7th Quality Conference in the Middle East

Leading Transformation to Sustainable Excellence

Proceedings of Congress

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The papers included in this book of proceedings focus on the contemporary issues in sustainable excellence. The papers were presented at the 7th Quality Conference in the Middle East held at the Atlantis hotel, Dubai, UAE between the 3rd and 5th of March, 2014, under the theme, ‘Towards Sustainable Excellence: Leading Successful Transformation’. The main purpose of the conference was to motivate researchers and professionals in the Quality arena to talk to each other, share information of mutual interest, and search for ways to jointly raise awareness about the need for all organizations to pursue excellence in the 21st century founded on the principles of effective governance and social responsibility. The conference also provided a great opportunity for presenting research findings and strategies for leading a successful transformation towards a sustainable excellence in the UAE, the Middle East and elsewhere in the world.

The conference led to interesting debates and enlightening views on the need for organizations to excel over the long run and utilize creativity and innovation in order to add value for internal and external stakeholders by understanding, anticipating, fulfilling, and exceeding their needs and expectations and produce a lasting prosperity that preserves natural resources for future generations. The discussions highlighted that organizations should identify the challenges that lie ahead while acknowledging their strengths and pinpointing the opportunities to sustain excellence over the long run. The participants in the conference agreed that excellence must be resilient and sustainable, and that maintaining and sustaining excellence is a lot more challenging than achieving it. As is always the case, many more issues were raised than solved. But the conference was a fruitful beginning and would provide a foundation for continuing dialogue and accomplishment of results on sustainable excellence.

The conference received more than 120 submissions including full papers, case studies, extended abstracts, and posters by researchers from 26 countries including the United States, France, Germany, Australia, Canada, Finland, Spain, Portugal, in addition to United Arab Emirates, Saudi Arabia, Bahrain, Egypt, and Algeria. The proceedings include full papers and case studies presented at the conference. The quality of these papers is a tribute to the authors and also to the reviewers who have guided considerable improvement in the manuscripts.
Research Papers
The Application of Maqasid Alsharia’h in Islamic Banking & Finance

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Abstract
Islam is a Divine revelation for all people and the Prophet (s.a.w.s.) has been sent as Compassion to Muslims as well as all humanity. It embraces whole life including economic and financial aspects that contain paths which lead to a social order along with social justice and economic prosperity. This conception is deeply adorned in the objectives of Maqasid al-Shari’ah. However, it is considered to be the cornerstone of Islamic finance & banking. Maqasid al-Shari’ah facilitate the needs of human being, ensure the wealth is circulated among as many as possible in a fair way, avoid dispute and ensure stability, promote transparency and accountability and uphold justice in acquiring wealth.

Purpose – The purpose of this paper is to discuss the application of Maqasid al-Shariah and its importance in structuring the framework of Islamic Financial institutions to develop financial products and services in accordance with Shariah rules and principles.

Design/methodology – This paper studies the meaning, contemplation and appropriate application of Maqasid al-Shari’ah in Islamic finance. It elaborates the ways of realizing the dignified objectives of Shari’ah in all sectors of Islamic finance. These objectives are elaborated in various and different aspects such as the appropriate meaning and significance of Maqasid al-Shari’ah; the proper comprehension of Maqasid al-Shari’ah in Islamic finance; the role of Maqasid al-Shari’ah in prohibition of riba in contemporary Islamic Finance and the methods of implementing Maqasid al-Shari’ah in Islamic banking. The paper analyses all these applications and provides examples from the current Practices of Islamic finance.

The value/Contribution – The value of this research project is to emphasize on the importance of Maqasid al-Shari’ah in all Islamic finance fields. Whatever direction Islamic finance may take in the future, it must be in conformity with the maqasid al-Shari’ah, which has been defined as the ‘purpose and wisdom behind the enactment of all or most of the Shari’ah ruling.

Introduction
Islamic Finance is finance following the Islamic law or Shari’ah principle. The basic sources of Shari’ah are the Qur’an & Sunna, which are followed by the consensus of the jurists and interpreters of Islamic law. The central feature of the Islamic finance system is the prohibition in the Qur’an of the payment and receipt of interest (or riba’). The strong disapproval of interest by Islam and the vital role of interest in modern commercial banking systems led Muslim thinkers to explore ways and means by which commercial banking could be organized on an interest-free basis. Islamic banks and financial institutions are supposed to be active according to Maqasid al-Shari’ah. Indeed, Chapra (1985) claims that such institutions have distinctive features such as the abolition of interest, adherence to public interest, catalyst for development, promotion of economic well-being, establishment of social and economic justice, and equitable distribution of income. Similarly, Nienhaus (2011, p.591) maintains
that “Islamic finance is based on a religious worldview and is thus often considered to be ‘ethical finance’. It is expected to observe the prohibition against interest (riba), uncertainty (gharar), and gambling (maysir), and it is supposed to tie financial transactions to activities in the real economy and share entrepreneurial risks. A global perspective of these features falls under the heading of Maqasid al-Shari’ah. Broadly speaking, Maqasid al-Shari’ah ensures that Islamic banks (or any financial institution and/or manufacturing/industrial firm) could contribute to the promotion of human welfare, prevent corruption, and enhance the social and economic stability.

This paper studies the meaning, contemplation and appropriate application of Maqasid al-Shari’ah in Islamic finance. It elaborates the ways of realizing the dignified objectives of Shari’ah in all sectors of Islamic finance.

Theory of Maqasid Al-Shariah

Maqasid al-Shari’ah

In recent years, Maqasid al-Shari’ah received an increasing attention. However, its emphasis within the Islamic finance industry needs to be indoctrinated into all spheres of the industry and all parties involved need to take proactive role in implementing it on a much wider scale. When people discuss about the underlying principle(s) and justification of particular action in Islam, for example forbiddance of interest (riba) or obligation of payment of zakah, the majority of the answers to the coherent rationalizations are presented by Maqasid al-Shari’ah. Every judgment comes with a reason. In case of the payment of zakah, the main objective is to purify one’s wealth and the central justification for it is equal allocation of wealth to everyone. Consequently, Maqasid al-Shari’ah reveals the noble vision of Islam which must be observed entirely as Islam is an absolute and integrated way of life. The Holy Qur’an illustrates this notably when it underlines the leading rationale for sending the Prophet Muhammad (s.a.w.s.) in verse: “We sent Thee not, but as a Mercy for all creatures” (Al-Qur’an, Al-Anbiya’: 107). Furthermore, it can be also observed in the Qur’an’s description of itself when it says “O mankind! there hath come to you a direction from your Lord and a healing for the (diseases) In your hearts,- and for those who believe, a guidance and a mercy.” (Al-Qur’an, Yunus: 57).

Definition of Maqasid al-Shari’ah

The word “Maqsid” (plural: Maqasid) reflects a meaning of purpose, objective, principle, intent, goal (Kamali, 2008a; Lane, 1968). Maqasid comprise the wisdom and knowledge behind rulings, the objectives of particular actions. As for the term “Shari’ah” mean Commands, prohibitions, values prescribed by Allah for His slaves either through Al-Quran or As-Sunnah (the teachings of the Prophet Muhammad s.a.w.). Hence, Maqasid al-Shari’ah represents “the objectives and the rationale of the Shari’ah (Dusuki & Bouheraoua, 2011). It encompasses all disciplines, laws, regulations, policies, instructions, obligations, principles, beliefs, devotion and actions designed to protect the interest of human beings in all segments and aspects of life.

Several renowned Muslim scholars have given their own definitions for Maqasid al-Shariah:

Abu Hamid al-Ghazali (d.1111 CE) as:

The very objective of the Shariah is to promote the well-being of the people, which lies in safeguarding their faith (deen), their lives (nafs), their intellect (Naqil), their posterity (nasl), and their wealth (mal). Whatever ensures the safeguarding of these five serves public interest and is desirable, and whatever hurts them is against public interest and its removal is desirable.
Imam al-Shatibi (d. 1388 CE), defined Maqasid al-Shariah as

The primary goal of the Shariah is to free man from the grip of his own whims, so that he may be the servant of Allah by choice, just as he is His slave [in matters about which he has] no choice.

Ibn Ashur (1973) defined Maqasid al-Shariah as

The overall objective (Maqsad Amm) of Islamic legislation is to preserve the social order of the community and insure its healthy progress by promoting the well-being and virtue (Salah) of the human being. The salah of human beings consists of the soundness of their intellects and the righteousness of their deeds, as well as the goodness of the things of the world in which they live that are put at their disposal.

Characteristics of Maqasid Al-Shariah

The Maqasid Al-Shariah has four main characteristics

1) Basis of legislation
Legislation has to serve the interest of all human beings and save them from harm.

2) Universal
Aiming to serve the interests of mankind and requiring the adherence of all human beings. This is because the Quran is the last revelation, applicable to the all mankind till the end of time.

3) Inclusive
They encompass all human acts whether they are related to Ibadat (responsibilities to God) or muamalat (responsibilities towards other human beings).

4) Definitive
They have not been derived from a single text or item of evidence, but from a multiplicity of texts and different aspects of evidence. (Mashhad, the Objectives of the Islamic Divine Law, 2003, 2)

Classification of Maqasid Al-Shariah

In usul al-fiqh, on which Islamic jurisprudence is based, scholars such as al-Shatibi further divide the general objectives—sometimes denoted as maslahah—into three sub-categories. Al-Shatibi calls these the essentials (Daruriyah), the complementary (Hajiyyah) and the embellishments (Tahsintiyah).

The categories are briefly discussed below:

1) Daruriyah (Essential)
It is known as the essential interests of life which people essentially depend upon, comprising the five objectives of Shariah: religion (deen); life (nafs); intellect (Naql); procreation (nasl) and wealth (mal). These are essentials serving as bases for the establishment of welfare in this world and the hereafter. If they are ignored then coherence and order cannot be established, fasad (chaos and disorder) shall prevail in this world, and there will be obvious loss in the hereafter. Some scholars argued that though the five daruriyat are essential for human welfare, necessities are not confined to these five maqasid; hence, they proposed additional daruriyah such as equality, freedom and protection of the environment (Mohammad Hashim Kamili, 3)

2) Hajiyyah (need or complimentary)
Complementary interests are defined as benefits which seek to remove severity and hardship that do not pose a threat to the very survival of normal order. The term refers to interests, the neglect of which will lead to hardship but not to total disruption of the normal order of life. In other words, these interests, which are a level below the five essentials, are needed in order to alleviate hardship, so that life may be free from distress and predicament. They are also reflected in provisions that aim to remove hardships and/or facilitate life. An example
is seen in the sphere of economic transactions; the Shari`ah has validated certain contracts such as the salam sale and lease and hire contracts (Ijarah) because of people’s need for them, notwithstanding a certain anomaly that is attendant in both Mohammad (Hashim Kamili, 3)

3) Tahsiniyyah (embellishments)

The embellishments refer to interests whose realisation leads to refinement and perfection in the customs and conduct of people at all levels of achievement. For example, the Shari`ah encourages charity to those in need, beyond the level of the obligatory zakah. In customary matters and relations among people, the Shari`ah encourages gentleness, pleasant speech and manner, and fair dealing. Other examples include permission to use beautiful, comfortable things; to eat delicious food; to wear fine clothing and so on.

Maqasid Model

Maqasid Al-Shariah and Islamic Finance

The earlier sections have discussed on the fundamental principles on the objectives of Shari`ah particularly in dealing with everyday life. The next focus is to apply evaluate maqasid alshari`ah in Islamic banking and finance. In fact, one of the biggest challenges of Islamic banking and finance industry today is to come up with product and services that is shari`ah compliant or legitimate from Islamic point of view without undermining the business aspects of being competitive, profitable and viable in the long run (Asyraf Dusuki, Challenges of Realizing Maqasid al Shari`ah in Islamic Capital Market,6)

The major components of Islamic financial services are

1) Islamic Banking
   a. Financing
   b. Deposit
   c. Investment

2) Islamic Capital Market
   a. Equity
   b. Islamic Securities
   c. Funds and Unit Trusts
   d. I-REITS
   e. Venture Capital / Private Equity
   f. Derivatives

3) Takaful/Islamic Insurance
   a. Takaful
   b. Retakaful

According to Chapra (1985) the main objectives of the Islamic Financial Institution (IFI) are abolition of interest, adherence to public interest, catalyst for development, promotion of economic well-being, establishment of social and economic justice, and equitable distribution of income.

The Qur`an has laid down several premises for economic justice. For example, people are not allowed to devour their wealth unjustly except through mutual consent. All forms of elements that would create economic injustices such as bribery (al-Rishwa) fraud or deception (al-Ghish), gambling (al-Maysir), dubious contracts (al-Gharar) and riba are condemned in the highest term. Interest is considered as a major destabilizing factor that contributes to cyclical fluctuations in the economy and it transfers resources from the poor to the rich (Minsky, Wheat sheaf Books, 10)

Other forms of activities are encouraged by the Shari`ah to ensure economic justice such as wealth circulation (al-Tadawul or al-Riawai) that should not only be confined to the rich, fair share of returns (al-Shirkah) among the contracting parties
and fair pricing (Tas’ir) while avoiding profiteering that burdens the public (Mustapha Omar Muhammad, Objectives of Islamic Banking: Maqasid Approach, 253).

Hassan (2003) observes that the Islamic Financial Institute (IFI) must seek to realize economic justice through wealth circulation, elimination of absolute poverty and efficiency in the utilization of resources available.

In addition, the profit and loss sharing arrangements on the pattern of equity are more just than the conventional contracts as closest to the Islamic ethos than the predetermined fixed interest debt which is unjust and a taboo. IFIs must seek to realize economic justice that would result in permanent contribution to economic efficiency, productivity, growth and stability. To ensure social justice as enjoined in the Qur’an, Islamic banks must strike effective balance between profitability and social justice.

Moreover, realization of maqasid al-Shari’ah in the current Islamic finance transactions it’s really important because of the several reasons. First, there is a strong relationship between the objectives of Maqasid al-Shari’ah and the objectives of business transactions, as can be observed from the position of the wealth within Islamic law and Maqasid al-Shari’ah that requests the preservation of wealth in everyday business activities and the promotion of socially responsible activities. As a result, if objectives of Maqasid al-Shari’ah in business transactions are neglected, it may result in poverty and anarchy. Second, the business transactions in domestic and international trade should be based on the principles of Islamic law, and the fundamental objectives of Maqasid al-Shari’ah in finance and business shall be applied as core guidelines to implement all types of financial transactions. Third, the particular objectives of Maqasid al-Shari’ah in business transactions must have perpetuity and constant outlook of the universal objectives of Maqasid al-Shari’ah. Last but not the least, the regulations of business transactions should be within the rules and the requirements of Maqasid al-Shari’ah and Islamic law. In other words, Maqasid al-Shari’ah must administer and regulate the Shari’ah principle of the Islamic finance (Lahsasna, 2009; Lahsasna & Sulaiman, 2010).

Maqasid Al-Shari’ah in the Prohibition of Interest (Riba)

From financial point of view, one of the most important objectives in Shari’ah is elimination of interest (riba) in all categories of business transactions. The two main categories of interest (riba) which are sternly prohibited in Islamic law are riba al-nasiah, which is interest on lent money, and riba al-fadl which is literally earnings or excess acquired by exchanging or selling commodities of superior value over other commodities given (Kahf, 2006). The Holy Quran states: “those who devour usury will not stand except as stand one whom the evil one by His touch hath driven to madness. That is because they say: "Trade is like usury," but Allah hath permitted trade and forbidden usury (riba)” (Al-Qur’an, Al Baqarah: 275).

According to Shari’ah, both types of riba cause unfairness in business transaction. It generally provides rich individuals easy way to grow their wealth by weakening the other member of community. The Shari’ah categorized this type of profit as illegal earnings which are strictly disallowed. Looking from the society (maslahah) point of view riba makes the community indolent, unproductive and lowers individuals’ contributions to the society. As a result, all banks and financial institutions must diverge from riba and perform whole some business transactions excluding riba. It is an extremely challenging task; however it is a devoting responsibility and most important obligation of Shari’ah in order to enhance supreme Islamic products in banking and finance. In this sense, it can be further elaborated that the distinction between the Islamic banks and the conventional banks lays in the fact that the Islamic banks, being Shari’ah-compliant, in all business
procedures disallow riba, whereas the conventional banks engage in all form of transactions without considering the illicit nature of riba. Therefore, the Islamic banks assess product from several perspectives, including value of the transaction, profit and return, as well as the nature of the products. On the other hand, conventional bank evaluates the product from side of interest and profit only, without taking into consideration the condition of the religion in particular transaction (Mohamed, 2006).

Application of Maqasid al-Shariah in Islamic Banking

The earlier sections have defined Maqasid al-Shariah, and discussed the prohibition of riba. This section will discuss on the importance of Maqasid al-Shariah in Islamic Banking. It is of crucial importance to the Islamic banks to develop financial products that are Shariah-compliant without jeopardizing their competitiveness and profitability in the long run. The pressing question is how to determine whether a product is Shariah–compliant or otherwise? How to resolve the legality of a contract from Shariah perspectives?

Shariah-Compliant: Legality vs Permissibility

The Fiqhi scholars have two different views on this matter. Some of them emphasize on whether the structure of the product is permissible while the other group prefers to look into the underlying objectives of the contracting parties. They do not want the products cleverly disguised as a shariah–compliant product when in actual case it is not. The difference in opinion is due to the hadith that mentions “matters are determined by intention”. Based on this hadith, the legality of the contracts must be established by intention (niyyah) not merely by its structure alone (Dusuki Asyraf Wajdi and Abdulazeem Abozaid, 2007, 15).

On the other hand, Imam Shafi stated that it is unreasonable to decide on the legality of contracts by implication of intention, as it is complex and sometimes improbable to categorize the intention of the contracting parties. In addition, they stated that some Shari’ah texts indicate that evaluating things must be based on their structure and manifestation (Dusuki, 15).

The scholars decided to reconcile the two conflicting opinions by introducing the two types of hukm (ruling): Hukum Qada’i and Hukum Diani.

1) Hukum Qada’i

This hukm is to determine if the contract complies with all the Shari’ah conditions and requirements pertaining to its form and structure. If the contract structure is Shariah-compliant then it is termed as valid contract (sahih).

2) Hukum Diani

This hukm is to determine whether the purpose of the contract is Shariah compliant and if it is then the contract is permissible (halal).

Thus, a transaction is deemed to be halal when it serves the legal purpose and intention, and sahih if the contract meets all contractual conditions and requirements. Consequently, a sahih (valid) contract is not necessarily halal (permissible).

It must be stated here that the scholars of Fiqh have different views with regard to the validity of a contract only. However, they have no issue with the permissibility of a contact on its matter or the contracting parties’ niyyah. Even Shafi scholars expressed examples of cases when real intention does nullify a contract such as selling fruit products to be used for alcohol making or furnishing arms to people who will use it against the Muslims. This indicates that the importance on the structure or expressed intention is more appropriate when the genuine intention is hard to establish.

For an Islamic product to be classified as Shariah–compliant by the jurists, the contract must commonly be both valid and permissible. The pertinent question is, are contemporary Islamic banking following the same principles One of the most debatable
products of Islamic banking is buy-back sale (bay’ al-‘inah). In bay’ al-‘inah approach the Islamic bank is theoretically acting as a trader selling or buying as the word “bay” means sale, but in actual terms the Islamic bank simply proceeds as a financier who provides capital without exposing itself to any risk and without taking engagement in the venture procedure. Bay’ al-‘inah here is resorted to as a legal device to avoid riba based loan. However, financing based on bay’ al-‘inah and the conventional riba based loan are very similar; they satisfied closely the same contracting parties’ purposes, and apply exactly the same economic matter and outcomes, although their form may be different (Dusuki and Abozaid, 2007).

Thus not all products offered by Islamic banks are fully embracing the objective of Shari’ah. If Islamic banks focus only on the structure or validity of a contract instead of focusing also on the underlying purpose or the permissibility then the bank is in opposition to the key principles of Maqasid al-Shariah. In the case of Bay Al-Inah, Maqasid al-Shariah has been used as a rationalization for application of rather questionable transaction, even though observing Maqasid al-Shariah must be the first factor to determine their prohibition (Dusuki and Abozaid, 2007).

**Equity Finance**

In order to streamline Islamic finance more in tune with Maqasid, some scholars advocate a shift towards the development of equity-financing away from debt-financing. “Evidence on the current practice of Islamic banks worldwide suggests that the majority of financing today is not based on equity but rather takes the form of debt-like instruments. This is because Islamic banks and financial institutions have opted for profitable Islamic financing such as Murabahah (debt finance) instead of Musharakah and Mudharabah (equity finance)” to the detriment of the industry. In fact, the implementation of profit-loss sharing “PLS” contracts such as Musharakah and Mudharabah has been limited thus far.

It is a complete contradiction to the goal of the entire industry and the Maqasid Al Sharia’h to focus primarily on profitable debt-financing and instruments.

“Currently, Islamic banks just focus on the form rather than substance itself as an attempt to meet Sharia’h compliance. The approach used by Islamic banks today, as argued by Syed Ali and Ahmad (2007), is just conventional banking in disguise. Like conventional banks, Islamic banks are still using debt-based financing contracts when they give out financing facilities to customers (Ibid, 6).

One of the goals of the Islamic finance industry is to optimize resource allocation for the benefit of humanity through (i.e.) extinguishing debt-based financing. However, as stated previously, in a complete paradox, the current Islamic finance industry is focusing primarily on debt-based financing (Ibid, 7).

Equity-financing utilizes a profit-loss sharing mechanism based on the contribution of capital in the project or investment. In equity-based financing, both the borrower and lender share profits and losses as compared to the case of debt-financing where one party is made to take all the risk. It also promotes expansion of the economy including the development of small to medium sized businesses in addition to large enterprises and promotes stability in the economy and society at large.

**Conclusion**

Islamic financial system has potentials to become the envoy for the implementation of the righteous objectives of Shari’ah, as it resides within a financial path underlined by the nature of Shari’ah rulings. These Shari’ah rulings correlate Islamic financial transactions with real concern for just, fair and transparent society. Concurrently, Shari’ah rulings prohibit involvement in forbidden activities which are harmful to social and environmental welfare. Maqasid al-Shari’ah is seeking to develop Islamic
finance on firm grounds which can accept all improvement in financial transactions. This firm position and prominent basis will help the Islamic finance to achieve a better performance. It could be strongly affirmed that Maqasid al-Shari’ah is the best elucidation for Islamic finance, particularly by looking into observation that the Islam itself is absolute system for living in all aspects including business and finance. From the firm ground of Maqasid al-Shari’ah, Muslim jurists and scholars, through the growth of the business transactions and finance, have introduced a number of Shari’ah principles in order to regulate and rule financial transactions. These principles should be implemented by Islamic banks and financial institutions in all aspects of finance. At the same time, this is to guarantee the consistency of the business and to smooth the progress of achieving Maqasid al-Shari’ah in financial transactions.

Finally, limited views of understanding Shari’ah, by only highlighting on the lawful forms of a contract, needs to be amended. Instead, the matter that has greater implications to the implementation of Maqasid al-Shari’ah must be observed, in particular when structuring a financial product. Therefore, Islamic finance must make sure that all of its transactions are Shari’ah-compliant not only in its forms and lawful procedures but more significantly in its substance and economic matters which are premised on the objectives outlined by Shari’ah.
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Shariah Audit Process in Dubai Islamic Bank

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Introduction

Nowadays, the conventional economy is seeking to launch more Islamic banks in order to establish a business transaction in accordance with the Shariah rules. Shariah auditing plays a vital role in ensuring that the bank’s operation and function is in accordance with the shariah rules and principles. In addition, banks with Shariah audit policy will establish and maintain an independent audit function in which the bank’s senior management and Board of Directors will provide a reasonable assurance that the bank keys operational, organizational and procedural control are effective, appropriate and compiled with. Therefore, it is important for banks to have a shariah internal and external audit. Thus, shariah compliance remains the central focus of Islamic finance industry and in order to maintain a proper compliance a shariah governance framework is needed. A shariah governance framework is important because it provides a guideline for Islamic financial institutions. The research paper will discuss the following points.

Definition of Shariah Governance

Nowadays, shariah governance has played a vital role in Islamic financial institutions and is considered to be as important as corporate governance. Shariah governance is considered to be a tool that ensures all business activities, transactions and services conducted are compiled with the rules and principles of Shariah as well as it acts as a guide for Islamic Financial Institutions. Moreover, the governance significance lies in its role to ensure confidence among stakeholders in the finance industry.

IFSB-10 has defined shariah governance systems as “A set of institutional and organizational arrangements through which IFIs ensure that there is an effective independent oversight of Shariah compliance over the issuance of relevant Shariah pronouncements, dissemination of information and an internal Shariah compliance review”. (IFSB, 2009)

The Shariah governance system put in place the role and function of Shariah Supervisory Board in Islamic Financial Services Industry as is to review, supervise and oversight the financial operations and activities ensuring its compliance to shariah rules and principles. Also, they are responsible to giving approval to banking sector regarding the products and services they offer to the public. Thus, shariah supervisory board are functioning in according to the concept of collective decision making in which a number of qualified member will decide on the difficult issues of finance to reach to a definite conclusion. In order for the shariah board to perform these duties a clear guideline, framework and structure is needed to ensure its effectives in terms of their independence, objectivity and binding force of its ruling. (Onagun,A.I., & Mikail,2013)

Thus, the main objectives for shariah governance framework and the reason for its existence is to ensure that all the behaviors, transactions and operation done by Islamic financial institutions are in accordance to the teaching of Islam and to Islam financial standards. In addition, it is to provide a detailed and comprehensive guideline to the shariah committee, board and management of the Islamic financial institution when performing their duties related to matters in shariah.
The table above illustrates how the shariah governance matches the existing framework of corporate governance in IFI.

**Process of Shariah Governance**

The shariah governance is divided into two processes the ex-ante process (internal auditor) and the ex-post process (external auditor).

1. **The Ex-Ante Process of Shari’ah Governance it is called “Internal Shariah Audit”**

   There are two important factors in internal process that should be presented in the Islamic financial institution in order to build good shariah governance. Those factors are structuring principles and rules in accordance to the Islamic jurisprudence, formulation of an Islamic product, and legal documentation processes. Thus, issuance of Fatwa or pronouncements and internal shariah review are considered to be two aspects of internal process. (Onagun, A.I., & Mikail, 2013)

   - **Issuance of Fatwa or pronouncements**
     
     When the bank decides to launch a new Islamic product to the public, it has to be approved by central authority such as Fatwa council and a pronouncement needs to be issued. First of all, a jurist opinion regarding a particular issue in Islamic finance will emerge and to be given by the shariah board. Thus, only the central authority has the authority to release pronouncements in relation to the finance issue and for the Islamic institutions to ensure their compliance to those pronouncements. Moreover, once the decision to implement the shariah pronouncements has been issued and approved then it becomes a legal and binding shariah ruling (hukum al-shariah) to Islamic financial institutions. The meaning of shariah rulings is rules and commandments from Allah in relation to the addressed subject matter or issue.

   - **Internal shariah review**
     
     The existence of internal shariah review unit/department is vital for every Islamic financial institution in order to monitor the daily operations of the institution and ensure that every transaction was in accordance to the shariah and central authority pronouncements. Therefore, the Islamic financial institution should provide the internal shariah review unit with proper equipment for effective results as well of specialized employee with knowledge of shariah rulings. Moreover, to avoid of conflict of interest the internal review unit should be separated from other departments. (Zurina Shafi & others, 2010)
Model of Shariah Governance in Dubai

The shariah governance model in Dubai is through the formation of

“Higher Shariah Authority” in which their goal is to oversee Islamic financial institutions such as banks and investment companies which is mentioned in Article. 5, Federal Law No. 6 of 1985.

The Federal law No.6 of 1985 consists of 10 articles regarding the law for Islamic banks, financial institutions and investment companies.

Article(1) states that all Islamic banks, financial institutions and investment companies should abide by the provisions of the Islamic shariah lax and conduct their activities in accordance to that. (Federal law, 1985)

Article(2) states that all Islamic banks, financial institutions and investment companies that has established in the country should carry their activities in accordance to the provision mentioned in the law. However, any issue that could not be resolved by this law they should resort to provision of Union law (10) of 1980 , Federal Law No. 8 o 1984 and any other established provision, laws, regulations and practices. The banks, institution and companies shall be established in the form of public joint stock and in accordance to the Federal Law No. 8 of 1984. Moreover, they shall be subject to the central bank license, supervision, and inspection. (Federal law, 1985)

Therefore, the “Higher Shariah Authority” is considered to promote the final decision in matters related to Islamic banking and finance. However, in cases of any disputes they should resort to Fatwa board in the Ministry of Awqaf and Islamic Affairs.

Definition of Shariah Audit

Shariah audit is defined as an audit performed by shariah auditors on periodic bases to assess and provide an opinion and reasonable assurance on the Islamic Financial Institution’s product, services and operation that they are in accordance to the shariah rules, principles and pronouncements and afterwards reporting it to the appropriate authority. (Abdel-Karim, 2011) In addition, shariah auditors perform their duties on both subjective and objective information. Examples of subjective information are fatwa, standard and shariah opinions.

However, an example of objective information is financial information. The scope in shariah audit is broader than the conventional audit because it includes auditing the financial information such as profit distribution , auditing the bank’s policy such as the penalty charge in late payment and auditing the bank’s product. Shariah audit is considered a vital part of shariah governance.

Every Islamic financial institution should perform shariah audit in which it is done by their internal auditors with knowledge and training on shariah-related matters. The shariah audit must be conducted yearly depending on the risk profile of the Islamic financial institutions. The purpose of shariah audit is providing an objective assurance and independent assessment of the banks’ operation and activities ensuring their compliance to the shariah’s rules and principles. Conducting shariah audit on specialized areas such as anti-money laundering and management audit is part of shariah audit. Moreover, Islamic financial institution needs to ensure that a proper and effective internal control is being implemented which includes in-depth understanding of the business activities to promote a more defined scope of an audit implementation, development of comprehensive and clear internal audit program, ensuring that the audit is being done on a periodic basic and gathering as well as making references to relevant sources such as fatwa guideline, shariah committee decision and internal shariah checklist. The audit board committee with
the consultation of the shariah committee should determine the deliverables of the shariah audit function in which it should consistent with accepted auditing standards.

The scope of Shariah audit shall cover all aspects of the IFI’s business

Operations and activities, including:

1) audit of financial statements of the IFI
2) Compliance audit on organizational structure, people, process and Information technology application systems
3) Review of adequacy of the Shariah governance process. (Islamic Financial Services Board, 2009)

This diagram below illustrates the evolution of audit through the centuries.

**Comparison between Conventional and Islamic Auditing**

Nowadays, the economy is witnessing the advanced development of Islamic financial institutions in the industry. Thus, this requires for an auditing mechanisms to fulfill this rise in the economy. Shariah based audit has been presented in the economy in the early 2000s due to the rise of Islamic financial institutions. However, there is a lack of research in this filed resulting in a gap on the methods of conducting the audit. Thus, there are several elements in common between the conventional and Islamic auditing as well as differences but the major difference between them is that in shariah audit all it’s operations and activities conducted should comply all the teaching of Islamic religious.

The similarity between conventional audit and shariah audit is parties involved and bank operations

- **Parties Involvement in the audit**
  In terms of the party relationship, both the conventional and shariah audit will involve the entity, auditors and a broad range of users such as stakeholders.

- **Bank Operations**
  In both Islamic and conventional banks have similar operation like deposits, finance, loans and investment in return for a reward.

The differences between the conventional and shariah audit are the subject matter, the criteria, the evidence used, the bank rewards and the reporting structure.
- **Subject Matter**

In contrast to conventional audit in which their subject matter is financial assertions, shariah audit subject matter includes contracts, products, performance, procedures and financial statements. For example, in Islamic banks auditors it is necessarily to ensure that the element of uncertainty is not present in the contracts between the bank and the customer. Also, that Islamic products offered to the public should not include interest (riba).

- **Criteria**

In conventional audit, they follow the criteria of IFRS while in shariah audit they follow the shariah rules and principles, any relevant IFRS and AAOIFI.

- **Evidence**

In terms of conventional audit, auditors will collect the appropriate and sufficient evidence in accordance to their scope of audit. While, Islamic audit will refer to evidences such as pronouncements, Fatwas of both national or international boards as well as any appropriate evidence extracted from conventional audit.

- **Reporting Structure**

In conventional audit the report done by the auditors will consist of opinion. However, in shariah audit the report tends to be a detailed and prepared by shariah auditors. (Hanif, 2011)

- **Bank Rewards**

In conventional banking, the rewards are fixed and pre-determined while in Islamic banking it is variable. Unlike conventional, Islamic bank possess the concept of profit-sharing

This table below summarizes the key points of the comparison between conventional and Islamic auditing

<table>
<thead>
<tr>
<th>Element</th>
<th>Conventional Audit</th>
<th>Islamic Auditing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Party Relationship</td>
<td>The entity, the stakeholder and the auditors</td>
<td>The entity, a broader range of stakeholder and the auditors</td>
</tr>
<tr>
<td>Focus</td>
<td>Financial statement assertions</td>
<td>Procedures, bank contract, personnel, operational systems, bank’s performance and financial statements</td>
</tr>
<tr>
<td>Standards</td>
<td>IFRS</td>
<td>Shari’a principles and rules, aaoifi standards</td>
</tr>
<tr>
<td>Evidence Used in Auditing</td>
<td>Sufficient and appropriate evidence</td>
<td>Fatwas of both international and national fiqh boards, plus all other conventional evidence</td>
</tr>
<tr>
<td>Reporting structure</td>
<td>Standard audit report prepared by auditor</td>
<td>A more detailed report prepared by a shariah auditor</td>
</tr>
<tr>
<td>Bank Reward</td>
<td>Fixed and pre-determined</td>
<td>Variable</td>
</tr>
</tbody>
</table>

**Dubai Islamic Bank Shariah Board**

Dubai Islamic Bank consists of a chairman and four members of the Fatwa and Shariah Supervisory Board. This board functions their duties in accordance to the guidelines imposed in shariah governance. The scholars in this board are with high level of expertise in Islamic finance, economics, law and banking system. Moreover, the board supervises the development of the product, investments and services that is offered by the bank. In addition, the board has the authority to issue shariah and fatwa guidance. There is a team of Shariah auditors within the bank under the supervision of the board to ensure that the
banks products and operations are compiled with the shariah rules and principles.

**Shariah Audit Process**

The shariah audit is common to the conventional audit in terms of the process. However, the main difference is the criteria and the standards that auditors refer to when conducting the audit. The process will include planning the audit, executing the audit, reporting and afterwards following up the audit. There will be a pre-audit process in which the auditor determine the more riskier area in the Islamic financial institution and focus on that area.

The auditor is responsible for planning the audit and it will include the establishment of the overall audit strategy in response of the risk assessment procedures and responses to the risk material misstatement. (Public Company Accounting Oversight Board)

Some tools and techniques that auditors use to execute their audit is observations, examining documents and interviewing.

In addition to shariah audit done internally by Dubai Islamic bank shariah auditors, Dubai Islamic bank will also be audited by auditors assigned from the government of Dubai in the financial audit department. Their role is to ensure that all their activities and operations are in accordance to the bank’s product and services policy. Also, they examine and evaluate their process and their decision regarding to whom to finance. Moreover, the auditors examine that all the operations are in accordance to the shariah pronouncements and Fatwas. For example, when auditing the retail segment specifically auto-finance the auditors ensure that the bank has purchased the car under their name (DIB) and afterwards financed that car to the client for a specific amount of repayments. This method is traced back to the shariah rules in which one cannot sell when he or she does not own the asset. The scope of the auditors includes all the activities accomplished and done by Dubai Islamic Bank such as investments, corporate and retail accounts. Their audit reports are detailed with specific mentioning of the clients or companies name in which there is any violation and to be reported to the head of financial audit department and it is done yearly.

**Dubai Islamic Bank Group Internal Audit**

In my opinion, the group internal audit should be considered as one of the most important departments in the bank due to their role of providing to their CEO, boards of directors and senior management reasonable assurance regarding the bank’s operations and activities as well as procedural controls that they are effective and appropriate. Group Internal Audit is considered to be an independent department that provides objective assurance and consultancy in order to assist the bank to accomplish their objectives through systemic approach to improve and evaluate the effectiveness of their internal control, risk management and governance process.

Dubai Islamic Bank’s group internal audit department is divided into five different units which are credit review, operational and financial audit, branches audit, investment and treasury audit, information audit and quality assurance. Every unit is auditing the operation and activities based on their specialized and assigned area.

**Credit Review Unit**

In credit review unit, they focus on auditing the portfolio quality and giving an opinion on it as well evaluating the credit risk management process (CRMP) and risk management. The objective of this unit is to examine the quality of the new account and manage the existing ones. In addition, the objective is to grade the status and condition of the portfolio quality. When the department reviews the CRMP they evaluate and examine the effectiveness and the efficiency through credit appraisals, approvals, risk recognition, documentation and securities. In conducting their audit, the
unit performs the audit in accordance with DIB Credit Policy Manual, Internal Audit Policy Manual, International Auditing Standards for the Professional Practice of Internal Auditing and applicable regulatory rules and regulations.

**Operations and Financial Audit Unit**

This unit performs it audit in relation to business departments and operations within the bank. This audit is carried in order to provide reasonable assurance on the efficiency and effectiveness of the department operations and procedures and to ensure that the department are complying their operation and activities with the internal policies, procedures and applicable laws and regulations. (Dubai Islamic Bank)

**Investment and treasury audit**

The bank’s auditors in this unit will audit the investment quality portfolio, effectiveness of the investment management portfolio and the risk management and control process in order to provide reasonable and independent assurance on them. In addition, the auditors seek to present the management with opinion regarding their investment activities through analytical assessment in order to show the areas where improvements could be made. When conducting the audit, the auditors follow the Internal Audit Policy Manual, International Auditing Standards for the Professional Practice of Internal Auditing and applicable regulatory rules and regulations to ensure all the investment activities are according to them. (Dubai Islamic Bank)

**Conclusion**

Islamic financial institution needs to conduct their operation and activities in accordance to the shariah governance because shariah governance acts as a guideline for shariah committee, boards of directors and management on the methods to conduct their duties in relation to the shariah related matters. Therefore, since shariah audit both external and internal are part of shariah governance, Islamic financial institution should focus heavily on shariah auditors because they provide and report to the appropriate authority independent and reasonable assurance that the bank operation and activities are in compliance to the shariah rules and principle.

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Sustainable Quality Improvement Through Six Sigma: The Successful Case of Ducab

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Abstract

Statement of the Problem:
There is a lack of research papers in the area of Six Sigma implementation in the United Arab Emirates. The paper describes how an organization in the U.A.E. successfully managed to implement Six Sigma in order to sustain its quality.

Significance and Relevance:
The research is of a great significance to researchers in the area of Six Sigma and TQM Sustainability, in particular researchers in the Middle East. The research also has great implications for managers who are about to implement Six Sigma or those who are facing problems with their Six Sigma projects.

Description of Research Method:
In-depth interviews with the Business Analyst at Ducab were conducted to gather primary data. A literature review of various journals and articles was utilized.

Results:
The results are very interesting and revealing. The results show the reasons that led Ducab to implement a Six Sigma project and the challenges they met. The results further reveal the advantages of Six Sigma as experienced by Ducab. Furthermore, the results highlight the Critical Success Factors that led to a successful implementation of Six Sigma at Ducab and explore how Ducab managed to prepare its internal culture to accept the implementation of Six Sigma. Moreover, the research also shows other methods used by Ducab, in addition to Six Sigma, to sustain its quality.

Conclusions:
Exploring the implementation of Six-Sigma approach at Ducab was very interesting. Ducab which is a huge cable manufacturing company made the right strategic decision when they decided to implement Six-Sigma in order to gain a competitive advantage. By implementing Six-Sigma Ducab has registered remarkable customer satisfaction, noticeable cost reductions and an enhanced market presence through its service excellence. Many reasons were behind the success of Ducab in implementing Six-Sigma, some of the most critical success factors were the top management commitment; their unlimited support, involvement and strategic actions. In addition to that, the right decision-making, budget allocation, training programs and cultural readiness played significant roles in the success story. Furthermore, in addition to Six Sigma, Ducab sustains its quality improvements through the implementation of different approach such as benchmarking and Kaizen.

Keywords: Six Sigma; Quality; Sustainability; Critical Success Factors; Ducab
Introduction

Dubai Cable Company (Ducab) Ltd. is a cable manufacturing company that provides an advanced technology in the cables field. Ducab was established in 1979 by Dubai Government as a joint venture with British Insulated Callenders’s Cables (BICC). Currently, Ducab supplies high quality power cables and related accessories to their customers in 40 different countries. Ducab is considered as a large manufacturing company as it produces over 110,000 tones of low, medium and high voltage cables and wires annually. In addition, it provides a range of different products such as DUCAB RU BICC NEW, Copper Rod and Wire, DUCAB Power plus Medium Voltage Cables and many other products. Ducab also supplied many recent major projects in Dubai, such as Burj Khalifa, Dubai Metro and Palm Jumeirah. (Ducab, 2013).

One of Ducab’s endeavors to achieve continuous improvements in its journey of excellence was the implementation of Six Sigma methodology, which is founded by Motorola, and defined by Antony and Banuelas (2001) as “a comprehensive system that helps organization to achieve sustainability and to maximize their businesses”. Paul (1999) defined Six Sigma as a statistical term that refers to 3.4 defects per million opportunities, which is as close as anyone is likely to get to perfection. Consequently, Ducab also set a milestone when it partnered – the first time for an organization in the Middle East – with Motorola University to adopt the Six Sigma methodology. Today, more than 20 per cent of the staff and engineers are trained and certified Six Sigma professionals. (Ducab Cabletalk, 2010).

This paper highlights Six Sigma implementation in Ducab by describing the reasons that led to implementing the project, advantages and disadvantages of Six Sigma, the critical success factors, how the culture has been prepared to accept Six-Sigma, and other approaches for a sustainable performance.

Reasons for Implementing Six Sigma

Since its early days, Ducab was always interested in continuous improvement and excellence. In fact, Ducab has always promoted and encouraged a culture of excellence. But what are the reasons behind their Six-Sigma implementation?

It is clearly known that any organization that needs to implement any new changes must have compelling reasons behind this change in order to create a culture of emergency among their employees to avoid any resistance (Beer and Nohria, 2000). As per Ducab’s official website (2013), the mission of the company is to provide both internal and external customers with Total Quality Excellence of products and services which fulfill their needs and meet their expectations to achieve high satisfaction.

Ducab is a company that is striving to be the number one in lowest cost products, and highest quality cable manufacturer ever in order to satisfy the aims and aspirations of the shareholders, employees, and the community as well (Ducab, 2013).

According to Gworge et al (2007), organizations implement Six-Sigma to improve processes as they will need to search for the problem’s root cause and fix it to increase the product’s quality, and gain customer satisfaction.

Furthermore, the competitive business environment in Dubai and the effect of globalization both played a significant role in encouraging Ducab to further improve its quality and implement a Six-Sigma program since 2000 (Baker, 2002, cited in Ahmed Al Sharif, 2011). Moreover, according to Antony and Banuelas (2001), there are lots of external factors that lead organizations to deploy Six-Sigma. For example, fast changing economy, increasing customer’s demand for higher quality products, global competition and declining profit margin, all had a vast impact on manufacturing companies.
One of the reasons for the widespread use of Six Sigma is possibly due to the fact that organizations were able to generate financial returns by linking process improvements with cost savings (Ray and Das, 2010).

Finally, as stated by Ms. Herleen Mehta who is the Business Analyst in Ducab, quality improvement is a non-stop journey in Ducab, and it all goes back to both management commitment and senior management vision for continuous improvement.

**Six Sigma Advantages and Limitations**

The implementation of Six-Sigma methodologies in Ducab had significant benefits consistent with the benefits found in literature. The managing director of Ducab, Andrew Shaw, mentioned in the corporate news magazine of Ducab (2010), that the company continues to change and develop, responding to the needs and requirements of its customers and market that it operates in and the factory operations and management systems are all audited and approved by its customers like DEWA, ADEWA, etc. Therefore, customer satisfaction is one of the main benefits gained by the implementation of Six Sigma.

Another advantage, as noted by John DeMerceau, (2013), Six-Sigma reduces defect in products and service processes. According to Ms. Herleen Mehta, Business Analyst in Ducab, the company implemented Six-Sigma program as an attempt to achieve near perfection by removing defects in the products and service processes. This assisted the organization in achieving its objective of being a truly quality driven organization, in which the customers' needs and requirements are its first priority. (AME Info FZ LLC, 2002).

According to Ms. Herleen Mehta, Business Analyst in Ducab, Six-Sigma helped in filtering the processes to make sure that only needed materials and resources are to be used. Lee-Mortimer A. (2006), noted that Six-Sigma companies are establishing now better understanding and more control of the processes, thus producing cost savings, enhanced customer satisfaction and increased profitability. Carraher and Shields (2009) also highlighted the benefits that companies gain when they implement Six-Sigma as they will improve processes, reduce costs, enhance cycle times and reduce customer complaints. Of course, the cost reductions will improve the financial performance of the company as emphasized by Plonien (2013) as he argued that the use of Six Sigma tools such as DMAIC will enable the improvement of the organization’s financial performance.

One of the attributes of Six Sigma is the gathering of the voice of customer (VOC). Six Sigma puts the VOC into every business decision. When using Six Sigma, the company would be concentrating on targeting processes that allow variations or defects that keep it from meeting the critical expectations of the customers. (Frank, 2010).

Furthermore, at Ducab Six Sigma methodology is the acknowledged method of improving product quality and company performance in all areas of the business. Also, Ducab used Smart Grid program in which it delivered electricity from the suppliers to the consumers, thus, saving energy, reducing costs and increasing reliability. (Herleen Mehta, 2011).

Another advantage is that people involvement during the execution of Six-Sigma increase the motivation, and commitment to success (Greg Brue, 2006). Ms. Herleen Mehta, during the interview stated that people participations and involvements in Six-Sigma project grew the spirit of enthusiasm and commitment towards success which enhanced people's motivation.

It is obvious that the adoption of Six Sigma gave Ducab a competitive advantage. As highlighted in AME Info FZ LLC. (2005), Farid Mohammed Ahmed who is working in
Ducab as GM Sales and Marketing, held a seminar in order to concentrate on Ducab’s competitive advantage, and service excellence. He mentioned that the present market occurrence of DUCAB has been enhanced and improved strategically through the competitive advantage and service excellence. Six-Sigma approach mainly develops the operational effectiveness and efficiency and this continuous improvement is crucial to develop competitive advantage and alter the results to sustainable profitability (de Mast 2006).

Ms. Herleen Mehta believes that Six-Sigma implementation improved the business and increased the profit of Ducab. Ducab recorded 30% increase in production levels across the entire product range and more than doubled the production of medium voltage (33kV and 11kV) cables in the second quarter of 2002, compared to the corresponding period of the previous year. The quality approach of the manufacturing process has been developed by making sure that the cables are under tremendously high standards. Six-Sigma program then enabled the organization to run the machines efficiently, decrease defects, and finally organize the manpower on machines. What’s more, is that the Six-Sigma program in every manufacturing process involved identifying limitations, and providing workaround solutions in order to reach general improvement in the production level, as well as speeding up to accomplish faster time to market. (Gulf construction. 2013).

Although Six-Sigma is a methodology considered to be well worthy of implementation for its tremendous advantages, there are still some limitations to this approach. For example, according to Antony (2006), in order to establish a Six-Sigma program; significant investment for the start-up cost is required. As a result, a number of small size companies as well as medium ones will be discouraged from introducing a Six-Sigma program. This is also the view of Sanders (2010) as he stated that “many companies hesitate to use Six Sigma because of the perceived payroll, consulting, and training or improvement costs”.

According to Ms. Herleen Mehta, Six-Sigma does not come cheap; many changes must take place within the organization to adopt such practice. Therefore, when Ducab started thinking of implementing such program, the first concern from the management was the cost. Not only the cost that is directly related to the program itself, but the cost that Ducab will incur non-directly from the implementation phase, such as training, equipment and infrastructure investment.

Furthermore, a Six-Sigma program requires quality data that might not be available, specifically in processes which have no data to start with as this will require a long time to prepare. According to Ms. Herleen Mehta the managers were focused into the core business and were not always free to attend meetings to collect the data for implementing Six-Sigma. The reason is that they faced conflicts with their business projects. The unavailability of data caused some delay in the implementation. However, the initial lack of such data seems to be the norm in many companies. There are a number of researchers who believe in data availability as a significant concern for the implementation of Six-Sigma. Rattan and Lal (2012) stated that data collection depends mainly on the readiness of the user as well as time limitations. Antony (2006) declared that in certain situations, which are driven by the data, they can be expensive, and sometimes just a tiny part of the solution is set out. Data collection is a time consuming practice and we all know that time equals money in businesses and this is also the view of Kliesmet (2013) when he argued that the most time-consuming part of a Six Sigma project is the collection of data. Not only collecting data is time-consuming but also According to Zimmerman and Weiss (2005), it is difficult to obtain
accurate and unbiased data to perform objective analysis from the existing company databases.

In Ducab only top management was aware of Six–Sigma methodologies. However, the majority of employees were not exposed to Six–Sigma, and they did not practice it before. As mentioned by the interviewee Ms. Herleen Mehta, the company is huge and has a large number of employees who needed to be educated and trained in Six-Sigma methodologies. Because Top managers were always busy with other projects the best solution to educate and train employees was to hire external consultants. Antony (2004) views the lack of knowledge and human resources as a main limitation of Six-Sigma.

Critical Success Factors for Six Sigma

Any quality improvement approach could succeed or fail since it is based on different elements that could interfere during the implementation, or influence the process. Along with several reviewed studies, these influences have been given different names such as ‘elements’, ‘principles’, ‘ingredients’ or ‘factors’. Ahmed AL Sharif (2011), tried, in his research, to develop means of compromise between these factors in order to investigate the success of implementing the Six-Sigma approach in Ducab Company. Some of the most important critical success factors are discussed below:

Top Management Commitment

Top management commitment is considered in Ducab as the most important factor to initiate a Six-Sigma approach as mentioned by Ms. Herleen Mehta. However, she clarified that the top management has to be convinced at first in order to accomplish Six-Sigma implementation successfully. Therefore, if the top management is totally convinced they can influence their employees who will facilitate the implementation too.

The top management involvement was through directing and managing the implementation journey in Ducab. Many special forums and internal committees were formed in order to control the process of Six-Sigma implementation. They allocated one hour in the management meetings to discuss these committees’ outcomes and reports as a mean of control, and encouragement (Sharif, 2011).

Ms. Herleen Mehta, during the interview, stressed on the responsibility of top management in allocating the needed budget and being part of taking strategic actions to fulfill Six-Sigma requirements. Moreover, motivating and supporting the staff in order to encourage them to proceed with their tasks, is another aspect that indicates the top management’s commitment in Ducab. In this regard, it was stated by Ricardo and Anthony, (2002) that most of the people who have undertaken this kind of project agree that the most important factor is the ongoing support and commitment of senior management. Behind most of the major Six-Sigma success stories are enthusiastic CEOs who have made it possible. This view is also supported by Schlegel (2012) as he emphasised the critical role Top-Down support plays in the success of a Six Sigma project.

Strategic Decision-Making/Linking Six Sigma to Business Strategies

Strategic decision-making is a strong factor that positively affected the success of the implementation of Six-Sigma in Ducab. All of the top and middle management levels were involved in strategic decision-making to ease reluctance surrounding the forthcoming implementation. In addition, the continuous quality improvement philosophy of top management resulted in an evolutionary nature of decisions making strategy. Therefore, the Six-Sigma approach implementation has been conducted gradually in Ducab, which enhanced the level of success and sustainability (Sharif, 2011).
Ms. Herleen Mehta, during the interview, also noted that the top and middle management had a great impact on the successful deployment of Six-Sigma as they showed great decision-making.

According to Laosirihongthong et al (2006), top management needs to know the whole philosophy of Six-Sigma, not only the usage of few tools and techniques. Six-Sigma shouldn’t be treated as a stand-alone activity, it should be linked to other business strategies and enhance the over competitiveness of the organization.

The importance of linking Six Sigma to the organization’s business strategies was also highlighted by Tran (2006) who further stated that “Integrating Six Sigma to Business Strategy is measured by assessing to what extent Six Sigma is used in a company’s strategy process along with the extent to which Six Sigma is apparent throughout the organization. If Six Sigma is well known across the company and is relayed to employees as a key strategy to the overall company success, then it is thought that Six Sigma is well integrated into the company strategy”.

Cultural Readiness

Cultural readiness is another factor that contributes to the success of Six-Sigma implementation. In relation to Ducab, all the participants in Al Sharif study claimed that Six-Sigma culture is part of the organizational system in the company. One participant reported that ‘some general managers are subjected to psychometric tests in order to find out to what extent they are fit to lead this organization’. This is supported by Laosirihongthong et al (2006), as he noted that the key factor for a successful Six-Sigma implementation is the effective change in organizational culture, which can’t be changed without a focused effort by top management targeted towards supporting continuous improvement, people involvement and cooperation. Another researcher that emphasized the importance of culture is Grove (2011), as he argued that culture is a key component to a successful deployment of Six Sigma.

During the interview Ms. Herleen Mehta, Business Analyst in Ducab, stressed the importance of preparing the culture to accept Six-Sigma. Indeed, the employees’ involvement and motivation facilitated the Six-Sigma implementation and this was considered as an important success factor. Also, Ducab took care of employees’ trainings and enriching their knowledge of Six-Sigma as they believe that Ducab’s human resources are the driver of the project and they needed to be trained well.

According to Ms. Herleen Mehta, the company went through different changes in the organization levels in order to adapt to the Six-Sigma implementation.

Nevertheless, Ducab faced some resistance in some isolated cases as clarified by the interviewee. She stated that a few elderly employees found it difficult to change some internal processes and reporting methods as they were used to follow some procedures in certain ways. Furthermore, during the changes in Ducab’s environment, some people were very busy with their core projects especially in the product operations section that led them to raise their concern about time constraints. In order to overcome this concern one of the top managers suggested the involvement of employees from different domains to coordinate with the processes’ owners in order to enhance their processes and help them to achieve the goals. Therefore, the employees with busy schedules had meetings with their managers to reschedule their projects. Employees were also empowered to handle the majority of tasks to give the project managers more time to concentrate on the Six-Sigma program.

The importance of sound communication was highlighted by Schlegel (2012) as he stated that “When rolling out any new program or event, there will always be some type of resistance to change. The key is to get buy-in from everyone who touches the
process, along with communication, communication, communication”.

It is also worth mentioning here that a blame-free environment was one of the features of a Six-Sigma culture that supported the desire of people to accomplish their roles and responsibilities without any fear (Sharif, 2011).

Learning Capacity

Ricardo and Anthony (2002), emphasized the importance of training not only because it supports the implementation process, but also because it creates a sense of ownership for everyone in the organization. From the first stage of six sigma decision in Ducab, the top management was aware of the strong need for learning and training in the entire organization. It has been considered one of the most significant factors to be planned and managed, due to its vital role in introducing the Six-Sigma approach to the organization. The training programs were designed in a way that covered all the employees in different divisions. The aim of this training was to teach employees the Six-Sigma principles and its various techniques in order to enrich their knowledge and help them to cope with its implementation (Sharif, 2011).

Hendricks and Kelbaugh (1998), stressed on the importance of training as a critical success factor. They noted that training is an imperative factor in the successful implementation of a Six Sigma project. They emphasized the importance of communicating the ‘why’ and the ‘how’ of Six Sigma as early as possible and give employees the chance to improve their comfort level by utilizing training sessions.

Sustainability Approaches

In Ducab quality always comes first, and they believe that it is an essential component of their success and, therefore, it is not to be compromised. This is why Ducab implemented several business and manufacturing excellence programs such as Kaizen and benchmarking with the world’s best practice organizations in addition to the Six-Sigma program. Benchmarking can be defined as “a method of improving performance in a systematic and logical way, by measuring and comparing your performance against others, and then using lessons learned from the best to make targeted improvements. It means knowing the answers to the following questions “Who performs better?”, “Why are they better?”, “What actions do we need to take in order to improve our performance?”. (SECB, 2009). Ducab has implemented Kaizen; Japanese continuous improvement philosophy, successfully as discussed by the interviewee Ms. Herleen Mehta, Business Analyst in Ducab. Many authors have written about Kaizen and its significance. The first and most well-known proponent of the Kaizen concept was Imai (1986), who wrote an important book with the title (KAIZEN- The Key to Japan’s Competitive Success) in 1986. The interviewee also defined Kaizen as a continuous improvement process that needs the involvement of all employees from different levels to play part in the change process. While Teian (1992), defined Kaizen as more than just a continuous improvement philosophy as it represents the daily process problems that occurred in the workplace and how the team can overcome these problems.

Based on the interview, Ducab implemented Kaizen as part of its employees’ involvement and empowerment strategy. According to Bessant (2000), Kaizen provides the main channel for origination’s employees to contribute to their company’s development. He explained the Kaizen term in a more simple way as he said that with every pair of hands, you get a free brain.

Ducab implemented Kaizen through activities and events called “Kaizen Events”, usually practiced on a monthly basis. These events continue for a week, usually under the supervision of a Kaizen coordinator. The steps of implementing Kaizen in DUCAB are listed below:

1. Composing a team of 5 to 7 employees.
2. Providing training for these teams on the Deming circle of continuous development, and methods and tools for analysis and problem-solving and information gathering.
3. Identifying an opportunity for improvement.
5. Studying and analyzing.
7. Suggesting a number of solutions.
8. Choosing the best solution.
10. The application of the solution and the training involved.
11. Installing the solution and documenting.
12. Following-up and ensuring the sustainability of the solution.

Gondhalekar (1995) highlighted the importance of kaizen as the first step in the TQM journey and stated that the implementation of Kaizen can lead to a self-sustaining, controllable process of setting up a culture of continuous improvement.

**Summary**

There are many reasons that lead organizations to implement Six Sigma, and the main reasons seem to be quality improvements and cost reductions. Although Six Sigma might carry with it some disadvantages, it is clear that the advantages outweigh the disadvantages. Six Sigma may be viewed as a costly approach to improve quality but in time it will pay for itself. Those who fear that Six Sigma might cause resistance among staff should understand that the resistance is not really caused by Six Sigma but rather by miscommunication or lack of communication. It is also concluded that Six Sigma will never work effectively without a real and visible commitment from top management. Furthermore, in addition to the commitment and support of the top management other critical success factors were identified to be strategic decision-making to link Six Sigma with the organization’s main strategies, sound change management, and learning capacity with training programs as the main focus. Ducab is an excellent example of a company that made a significant reputation in the market and became well renowned for its products quality. Ducab uses Six Sigma, benchmarking, and Kaizen in order to sustain its quality.
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"Imagination is more important than knowledge." - Albert Einstein

Introduction

We are constantly striving for better, and essentially our businesses have to be routinely reinvented to attain the constant growth. In the recent years, in precise from the Global Credit Crunch in 2007-2008, immediately following the bursting of Unites States House Bubble, the urge has changed slightly from attaining growth to efforts to retain Sustainable Growth.

Sustainability by definition is the conditions under which humans and nature can exist in productive harmony that permit fulfilling the social, economic and other requirements of present and future generations. Often, there is a misconception that Sustainability means only Green Services or Environment. But Sustainability is the concept which could adopted in every walk of life including Business. Sustainability is about the Triple Bottom Line, or the three P’s of sustainability: People, planet, and profit. However, in business, the pillars of a sustainable existence are Creativity, Innovation and Quality.

Creativity, Innovation and Quality are observed as the three element of successful entrepreneurship and are linked sources that have a common relationship. With the inspiration of creative imaginations, the Innovations are developed which are implemented to grow the business. Quality helps us continuously improve our products and services and to continuously reduce our costs of providing them (Godfrey, A.B) by reinventing through innovation and creativity. “Jugaad” is one of the successfully implemented strategies, which can be an effective solution when combines with Quality, since it already epitomize Creativity and Innovation (Figure 1).

Literature Review

Creativity is the production of novel and useful idea in any domain (Amabile T.M, 1996). The components of Creativity include Expertise, Critical Thinking and Intrinsic Task Motivation. In the recent days problem solving demands Critical thinking. Critical thinking is the making use of both critical thinking and lateral thinking (Allem, R, 2014).

Quality helps for a firm gain in competitive advantage by delivering goods to the marketplace that meet customer needs, operate in their intended manner, and continuously improve quality dimensions in order to “surprise and delight” the customer. While quality’s significance has been emphasized for years, the contribution of quality to business performance has been largely unexplored. Quality remains the foundation of competitive advantage, even if a firm’s short-term attention has drifted to speed-to-market, cost reduction and other concerns. (Laura et al, 1996).

Jugaad: A Recommended Strategy

“Jugaad” is one of the successfully implemented strategies, which effectively combines Creativity and Innovation. Often, the term Jugaad is applied to a creative or innovative idea providing a quick, alternative way of solving or fixing a problem. Moreover, they are the practical and effective solutions developed for a requirement in the market, which are also iterated based on the market responses. If emphasis on the Quality is ensured, ideas becomes success despite the solutions are often very simple in manifestation.
Jugaad isn’t really a new concept; it is an ancient Indian management technique which signifies attaining any objective with the available resources. Similar concepts have also been found in other economies. In China it's called 'Zizhu Chuangxin', in Brazil it is called 'Gambiarra', and in France it's called 'System D. In recent times, it is coming alive outside emerging markets. It is often recognized as frugal engineering or frugal innovation. Frugal engineering" was coined by Carlos Ghosn, the joint chief of Renault and Nissan, who stated, "frugal engineering is achieving more with fewer resources.

An early appearance of the word jugaad in a western publication referred to a particular form of technological improvisation: the jugaad car, also called simply jugaad. In a 1995 Wall Street Journal article, Barun Mitra reported from Gohana, Haryana (a town fifty miles northwest of Delhi) that an informal industry had developed to build motor vehicles from repurposed parts. Jugaads are cobbled together from components such as a 10-hp diesel pump motor, wheels, and a wooden plank for a seat. They typically have no electronics, no headlights, no shocks—and often no brakes. To stop, the driver typically just switches off the engine. Despite obvious shortcomings in safety, economic factors make jugaads appealing for rural transportation, because they remain considerably cheaper than the cheapest cars produced by formal industry. Jugaad is an outcome of three constraints -constraints of space, time and resources. (Charles Dhanraj and T Krishnan, 2011) Thence, the application of Jugaad in business empowers with simpler cost effective solutions helping in resilience and sustainability, focusing on a lasting prosperity.

However, Jugaad is suffering a lot of criticisms. It is often blamed as a temporary way of ridding a problem and not a permanent way of solving it. It is criticized as the problem take a detour as sooner or later it comes back to haunt you with greater intensity than before. Aversions are expressed in the manner in which every management guru and business schools have exalted this management trend as it is simply a short term method of dealing with crisis. (Sidin Vadukut 2011). Jugaad at times could tilt on the illegal side of the ethical line; it could be dangerous and therefore leads us to believe that it sprouts more from a need and not so much from the excitement of doing things yourself.

However, in practice, if quality is ascertained, Jugaad offers not just effective solutions but also sustainable existence through the simple solutions, especially to the segment of people whom the solutions will not be enjoyed, if it was not cost effective.

**Examples of Jugaad**

Jaipur leg is a classic example of low cost prosthetic developed in India. The Jaipur leg costs about $150 to manufacturer and includes some clever improvisations such as incorporating irrigation piping into the design to lower costs.

In some Philippine slums, solar skylights made from one liter soda bottles filled with water and bleach provide light equivalent to that produced by a 55 watt bulb and may reduce electricity bills by US$10 per month.

Mobile banking solutions in Africa, like SafariCom’s M-Pes allow people access to basic banking services from their mobile phones. Money transfers done through mobiles are also much cheaper than using a traditional method. While some services can be accessed on a mobile alone, deposits and withdrawals necessitate a trip to a local agent.

Akaash Tablets, costing $40 has revolutionized the education sector of India, making the e-education tools affordable to school children from all backgrounds. Local examples are also available in Jugaad, where plants were successfully grown in desert using rubber tubes, which helped to grow the plants in minimal water requirement.
Conclusion

In the new era, business success is rated in caution where prominence is given to sustainable existence than just growth. Creativity, Innovation and Quality are viewed as the solid pillars for any growth. One of the successful strategies for achieving the sustainable existence is Jugaad. Jugaad is the simple and innovative way of solving a problem. It is also called as frugal engineering and Jugaad is often criticized too. But in practice, if quality is ensured Jugaad is found to be an effective strategy to solve the issues. Most of the Jugaad examples are cost effective solutions, however, Jugaad should not has to be limited to cost effectiveness, Jugaad could offer other merits as flexibility and saving the time.
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Towards a Sustainable Excellence: Successful Transformation in Modern Businesses

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Abstract

Business in a modern world is a constant transformation. Markets, companies and even complete societies are subject to constant change. The ability to transform is a key success factor in business but also a major challenge. „How to“ transform? Which factors are relevant for a sustainable and successful transformation? This paper will give some answers to these questions and we will show, that transformation is strongly related to:

Why? The purpose of the future business and transformation process has to be carved out precisely and communicated well. This is essential to get the buy-in of all relevant stakeholders. They have to understand the necessity to change values, behaviors and develop the competencies needed for a future excellence.

How? A well-laid strategy in combination with operational excellence in organizational design and process layouts sets the direction, a structured development of competencies and skills ensures the necessary abilities are in place.

What? In the end the result oriented execution of strategies and plans will be the key factor for success. Only realized results make the difference!

Background and Introduction

When talking about Excellence it may be worth to spend some minutes and think about the meaning of excellence. What makes a product, company or even a person excellent? We define three levels of excellence:

1. Technical and design excellence \( \rightarrow \) Craftsmanship
2. Individual skills and dedication \( \rightarrow \) Competence
3. History and Tradition \( \rightarrow \) Culture

On the first level, excellence is related to a proper design which may be easy to use, manufactured on a high quality level. In most cases a brilliant product is not enough but there is also a need for a person who is able to use the product in the right way. A child will not be able to drive the best car and an unexperienced person will not be able to use a golf club properly. One factor quite often ignored but relevant too is culture and tradition. Real mastery is always a result of a time-consuming learning and optimization process, often lasting for generations.

Although there is some kind of excellence in every single of these three levels for real excellence all three have to be covered. To reach real mastery you have to train a lot and be focused, you need excellent instruments and tools and in most cases a social network of other excellent persons will leverage your excellence. This is applying for the personal as well as organizational level.

Transferred to the sphere of economics the three levels of excellence stand for:

- Craftsmanship – Quality and improvement in operational excellence. Only companies who have efficient,
result-oriented processes in place and constantly try to change for the better will succeed in the long run.

- Competence – Qualification and motivation of employees ensure a sufficient level of impetus and innovation and customer satisfaction.

- Culture – Clear vision and strategy for the whole company ensure that all employees and managers understand and actively support the company values and strategy. Additionally, excellence in business culture requires curiosity and open attitude for new ideas together with hunger to execute towards common vision and clear goals. Last but not least, a Leadership behavior engages people for the vision, empowers them for actions and enhances them with feedback.

Sometimes we hear that these three levels of excellence are outdated and less relevant in a modern, global, digitalized economy. We strongly believe the opposite is true. So let’s have a look into the future of business. Most of the relevant consultancies, think tanks and trend evangelists draw similar pictures for the coming changes. The actual trends in globalization (mainly driven in Asia), digitalization, urbanization and individualized products and services force nearly all industries to develop faster and far more radical, as it has been in the past.

Figure 1: Main drivers for cooperation and change, according to IBM CEO Study 2012

The majority of CEO’s already understood these trends and the resulting needs for their own companies. In the yearly CEO studies conducted by IBM, the increasing complexity of business (2011) and the need to be more and better connected (2012; Source for the shown diagram). The most dramatic needs for change are seen for collaboration with other organizations, internal collaboration, internal processes etc. CEO’s are well aware of the fact that these changes increase the pressure on their organizations to constantly transform and reinvent themselves. Doing business becomes more agile and management has to focus on transformation and learning.

Are companies well prepared for the future world of collaboration? Most probably not! The changes already foreseen by the C-Level have only partly been transferred into operations and this is a time-consuming process, partly in unknown terrain. For example just a few companies started to use external crowd intelligence for their R&D or qualify their managers to master the digital media which influence our communication and collaboration behavior more and more.

To be well prepared for the future challenges all companies are stipulated to identify which of the drivers shown in the picture have a significant impact and must be handled to ensure business excellence. The given details are only examples but clearly show the complexity in modern business. Whatever the individual situation and driver may be, one message is clear. The need for change and transformation is reality for all companies, competing in global markets. Consequently the capability to realize sustainable transformations is a key success factor in modern business.

Here the three levels of excellence discussed in the beginning become relevant again. As we will show, a culture of change and result-orientation is as essential, as a proper transformation method (craftsmanship) and capable Leaders (competence).
But how does reality look like? In all the years we supported managers in different change and transformation processes we slowly realized there are some patterns in the processes themselves and human behavior, which make it really difficult to succeed in transformation excellence. When looking at a transformation process with the eyes of a middle manager it is “over-“. The combination of Old and New increases complexity, often becoming over-whelming. The workload increases dramatically by additional needs for organization and communication, making managers feel over-burdened. Finally they do their best but will be over-worked sooner or later. Consequently communication, result-orientation and other key success factors for an excellent transformation process decline, the process slows down or even is turning back.

But is it the manager’s fault? No, mostly it is not. Let’s take the metaphor of a journey to explain why not. Assuming, the promised land we want to reach lies behind a mountain (the mountain of change) it immediately becomes clear, we have to consider some aspects:

- Destination: No one climbs a mountain without a clear picture what he wants to achieve. What is it good for and which route is suitable? Answers on these questions create the will and mental strength to take the hardships.
- Supply: We need ropes, food, proper clothes etc. to master the climb. In business terms it means we need a proper process, tools and instruments etc.
- Training: For a long respectively straining journey we have to be trained. Our physical strength and our capability to use the tools. Many people have to be trained to new IT tools, processes, you name it.
- **Guidance**: Experience is a key success factor. If this is not available we will rely on a guide showing us the best way and helping us, if help is needed. In many companies there is no need for explicit transformation experience (until we decide to transform) so where should it come from? External experts may be a good idea to guide through the process.

- **Network**: Climbing a mountain is not only exhausting, it is dangerous. Cooperation in a well trained team is essential and in business we have to ensure that our workforce is strong enough and in numbers and experience. If this is not the case Interim Managers and other “guides” may be hired to strengthen the forces.

### Mastering a Sustainable Transformation Process

As laid out before, to achieve real excellence we have to master all three levels of excellence, which applies also for transformation processes. The last two decades have shown giant leaps in change management methodology and skills and most companies also have leadership development high on their agendas. So, why aren’t we seeing higher success rates? An educated guess is that only 10-30% of organizations succeed to implement their strategy for change. While craftsmanship and competence are comparably easier to tackle and solve (e.g. through talent management, performance management and leadership/people development), culture seems to be the hardest part. Mastering culture – from our experience - proves to be the real differentiator between poor or average performing companies and the ones who stand out and achieve excellence.

To achieve this sustainable transformation through building the capability to execute and changing the culture we found the framework of the Execution Journey to be a strong driver. It integrates successfully proven methods and tools into a clear and consistent 4-phase culture change program, which builds the capability to execute (and thus constant change and sustainable transformation capabilities) into the DNA of the organisation.

It is called a “journey” because it is not just a project or a program one may administer or control. It is a clearly laid out path with a well defined starting point and a visible but not yet tangible destination. To get there (and transform on the way) we have to

- Create momentum through correctly directed action
- Design the path
- Evoke emotion
- Change behavior
- … and build capabilities

So where to start?

The journey usually starts after all the analyses, strategy building and business planning have been done. Business cases have been approved, C-Level is convinced that this is the right thing to do, consultants went home, and the only question that is left is: How do we do it and move on from here?

As laid out before just building on craftsmanship and competence alone will not move an organisation beyond the point of no return in terms of a sustainable transformation. But this is what often happens. The (project-) management troops start marching with all their tools assigning tasks, setting up schedules and defining KPIs (craftsmanship). Communications focuses on getting messages through and HR starts to move people around, assigning new functions, assessing competencies and skills, training for new assignments and coordinating change management workshops (competency). As we all know: if capability to change and execute is not in the DNA of the organisation these efforts will not help to the extend that is actually need to sustainably tranform. This is why only less than 30% of change efforts still succeed – let alone sustain in constant tranformation need today. Everybody know at least one example from own experience which terribly failed.
Like in any project, the start of the journey is crucial to the success of the whole effort. Only if a clear direction is achieved, a journey should start. Too many times too many different messages are out there for the same thing, or the messages are not precise or clear enough. This would blur the vision of the journey destination right from the beginning. So getting the direction clear, setting the focus to the right areas that have to be addressed is key for the overall transformation effort to be successful. Another important part is to know about the change readiness within an organisation in terms of mindset, willingness to change, commitment, dedication and hunger for success and innovation. This has to be taken into account when designing the path for the journey and the creating the energy to finally embark on the journey. So this crucial phase we call “Define” and has to take place at the very top-level of an organisation, involving the C-level and/or powerful transformation sponsors within the organisation: few people have to do the right thing, set the direction and the agenda.

In the next step is the fun part. We call it the “Create”-phase. It is about broadening the base of the involved stakeholders and laying out the path for the journey, creating awareness and momentum among the ones who need to drive the transformation in their responsibility. Depending on the size of the company and the desired transformation this can be any number of participants between the low two digits up to more than 500. There are many methods and tools out there, which can actually support this phase. But the strongest by far we experienced is the Design Shop Method (MG Taylor corporation). The method is ideal for a large number of stakeholders to collaborate and co-create tangible solutions to complex problems. Engaging all relevant parties into the design through an energetic and structured process ensures ownership. Dedication and quality of the outputs are significantly increased by the method. Learning activities and supportive electronic tools like TEDtalks, Slams or an eLearning platform additionally accelerate the processes. The “Create”-phase leverages the
know-how and experience of a broad stakeholder base within the organization. Complex problems and initiatives are broken up into manageable pieces that can actually be done. The methodology is agile in any sense and creates solutions, which can be adopted quickly throughout the organization. The transformation capabilities start to root within the organization’s culture.

After laying out the path of the journey in detail through the “Create”-phase it is important to involve an even broader base of employees and stakeholders (which employees actually are, sooner or later). This phase we call “Mobilize”. This is the classical moment, where “craftsmanship” and “competence” as elements of excellence are usually in focus – and need to be there. But now it is the pivotal point, where culture change either starts to grab a hold or entirely fails. Only if the participants of the create part of the journey can walk the talk and support with their energy and capability to execute in their normal work environment (with their colleagues, peers and subordinates), the capability to execute will spread across the organisation. To get it right: we need all the competency building and the enhancement of the craftsmanship, but if the transformation is handled as a project, run by a few, not rooted in day-to-day operations, it will inevitably fail, leaving behind an oversized project management infrastructure and a puzzled sponsor team. So the Mobilize part is about spreading the word, showing the others the path and changing things that need to be changed. This usually takes its time, lots of effort regarding communication and classic change management initiatives.

The final phase, which helps to sustain the transformation and tells the good from the excellent we call “Lead”. Realizing results in day-to-day operations is the key challenge in transformation. The different stakeholders and their conflicting interests offer a wide range of reasons to deliver not. Consequence and the strong will to get over the tipping point into a better future are essential for success. Here quite often the biggest need for support can be observed, since the strongest thread to a sustainable transformation is the slowly diminishing energy, when the final destination seems almost be reached. If this happens, the next transformation (that will inevitably come) will start at zero – culturewise. “Lead” is about keeping up the will to execute and really concentrating on what matters until the final destination is tangibly reached. In this phase leadership (development), learning and mentoring are crucial for success. Efforts have to be tracked and achievements to be made transparent. What we see is, that organisations, excelling in this phase, really root the capability to execute in their DNA. We see a clear drop in number or meetings, less meeting participants, better meeting outputs and things that finally move. As Herzberg found out already in the 1960ies, achievement is the biggest motivator people have, no matter in which organisation they work in. This is, what finally starts to happen in “Lead”: people achieve what was laid out in the path, starting an upward cycle to excitement about getting things done.
Qualification of Transformation Managers

As shown in the discussion, another aspect of transformation management may be of high relevance. In standard qualifications for managers the specific aspects of transformation processes are not covered and hence it is no surprise that many managers feel overburdened when becoming involved in a transformation process.

So one part of an organization’s capability for change and transformation is qualification. What kind of knowledge and competences do managers need to be well prepared to lead a transformation? From our point of view we suggest a formal qualification should cover the following fields:

- Strategic Management
- Project Management
- Leading complex and flexible systems
- Methods for transformation processes
- Personal and leadership skills
- Digital media competence and communication

Beside this operational experience shows that within a transformation process a formal qualification may not be sufficient. Quite often the complex and demanding situation is overwhelming and a personal accompaniment is needed. Like a buddy system an experienced external manager helps to focus on the relevant aspects and intended results. He acts like a shadow of the manager and jumps in, when help is needed.

In a business world streamlined for efficiency it may be realized that the actual bandwidth of management is insufficient. In a transformation process the need for communication and coordination is significantly increased. Therefore not only the qualification may be short but also the number of managers needed. One solution may be the use of Interim Managers who...
temporarily join the team to make sure the right management capacity is in place.

**Summary and Outlook**

In a global and digitalized business, the ability to transform is essential for sustainable success. On one side this is connected to operational excellence in day-to-day work but on the other side it means to establish a culture and organization of continuous transformation.

The keyword for successful transformation is capability. It stands for a culture of professional change, operational agility, result orientation and individual competence. As a framework for sustainable transformations we suggest seven rules for success:

1. Develop a culture of constant change and hunger for excellence. Striving for excellence is a key factor for success.
2. Ensure the purpose of any change or transformation is well understood and shared. People want to know, why their work makes sense.
3. Empower experts and teams to ensure agile, result-oriented operations. The people knowing best, what is the right thing to do are those who should do the work.
4. Focus on Capabilities and execution. Results are what we are looking for!
5. Digitalize the company for better communication and collaboration
6. Qualify the relevant persons to ensure the time of transformation, i.e. uncertainty and conflict of interest is managed well.
7. Check your leadership bandwidth. In times of change and transformation the need for qualified and available managers is significantly higher

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Abstract

Islamic financial institutions established three decades ago as an alternative to conventional institutions mainly to provide Shari’ah compatible investment, financing, and trading opportunities. This research aims to analyze the types of financing in one of the Islamic Financial Institutions in United Arab Emirates (UAE). Therefore, the main objective of this research paper is to study the main financing ways which Islamic banks are using whether the financing provided are complied with Shari’ah rules and principles. The research will answer some questions like: How is Islamic finance different from conventional finance? What are the types of Shari’ah compliance financing? What are Islamic financial contracts used in their financing transactions? To answer these queries, Dubai Islamic Bank will be our case study. Therefore the method that will be used is compare and contrast in order to measure the quality and effective of Shari’ah compliance financing. The value of this research paper is assimilating in studying and analyzing the main ways of financing in Islamic banks. Finally, this research will help those who deal with Islamic banks and have doubts about the Shari’ah compliance of Islamic bank financings.

Keywords: Investment, Shari’ah financing, Home financing, Financial transactions, Islamic finance.

Introduction

Over the last four decades, Muslims have been attempting to reform their lives on the basis of Islamic principles. The political dominance of the West, during past centuries, has deprived Muslim societies of the divine guidance, especially in the socio-economic fields. Therefore, after getting the political freedom, it was important for Muslims to revival of their Islamic identity and organize their collective life according to Islamic teachings. In the economic field, it was the biggest challenge for Muslims to reform their financial institutions to bring them in harmony with the dictates of Shari’ah. In an environment where the entire financial system was based on interest, it was a very difficult task to structure the financial institutions on an interest free basis. The people, who are not familiar with the principles of Shari’ah and its economic philosophy, sometimes believe that removing interest from the banks and financial institutions would make them charitable rather than commercial. However, that is not true. Through this paper we will see the work mechanism of Islamic banks and how they make profits without exploiting needy or cheating.

For those who are interested in the phenomenon of Islamic banking and in the question of how it differs from conventional banking. It is very important to know that conventional banks are part of the capitalism system which is not controlled by divine authority and that results into imbalance in the society, and the cries that happened before few years proved that. When Islamic economics started to grow, it did not negate market force or privet ownership. However, Islam puts certain restrictions on the economy to maintain balance and just. Thus Riba, Gharar, dealing in unlawful goods, etc, have been prohibited. Islamic Financing is asset-backed, while conventional banks deal in
money and monetary papers. Islam does not recognize trade in money, and any profit earned through money itself is considered Riba 'interest'.

The aim of this paper is to describe some of the most common financial contracts which are used currently in Islamic institutions. It also aims to discuss the main differences between the traditional financing and Islamic financing.

Concept of Islamic Bank Financing

Islamic banking is part of the Islamic financial system which exists to provide a variety of religiously acceptable financial services to the Muslim communities. Moreover, it is expected from banking and financial institutions to contribute richly to achieve the socio-economic goals of Islam, such as: economic well-being with full employment and a high rate of economic growth, socioeconomic justice and an equitable distribution of income and wealth, stability in the value of money, and the mobilization and investment of savings for economic development in such a way that a just return is ensured to all parties involved.

The fundamental sources of Islam are the Holy Qur'an and Sunnah. Either these sources conceder interest (or Riba) as an exploitation and injustice act, therefore it contradicts with the Islamic notions of fairness and property rights. Islamic banking thus eliminates all forms of interest in all its transactions, and that what makes Islamic banks and financial institutions different in principle from their Western counterparts.

The Prohibition of Riba

The most distinguishing feature of Islamic economics from a Western perspective is the prohibition of interest (Riba). Literally, Riba is an Arabic word and it means "to grow", "expand" or "increase", and it is usually interpreted as usury. In Shari'ah it has a much broader sense, where Riba technically means the premium that must be paid by the borrower to the lender along with the principle amount as a condition for the loan or for an extension in its maturity.¹ This kind of Riba is called Riba Al-nasi'ah, and it was very popular in the pre-Islamic and early Islamic era. This kind of Riba is mentioned in the Holy Quran in different places. One of the Quran verses says:

"O believers, take not doubled and redoubled riba, and fear God so that you may prosper. Fear the fire which has been prepared for those who reject faith, and obey God and the Prophet so that you may receive mercy", (3:130-2).

In Chapter al-Baqarah, the prohibition of Riba was intensified. The verses say:

"O believers, fear God, and give up the Riba that remains outstanding if you are believers", (278).

"If you do not do so, then be sure of being at war with God and His Messenger. But, if you repent, you can have your principal. Neither should you commit injustice nor should you be subjected to it", (279).

"If the debtor is in difficulty, let him have respite until it is easier, but if you forego out of charity, it is better for you if you realise", (280).

Therefore, according to these verses, banks should not get any extra accumulated interest over the principle amount of debt and if the debtor cannot repay the debt on time the bank should give him a chance and do not increase the amount of the debt as it mentioned in the verse: "If the debtor is in difficulty, let him have respite until it is easier".

In fiqh terminology, Riba refers to the increase in one of two homogeneous equivalents being exchanged without this increase being accompanied by a return.² In Shari'ah, Riba is classified to two types which are; Riba al-Nasi'ah and Riba al-Fadl.

² Al-Jaziri, 'Abdal-Rahman, Kitab al-Fiqh 'ala al-Madahib al-'Arba'ah, Beirut, undated, p.245.
The term 'Riba' is considered by the Quran as 'Riba al-Nasi'ah', whereas the hadith discusses both types of (Riba al-Nasi'ah and Riba al-Fadl). The view on Riba al-Fadl is mentioned in different hadiths, but the following is the most famous and accepted one:

From 'Ubada ibn al-Samit: The Prophet, peace be on him, said: "Gold for gold, silver for silver, wheat for wheat, barley for barley dates for dates, and salt for salt - like for like, equal for equal, and hand-to-hand; if the commodities differ, then you may sell as you wish, provided that the exchange is hand-to-hand."

Therefore, if gold, silver, wheat, barley, dates, and salt are exchanged against themselves they should be exchanged on the spot and be equal and alike.

**Riba in Banks:**

According to Shari‘ah, Riba could occur in different situations in banks’ transactions. The first situation could occur in loan contracts. For example, in today’s banking practice, when a person asked a loan from a commercial bank, the bank fixes the interest rate e.g 10 per cent a year, thus enabling the customer to have the required amount of money in his possession. However, the amount accrued from the interest might be compounded to an unknown amount in the event where the customer is in default. That is exactly what we called Riba and this kind of Riba is categorized under both Riba al-Fadl (interest in excess) and Riba al-Nasiah (increases due to time). Whereas, In Islamic banks practice, the banks sell the goods to the customer at a fixed selling price and it cannot be higher than what has been fixed. If there is a default in the payment, he/she is only been charged a compensation, which is very small just enough to cover the administration’s cost. If any excess occurs it will be distributed away as a charity. The second form of Riba occurs when customer deposits their money in any type of conventional accounts. For example in conventional fixed deposit account, the bank invests the deposited money of a client to gain profit. As a reward to the depositor, the bank fixes an upfront interest rate. According to Shari‘ah the extra amount of money that the bank gives the depositor over his principle amount of money is Riba. In an Islamic account, customers may deposit their money in Savings Account (Wadi‘ah Yad Dhanmah) and it is compulsory for the Bank to return the fund as and when requested by the customer. In this kind of accounts, the bank may give Hibah (gift) to the depositor but it is not a promise or fixed as the conventional banks. Another way of depositing money in Islamic banks is by Wadi‘ah with the concept of Mudharabah (Investment account). In this kind of accounts, the client aims to save his/her money in the same time invest it. Under this concept, depositors are willing to bear the risk arising from the investment with the bank (profit and loss principle), and the percentage rate of profit is determined in the contract.  

Riba is prohibited because it leads to exploit the needy. Revenue resulting from the interest (Riba) is actually received as a result of exploiting the difficulty faced by the customer i.e. only a dire need person would go to a bank to get a loan in order to settle his/her financial problems. Unfortunately, the bank on the other hand is charging an additional amount of payment (interest) for the loan. This is why Riba leads to injustice and duress on the customer part. It also leads to laziness and getting profits without work which contradict Islamic principles which encourage people to work in order to get profits.

**The Prohibition of Gharar**

Gharar can be translated as "uncertainty" or "risk". Professor Mustafa Al-Zarqa defined it as follow:

Gharar is the sale of probable items whose existence or characteristics are not certain, due to the risky nature which makes the trade similar to gambling.

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3<http://www.kantakji.com/fiqh/Files/Riba/gabungan.htm>
There are many examples of Gharar we can find in the Hadith. For example, the sale of birds in the sky, fish in the sea, a runaway animal, an unborn calf in its mother's womb, un-ripened fruits on the tree, etc. All such cases involve the sale of an item which may or may not exist. In such circumstances the fish in the sea may never be caught, the calf may be still-born, and the fruits may never ripen. In all such cases, it is in the best interest of the trading parties to be very specific about what is being sold and for what price.  

There are different Hadiths forbidding Gharar sales. One commonly cited Hadith was narrated by Muslim, Ahmad, Abu Dawud, Al-Tirmidhi, Al-Nasa'i, Al-Darami and Ibn Majah on the authority of Abu Hurayra (mAbpwh) that

The Prophet (pbuh) prohibited the pebble sale and the Gharar sale.

Another Hadith Ahmad and Ibn Majah narrated on the authority of Abu-Said Al-Khudriy:

The Prophet (pbuh) has forbidden the purchase of the unborn animal in its mother’s womb, the sale of the milk in the udder without measurement, the purchase of spoils of war prior to their distribution, the purchase of charities prior to their receipt, and the purchase of the catch of a diver.

In recent time, Gharar might exist in contracts under different conditions. Islamic scholars have identified these conditions which make a contract uncertain to the extent that is forbidden. To avoid Gharar, each party in the contract must be clear with the quantity, specification, price, time, and place of delivery of the selling item. Ibn Taymiah gave an example on selling a lost camel or hours to explain the meaning of Gharar. If the owner of a lost camel or hours sell it conditional on risk, the buyer would pay less than its worth. If he gets it, the seller would complain because the buyer got it with low price, and if he could not find it, the buyer would complain because he paid money for nothing. In both cases, the result leads to injustice. Therefore, Gharar exchange implies injustice, enmity, and hatred, and all of them contradict the objective of Shari'ah.

**Conventional versus Islamic Financing**

There are many people who feel that there is no difference between Islamic and conventional finance and the only difference between the two is the name. Actually that is not strange because both Islamic and Western financing look very similar. The Islamic financial system has all the features of a conventional financial system such as capital markets, investment firms, fund managers and insurance companies. However, these systems are governed by Islamic laws. Mohammad Amin El-Gamal explained this issue by giving a good analogy, which is "Islamic marriage". He said that in North America, Muslims do not have any obstacle prevent them from having an Islamic marriage. They can get a contract that adheres to the legal requirements of the state as well as the Islamic legal requirements. In certain respects, “a marriage is a marriage”, but in other respects, to follow the requirements of the Islamic marriage contract, a Muslim man and woman need to do some extra work. Similarly, the notion that “a marriage is a marriage” could be applied in the area of finance, for example “a lease is a lease”. In this domain also, the Muslim needs to ensure that the contract he signs with the lessee or lessor agrees with the conditions of the lease contract in Islamic jurisprudence. Those conditions are put in place to ensure that the contract would not contain elements of Riba or Gharar, which are forbidden in Islam as we mentioned before. Therefore, Islamic banks or Islamic financial institutions try to ensure that all their

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contracts adhere to Islamic legal requirements as well as state requirements. As with marriage, the outer form of an Islamic lease may seem to people to be identical to a regular lease. To recognize the differences between the two financing and the legal financial requirements of Islam, people should be educated regarding these important requirements.

Now the question, why do we need Islamic finance if we have a developed and well studied financial system? Mohammed Umer Chapra have discussed this issue proficiently in one of his articles. According to him, all economic systems have the same vision which is realizing human well-being. However, the meaning of well-being differs according to societies' worldview. Unlike the conventional economic worldview, Islamic worldview is not secularist or materialist. It is rather based on a number of concepts that strike at the root of these doctrines. It gives primary importance to moral values, human brotherhood, and socio-economic justice and does not rely primarily on either the state or the market for realizing its vision.  

Today, an Islamic financial system exists to provide a variety of religiously acceptable financial services to Muslim communities and also as an alternative for non-Muslim clients seeking ethical investments and greater risk diversification. The table below shows the main four different aspects between Islamic and conventional financing systems:

<table>
<thead>
<tr>
<th>Differences</th>
<th>Islamic financial system</th>
<th>Conventional financial system</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prohibition of Riba (interest)</td>
<td>Islamic banking is interest-free. That means all banking business and activities must be free from any element of interest. A good example of the avoidance of interest in kind is the prohibition of any advertisement of gifts for prospective saving and current account holders when these accounts are based on Wadiah (safekeeping) or Qard (loan) contract.</td>
<td>Conventional banking is based on the lending of money for a premium – interest. A fixed deposit account in a conventional bank is a good example of how the bank pays interest in cash, where the bank invests the depositor's money to make profits. Consequently, as a reward to the depositor, the Bank will fix an upfront interest rate (fixed interest).</td>
</tr>
<tr>
<td>Prohibition of Gharar</td>
<td>Any transaction made by Islamic financial institutions must be free of uncertainty (Gharar). The principles of Sharia require that the fundamental terms of a contract be certain at the time the contract is execute. For example, in the Islamic insurance (Takaful), the insurer is prohibited from providing indemnity to the insured or the policyholders, because both the premium paid by policyholders and the indemnity paid by the insurer are uncertain and therefore not permissible as they contain the element of uncertainty or Gharar.</td>
<td>In conventional banks all financial instruments are allowed in conventional banks including the traditional insurance products. For example, conventional life insurance companies allow for things like average life expectancy and high risk customers when setting their premiums to ensure that they will make profits from offering life insurance to customers.</td>
</tr>
<tr>
<td>Profit and Loss Sharing principle</td>
<td>Islamic finance is also closely associated with the practice of profit and loss sharing. Returns are variable depending on bank performance, and consumers can participate in the profit upside in a more equitable way than receiving a predetermined return.</td>
<td>Returns to customers are not related to bank performance and profitability. Customer is treated only as a depositor and does get any other compensation other than interest.</td>
</tr>
<tr>
<td>Assets</td>
<td>Another equally important feature is that Islamic finance must not be involved in any activities related to unlawful goods and services.</td>
<td>In conventional banks, many businesses have either direct or indirect links to some or all of the prohibited activities</td>
</tr>
</tbody>
</table>

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8 Di Mauro, Filippo; Caristi, Pierlugi; Couderc, Stephane; Di Maria, Angela; Ho, Lauren; Grewal, Baljeet Kaur, Masciantonio, Sergio; Ongena, Steven and Zaher, Sajjad. (2013) *ISLAMIC FINANCE IN EUROPE*, ECB. pp. 146.
9 www.cimaglobal.com/if
Differences | Islamic financial system | Conventional financial system
---|---|---
Services. These prohibited goods and services include non-halal foods such as pork, non-slaughtered animals or animals which were not slaughtered according to Islamic principles, intoxicating drinks, entertainment and pornography, Tobacco and weapons. | such as tobacco and intoxicating drinks. |

**Types of Financing in Islamic Banks**

In Islam it is prohibited to make profit from lending money which is called interest in conventional banks. However, trade is permissible and it is encouraged way to make such human profits. A valid trade is concluded in Islam if the seller and buyer exchange an offer and acceptance which specify the object of sale and the price, and they both agree. Not only is trading permitted, it is encouraged in Islam. Al Suyuti mentioned in Al-Jami’ Al-Sghir, a Hadith on the authority of Rafi’ that: The Prophet (pbuh) was asked: “which are the best forms of income generation?” He (pbuh) replied: “A man’s labor, and every legitimate sale.”

Therefore, any financing conducted through valid trading by mutual consent is permissible. In this part will see some of the ways that are used in Islamic banks which are used to give free-interest financing to people without exploiting them, and we will see how Islamic banks make permissible (halal) profits without fixing a premium interest.

**Shari’ah Compliance Financing Based on Murabahah (cost-plus sales)**

Most of the Islamic banks and financial institutions are using Murabahah as an Islamic mode of financing, and most of their financing operations are based on Murabahah. However, Murabahah originally refers to a particular kind of sale having nothing with financing. In this kind of sale, the seller agrees with the buyer to sell him a specific commodity on a certain profit added to the original price. Therefore, Murabahah is simply a sale, and the only feature distinguishing it from other kinds of sale is that the seller in Murabahah expressly tells the purchaser how much cost he has incurred and how much profit he is going to charge in addition to the cost. This profit may be in lump sum or may be based on a percentage. If a person sells a commodity for a lump sum price without referring to the main cost, this is not called a Murabahah, even if he is earning some profit because the sale is not based on a "cost-plus" concept. In this case, the sale is called Musawamah (bargaining). Nowadays, this concept is being used a lot in Islamic banks and financial institutions as a mode of financing and this is conceded the most significant development in Islamic financing during the late nineteen-seventies and early eighties.

Murabahah can be used in Islamic banks for financing local purchase or import of capital goods, consumer goods or raw material. Under the Murabahah agreement, the client provides the bank with all the specifications of a good. If the bank and the client agreed on the terms of the deal, the bank purchases the specific commodity from a third party, then sell it to the client. What the man got from the Islamic bank under this arrangement is the commodity he needed purchased by the bank at his request to be paid after a period of time. The profit that the bank takes is fixed and it does not increased by time. It can, however, differ according to the period alone. For example, if the payment is made in 3 months, the

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profit is AED 200, but if the payment is made in 6 months, the profit will be more, but not necessarily double the amount of the three months.

There are some who think that, by using these contracts in Islamic banks, this is simply a 'trick' to circumvent the prohibition of Riba. However, this is actually not the case. The major difference between Murabahah and interest-based lending is that the mark-up in Murabahah is for the services the bank provides (for example, seeking and purchasing the required goods at the best price) and the mark-up is not stipulated in terms of a time period. Thus, if the client fails to make a deferred payment on time, the mark-up does not increase from the agreed price owing to delay. Also the bank owns the goods between the two sales, which mean it carries the associated risks.12

Despite the extensive use for Murabahah financing, there are two important points the bank should understand them very well in this respect:

i. Firstly, the bank should not forget that Murabahah is not the ideal way of financing, and it is only a device to escape from interest. Therefore, it should be used when Mudarabah and Musharakah are not practical.

ii. The second important point is that the Murabahah transaction does not come into existence by merely replacing the word of "interest" by the words of "profit" or "mark-up". Actually, Murabahah as a mode of finance has been allowed by the Shari’ah scholars with some conditions. Unless these conditions are fully observed, Murabahah is not permissible.

Here there is a need to mention these conditions that should be available in Murabahah financing mode in order to be permissible in Shari’ah.

**Main Conditions of Murabahah:**

1. The sale and purchase of goods should be genuine. Murabahah cannot be against abstract objects or against existing goods of the client.
2. The goods must be clearly identified, and the place of delivery of goods and period of payment are pre-determined.
3. The bank should himself or through his agent arrange the purchase of the goods for the client. However, the bank can also appoint the client himself as agent for this purpose.13
4. The item should be purchased from a third person (supplier).14
5. The Islamic bank must have the ownership of the goods before selling them to the client.
6. The client should sign the financing documents after the actual sale take place, not before.
7. The sale and purchase of goods between the bank and the client can be done only once.
8. The bank can ask for some collateral from the client to ensure payment on time.

**Shari’ah Compliance Financing Based on Qard**

The literal meaning of Qard is 'to cut'. It is called like that because the property is really cut of the when it is given to the borrower. The technical meaning of Qard is to give a property to a party who will benefit from it and who will subsequently return an equivalent replacement. The scholars have unanimously agreed that Qard is permissible based on the Quran, Sunnah and ijma’. From the Quran, the following verse is the basis for Qard permissibility:

"Who is that will grant Allah a goodly (sincere) loan so that He will repay him many times over? And (remember) it is Allah who decreases and increases"

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(sustenance), and to Him you shall all return.”

According to scholars of tafsir, the term Qard hassan in the context of the above verse refers to acts of contributing for the sake of Allah (infaq). The term Qard literally means loan not infaq. However, the permissibility of Qard in the context of loans is based on the literal meaning of the above verse since Allah SWT will not probably mention and equate commendable matter like infaq with forbidden matters. This indicates that Qard is permissible. The repayment of Qard is obligatory. The Holy Prophet is reported to have said "... every loan must be paid ...".

Qard contract is one of the contracts used to manage liquidity in Islamic finance. The contract obliges a borrower to return the loan amount to the lender without promising to pay any additional amount. However, in current practices, a borrower sometimes gives hibah to the lender at his own discretion when paying off the debts. Nowadays, its application has been expanded to other products such as credit cards, charge cards, rahn loans and others.

Shari’ah Compliance Financing Based on Ijarah (leasing)

Ijarah is a contract on using the benefits or services in return for compensation. This classical definition was the basis of many of the contracts of exchange even before the times of the Prophet, and it is permissible in Islam, as evidenced by the verse:

And if they suckle your offspring, give them their recompense. [65:6]

Over time, however, this concept has developed into transactions with more complex features that give rise to variations from the basic structure of the Ijarah transactions. There are some conditions that Ijarah transactions need to follow in order to be in consonance with the principles of Islamic finance.

In Islamic banks, Ijara is a contract under which a bank buys and leases out an asset or equipment required by its client for a rental fee. This transaction of financial lease should subject to certain conditions to be permissible in Shari’ah, when it is used by Islamic bank.

**Ijarah Conditions:**

- The subject of lessee should be valuable, identified and quantified. Basically, in the lease contract must mention the lease period clearly and renewal terms must also be stated clearly, and the contract should not contain clauses like “left to the sole discretion of the lessor” and the like.
- All consumable things such as money, wheat cannot be leased.
- Another condition is that the subject of the contract must actually and legally be attainable. It is not permissible to lease something that cannot be delivered. It is also not permissible to lease something prohibited in Islam like casino.
- The ownership of the leased property remains with the seller, and only its usufruct is transferred to the lessee.
- It is permissible for the two parties to agree during the lease period to review the lease period or the rental or both.
- During a predetermined period, the lessor (the bank) is responsible for its maintenance, which means that it assumes the risk of ownership.
- Under this contract, the lessee (the client) does not have the option to purchase the asset during or at the end of the lease term. However this objective may be achieved through a similar type of contracts called Ijara wa iqtina (leasing and promise to gift).

The evolution of modern Islamic banking and finance has created another form of Ijarah known as Ijarah Muntahia Bittamleek.

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or financial lease (financial Ijarah). The financial Ijarah is defined as a form of transfer of ownership of usufructs of some assets, such as buildings or equipment, for a particular period in consideration for a defined rent which is usually higher than the normal rental to encourage the lessor to transfer the leased assets to the lessee at the end of the lease period after the lessee has paid all installments. Ijarah is used a lot as a financial tool in Islamic banks. For example, Ijarah concept is usually applicable in financing contracts such as in real property financing, vehicle financing, project financing and personal financing. The process of Ijarah financing in Islamic banks is as follow:

1. Firstly, the customer approaches the bank with the request for Ijarah financing and enters into a promise to lease agreement.
2. The bank purchases the item required for leasing and receives title of ownership from the seller after the bank pays all the costs.
3. The Bank leases the asset to the customer after signing a lease agreement.
4. The customer makes periodic payments as it pre-determined in the contract.
5. At the end of the lease period, and after cost and profit is recovered, the bank transfers the ownership of the property to the client for a nominal sale price or as a gift by a separate sale or gift contract at the end of the lease period.

**Financing in Dubai Islamic Bank**

Dubai Islamic Bank (DIB) is the largest Islamic bank in UAE and it was established in 1975. Because of its early formation, DIB has established itself as the undisputed leader in its field. The bank aims to understand and cover all people needs and provide them all types of financing they need which are compliant with Shari'ah. Islamic finance does not, and should not, deal with money directly as money and it cannot earn more money by itself. Money must be put into real business activities to earn extra money. This is the whole basis of trading. In other words, Islamic Financial Institutions facilitate the financing needs of customers by becoming sellers, lessors or partners as the case may be.

- **Dubai Islamic Bank Home Financing**

House financing is a Shari'ah based financing facility to finance the purchase of all types of residential properties including houses, flats, apartments or condominiums. Dubai Islamic Bank avails Home financing for a residential property using different ways such as Ijarah and Murabaha.

a. **Home Financing by Murabaha:**

The procedures that are followed in home financing by Murabaha is shown by the below diagram:

![Diagram of Home Financing by Murabaha]

Therefore, from the diagram, Home finance by Murabaha goes through three main steps as follow:

1. The client and the bank sign a Murabaha contract. The contract should mention all home specifications, the amount of the advanced payment (to be sure that the client is serious in his/her order), the amount of the monthly installments, the way of payment, and it must be mentioned the principle price of the home and the amount of the bank profit.
2. The next step is buying the agreed home from the vendor. The bank buys the home according to the descriptions that were mentioned in the contract. Then...
the bank sells the home to the client in premiums.

3. After finishing all the installments in the end of the financing period the title of the property is transferred to the client.

The amount of the advanced payment that DIB specify in its Murabaha contracts is at least 25% of the real price of the home. And the maximum payment period is 10 years. To prevent harm, the bank put conditions under this type of financing, such as, the client should not be less than 21 years old or more than 65 years old, also the client's salary should not be less than AED 15,000, and for those who has their own business; they should be working in that business not less than two years.

b. Home Financing by Ijarah:

Ijarah is another way of Home financing in Islamic banks. In this way of financing, the bank buy a home then lease it to the client and promise him to own the home after finishing the all agreed payments. The following diagram shows the procedure of Home finance by Ijarah:

Dubai Islamic bank use Ijarah as another method of Home financing. For example, if someone wants to own a ready property (home), DIB can avail a standard Ijarah finance. In this type of finance, the bank and the client sign a lease contract wherein the bank leases the property to the client in return for a rental payment for a specific period. The bank purchases the property in its name based on the client promise to lease it from the bank. Once all payments have been made, the bank transfers the title of the property to the client in the end of the financing period for a nominal sale price or as a gift by a separate sale or gift contract. The amount of financing can reach 95%, and the maximum period of payment can reach 25 years. This way of financing is suitable for people with low income. In the case if the client wants a home which is still under construction, the bank and the client sign the Ijarah contract of the home that will be submitted later. The bank pays the amount of money needed to complete the construction directly to the contractor. After finishing the building, it follows the rules of the leasing contract that was signed in the beginning, and the client start paying the monthly statements after finishing constructions and receiving the home.

- Dubai Islamic Bank Personal Financing

There are some cases people need cash money to buy different services or goods, such as educational fees, medical treatment, or household furniture. As we discussed
before, Islamic finance does not, and should not, deal with money directly as money and it cannot earn more money by itself. Therefore, Islamic banks developed its financial products and offered Personal financing in a way that does not contradict with Shari’ah.

a. **Personal finance under Services Ijarah:**

Sometimes people need finance to buy different services such as educational fees. DIB developed Personal finance under Services Ijarah to finance different services for their clients. The services that DIB finance them are:

- Air travel and holiday packages including Haj and Umrah.
- Educational fees.
- Medical treatment.
- Residential accommodation and commercial rental payments.

The following diagram shows the procedure of Personal finance under Services Ijarah:

1. **Buy the service**
   (Immediate payment)

2. **Rent the service**
3. **Rental payment**

Therefore, this kind of finance goes through three main steps as follow:

1. The bank do not give cash to customers, instead, it recognizes clients' needs. For example, does the client need finance for educational fees or for other services.
2. Then the bank buys the services and rents them to clients after signing the contract.
3. Customers start to pay the installments. The amount of the installments and the period of payment are also determined in the agreement in the beginning.

b. **Personal Finance under Goods Murabaha:**

When a person need cash money to buy different goods such as household furniture, DIB offers Personal financing by Murabaha. Under this Murabaha scheme, the bank will purchase the goods according to the client request from the authorized dealer, and then sell them to the client at an agreed profit. The advantage is that the client knows the bank's profit mark-up and the installment that he should pay at the time of signing the deal, and it will not change throughout the financing term. This arrangement allows the client to take immediate possession and ownership of the goods he needs and spread his capital expenditure over a period of time. The goods that go under this kind of financing are:

- Household furniture
- Electronics and domestic appliances
- Building materials
- Boats
- Motorcycles
- Tools and machinery

The following diagram shows the procedure of this kind of Personal finance:

1. **Sells the goods**
   (Immediate delivery)
   **Immediate payment**
   (cost)

2. **Sells the goods**
   (Immediate delivery)
   3. **Deferred payment**
   (cost + mark up)

From the diagram we can see that Personal finance under Goods Murabaha goes through three main steps:

1. The bank do not give cash to customers, instead it recognizes clients' needs. For example, if the client need to buy car or need to buy furniture.
2. Then the bank buys the goods from the vendor and sells them to the clients. The price is predetermined in the agreement between customers and the bank in the beginning, and it equal to the cost plus the profit.

3. Customers start to pay the installments. The amount of the installments and the period of payment are also determined in the agreement in the beginning.

c. Salam Finance:

In Salam sale contract, the price should be paid in advance and commodity delivery is postponed. It is a forward contract with immediate price. The Salam sale differs than other sales in one thing, where in other sale contracts the existence of the commodity at the time of contracting is required, except the Istisna'a contracts. So Salam is an exception to this rule. Provided that the asset should be identified, prescribed accurately, delivery date is specified, and the seller is capable to deliver it. The advance price is one of the Salam sale contract conditions. The Islamic banks use the Salam sale in financing the agriculture, industry, and all commodities that can be duly specified.

In DIB Salam is used as another way of personal finance, where the customer (seller) undertakes to deliver a specified tangible asset to DIB (buyer) at mutually agreed future date(s) in exchange for an advance price fully paid on the spot by the buyer.

The below diagram shows Salam finance procedure in DIB:

The diagram shows that Salam finance in DIB goes through the following steps:

1. The bank and the client sign a Salam contract. The contract mention kind and amount of good that the client will sell to the bank later, in the case of DIB the goods are sugar. It also mentions the dates of submitting the good to the bank.
2. DIB gives the price of the goods to the seller (the customer) on the spot.
3. To complete the procedures, the customer should buy the goods from the factory. However, usually the client appoints the bank as an agent to purchase the good (sugar) from the factory.
4. The provider submits the good to the bank on the agreed time. In the same time the customer pays the price of that good, (usually the price that the customer pay to buy that good is more than the price that he sold it for the bank in the beginning).
5. The bank then sells the good in the international market.
Dubai Islamic Bank Car financing

Purchasing a car is often the second most expensive yet important purchase, after buying a home. While doing so, an individual has two options available, either (cash) purchase or to ask for car financing. However, many individuals prefer the latter option. DIB provide this facility at different for individuals by Murabaha selling. The following diagram shows the procedure of Car finance in DIB:

Therefore, from the diagram we can see that Car finance goes through four main steps as follow:

1. The client asks the bank to buy for him a car with special specification and he promise the bank to buy it from him. In DIB the client should pay advanced payment (20% of the total car price) to ensure his seriousness in buying the car.
2. The bank buys the car from the vendor with all the specifications that were mentioned by the customer.
3. The bank sells the car to the client in Murabaha. In the contract, they mention all the specifications of the car, the price, the profit, the time of delivery, and the amount of installments.
4. After paying all the installments (cost plus mark up) the bank transfers the title of the car to the client.

Conclusion

Islamic law puts many restrictions on contracts to attain maximal justice in financial transaction, minimize the potential for legal disputes, and build a healthy and stable financial and economic system. This paper discussed three of these contracts and how they are applicable in Islamic banks. The first contract was Murabaha contract. Murabaha is used intensively in Islamic banks as a financial mode. For example in Dubai Islamic Bank, they use Murabaha for vehicles financing, home financing and goods financing. Basically Murabaha is a sale where the real cost and the profit are known for both contract's parties (the bank and the client). However, there are some conditions that should be available in Murabaha financing in order to be permissible in Shari’ah. The second contract was discussed in this paper is Qard contract. Qard is also used as a financial too in Islamic banks. What makes Qard different in Islamic banks that loans in conventional banks is the absence of interest in the first one. Its application has been expanded to other products such as credit cards, charge cards, rahn loans and others. The third contract is Ijarah contract. The Ijarah finance is the second financial mode used intensively in Islamic banks after Murabaha. In Dubai Islamic Bank it is used in home financing, car financing and services financing. There are also some conditions should be available in Ijarah contract to be acceptable in Shari’ah.

From the difficulties that I faced when I wrote this paper is finding the person who has the knowledge about this area of studding. That's why I want to emphasize to the importance of studding Islamic economics and finance. Muslim governments should also be responsible to teach and educate the new generations to increase number of Islamic economic agents to realize Muslims welfare through applying Shari’ah rulings. Moreover, Muslims should support and trust Islamic banks' products. Shari’ah Board in Islamic banks provides advices and procedures relating to individuals and companies transactions to ensure that Islamic banking etiquettes are at all times consistent with the principles of Islamic jurisprudence.
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Investigating Consumer Satisfaction Models in Gulf Region: Is there a Need to Revise Traditional Paradigms?

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Introduction

Customer satisfaction, its antecedents and consequences

As the central construct of marketing, customer satisfaction has been defined as “a judgment that a product or service feature, provides a pleasurable level of consumption-related fulfillment” (Oliver, 1997). Satisfaction is a key determinant of customer loyalty (e.g. Ha and John, 2010), so that it becomes a key predictor of customer loyalty (Garbarino & Johnson, 1999). Consequently, satisfaction studies are very common in both academia and industry where its determinants and consequences have been investigated in various industry contexts (Selnes, 1998).

Customer needs are known to vary across different industry contexts as well as across customer demographics. The determinants of customer satisfaction have accordingly been found to be truly diverse. As an illustration, in the Higher Education context, Gibson (2010) classified the antecedents of satisfaction across nine factors: 1. Academic staff/teaching; 2. Classes/curriculum; 3. Advising support; 4. Skills developed by students; 5. Preparation for future; 6. Services/facilities; 7. Social integration; 8. Student centeredness/ responsiveness; and 9. Pre-enrolment factors.

Classifying Determinants of Satisfaction

In an attempt to summarize the various determinants of satisfaction, the extant literature broadly tends to classify them into three general classes:

- Service quality factors;
- Value and price related factors; and
- Reputation/image.

The roots of service quality research originated from early conceptual work in Europe (Grönroos, 1988), and attracted growing attention when a measuring scale called SERVQUAL was developed by Parasuraman et al (1988), leading studies assessing service quality being replicated in various industry sectors. In fact, service quality has been empirically determined to be a driver of satisfaction (e.g. Ledden et al, 2011).

In addition, perceived value, or the consumer’s overall assessment of the utility of a product based on a cognitive trade-off between quality and sacrifice was conceptualized (Zeithaml, 1988) was empirically confirmed as a determinant of satisfaction (e.g. Mc Dougall and Levesque, 2000; Patterson and Spreng, 1997).

Finally, in an era of globalization and maturity of markets in many parts of the world, firms attempted to focus on intangible product and service attributes to differentiate themselves from competitors. Consequently, corporate reputation, or the “observers’ collective judgments of a corporation based on assessments of the financial, social, and environmental impacts attributed to the corporation over time” (Barnett et al, 2006:34) became important to organizations as it represented a valuable intangible asset (Vidaver-Cohen, 2007).

Objectives of the Study

As the preceding paragraphs illustrate, the satisfaction literature is rich and mature in
western countries. Unfortunately, the same cannot quite be said for the Gulf region. The region displays some major differences as compared to Western markets in terms of: different socio-cultural context, and demographics (e.g. a young population). This raises the question as to whether models of satisfaction developed in primarily western business contexts and relied upon in managerial literature may be extended to consumer behavior in the Gulf region, or alternatively whether there are other specific determinants of satisfaction that arise within the Gulf context.

The present exploratory study therefore proposes to undertake a review of recent customer satisfaction studies undertaken in the empirical context of the Gulf region and based thereon attempt to compare and contrast them with those in Western countries. The study objective is therefore to identify whether the differences in socio-cultural and demographic contexts between the Gulf region and western countries impact on factors affecting customer satisfaction. If so, what are the specific factors that should be considered in marketing to Gulf customers?

**Analysis of Satisfaction Studies in Gulf Region**

The methodology adopted was a desk review of major recent studies focusing on satisfaction (or in a few cases on its consequence, customer loyalty) undertaken during the last fifteen years in the Gulf region. Instead, a total of 18 major studies from different industry sectors and countries were identified from Emerald and EBSCO Business Source Premier databases and analyzed.

From Table 1, it is observed that the 18 satisfaction studies undertaken in the Gulf region (11 from the UAE, two from Bahrain, and from Saudi Arabia, and one each from Jordan, Kuwait and Iran) were the subject of scrutiny. The 18 studies emanated from five sectors:

1. Banking (9 studies)
2. Higher Education (5 studies)
3. Healthcare (2 studies)
4. Cosmetics retail (1 study)
5. Public transportation (1 study)

<table>
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Among the studies analyzed, it was observed that, in order of decreasing importance, four broad categories of determinants affected satisfaction (see table1):

1. Service quality (16 citations)
2. Reputation (10 citations)
3. Religious and social factors (5 citations).
4. Value (4 citations)

These studies are analyzed in the next section to determine whether the traditional models of satisfaction generally developed in western contexts were applicable in the Gulf region, or whether there were specific determinants of satisfaction that emerged in the Gulf region.

**Discussion**

*Comparison of customer satisfaction studies in the west to those in Gulf region*

From the summary of findings in Table 1, it was observed that three widely reported determinants of customer satisfaction (i.e. service quality, value and reputation) were consistently determined to affect satisfaction in both Western market and in the Gulf region. This would imply that the customers in both markets displayed similar behaviors. Consequently, businesses might use marketing strategies that emphasize quality, value or branding, as these would be effective in both contexts.

In addition, the different cultural and religious contexts between the West and the Gulf region also led to the emergence of one specific determinant of satisfaction in the Gulf region that is not present in the Western markets: religious and social factors. In the Banking industry, where an alternative service aligned to the religious beliefs of Muslim customers is offered (Arham, 2010), religious related factors were found to be a key driver of satisfaction. These included concepts such as: social and religious values of the firm; observance of Sharia’h principles; quality of Sharia’h supervisory committee; social features of personnel; Islamic religious belief and social responsibility; and finally adherence to Islamic principles. This factor of “religious and social factors” needs to be considered by marketers as it emerged in 5 of the 18 studies analyzed. This might indicate the presence of a segment of customers for Islamic services in other sectors as well.

Before concluding this section, it needs be highlighted that reputation did indeed have a prime effect on satisfaction in the Gulf context. In fact, it was the second most
A common factor affecting satisfaction (10 citations) with twice the number of citations as either value or religious and social factors. Reputation was determined to be the sole factor influencing satisfaction for Dubai metro passengers under 30 years of age (Parahoo, Harvey and Radi, 2014), as well as for female university students in Saudi Arabia (Parahoo, Harvey and Tamim, 2014). The prominent role of reputation in influencing the satisfaction of consumers in Gulf countries might be linked with their high uncertainty avoidance (UA) index (Hofstede Centre, 2013). A high UA index encouraged customers to pay particular attention to brand name and image (Bartikowski et al, 2011), hence the importance of reputation.

Another factor supporting the prominent role of reputation is the young population, with a median age of about 30 years of age.

**Conclusion**

From a theoretical perspective, the preceding discussion has demonstrated that consumer satisfaction in the Gulf region was affected by similar factors as Western countries: quality, value and reputation. However, one additional factor, religious and cultural factors played an important role as well in influencing satisfaction in Gulf states while it was absent in western countries. The religious factor emanated from the fact that the majority of the population in the region is Muslim and they tended to expect products/services that were in line with their religious beliefs. In addition, it has been found that reputation played an important role as well in Gulf countries. It was proposed that the high UA of the Gulf countries (Hofstede Centre, 2013)

The practical implications are that marketers in the Gulf region should not rely only on traditional western models of customer satisfaction, but should instead pay particular attention to religious and cultural factors as well as reputation in developing their marketing strategies so as to achieve customer satisfaction.
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Abstract

This research was undertaken to ascertain that the corporate brand equity can be measured in monetary value so as to inspire top management to formulate corporate brand strategy for business success. The research had two objectives. The first was to expand the original corporate brand valuation tool, the “Corporate Brand Success Valuation,” which was developed by Ruenrom and Pattaratanakun in 2009. The revised CBS Valuation was used to measure the corporate brand values of firms listed in the Stock Exchange of Thailand which separated into eight industries. Three years of financial data from 2010-2012 were collected from 492 listed companies. The results revealed the corporate brand equities for all eight industries in 2013. Those industries were agro and food, consumer goods, finance, industrial products, property and constructions, resources, service, and technology. The second objective was to demonstrate the relationship between the corporate brand values and sales. The relationships were found very high for seven industries, with one exception, the consumer products. The findings broadened the scope of knowledge of the corporate brand valuation and will help top management to gain knowledge of the valuation and understand the important role of corporate brand value in bringing a company’s success.

Keywords: Corporate brand value; enterprise value; corporate brand success valuation; Stock Exchange of Thailand

Introduction

The success of a company depends on a number of factors. One of the key factors of the long term success is the corporate brand, which is an intangible, nonfinancial asset of a company (Aaker, 1991; 1992; Keller, 1988). Knowledge of the corporate brand is very limited. Firms’ executives are accustomed to the idea of product brand rather than the corporate brand. The issue of corporate branding has recently received some attention from top executives of major companies in Thailand. In the past decade, a company’s strategy often had been linked to product brand building due to the belief that having a product brand was sufficient for a company to make sales that meet a company’s objectives. This belief hinders the development of the corporate brand and might cause a company an opportunity loss. There may also be a competitive disadvantage when compared to competitors who could utilize the strengths of their corporate brands to gain trust and confidence from customers as well as acquiring good images among the public. Besides the insufficient knowledge of the corporate brand equity among companies’ management, one of the reasons why there has not been much attention among top executives to measuring the corporate brand is the lack of an “easy and less expensive tool” to measure the corporate brand value. Even though there are existing tools but those tools owned by private companies which generally incur high cost to have the corporate brand value be measured. A few well-known companies that have developed the valuation tools to measure brand equity...
are Interbrand, Brand Finance, BBDO, Y&R, Fortune, Brand Monitor, BusinessWeek, etc. To use the tools that developed by those companies demand vast data that must be collected from inside and outside a company, including relevant data about the market situation, competitors, consumers, etc. All of these data are collected through a qualitative or a quantitative method or both. Therefore, the execution can be costly and very time consuming. Biases can occur due to some attitudinal or psychological factors. These issues might lead to errors in brand valuation, not to mention a high level of expertise is required from brand valuators. These problems inhibit companies’ top executives to measuring the corporate brand value. Thus, what is needed is a more simplified corporate brand valuation tool that is not be too costly, is easy to use, and provides valid outcomes.

In 2009, a tool to measure corporate brand values was developed in Thailand to overcome some limitations in the data collection and bias that might occur during the valuation process by integrating the concepts of marketing, finance, and accounting to create the tool (Ruenrom and Pattaratanakun, 2012). The Corporate Brand Success Valuation or the CBS Valuation was initiated and it was used to measure the corporate brand values of companies that were registered at the Stock Exchange of Thailand in 2009. Afterwards, according to the financial standards that have been amended, the CBS Valuation was revised accordingly and was used to measure the corporate brand values from the new set of data of the listed firms. The relationship between the corporate brand values and the companies’ sales were also investigated to verify the relationship between the corporate brand values and sales from the new set of data.

Research Objectives

This research has two objectives. Firstly, it revises the former CBS valuation (Ruenrom and Pattaratanakun, 2012) to make it comply with the amended financial standards and use this revised tool to valuate the companies’ corporate brand values. Secondly, it discovers the relationship between the corporate brand values and the companies’ sales in all eight industries to determine the relationship between the corporate brand values and the companies’ sales.

Literature Review

Corporate Brand

Brand equity has the merit of being intangible asset of a company (Aaker, 1991). It can help a company to gain the credibility among consumers. In contrary, a company that cares less to have corporate brand could lose its credibility eventually and this will hurt a company’s revenue in a long run (Roberts and Dowling, 2002). The focal point is consumer trust is deemed to be closely related to the corporate brand (Keller and Aaker, 1992; Keller, 2008).

A firm’s corporate brand cannot be separated from its operations, marketing, selling and innovation. Customers and the public are becoming aware of and having better knowledge about companies that produce and sell products or services. Due to the vast impact that the business industry has upon societies and consumers’ lives through the production, distribution, marketing and selling, the idea of having “good corporate brand” increasingly has not only generated interest among companies’ top executives, but from society and consumers as well (Keller, 1999; Keller and Aaker, 1992; Olin, 2001; Wallström et al., 2008). Major firms in all industries currently gain attention from the public for what they do and what they say because their business missions and communications can have direct and indirect impact upon society and consumers. A strong corporate brand can create intangible value to a company, including believability, trust, pride, credibility, familiarity, loyalty, image, etc. With these emotional values, a
company can improve its reputation and position in the market. Furthermore, the market impact of a strong corporate brand can lower marketing costs (Aaker, 1996; Keller, 1999; 2008). This is the tremendous benefit of having the strong corporate brand, which, in the long run, can help increase the company’s value and the sustainability (Aaker, 1991; 1996).

In general, the corporate brand has received less attention from management because the traditional focus was normally put on the development of product branding (Balmer and Gray, 2000; 2003; Bickerton, 2000; Birkin, 1991). From management’s viewpoints, a product brand is closer to targeted customers and it is easier to monitor and control. The product brand plays the role of external marketing while the corporate brand plays the role of an internal marketing. From this perspective, the product brand is a direct source of revenue, while the corporate brand is a source of expenses. Consequently, business strategies have focused more on product brand building rather than corporate brand building.

Corporate Brand Value

The word “brand equity” was introduced over two decades ago by a brand guru, David A. Aaker (Aaker, 1991). If all factors that related to a company are positive, thus, brand equity is the asset of a company that could make a positive effect in the market. Therefore, a positive and/or negative corporate brand can significantly contribute to a company’s value. However, the real meaning of the corporate brand value was not clear among executives because of its intangibility. Though brand equity is very valuable to a firm, but it is not easy to measure it in a monetary term.

There are business firms and institutions that try to measure major global companies in terms of their values and other business dimensions. The corporate brand value has gained more attention as business and public reports have revealed the values of the global corporate brands (Chu and Keh, 2006; Fehle et al., 2008; Fombrun and Rindova, 1998; Keller and Lehmann, 2009). It is very interesting to see the annual rankings of the corporate brand values since the results provide the knowledge of their equity values and positions in the marketplace. Another benefit is it is possible that we can look deeply into how these global companies operate their brand strategies to achieve their leadership positions (Christopher, 1995; Clifton, 2000; Haigh, 2010).

The Brand Valuation Approaches

A number of the brand valuation tools were developed by academicians and some business firms. Results of global brands/corporate brand valuations and the brand rankings had been revealed each year by the established consulting firms like Interbrand, Brand Finance, Fortune, PricewaterhouseCoopers, Y&R, etc. To name just a few notably brand valuation tools, the Nielsen Brand Balance Sheet (Schulz and Brandmeyer, 1989), Brand Valuation Model (Interbrand, 2009), Brand Equity Evaluation System (BBDO, 2001), Brand Finance Valuation (Brand Finance, 2001) BrandAsset™ Valuator (Y&R) and Brand Value Based Upon Stock Price Movements (Simon and Sullivan, 1993). From the review of these valuation tools, there are generally four different approaches that are used to measure the value of the brands. A brief overview of each approach is the following:

(1) **The cost-based approach.** This method is the most basic. The brand value comes from the total costs of production to produce the product/service (Delaney et al., 2001). The strength is its simplicity and easy to calculate but the disregard of the intangible value of the brand building is the weakness of this approach. There must be some expenses occurred in building the psychological value into the brand and this is not recognized as its expenses. Therefore, this approach might overlook some factors in making the corporate brand. Top
executives might imbalance their efforts and budgets in building the corporate brand and emphasized more functional values rather than balancing between the functional and the emotional values.

(2) The market value approach. This approach uses the market value that a brand can be bought in the marketplace (Aaker, 1991). The difference between the market value and the accounting value which is calculated by summing all the intangible assets to obtain the brand value. Though this approach is not complicated, the assumption of the perfect knowledge of the brands that a valuator must have for the brands in question and the other competing brands can be unrealistic because the perfect information of many brands in the market is not easy to obtain. Therefore, some “smart guess” of a valuator must be done with careful considerations. Hence, the brand expert(s) who has very good knowledge about various brands in the marketplace is required.

(3) The income approach. Interbrand was the company that introduced the income approach to valuate the brand. The approach uses the income that the brand generates profit to a company as the brand value. There are different ways to calculate the brand value. A researcher may compare the value of the product by using the price premium and not price premium, or it can estimate the royalty fee of a brand, or comparing the net profit after tax deduction between a product with a brand and without a brand. The results of these methods are the brand values in the monetary term. The weakness of this approach is it demands a lot of professional judgment and knowledge from a researcher(s) to do the brand valuation and the bias might occur in the process of valuation.

(4) The brand strength assessment approach. This is the consumer survey. The researcher assesses the strengths/weaknesses of brands in questions by asking many questions related the brands. The questionnaire which is the instrument to collect the data must be designed very carefully to get the valid results. The weakness of this approach is the assumptions that the subjects must have very good knowledge about the brands in question as well as other competing brands. This assumption could not be realized easily because normally, people would not have very good knowledge about the brands that they do not use. Also, it is expensive to operate the data collection because a researcher needs a large sample size in order to obtain the valid and reliable results.

So far, there is no best way to measure the brand equity since each approach has its own merits. Valuators must know the strengths and weaknesses of each approach and choose the one which is the most suitable for given circumstances. The reviewing of the previous brand equity valuation tools revealed some common characteristics. These approaches are expensive, very time consuming to collect the data because there are marketing and economics variables involved in the valuations. The methods of data collection can be either qualitative or quantitative approach or can use both. It must be aware that no matter how careful a valuator is, the bias could occur if the qualitative method was used either alone or combined with the quantitative method. The qualitative judgment of a researcher(s) and consumers who were selected to be samples could be the sources of random errors. In addition, systematic errors might happen due to a poorly designed questionnaire or a weak sampling procedure could make the results unreliable.

Research Methodology

The research methodology of this research has two steps: the initial CBS Valuation (Ruenrom and Pattaratanakun, 2012), is revised to comply with the amended financial standards. This revised valuation tool, then, is used to measure the 492 companies that registered at the Stock Exchange of Thailand by the year ending in
2012. A new data set is collected from firms’ financial statements from 2010 through 2012. The three-year average numbers for the calculations is used to avoid the effect of the market manipulation. According to the criteria set by the Stock Exchange of Thailand, the listed companies belong to eight industries. These eight industries are agro and food, consumer products, finance, industrial products, property and constructions, resources, service, and technology. The number of companies in each industry is shown in Table 1.

Table 1: Number of Companies in Eight Industries, the Stock Exchange of Thailand

<table>
<thead>
<tr>
<th>Industry</th>
<th>Number of companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agro and food</td>
<td>41</td>
</tr>
<tr>
<td>Consumer products</td>
<td>39</td>
</tr>
<tr>
<td>Financial</td>
<td>59</td>
</tr>
<tr>
<td>Industrial products</td>
<td>80</td>
</tr>
<tr>
<td>Property and constructions</td>
<td>120</td>
</tr>
<tr>
<td>Resources</td>
<td>28</td>
</tr>
<tr>
<td>Services</td>
<td>87</td>
</tr>
<tr>
<td>Technology</td>
<td>38</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>492</strong></td>
</tr>
</tbody>
</table>

Once the corporate brand values of companies in all eight industries are obtained, the relationship between the corporate brand values from the top ten companies in each industry and their sales are measured by Pearson’s coefficient of correlation in order to discover the relationship between the two variables.

The Development of Corporate Brand Success Valuation (CBS Valuation)

In 2009, Ruenrom and Pattaratanakun developed the new corporate brand valuation tool and used it to measure the corporate brand values of firms that listed at the Stock Exchange of Thailand for the first time. The tool is called “Corporate Brand Success Valuation” or the CBS Valuation (Ruenrom and Pattaratanakun, 2012). The main idea is to inspire top management to be aware of their corporate brand values and to manage it well for the sustainability of their businesses. With this notion, the less costly and easy to use valuation tool is developed to substitute the existing, but expensive and much complicated tools. The idea is to integrate the three main concepts of business administration: marketing, finance, and accounting, to measure the corporate brand value and to eliminate the subjective characteristic of data collection and sampling errors as well as the judgmental aspect of a valuator(s).

The value of a firm comprises of tangible and intangible assets (Aaker, 1991; Simon and Sullivan, 1993). Enterprise value is the value of a company. It is a measure of the price that an investor has to pay to acquire a firm. EV has been developed by the FASB (Financial Accounting Standards Board). It is the value of a firm that is measured as market capital (which is the outstanding stocks multiplies the share price) plus debts, minus total cash. We can simply write the formula of EV as the following:

\[ \text{Enterprise value} = \text{Market capitalization} + \text{Total debts} - \text{Cash} \]

\[ = \text{Share outstanding x Current share price} + \text{Total debts} - \text{Cash} \]

Since the corporate brand value which is specified in the marketing concept is embedded in the value of a firm. If we can remove the tangible values out of the total firm value, what is left will be the corporate brand value (Ruenrom and Pattaratanakun, 2012). Though the enterprise value is conceptually straightforward but there are certain standards to be followed.

Some analysts adjust the debt portion to include preferred stock and the cash portion to include some cash equivalents such as current account receivables and liquid inventory (Pinto, Robinson and Stowe, 2010). A firm’s debt will be paid by an acquirer who wants to acquire a firm. Because of this standard, EV provides accurate takeover valuation because it includes debts in its firm’s value. Cash is deducted because cash is used to pay debts.
If there is non-controlling interest, it must be added because it reflects the claim on assets consolidated into a firm. Also, if a firm has other short-term investments in other companies, the temporary investments will be subtracted because it reflects the claim on assets consolidated into other firms.

In accounting, the emphasis is the recognition of business transactions that must follow the IFRS (International Financial Reporting Standards). It should be aware that a company’s goodwill will appear when one company wants to acquire another company. The company that wants to buy has to pay the price higher than the fair market value of the net assets (total assets – total liabilities). The gap between the market value and the price is goodwill. Goodwill is technically classified as an intangible asset in the balance sheet. The original CBS Valuation had the formula as the following:

\[
\text{Corporate brand value} = \text{Enterprise value} - (\text{Total assets} - \text{Cash}) + \text{Goodwill}
\]

According to the CFA (the Chartered Financial Analyst), which is the institute that earns very high recognition in finance. The CFA Institute publishes the handbooks and provides the standards for all financial analysts. EV has been expanded to include a number of components to reflect the value of a company such as unfunded pension liabilities, employee stock option, environmental provisions, abandonment provisions, and other provisions because they reflect claims on a company’s assets (CFA, 2010). The expanded EV can be stated as the following:

\[
\text{Enterprise value} = \text{Market capitalization} + \text{Preferred equity (if any)} + \text{Noncontrolling interest (if any)} + \text{Market value of debts} + \text{Unfunded pension liabilities and other debt deemed provisions} - \text{Cash} - \text{Cash equivalents} - \text{Temporary investments}
\]

According to the expanded EV, the original CBS Valuation is revised accordingly. A revised formula of the CBS Valuation is stated below:

\[
\text{CBS Valuation} = \text{Enterprise value} - (\text{Total assets} - \text{Cash} - \text{Cash equivalents} - \text{Temporary investments})
\]

When calculated, the plus and minus signs will cancel out for cash, cash equivalents and temporary investments. The final CBS Valuation is the following:

\[
\text{CBS Valuation} = \left[ \text{Market capitalization} + \text{Preferred equity (if any)} + \text{Noncontrolling interest (if any)} + \text{Market value of debts} + \text{Unfunded pension liabilities and other debt deemed provisions} \right] - \text{[Total assets]}
\]

Since the market value of total assets is not easy to find in practice, the CBS Valuation uses the book value of total assets. Thus, the corporate brand value would be the highest possible value. Based on the IFRS, goodwill and other intangible assets are normally listed as separate items in a company’s balance sheet. Goodwill is contingent upon a company acquires or merges another company. For the sake of simplification, goodwill will only be added when a firm acquires or merges with another firm.

The Relationship between Corporate Brand Values and Sales

The question whether or not there is any relationship between the corporate brand and sales of a company has been raised by management. The revised CBS Valuation is used to measure the corporate brand values of companies that registered in the Stock Exchange of Thailand during 2010-2012. There are 492 companies in all eight industries. The corporate brand values of the top ten firms in each industry and their companies’ sales are obtained. Pearson’s coefficient of correlation is analyzed to discover the relationship between those companies’ corporate brand values and their sales. The relationship between the corporate brand values and their sales in
each industry are found very strong and statistically significance in seven industries except the consumer goods industry. The findings reaffirmed the research results previously found (Ruenrom and Pattaratanakun, 2012). Two industries had the highest relationship: property and construction ($r = .96$), agro and food ($r = .95$), followed by industrial products ($r = .87$), resources ($r = .86$), technology ($r = .86$) financial ($r = .82$) and service ($r = .71$). Six industries are statistically significant at $p \leq .01$. The service industry is statistically significant at $p \leq .05$. The results of overall eight industries show positive and strong relationship between the corporate brand values and the company sales ($R = .76, p \leq .01$).

Table 2: The Relationship between the Corporate Brand Values and Sales

<table>
<thead>
<tr>
<th>Industry</th>
<th>Coefficient of Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agro and food</td>
<td>0.95**</td>
</tr>
<tr>
<td>Consumer products</td>
<td>0.13</td>
</tr>
<tr>
<td>Financial</td>
<td>0.82**</td>
</tr>
<tr>
<td>Industrial products</td>
<td>0.87**</td>
</tr>
<tr>
<td>Property and construction</td>
<td>0.96**</td>
</tr>
<tr>
<td>Resources</td>
<td>0.86**</td>
</tr>
<tr>
<td>Service</td>
<td>0.71*</td>
</tr>
<tr>
<td>Technology</td>
<td>0.86**</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>0.76</strong></td>
</tr>
</tbody>
</table>

**Discussion**

The CBS Valuation which was developed by Ruenrom and Pattaratanakun in 2009, is revised to comply with the expanded financial standards and is used to calculate the relationship between the corporate brand values and the companies’ sales in eight industries for the year 2013. The findings of the relationship between the corporate brand values and sales show positive and strong relationship between these two variables in seven industries: property and construction, agro and food, industrial goods, resources, technology, financial and services with the exception of the consumer products industry. Strong and significant relationships are found for property and construction, agro and food industrial goods, resources, technology, financial and services. It can be explained that consumers today are more careful and seek out information before they make decision to buy products or services that are important to their lives and well being. The buying decisions demand high degree of consumers’ involvement. Therefore, the recognition of a corporate brand that could generate trust and confidence to consumers would have some impacts upon their sales. However, when buying consumer goods, especially FMCG (fast moving consumer goods), it is low involvement decision, consumers are more familiar with the product brands rather than corporate brands. Therefore, the results showed no significant relationship between the corporate brand values and companies’ sales but this does not mean that top management would not have to care about their own corporate brands.

**Contributions**

This research provides two significant contributions. Firstly, the theoretical contribution, the integrative approach that is used to build the corporate brand valuation tool – the CBS Valuation, is a new approach that shows the merits of the principles in marketing, finance, and accounting. Each principle provides a sound framework to help develop an efficient tool that is less costly and is easy to measure the corporate brand. The method is quantitative so that eliminating the weakness of using qualitative judgment. Secondly, the managerial contribution, because the CBS Valuation provides important results for top management in Thailand. They can use the CBS Valuation formula to calculate the value of their corporate brands without difficulty with much less cost and time. Also, the knowledge of the relationship between the corporate brand value and a company’s sales would assure the beliefs of top executives that building corporate brand yields some values or is related to a company’s sales. The research results will
trigger top management to think about the corporate brand and to look for the appropriate corporate brand strategies in order to help achieve a company’s objectives.

**Future Research Suggestions**

The future research in this area can be done in many ways such as continuing the valuation every year by using the CBS Valuation to measure the corporate brand values of the companies in the Stock Exchange of Thailand in order to see the pattern of changes and the comparison study could be made. The tool can also be used to do the corporate brand valuation of the listed firms in other countries that use the same IFRS. A researcher may consider some other related variables in the financial statement that might be put into the formula to further capture a more accurate value of a corporate brand. Since the CBS Valuation can normally be used to measure the corporate brand values of the listed firms, therefore, the future research could explore the way to valuate the corporate brand values of non-listed firms by using the similar approach.
References


Abstract

In comparison to for-profit organisations, a few scholars have attempted to examine the application and outcomes of various change initiatives in the context of voluntary sector organisations. This paper reports on the application of quality and business excellence-oriented programmes in terms of their adoption, implementation and the resultant outcomes in a sample of not-for-profit organisations. Using a multiple case study design of two cases, the findings largely support the view that initiating any organisational change programme poses a challenge to the ability of management to promote organisational learning and employee training/development in order to sustain the commitment and support necessary to prevent contradictory issues arising.

Key words: Quality Management; Voluntary Sector; Case Study.

Introduction

A number of previous studies have proposed the examination of current developments in voluntary sector organisations not least because voluntary organisations have become increasingly important in the provision of public services, namely social services, health and social housing (Billis & Harris, 1992, p. 214; Chew & Osborne, 2009). While in the Western industrialised nations (e.g. UK), governments are regarded as important sources of funding for the work of many voluntary organisations (NCVO, 1996, p. 53), voluntary sector has appeared to receive little research attention, because of its seemingly perceived marginality from mainstream economic activity (see Batsleer, 1995, p. 225; Cunningham, 1999). We concur with the past concerns over a lack of research on the take-up of change programmes in voluntary sector organisations, and try to fill this void by empirically exploring how successful voluntary organisations have been in their efforts towards adopting and implementing change programmes.

Logic and the Resulting Consequences of Adoption of Change Initiatives

Studies examining the management of change and its effectiveness in not-for-profit organisations, are scarce. The evidence suggests that the not-for-profit organisations have been subject to great changes throughout the 1980s and into the 1990s (e.g. Lovell, 1994; Bryson, 1995; Little, 2004; Holloway et al., 1999). These changes, as Lawler and Hearn (1995, p. 7) argued, can be broadly characterised as having two major facets. These have resulted in not-for-profit organisations either being privatised or being subject to pressures to increase the effectiveness of their management along with increasingly stringent financial review. Lovell (1994), for example, talks about the increase in the demand for public services, the move from
the ‘industrial’ to the ‘information’ age, changes in work perceptions, and dissatisfaction with bureaucracy in response to why management of change should be considered by the public sector [and its partner] (pp. 4-6).

Clearly, the aforementioned changes in the public administration have had a knock-on effect on the operations of voluntary sector organisations. Hence, there has been strong pressure on managers in the voluntary sector for change in management practices (see Cunningham, 1999; Burt & Taylor, 2003). Moreover, funding and competitive factors have led to an increased awareness within the sector about the importance of initiating various organisational change programmes to improve service delivery. The take-up of organisational change initiatives, it is argued, might appear attractive to the sector, both as a means of attracting funds from government to secure long-term survival, and to overcome the problems of low effectiveness.

The above review of the literature highlights two key issues. First, there is convincing evidence that the voluntary sector is increasingly being recognised as a significant factor in the developed nations’ economic and social development (see Brudney & Kellough, 2000). Second, despite such contribution and acting as an employer in its own right, and as an agent for developing skills that increase wider employability (see NCVO, 2005), concerns have been raised as to the low effectiveness of the sector in making a meaningful contribution the economy. This study was therefore designed to explore and understand the nature of quality-oriented management practices in the voluntary sector and contribute to the literature on the effective management of quality initiatives (See Waldman et al., 1998).

**Research Methodology**

In order to gain direct experience with the research phenomenon and helps the researcher becomes more involved in the research process (Trochim, 2002), a multiple case study design in the form of two cases of voluntary sector organisations was conducted: a Child Care and an Economic Development agency. The two cases used identical methods of data collection and adopted identical data analysis techniques. The primary data were gained via semi-structured interviews with three key informants – i.e. various managerial levels. The secondary data included company documentation such as internal management reports, publicly available reports, as well as observation and examination of other related written statements. Interviews were conducted individually and each lasted about one and a half hours. In total 24 interviews (phase 1 of the study) were undertaken – approximately 12 interviews per case.

Based on the content analysis, the interview transcripts were then (open) coded by two of the research assistants. In order to reassemble the data that were fractured during initial open coding, open codes were finally linked to each other to form some several key categories as follows:

- The rationale for change
- The drive for change
- The Impact of change

In the following sections, further qualitative analysis of the specified characteristics of the interviewees’ responses is given.

**Results**

**The Rationale for Change**

The analysis of the interviewees’ responses and internal documents indicate that constant pressure to improve organisational performance, value for money, the way services are delivered, and to meet the requirements of various stakeholders, provided the impetus for the desire to undertake a wide variety of change initiatives (see Holloway et al., 1999). Child Care and Economic Development, for example, reacted to this by embarking on major organisation-wide strategic plans for
the period of 2004-2007 and 2005-2008, respectively.

The research evidence also uncovered that the nature of services provided by voluntary sector and the necessity to keep aligned with the local and national standards and regulations for the sector had a great impact upon the sectors’ current impetus to organisational changes. For example, one supervisory-level manager at the Child Care commented that “The world of social work is expanding and therefore changing very rapidly. We have to provide the evidence of the initiatives and interventions that we take both in terms of internal efficiency and external customer satisfaction. In particular, we are subject to new regulations set by the government, requiring us to change in the way services are delivered”. Several interviewees at middle and supervisory level management felt that one reason as to why their organisations pushed for change initiatives was due to the ready evidence of high quality (as a result of change initiatives) and the government’s interest in building the not-for-profit sector’s capacity to deliver public services (see Young, 2000; Little, 2004).

The Drive for Change

The importance of quality-driven programmes was particularly evident in the following comments.

As our first step towards the take-up of change programmes, we have taken several steps to develop management skills as the prerequisite for an effective change implementation. [Senior Manager – Child Care]

It [the change] must come from the top and cascade down the organisational hierarchy. If not, nobody else can make any sense of it. Therefore, there is no a second option. [Senior Manager – Economic Development]

These quotes have close affinity with the findings of many studies on change management. Kanter et al. (1992), Goodstein and Burke (1991), Marshall (2000) and Bennis and O’Toole (2000) amongst others, argue that executive sponsorship and participation are critical to the success of change initiatives; that they are the single greatest contributor to success in change programmes; that change leadership must be diffused throughout the organisation; that they must have the ability to motivate and overcome resistance to change; and that they can make or break a company, in part because of their role in initiating and leading planned change.

The evidence also indicated that change programmes were initially led by the senior management team. In the Economic Development case, top management introduced a programme called ‘management improvement review’. As part of this programme, the organisation sent their middle and senior managers on relevant management courses. The participants were then commissioned to advise on the take-up of change initiatives in the organisation.

According to a senior manager from the Child Care case, the organisation also sent a number of lower-level employees to attend such training courses.

Content analysis of the interviewees’ responses across the two cases highlighted the importance of top management team to the success of change programme. The interviewees commonly believed that an effective change programme would be a function of an effective and efficient top management team. Despite such general consensus, the organisations’ approach to employee involvement varied considerably.

The Impact of Change

There were distinct differences among the case organisations in terms of the impact of change initiatives on their individual and organisation performance. For the interviewees at Child Care, the take-up of initiatives had implications for both the organisation and individuals. The efforts to use initiatives such as self-assessment tools (e.g. EFQM model) to carry out the so-called ‘gap analysis’ (Oakland, 1998) were
reasonably successful. This was evident in the views of many managers in the case organisation. In the Child Care case, a senior manager expressed a commonly held view: “We use our change programmes as a means of organisational learning and therefore improving our operations. Upon initiating a change programme, we get involved in a range of developmental activities. As a result of such an approach to adoption of change programmes financial systems were improved, human resource policies were adjusted, individual development was given more weight, and more importantly organisational learning was given a very high priority on management agenda.

In the Economic Development case, for example, it appeared that not only was there a lack of qualified workforce to implement the initiatives, but also a number of senior managers questioned whether their change programmes had any impact on organisational performance, in part because of a lack of an integrated performance measurement system. Subsequently, it has been argued that the lack of a company-wide approach to measuring the effectiveness of organizational change initiatives could contribute to the failure of or dissatisfaction with the change programmes.

The data here also supports the work of Claret (1993), and Cottrell (1992) who found little evidence, in reality, of the important role of measurement in many change programmes in the UK.

An overall assessment of the impact of change initiatives on organisational performance across the two cases suggested that the proposed changes had different outcomes. There were positive outcomes in that the take-up of change initiatives highlighted the skill shortage and hence the importance of qualified personnel.

Conclusions

Using a multiple case study design, the authors conducted semi-structured interviews with senior, middle, and supervisory level managers of two voluntary sector organisations with an aim to assess the extent, nature and the efficacy of their change management programmes. The findings lend credence to the importance of the context in which the change programmes are to be taken — i.e. organisational fit. The findings suggest that the take-up of change programmes is very appropriate in the context of non-for-profit organisations to reduce costs and improve their viability. The results offer support for the vital role of senior management team as the major drive for change programmes. However, despite being a different economic sector with its own unique context, no different change strategies or tools were adopted by the cases.

While this study provides a variety of new insights into the adoption and implementation of change initiatives in two non-for-profit voluntary sector organisations, it has several limitations. For example, the study used managers across top, middle and first line levels as respondents without taking account of non-managerial employees; it focused on change initiatives generally and hence ignored the examination of the efficacy of a specific change programme; it examined only the current practice of change initiatives as opposed to longitudinal examinations of the process of adoption and implementation of change initiatives. In the light of the research findings, future research could include further quantitative assessment of issues identified in this study and in particular from employees’ point of view, thereby finding out any similarities and differences between those who have a role in adopting the change programmes and those who are really engaged in the implementation of the initiatives.
References


The Interplay Between Service Quality, Satisfaction, Value for Money, and Behavioral Outcomes: Going Beyond an Aggregate Level of Analysis

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Abstract
This article is a response to the need for further exploration of ‘satisfaction’ with regard to its specific sources and causes (e.g. service quality, value for money) and the resulting customers’ behavioral outcomes. Whilst the relationship between these constructs have been frequently studied at aggregate level of analysis in Western-dominated organizational contexts with informed, price sensitive and quality-conscious customers, the current study makes a contribution to the extant literature on service quality and satisfaction on two fronts: it examines the relationships between these construct dimensions at individual level of analysis; it explores the research phenomenon in the context of developing economies (i.e. Republic of China) with different socioeconomic status and therefore rising and varying customer expectations. In order to achieve the intended research aims and realise its contributions, a detailed research framework was designed, several working propositions were derived, and data were collected through a survey instrument from two types of restaurant settings, namely, five star chain hotel restaurants and local chain restaurants. Using SPSS 22.0 and LISREL 8.8, the data were then analyzed and the hypotheses tested using a range of descriptive and inferential statistics. Whilst the results support the positive impact of service quality dimensions of tangible and assurance on satisfaction in the five star hotel chain restaurants, they refute the positive impact of tangibles facilities and aesthetic aspects of dining environment on customer satisfaction in the local chain restaurants. Overall, the findings pose a challenge to the marketing and service research scholars in terms of applicability of Western-dominated cultural frameworks to study customers’ expectations of more specific-cultural contexts.

Keywords: service quality, Satisfaction, non-Western context, level of analysis, survey method.

Introduction
In recent years, organizations have come to realize that the salient factor of sustained competitive advantage is probably to understand, meet, exceed, and anticipate customer needs and expectations (Vaires and Coelho 2003). Indeed, value creation through customer satisfaction has been viewed as the raison d'etre of any businesses. The importance attached to meeting and exceeding customer needs as a means of gaining competitive advantage is clearly evident in most of universal quality awards (e.g. European quality award, Malcolm Baldrige National Quality Award, Deming Prize), in which customer satisfaction has been given the highest weight, and therefore the eligibility of the applicant firm for the quality award. However, to achieve competitive advantage through customers, organizational scholars
and practicing managers must know more than how to satisfy customers or exceed their expectations. Rhoden (2011, p. 1) usefully warns of the false seduction and danger of over-reliance on ‘customer satisfaction metric’ to gaining competitive advantage. He perceives customer satisfaction as a lagging indicator and not a leading one as it does not result in a formulation of a forward-thinking strategy which turns a firm to become advocates of its customers. For Rhoden (2011, p. 1), advocacy connotes a business strategy which is built upon trust and encourages a customer to support the brand even in times of difficulty. To put it differently, ‘satisfaction’ needs to be analyzed and examined as a multi-dimensional construct in terms of both its antecedents (service quality, value for money) and outcomes (behavioral intention) (see Parasuraman et al., 1985; Cronin et al., 2000; Brady et al., 2005).

This article is therefore a response to the need for further exploration of ‘satisfaction’ with regard to its specific sources and causes (e.g. service quality, value for money) and the resulting customers’ behavioral outcomes. Whilst the relationship between these constructs have been frequently studied at aggregate level of construct in Western-dominated organizational contexts with informed, price sensitive and quality-conscious customers, the current study makes a contribution to the extant literature on service quality and satisfaction on two fronts: it examines the relationships between these construct dimensions at individual level of analysis; it explores the research phenomenon in the context of developing economies (i.e. Republic of China) with different socioeconomic status and therefore customer expectations.

To achieve the above research aim and adequately capture the interplay between customer satisfaction, service quality, value for money and the resulting customers’ behavioral outcomes, a conceptual model was developed (see Figure 1). Figure 1 shows our conceptual model that provides a basis for further empirical testing. We employ quantitative data from a sample of 524 customers of hospitality industry in the Republic of China (Taiwan). The focus in hospitality industry was on the customers of two types of restaurant and food services sector (five star hotel & local chain restaurants) – owing to the sector specific attributes such as high-customer contact environment and both intangible and tangible nature of its service offerings.

![Figure 1: Conceptual Model](image)

In the sections to follow, we first explain the conceptual model in terms of the interplay between its constructs followed by the development of hypotheses. We then
discuss our approach to research design and report the results of our quantitative data analysis (testing hypotheses). The paper concludes with a discussion of theoretical and managerial implications, research limitations and venues for future research efforts.

Theoretical Background and Hypotheses\textsuperscript{17}

In satisfaction literature, satisfaction is viewed as an emotional response (Cadotte et al. 1987; Giese and Cote 2000), a cognitive response (Bolton 1998; Bolton and Drew 1991; Tse and Wilton 1988), or a combined of both responses (Churchill and Surprenant 1982; Westbrook 1980). Of these two perspectives to the definition of satisfaction, more recent definitions seem to concede satisfaction an emotional response (Mano and Oliver 1993; Oliver 1992; Oliver 1997; Giese and Cote 2000). Bagozzi’s (1992) employed ‘appraisal\textarrow{emotional response}\textarrow{coping framework as the basis for identifying the antecedents of satisfaction (Cronin et al. 2000; Brady et al 2001). That is, an individual might have an emotive response when evaluating an object and consequently it leads to behaviour. In the service setting, the cognitively oriented service quality and service value evaluation lead to emotive satisfaction assessment (Bagozzi 1992; Brady et al 2001; Gotlieb et al 1994). In this respect, service quality and perceived value are viewed as the antecedents of satisfaction. This maintains the cognitive\textarrow{emotive causal order and suggests that service quality and perceived value vie for explanatory variance in the satisfaction judgment (Cronin et al 2000).

In service marketing literature satisfaction is rooted in the disconfirmation paradigm (see Oliver 1980). This paradigm states that satisfaction judgments are formed through an evaluation process or a response to an evaluation process based on a comparison of perceived performance with pre-experience expectations (Hunt 1977; Oliver 1981; Shukla 2004). Satisfaction with delivered products and services has been suggested and empirically tested as a factor influencing a buyer’s decision to continue a business relationship (Leung et al. 2005). Oliver (1997) also offers theoretical support for the relationship in proposing that the effect can be justified using the cognitive\textarrow{affective \textarrow{conative attitudinal framework. That is, given that satisfaction is primarily an affective-oriented response to a service encounter, it may well be the strongest predictor of behavioural intentions (Grace and O’cass 2005).

In Zeithaml’s means-end study, perceived value is a cognitive evaluation perceived by customers in terms of a trade-off between what is received (benefits) and what is given (sacrifices) (Sanchez-Fernandez and Iniesta-Bonillo 2007; Zeithaml 1988). It, therefore, represents the utility derived from a service exchange (Ostrom and Iacobucci 1995). In the service setting, service quality is viewed as a benefit, whereas sacrifice elements include time, energy, effort, price/money and relevant costs (Sweeney et al. 1999; Zeithaml 1988). Perceived value is viewed as the result of a cognitive comparison process. The concept has been described as a ‘cognitive-based construct which captures any benefit-sacrifice discrepancy in much the same way disconfirmation does for variations between expectations and perceived performance’ (Patterson and Spreng 1997: 421; Eggert and Ulaga 2002). Perceived is independent of the timing of the use of a market offering and can be considered as a pre- or post-purchase construct while satisfaction is considered as a post-purchase construct and conceptualized as an affective evaluative response (Oliver 1996; Woodruff and Gardial 1996). Satisfaction and perceived value are two complementary and distinct constructs (Eggert and Ulaga 2002; Fornell

\textsuperscript{17} In line with manuscript preparation instructions (and suggested word limit), the current draft of the article only provides a brief account of the literature review and data analysis. Further details on the constructs, development of the hypotheses, development of the survey instrument and data analysis are available on request.
et al. 1996). It is confirmed the relationship between satisfaction and perceived value (e.g. Chen 2008; Chen and Tsai 2008; Huber et al. 2007; Hume and Mort 2008).

According to the trade-off model, value for money is defined in terms of perceived value which is a uni-dimensional construct and can be defined in terms of a perceived value construct (give and get components) (see Lin et al. 2005). Theory suggests greater utility results in an increased likelihood to repurchase (Brady et al 2001). Specifically and relatedly, value for money is believed to have significant influence on individual’s behavioural outcomes.

Research to date has discussed the relationship among service quality, satisfaction, value for money, and the resulting behavioral intention (e.g. Cronin et al 2000, Durvasula et al, 2004, Brady et al, 2001, 2005). Clearly, the aforementioned studies can prove to be both helpful guide yet a less comprehensive means of analyzing the impact of various cultural values across different nations on service quality, value for money, customer satisfaction, and the resultant customer behavioral intentions. The disadvantage of conceptual frameworks in previous studies derives from the fact that they tend to be insufficiently focused for the purpose of the current research not least because of, first, the peculiarities of non-Western organizational contexts and cultures, and consequently and second, the possibility of falling into the trap of distorting reality by generalizing the existing research outcomes of a specific culture/service quality dimensions relationship to other national or international contexts.

A review of the extant literature on ‘the interplay between service quality, value for money, customer satisfaction, and the resultant customer behavioral intentions’ shows that they primarily explore the relationship between these variables at aggregate level of construct – an indication of their failure to examine the relationship among these constructs separately (Aga and Safakli 2007; Gonzalez et al. 2007; Hu et al. 2009; Ueltschy et al. 2007).

Table 1: List of Hypotheses

<table>
<thead>
<tr>
<th>Service quality and satisfaction</th>
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<tbody>
<tr>
<td>H1: Higher service quality will be closely linked to the higher level of customer satisfaction.</td>
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<thead>
<tr>
<th>Value for money and satisfaction</th>
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<tr>
<td>H2: The higher the degree of value for money, the higher the degree of customer satisfaction.</td>
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<table>
<thead>
<tr>
<th>Service quality and value for money</th>
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<tr>
<td>H3: Service quality has a positive influence on value for money.</td>
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<table>
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<tr>
<th>Service quality and behavioral intention</th>
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<tbody>
<tr>
<td>H4-1: Customer satisfaction has a positive influence on positive word of mouth.</td>
</tr>
<tr>
<td>H4-2: Customer satisfaction has a positive influence on loyalty.</td>
</tr>
<tr>
<td>H4-3: Customer satisfaction has a positive influence on willingness to pay more.</td>
</tr>
<tr>
<td>H4-4: Customer satisfaction has a negative influence on complaint.</td>
</tr>
<tr>
<td>H4-5: Customer satisfaction has a positive influence on repurchase intention.</td>
</tr>
<tr>
<td>H4-6: Customer satisfaction has a negative influence on switching intention.</td>
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</table>

<table>
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<tr>
<th>Value for money and behavioral intention</th>
</tr>
</thead>
<tbody>
<tr>
<td>H5-1: Value for money has a positive influence on positive word of mouth.</td>
</tr>
<tr>
<td>H5-2: Value for money has a positive influence on loyalty.</td>
</tr>
<tr>
<td>H5-3: Value for money has a positive influence on willingness to pay more.</td>
</tr>
<tr>
<td>H5-4: Value for money has a negative influence on complaint.</td>
</tr>
<tr>
<td>H5-5: Value for money has a positive influence on repurchase intention.</td>
</tr>
<tr>
<td>H5-6: Value for money has a negative influence on switching intention</td>
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</tbody>
</table>

In light of these limitations and as shown in the developed conceptual model and reflected in the proposed list of hypotheses (see Table 1) and follow up analysis, our research aims to explore the interplay between the constructs shown in the conceptual model at the individual level of analysis – as opposed to the aggregate level of analysis – in the context of developing countries (Republic of China/Taiwan) - as
opposed to oft-cited Western organisational context.

Method

Data Collection and Sample

Utilizing the questionnaire as the primary means of data collection the study adopts a cross-sectional approach to data collection form restaurant/foodservices industry in Taiwan. This study used a combination of face-to-face and self-administration survey for data collection. In the interest of more reliable, valid and comparable results, the study selects only hotel chain and local chain restaurants not least because as ‘chain’ they provide a similar and consistent service package and delivery across all branches. Data also are collected from three regions of Taiwan. Even though there are over 100 five-star hotels across the whole country, the study focuses on three main regions, namely, Taipei (the Northern region), Taichung (the Middle region), and Kaohsiung (the Southern region). In short, respondents in this study are customers of the five-star hotel chain restaurants and the local chain restaurants. 257 questionnaires were collected in the five star chain hotel restaurants while 267 samples were received in the local chain restaurants.

Restaurant industry and food services are chosen for the study not least because of the industry specific attributes such as high-customer contact environment and both intangible and tangible nature of its service offerings.

Measures

Each of the constructs used in the study are drawn from previous published research (see Table 2) and expert panel members’ suggestions. This study employed 7-point Likert-type scales anchored by 1 refers to strongly disagree and 7 refers to strongly agree.

Prior to the data collection, the pre-test approach with 32 samples was employed to measure the internal consistency or reliability of each of the items of the scale (Cronbach 1951 and Churchill 1979). One item of satisfaction, one item of value for money and two items of behavioural outcomes were dropped because these items with low-item-total correlation (r<0.40).

Table 2: Sources of the constructs of the conceptual model

<table>
<thead>
<tr>
<th>Construct</th>
<th>References</th>
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<tr>
<td>Service quality</td>
<td>A customized version of SERVQUAL;</td>
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<td></td>
<td>Kim et al., (2006); Oubre and Brown (2009);</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>Oliver (1980)</td>
</tr>
<tr>
<td>Value for money</td>
<td>Butcher et al. (2001).</td>
</tr>
<tr>
<td>Behavior intentions</td>
<td>Zeithaml et al. (1996).</td>
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</tbody>
</table>

Results

Sample Profile

Due to the high demographical diversity of the respondents (e.g. gender, age, qualification, income), the study had to ensure whether there were any significant differences between the data collected across the three regions. Accordingly, the chi-square test was employed across the three regions based upon different demographic variables. Analysing the chi-square test results, no significant difference were observed between the respondents of the five-star hotel chain restaurants and local restaurants across the three regions (p>0.05) individually. Given no significant differences, we then combined the three regional datasets into a single one for further analysis.

Measure Assessment

A two-step approach to data analysis was undertaken (Anderson and Gerbing 1988). In particular, the study conducted exploratory factor analysis using principal component method with varimax rotation on service quality and behavior outcomes to examine their dimensionalities and psychometric properties (e.g. Chen and Tsai 2007) and then the relationship among service quality, satisfaction, perceived value
and behavior outcomes were explored using structural equation modeling (SEM) technique with LISREL software.

In short, as a result of the aforementioned analysis of reliability and validity of the research constructs, it can be safely argued that the scale possesses internal consistency with regard to content, convergent, and discriminant validities – an indication of its appropriateness and suitability for further structural equation modeling (SEM) analysis.

**Hypotheses Testing**

The six set of hypotheses (H1) is tested by several sub-hypotheses where it postulates a positive relationship between service quality and satisfaction. It suggests that a customer’s service assessment impacts on the customer satisfaction. In respect of the five star hotel chain restaurants, the results show that the positive impact of (service quality) assurance on satisfaction is significant ($\gamma = 0.13; \text{t-value} = 2.46; p < 0.05$) – thereby offering support for the hypothesis; there exists a partial support for the positive relationship between (service quality) tangible and satisfaction (physical evidence: $\gamma = 0.17; \text{t-value}=2.10; p<0.05$; food: $p>0.05$); the positive impact of responsiveness on satisfaction is not significant ($\gamma=0.05; \text{t-value}= 0.86$); and finally the data offers no support for the positive impact of empathy on satisfaction ($\gamma=0.16; \text{t-value}=1.61$). With regard to the local chain restaurants, the results indicate that reliability ($\gamma=0.26; \text{t-value}=5.15; p<0.001$) and empathy ($\gamma=0.20; \text{t-value}=4.24; p<0.01$) of service quality have positive impact on satisfaction; the results partially support the impact of tangible on satisfaction (physical evidence: $p>0.05$; food: $\gamma=0.16; \text{t-value}=2.30; p<0.05$); and finally the results offer no support for the impact of responsiveness on satisfaction ($\gamma=0.05; \text{t-value}=1.32$).

**Concluding Remarks**

This primary aim of this study was to empirically examine the relationship between service quality, value for money, satisfaction, and behavioural outcomes at construct dimensions level. To accomplish this aim, the study draws evidence from Taiwanese five star chain hotel restaurants and local chain restaurants – regarded as an under-researched industry in an under-researched cultural context. Implicit in research findings on service quality, value for money, satisfaction, and behavioural outcomes are several points which deserve further attention by both organisational scholars and practicing local and international managers of hospitality sector.

**Theoretical Implications**

The study contributes to theory development and testing in terms of the relationship between service quality, value for money, satisfaction, and behavioral outcomes. In this respect, this study contributes to the debate in three-related ways. First, in contrast to many previous studies on the research phenomena, attempts have been made to individually investigate the impact of each of the elements of service quality. Accordingly, each of the several behavioral outcomes has also been examined separately – as opposed to their aggregate impact (see Tsoukatos 2007). Second, in contrast to utilizing generic form of SERVQUAL index, the current study has made an attempt to develop a more customized version of SERVUQL instrument to appropriately reflect on and measure the relationships between service quality, value for money, satisfaction, and behavioural outcomes in the context of restaurant industry in Taiwan. Whilst customization is not without its drawbacks particularly with regard to the follow-up comparability and generalizability of results, particular care was taken to incorporate the customized attributes within the general frame of the SERVQUAL dimensions. Hence, this study contributes towards making a strong case for further applicability of SERVQUAL across non-Western cultures to further capture the service attributes of the industry under research. (see Jabnoun and Azaadin 2005;
Kim et al. 2009; Kim et al. 2009; Raajpoot 2004; Tsoukatos, 2007:193). Third, in contrast to the extant research evidence on the relationship between service quality, value for money, satisfaction, and behavioural outcomes, the current study reports two contrasting findings with those of past research evidence. First, it disproves a significant relationship between value for money and behavioural outcomes in the local chain restaurants. Second, it refutes a significant relationship between satisfaction and behavioural outcomes in the five star hotel chain restaurants. The findings offer support to the satisfaction literature related to emotive responses in the local chain restaurants as well as the perceived value literature for judgmental responses in the five star hotel restaurants.

Managerial and Policy Implications

The implications of the findings for local managers who create the service encounter – i.e. restaurant managers – as well as their customer-contact employees who create the service experience are that they need to consider, embed, and observe the cultural backgrounds of the customers in both the design and delivery of dining services. For example, the management of five star chain hotel restaurants have to invest in staff’s interpersonal and technical training so that they become competent and capable in serving their customers, thereby giving face to their guests through retaining and maintaining immense regard for them and enhancing their personal values. In respect of the management of local chain restaurants, there is a need on the part of the management to create a genuine dining environment which results in giving face to the guests thereby enhancing customer’s value, through dining in a friendly atmosphere where the overall ambience of the restaurant is cosy, the internal design and decoration of restaurant is consistent with the expectations of the customers and deeply rooted in Chinese culture (e.g. the culture of chopsticks which signals the wisdom of Chinese ancient people to rip, pick, nip and stir food; the culture of setting tables; the culture of respecting others at the table, and the like), the customer-contact staff keep the customer in high spirits through behaving with the utmost courtesy, and more importantly, food quality and presentation in terms of color, flavor, aroma make up a seductive dish for the customer. Finally, the role played by the policy makers (government) needs to focus on strengthening the relationship between the parties and ensuring its sustainability through mandatory effective service provider–customer relations policies.

Limitations

The first limitation relates to the fact that the data were collected from a single industry (hotel chain restaurants and local chain restaurants), thereby restricting the generalizability of the findings to wider business contexts. As such, a second limitation of this study lies in its restricted samples. Third limitation of this study is related to the choice of restaurateurs (not all restaurants), and finally the convenience sampling method constitutes the fourth limitation of the current study.

Future Research

In light of the aforementioned limitations, several issues deserve further attention in any future research on the topic. It would be imperative to further validate the results by examining other research contexts such Mainland China, Hong Kong, Singapore or any other Chinese-spoken countries to reveal the similarities and differences. The use of cultural frameworks such as Chinese cultural values, GLOBE, or that of Trompennars or Schwartz (as opposed to most widely-cited Hofstede’s dimensional model of national culture) could also shed new light on the peculiarities of national cultures and their implications for the consumers’ behaviours. A similar line of enquiry into the research phenomena in other service-oriented organisations could prove beneficial to further explore the influence of culture on customer’s expectations and perceptions towards services.
References


Effect of ISO 9000 Certification on TQM Implementation

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University of the Punjab, Lahore, Pakistan

Abstract

ISO 9000 is a widely used quality management standard in the world. However, the review of literature has shown the contradictory findings about its relationship with the implementation of TQM. The in-depth review of both ISO 9000 and TQM indicates that both systems share many common principles. However, still many believes that ISO 9000 implementation contradict the philosophy of TQM whereas others indicate that implementation of ISO 9000 leads the organisations towards the implementation of higher levels of TQM. Therefore, the relationship of ISO 9000 certification with implementation of TQM needs to be explored in further details. In this study, the data was collected by using self-completion questionnaire from the managers of 306 textile companies located in Pakistan. The findings of this study provides empirical evidence that certification to ISO 9000 facilitates the companies in their journey towards the implementation of TQM. However, duration of ISO 9000 certification does not have the significant effect on the implementation of TQM philosophy.

Keywords: ISO 9000, Quality Management System, Organisational Performance, TQM, Quality Management.

Introduction

ISO 9000 is a widely used Quality Management System. Millions of manufacturing and service organisations are certified to this standard. According to the survey conducted by International Organisation for Standardisation (ISO) in December 2011, the number of companies certified to ISO 9000 in the last few years is increasing in all over the world (ISO Survey, 2011).

It is generally believed that implementation of ISO 9000 helps organisations to achieve an improved performance and a higher level of TQM implementation (Gutierrez et al., 2010). However, some studies indicate that certification to ISO 9000 has no effect on the implementation of TQM or even contradicts the teachings of TQM (Martinez-Lorente and Martinez-Costa, 2004; Zhu and Scheuermann, 1999). Martinez-Lorente and Martinez-Costa (2004) state that the underlying concepts of ISO 9000 are contrary to the basic assumptions of TQM, because, for example, ISO 9000 is too bureaucratic this de-motivates employees. Similarly, TQM emphasises the development of long-term relations with suppliers whereas ISO 9000 focuses on the control of products which are being received from the suppliers.

The above studies indicate that the effect of ISO 9000 certification on implementation of TQM needs to be explored in further details. Therefore, in this study it is attempted to provide the empirical evidence to address the above mentioned gaps in the existing literature.
areas (ISO, 2011). The first set of standards for the promotion of quality in goods and services in UK industries was introduced by the British Standards Institute (BSI) in 1979, whereas ISO released its first ISO 9000 quality standard series in 1987, based on BS 5750 (Sroufe and Curkovic, 2008). The ISO has developed over 18,500 International Standards for various subjects. In the ISO 9000 family of standards, ISO 9001:2008 provides a set of standardised requirements for a quality management system. This standard can be implemented regardless of the user organisation’s activities, size or type (e.g. private or public sector). This standard provides a tried and tested framework for the systematic management of organisational processes, in order to produce products which accord to the expectations of customers (ISO, 2011).

The ISO periodically review their standards, keeping in view the experiences of certified organisations, experts and consultants. The first revision of ISO 9001 was carried out in 1994, then in 2000 and the current version of this standard was released in 2008. However, no significant changes were carried out in the latest version ISO 9001:2008 compared to ISO 9001:2000 (Martinez-Costa, Choi and Martinez, 2009).

The other standards of the ISO 9000 family provide information about other aspects of quality management system like vocabulary, fundamental concepts and auditing. For example, ISO 9000:2005 provides the fundamentals concepts of quality management systems and defines related terms; whereas ISO 9004:2009 gives guidance to organisations to help support sustained achievements. However, these two standards are not used for certification, contractual or regulatory use (ISO, 2011).

ISO 9001:2008 is based on eight principles of quality management. These principles are leadership, involvement of people, process approach, system approach to management, continual improvement, and factual approach to management, mutual beneficial supplier relationship and customer focus. The eight principles are integrated in the five clauses of the standard. As ISO 9001:2008 is based on eight clauses. However, the first three clauses just indicate the scope, normative references and terms and definitions. Whereas the Clause four describes the requirements of quality management system. The general and documentation requirements for this standard are also contained in this clause. Clauses Five to Eight present the requirements of the standard related to management responsibility (Clause 5), resource management (Clause 6), product realisation (Clause 7) and measurement, analysis and improvement (Clause 8) (ISO 9001:2008).

The process approach is considered to be the corner stone to achieve continual improvement in this standard (ISO, 2011). The “process approach” refers to

the application of a system of processes within an organisation, together with the identification and interactions of these processes, and their management to produce the desired outcome. (ISO 9001:2008, p. v)

This process approach is depicted in Figure 1.

This model indicates the process links between Clause Four to Eight of ISO 9001:2008. From this model it is evident that customer satisfaction is given great importance in this standard. The customers play a vital role in defining the requirements as inputs. At later stages, organisations have to determine whether they were able to satisfy their customers or not.
What is Total Quality Management?

Despite thousands of articles in the business and trade press but still total quality remains a “hazy” and “ambiguous” concept. The founders of this philosophy like Deming, Juran and Crosby, have no doubt, contributed to this confusion (Dean and Bowen, 1994). Many authors still consider it to be another management fad (Rich, 2008; David and Strang, 2006; Miller, Hartwick and Breton-Miller 2004; and Boaden, 1996). They argue that the fundamental values of this management philosophy are part of already existing organisational change initiatives (Boaden, 1996). However, many studies indicate that the underlying principles, assumptions, values and theories of TQM are comparatively different from other improvement initiatives (Sousa and Voss, 2002; Hackman and Wageman, 1995; Dean and Bowen, 1994; Grant, Shani and Krishnan, 1994). In order to identify that whether there is anything like TQM exists or not, Hackman and Wageman (1995) conducted the discriminate and convergent validity tests. Discriminate validity refers to the degree to which TQM philosophy and practices can be reliably distinguished from other strategies for organizational improvement such as participative management, management by objectives, and so on. Convergent validity reflects the degree to which the versions of TQM promulgated by its founders and observed in organizational practices share a common set of assumptions and prescriptions. They found that TQM passes the discriminate test.
because there is sufficient agreement among the movement’s founders about the key assumptions and practices of TQM. These assumptions and practices are clearly different, both conceptually and operationally, from the other change management programs.

Several attempts have been made to define TQM but the definitions provided are “vague”. There is a little agreement on what total quality management really means. The leading authors and gurus have used different terms while discussing this topic in the existing literature. For an instance total quality control (Feigenbaum, 1956), total quality improvement (Lascelles and Dale, 1991), and strategic quality management (Garvin, 1988). The difference among these terms, if any and other concepts is often unclear and creates confusion. Spencer (1994, p.448) describes that TQM “is not a cut-and-dried reality but an amorphous philosophy that is continuously enacted by managers, consultants, and researchers who make choices based not only on their understanding of principles of TQM but also on their own conceptual frameworks concerning the nature of organizations”. One possible explanation might be that much of the literature is written by consultants and the question of what TQM “really is” has not yet interested the academia to a larger extent (Hellsten and Klefsjo, 2000, p.239).

Some of the authors attempted to define TQM, for example, according to Oakland (1993, p.22), total quality management is an approach to improving the competitiveness, effectiveness, flexibility of a whole organization. It is essentially a way of planning, organizing, and understanding each activity, and depends on each individual at each level. Evans and Lindsay (2008, p.10) extended these definitions and described that people have started to recognize that the “quality of management is as important as “management of quality”.

The term Big Q is being used to contrast the difference between managing for quality in all organizational processes as opposed to focusing solely on manufacturing quality (Little Q). They have extended this term to the “quality of management” rather than “management of quality”. They stated that;

“…..Organizations began to integrate quality principles into their management systems, the notion of Total Quality Management, or TQM, became popular. Rather than a narrow engineering or production-based technical discipline, quality took on a new role that permeated every aspect of running an organization”.

Tari (2005) argues that although the practices of TQM vary from author to author, common practices can still be identified. These practices include top management commitment, customer satisfaction, continuous improvement, involvement of employees and partnership with suppliers. Many authors agree that these practices are the core elements of TQM (Martinez-Costa, Choi and Martinez, 2009; Fotopoulos and Psomas, 2009; Lopez-Mielgo, Montes-Peon and Vazquez-Ordas 2009; Bou-Llusar et al., 2009; Zu, 2009; Li et al., 2008; 2006 and Sila and Ebrahimpour, 2003). Furthermore, many studies empirically validate the above-mentioned TQM practices (Saraph, Benson and Schroeder, 1989; Flynn, Schroeder and Sakakibara, 1994; Ahire, Golhar and Waller, 1996; Quazi et al. 1998; Rao, Raghunathan and Solis, 1999, Kaynak, 2003; Fotopoulos and Psomas, 2009).

Bou-Llusar et al. (2009) explain and categorise TQM practices in more detail; the core practices of TQM can be categorised into two broad dimensions, social or soft, and technical or hard. The social dimension includes teamwork, leadership, training and involvement of employees, whereas the development of standardised and well-defined processes and procedures comes under the technical dimension. However, they emphasise that the social and technical dimensions of TQM are interrelated and mutually support one another.
Hafeez et al. (2006) conducted a comparative study of the ten notable authors who have really contributed in extending the discipline of TQM. They have identified 18 elements of TQM which are categorised under well-established dimensions of operations management like technologies (and tools), organisation (and systems) and people. The categorisation of TQM elements in the well-known dimensions of operations management given by Hafeez et al. (2006) are being used as the framework to explain the effect of ISO 9000 certification on TQM implementation.

**Effect of ISO 9000 Certification on Implementation of TQM**

The literature seems inconclusive about the association between ISO 9000 certification and the achievement of higher levels of TQM. Many studies indicate that certification to ISO 9000 has no effect on the implementation of TQM or even contradicts the teachings of TQM (Martinez-Lorente and Martinez-Costa, 2004; Zhu and Scheuermann, 1999).

Whereas, Magd and Curry (2003) assert that TQM and certification to ISO 9000 have a propensity to support each other. Companies can streamline their work processes using the implementation of ISO 9000 and then TQM can help to improve the motivation of employees, efficiency of operations, and overall performance of the organisation. Similarly, Rao, Ragu-Nathan and Solis (1997) have revealed that ISO 9000 certification can help organisations to have higher levels of implementation of quality management practices. They provided empirical evidence that the companies which were certified to ISO 9000:1994 had higher levels of quality leadership, human resource development, strategic quality planning, supplier relationship, quality assurance, and customer orientation. Terziovski and Power (2007) reported that ISO 9000 certification can facilitate the organisations to develop a quality culture. This finding is supported by Srivastav (2010). He provides empirical evidence from the manufacturing companies of India and indicated that ISO 9000 implementation enhances the collaborative culture, reduces the stress level and improves problem solving through team work.

**Figure 2: Evolution of Total Quality Management**

![Evolution of Total Quality Management](image-url)

Similarly, Jang and Lin (2008) provide the empirical evidence that the operational performance of organisations improved after getting the certification of ISO 9000. Stroufe and Cukovic (2008) also show that certification to ISO 9000 improves processes and helps to minimize production losses.

Hafeez et al. (2006) argued that ISO 9000 provide the foundation for effective implementation of TQM philosophy by fulfilling the requirements of quality control and quality assurance. Figure 2 explains in depth how ISO 9000 provide the foundation to implement TQM elements. Gutierrez et al. (2010) support Hafeez et al. (2006). They also argue that the implementation of ISO 9000 could be mapped on to the phases of quality control and quality assurance. They also indicated that implementation of ISO 9000 could be considered as a mid-way point towards the adoption of advanced TQM models like the EFQM Excellence Model and Six Sigma. They argue that the implementation of EFQM Excellence Model and Six Sigma requires more complexity and development in most of the quality management elements. Thus, implementing ISO 9000 could facilitate the organisations in their journey towards the implementation of these models.

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<td>5.2 (Customer Focus), 5.1a 5.6.2b 5.6.3b 7.2 (Customer related processes) 7.2.1 (Determination of requirements related to the product) 7.2.2 (Review of requirements related to the product) 7.2.3 (Customer communication) 7.4.2 Purchasing information</td>
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<tr>
<td>Continuous Improvement</td>
<td>5.1 Management commitment, 5.3b, 5.6.2g, 5.6.3a &amp;b 8.4 Analysis of data 8.5.1 Continual improvement, 8.1c</td>
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<tr>
<td>Benchmarking</td>
<td>5.5 Responsibility, authority and communication 5.5.3 Internal communication 7.2.3 Customer communication 7.4.2 Purchasing information</td>
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<tr>
<td>Process Management</td>
<td>4.1 General Requirements 5.5.2a 5.6.2c 5.6.3a 6.3b 7.1 Planning of Product Realization 7.2 Customer Related Processes 7.4.1 Purchasing Process 7.5.2 Validation of processes for production and service provision 7.6 Control of Monitoring and Measuring Equipment 8.1 8.2.2 Internal Audit 8.2.3 Monitoring and Measurement of Processes</td>
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Partnership and provision of Resources

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<th>5.1e</th>
<th>6.1 Provision of Resources</th>
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Top management commitment

<table>
<thead>
<tr>
<th>Clauses</th>
<th>5.1 Management Commitment</th>
</tr>
</thead>
</table>

Employees Involvement

| Clauses | |
|---------| |

Employees Training and Development

<table>
<thead>
<tr>
<th>Clauses</th>
<th>6.2 Human Resource (6.2.1, 6.2.2)</th>
</tr>
</thead>
</table>

Legend:
- ☻ Very Strong
- ● Strong
- ○ Medium
- ○ No/Week

The clauses of auditable standard of ISO 9000 series of quality management system; ISO 9001:2008 are mapped with the elements of TQM in Table 1. The elements of TQM which are referred in five or more than five clauses of ISO 9001:2008 are considered having very strong relevance with ISO 9000, Quality Management System. Similarly, the TQM elements which are referred in three or more but less than five clauses of ISO 9001:2008 directly are considered having strong relevance, the TQM elements which are referred in one or more than one but less than three clauses are considered having medium relevance and elements which are not mentioned anywhere in the standard are considered having weak or no relationship with ISO 9000 Quality Management System. It is evident from the table that there is a very clear linkage among the elements of TQM and the clauses of ISO 9001:2000.

Among different elements of TQM, customer focus and process management have a very strong relevance with the ISO 9000 QMS. Continuous improvement and communication seem to have strong relevance whereas partnership and provision of resources, top management commitment and employees training and development have medium relevance. The Table 1 indicates that employee involvement and benchmarking is not given much importance in ISO 9000 QMS.

Overall, it is evident that ISO 9001:2008 clauses have much relevance with the elements of TQM. Russell (2000) has also done similar mapping of ISO 9001:2000 clauses with the EFQM criteria. He identified that there is a much correspondence between these two models. Leadership is considered as the driving force behind the both frameworks. Customers’ satisfaction is given top priority. Continuous improvement and learning, people development and involvement, process approach and partnership development are considered important in both frameworks.

It is the general impression that this standard is bureaucratic in nature and organisations have to put unnecessary emphasis on documentation, which makes the processes less efficient. However, in-depth analysis of the ISO 9001:2008 standard’s requirements indicate that this standard only requires six mandatory documented procedures. Apart from these procedures, this standard does not require any other written procedure. However, it is up to the organisation whether it wants some more procedures should be in written form or not. This standard gives much emphasis that the record of the activities performed within an organisation must be maintained. These records are evaluated during the audit of the quality management systems.
Those organisations that have not yet established the fundamental systems and procedures to perform different functions might consider such requirements as burdensome; however, these are the normal documents that every organisation is required to establish for the smooth running of its activities. Therefore, Magd and Curry (2003) assert that early implementation of ISO 9000 can provide stability and consistency in an organisation’s work. Subsequently, the implementation of TQM philosophy can enhance an organisation’s overall performance.

Based upon the above discussion, a theoretical framework is developed which is given in Figure 3. The elements of TQM are categorised in three well established dimensions of operations management ‘Technologies (and tools)’, ‘Organisation (and systems)’ and ‘People’ as given in Hafeez et al. (2006). Following hypothesis are developed on the basis of this theoretical framework.

H1: ISO 9000 certification is associated to the implementation of TOP constructs of TQM.

H1a: ISO 9000 certification is associated to the implementation of Technologies construct of TQM.

H1b: ISO 9000 certification is associated to the implementation of Organisation (Systems) construct of TQM.

H1c: ISO 9000 certification is associated to the implementation of People construct of TQM.

H2: Duration of ISO 9000 certification is associated to the implementation of TQM.

H2a: Duration of ISO 9000 certification is associated to the implementation of Technologies construct of TQM.

H2b: Duration of ISO 9000 certification is associated to the implementation of Organisation (Systems) construct of TQM.

H2c: Duration of ISO 9000 certification is associated to the implementation of People construct of TQM.
Research Methodology

This study was conducted in the context of textile companies of Pakistan. The member companies of All Pakistan Textile Mills Association (APTMA) were taken as population of this study. There are three hundred and seventy five textile mills are members of this association. The members list of APTMA is taken as the sampling frame for this study. These textile companies are located in different provinces of the country. Among these provinces, Punjab is the largest province. Sixty-five percent of the total population of Pakistan live in this province and it is the largest producer of cotton. Fifty-six percent of APTMA member textile companies are located in the Punjab. The area and population of the Punjab is three times bigger than that of the UK. Thus, it was decided that all the member organisations of APTMA located in the province of Punjab would be considered as the sample for this study. A total of one thousand and fifty questionnaires were sent to the sample companies.

The selection of respondents is a critical point in a questionnaire survey, which is based on many factors like the nature and level of the information required, and the language and terminologies used in the questionnaire. The majority of information required for this study can only be taken from employees working at the managerial level. Therefore, it was decided that the managers would be the respondents in this study. It is also assumed that multiple responses from each organisation will minimise the bias in the data. It was therefore decided to collect the responses from the managers of multiple departments of same company. Therefore, senior managers from multi-departments including Quality, Operations, Finance, Sales & Marketing and Human Resources were selected as the respondents for this study. Similar respondents were selected by Feng et al. (2006), Prajogo and Sohal (2003); Ho, Duffy and Shih (2001), Ahire and Dreyfus (2000) and Flynn, Schroeder and Sakakibara (1994). Other research has collected the data from CEOs/quality directors/quality managers (e.g. Bou-Llusar et al. 2009; Douglas and Judge, 2001; Rao, Raghunathan and Solis 1999).

There are many validated instruments already available in the literature to investigate the extent of TQM implementation (e.g. Saraph, Benson and Schroeder 1989; Ahire, Golhar and Waller 1996). The majority of the instruments were validated in the context of the USA and the UK. It is therefore expected that these instruments may have some validation issues in a developing country like Pakistan. The items for this questionnaire were taken from the literature. For the pilot testing of the instrument, a group of different experts including TQM practitioners, academics and textile managers was selected from Pakistan. The quality and textile academics were selected from the National Textile University, Faisalabad and the Institute of Quality and Technology Management, University of the Punjab and University of Lahore, Pakistan. The textile managers were selected from Nishat Textile Lahore, The Crescent Textile Faisalabad and Style Textile Lahore. The newly developed questionnaire was sent to the focus group members, along with the details of the study and the actions they needed to perform. A comprehensive set of guidelines was sent to facilitate their review of the questionnaire. The details and suitability of this questionnaire in the context of textile companies of Pakistan were also discussed with some of the members of the focus group on the telephone. Feedback was received from fifteen group members. These included academics and practitioners from textile and quality management.

Analysis of the Data
Sample Profile

A total of 1,050 questionnaires were sent to 210 companies, which were members of APTMA and located in the province of Punjab.
Punjab. A total of 75 questionnaires from 15 companies were returned as undelivered and 306 completed questionnaires were returned from 105 companies. Thus, the response rate was 50.5% company wise and 31.8% respondent wise. Five questionnaires were excluded from the final analyses because a major part of the data was missing from these questionnaires.

Table 2 indicates that maximum respondents belong to spinning companies (59%) followed by weaving (20%), finishing (10%), garments (6%) and composite (5%). The responses were according to the textile composition in Pakistan. As the majority of companies in Pakistan are spinning companies; therefore, the majority of responses came from this sector. The majority of responses were received from the companies having employees between 100 to 1000 employees. Only 14% respondents belong to the companies having employees more than 1000. The majority (37%) of respondents were production managers followed by Quality Assurance Manager (27%). The majority (61%) of the respondents think that employees and managers of the sample companies have good awareness of TQM, 31% think very good, and 5% claim excellent knowledge of TQM. There were only 2% of respondents answering poor and 1% saying that they know nothing about TQM. The overall results show that the respondents perceive that both employees and managers of the companies have awareness of TQM.

The reliability might be referred as the internal consistency of the items, which used to develop a scale. Therefore, to evaluate the internal consistency of the constructs, an item inter-correlation matrix was developed for each construct. All items which had negative correlation with other items of the construct were deleted. Later on, the value of Cronbach’s Alpha (CA) was determined for each construct.

### Table 2: Profile of the Sample

<table>
<thead>
<tr>
<th>Type of the sample textile companies</th>
<th>Size of company n= 299</th>
<th>Manager and employee awareness of TQM n=298</th>
<th>Job designation of the respondents n=301</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage</td>
<td>Percentage</td>
<td>Percentage</td>
<td>Percentage</td>
</tr>
<tr>
<td>Spinning</td>
<td>59% (100-500)</td>
<td>44% Excellent</td>
<td>5% Production Manager</td>
</tr>
<tr>
<td>Weaving</td>
<td>20% (500-1000)</td>
<td>42% Very good</td>
<td>31% Quality Assurance Managers</td>
</tr>
<tr>
<td>Finishing</td>
<td>10% (Above 1000)</td>
<td>14% Good</td>
<td>61% Financial Managers</td>
</tr>
<tr>
<td>Garments</td>
<td>6%</td>
<td>2% Poor</td>
<td>2 Human Resource Managers</td>
</tr>
<tr>
<td>Composite</td>
<td>5%</td>
<td>Know nothing</td>
<td>1% Sales Managers</td>
</tr>
</tbody>
</table>

*The items in Section II of the questionnaire are represented by “V1, V2 and so on. These items could be traced from the questionnaire, attached as Appendix A. The notation of “Vr” is used when the rating for that item is reversed.*

### Table 3: A Reliability Analysis of the Questionnaire

<table>
<thead>
<tr>
<th>Constructs</th>
<th>No. of Items</th>
<th>Cronbach’s Alpha</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous Improvement</td>
<td>3 (V27, V28, V29)</td>
<td>0.70</td>
<td>3.9347</td>
<td>.67644</td>
</tr>
<tr>
<td>Benchmarking</td>
<td>3 (V9, V10, V12)</td>
<td>0.70</td>
<td>4.0177</td>
<td>.64611</td>
</tr>
<tr>
<td>Top management commitment</td>
<td>3 (V2, V5, V6)</td>
<td>0.76</td>
<td>4.0044</td>
<td>.69066</td>
</tr>
<tr>
<td>Employees Involvement</td>
<td>3 (V16, V18, V17)</td>
<td>0.71</td>
<td>3.9457</td>
<td>.72903</td>
</tr>
<tr>
<td>Communication</td>
<td>3 (V30, V22, V11)</td>
<td>0.61</td>
<td>3.9280</td>
<td>.65404</td>
</tr>
<tr>
<td>Customer Focus</td>
<td>2 (V7, V10)</td>
<td>0.63</td>
<td>3.9668</td>
<td>.74312</td>
</tr>
<tr>
<td>Partnership and Provision of Resources</td>
<td>3 (V19, V21, V23)</td>
<td>0.61</td>
<td>3.7973</td>
<td>.69061</td>
</tr>
</tbody>
</table>

18 The items in Section II of the questionnaire are represented by “V1, V2 and so on. These items could be traced from the questionnaire, attached as Appendix A. The notation of “Vr” is used when the rating for that item is reversed.
<table>
<thead>
<tr>
<th>Constructs</th>
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<th>Cronbach’s Alpha</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process management</td>
<td>3 (V24, V25, V26)</td>
<td>0.73</td>
<td>4.0421</td>
<td>0.64956</td>
</tr>
<tr>
<td>Employees Training and Development</td>
<td>2 (V15, V14)</td>
<td>0.78</td>
<td>3.8505</td>
<td>0.83221</td>
</tr>
<tr>
<td>Organisation (Systems)</td>
<td></td>
<td>0.83</td>
<td>3.9225</td>
<td>0.57440</td>
</tr>
<tr>
<td>Technologies (Tools)</td>
<td></td>
<td>0.85</td>
<td>3.9731</td>
<td>0.60111</td>
</tr>
<tr>
<td>People</td>
<td></td>
<td>0.80</td>
<td>3.9336</td>
<td>0.62337</td>
</tr>
</tbody>
</table>

Generally, 0.7 is considered as the acceptable CA value for any construct however, Nunnally (1978) indicated that CA value of 0.6 is also acceptable if the scales are new. Table 3 indicates the values of CA for the individual constructs. It is evident from Table 3 that all the values of CA are more than 0.6. Therefore, all the constructs with CA value equivalent or more than 0.6 are accepted. The CA value of Technologies (Tools), ‘Organisation (Systems)’, ‘and ‘People’ (TOP) varies from .80 to 0.85.

Figure 4 indicates comparative mean score of the TQM constructs for ISO 9000 certified and non-certified organisations. It is evident from the mean values that the construct have higher mean values for ISO 9000 certified companies.

Figure 5: Comparative Mean Score of TQM Constructs for different durations of ISO 9000 Certified Companies

However, Figure 5 indicates that the mean score for TOP constructs for different durations of ISO 9000 certifications do not have much difference.

Table 4: Relationship of ISO 9000 Certification to TOP Constructs

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Pearson Chi-Square</th>
<th>df</th>
<th>Asymp. Sig. (2-Sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technologies</td>
<td>8.925</td>
<td>2</td>
<td>0.012</td>
</tr>
<tr>
<td>Organization</td>
<td>13.473</td>
<td>2</td>
<td>0.001</td>
</tr>
<tr>
<td>People</td>
<td>12.488</td>
<td>2</td>
<td>0.002</td>
</tr>
</tbody>
</table>
Table 5 indicates the relationship between duration of ISO 9000 certification and implementation of TOP constructs of TQM. Chi-Square was used to investigate this association. The results indicate that the difference in the implementation of TOP constructs across the different durations of ISO 9000 certification is not statistically significant (for Technologies $x^2 = 8.814, p = 0.066$, df =4, for Organisation $x^2 = 8.160, p = 0.086, df =4$) for People $x^2 =12.488, p = 0.002, df =2$), however, this relationship is significant for people construct ($x^2 = 11.564, p = 0.021, df =4$).

Table 5: Relationship of ISO 9000 Certification Duration to TOP Constructs

<table>
<thead>
<tr>
<th></th>
<th>Pearson Chi-Square</th>
<th>df</th>
<th>Asymp. Sig. (2-Sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tech</td>
<td>8.814</td>
<td>4</td>
<td>0.066</td>
</tr>
<tr>
<td>Organisation</td>
<td>8.160</td>
<td>4</td>
<td>0.086</td>
</tr>
<tr>
<td>People</td>
<td>11.564</td>
<td>4</td>
<td>0.021</td>
</tr>
</tbody>
</table>

These results indicate that according to the perception of respondents there is no relationship between the implementation of Technologies and Organisation constructs of TOP with the duration of certification of ISO 9000, Quality Management System. However, the construct of ‘People’ is associated with the duration of certification of ISO 9000. Therefore, hypothesis H2a and H2b are not accepted whereas H2c is accepted.

Discussion on Results

From Figure 4 and Table 4 it is evident that all the constructs of the TOP are related with certification of ISO 9000, Quality Management System. Table 4 indicates that the ISO 9000 certified companies have higher levels of TQM implementation. Many studies support these findings. For example, The findings of Terziovski and Power (2007) confirm the findings of the current study by providing empirical evidence that certification to ISO 9001:2000 facilitates the organisations in the development of a quality culture. Rao, Ragu-Nathan and Solis (1997) also confirm the findings of the current study.

Some research does not support the findings of the current study. For example, Sila (2007) states that there was no difference in the performance and systems of the ISO 9000 certified and non-certified companies. A detailed investigation of Sila’s sample shows that the non-certified companies which were included were already involved in the implementation of a range of quality improvement initiatives like Kaizen, 5S, lean manufacturing, constraint management, Juran training, as well as other quality improvement initiatives, without formal names. All of the above mentioned initiatives are based on some of the principles of TQM. On the other hand, in the case of the present study, the majority of sampled textile companies were not using any other quality improvement initiatives except ISO 9000. Therefore, in the two studies, the non-ISO 9000 certified companies had a different level of introduction to the TQM principles.

The finding of Martinez-Lorente and Martinez-Costa (2004) seem contrary to the findings of the current study. They put forward evidence that ISO 9001 certification contradicts the implementation of the TQM philosophy when these two approaches are implemented together. In the current study this aspect was not studied explicitly. Thus, the research is unable to make a real comparison of the two studies.

Another aspect of Martinez-Lorente and Martinez-Costa (2004) is not comparable with the current study; the majority of companies in their sample were certified to ISO 9000:1994 whereas the companies in the current sample are certified to ISO 9001:2008. As ISO 9001:2008 is the latest version of the ISO 9000 series and has better compatibility with the TQM philosophy (ISO, 2011), therefore, it was expected that this version would be more helpful in the implementation of TQM practices. Furthermore, these two studies were conducted in two different countries.
and company sectors. Martinez-Lorente and Martinez-Costa (2004) conducted their study in the manufacturing and service organisations of Spain while the current study was conducted using only Pakistani textile companies. Feng, Terzirovski and Samson (2008) indicate that for a successful implementation of ISO 9000 organisations require higher levels of employee training, planning and commitment at all levels.

The other findings indicate that duration of ISO 9000 certification do not have significant effect on the implementation of TOP constructs except ‘people’. According to these findings the companies having certification for less than three years and more than six years do not have significant difference especially for Organisation and Technologies construct of TOP. This aspect could be explained in the context of the explanation given by Baxter and Hirschhauser (2004, p.208). They consider that the implementation of the majority of performance improvement initiatives are intended to highlight the company’s competence to the outside world, and the company may never really intend to revolutionize the workplace. The ‘pink factories’ which adopt this approach in their implementation of TQM can never get success by using this philosophy.

Soltani, Meer and Williams (2005, p. 226) seem agree with this explanation they assert that, “registration with either the EFQM or one of its partners, such as the British Quality Foundation (BQF) and Quality Scotland Foundation (QSF) or MBNQA, does not necessarily make an organisation a quality-driven one”. In addition, Magd and Curry (2003) indicate that the majority of companies get ISO 9000 certification because of customers’ pressure. They want to show their competence to their customers and are not really concerned about improving the system by using the principles of ISO 9000. This could be the reason that in spite of having ISO 9000 certifications, the majority of companies are unable to improve continuously.

**Conclusion**

This study provides empirical evidence that certification to ISO 9000 is associated with the perceived implementation of TQM philosophy. The companies having ISO 9000 certification can perform better in comparison to non-certified companies. Therefore, ISO 9000 implementation facilitates the companies in their journey towards the implementation of TQM (Srivastav, 2010; Jang and Lin, 2008; Sroufe and Curkovic; 2008; Gotzamani et al. 2007; Terzirovski and Power, 2007; Gotzamani et al. 2007; and Magd and Curry, 2003). The companies having certification to ISO 9000 can perform in the areas of customer focus and process management and continuous improvement however; they might not perform well in involvement of people and benchmarking activities. Furthermore, the documentation for ISO 9000 facilitates employees having better work instructions and procedures which consequently improve the organisational processes (Chow-Chua, Goh and Wan, 2003). However, the duration of certification to ISO 9000 does has much effect on the implementation of TQM philosophy. It seems that sample companies have not well understood the concept of continuous improvement which is the main component of process approach model of ISO 9000. This also indicate that companies do not give much emphasis on the implementation of spirit of ISO 9000 quality management system after having the certification of this standard.
Bibliography


Using the Six Action Shoes to Foster Creativity and Innovation Among Some Nigerian National Youth Service Corps Members

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Abstract

The study examined the importance of creativity and innovation to mankind and wondered that despite the fact that every human being has a deposit of creativity in him that could make individuals to live successfully in life, many still live an idle, fruitless, confused and frustrated life. This is often common among the youths who are expected to be the future leaders of the nation, hence the problem of unemployment has aggravated to an alarming level leading to incessant high rate of crime in the country, due to the fact that people have failed to nurture and develop their creativity. The study therefore investigated the effect of the Six Action Shoes creativity technique in fostering the creativity and innovative skills of the members of the National Youth Service Corps in Nigeria. The study made use of pretest-posttest quasi experimental design whereby a randomly selected sample of 70 members of the NYSC cutting across the six geo-political zones in Nigeria whose ages ranged from 21-30, with a mean of 26.4 were randomly selected from 2 Local Government areas of Oyo state. They were assigned to the experimental and control groups based on balloting. Both groups responded to the Creativity and Innovation rating scale in Animasahun’s (2007) Success Potential Battery to collect their pre-test as well as post-test scores. The experimental group was subjected to six weeks of training in the utilization of the Six Action Shoes lasting for 2 hours per week, while the control group waited for their turn later. At the end of the exercise, the 35 members in the experimental group remained intact, while only 32 members in the control group completed the exercise. The one-way analysis of covariance (ANCOVA) was used to test the only hypothesis generated for the study at the 0.05 level of significance. The result showed that there was a significant main effect of treatment on the Youth Corps’ creativity and innovative skills, which means that participants exposed to treatment scored significantly better than the control group on Creativity and Innovative rating scale (F (1, 64) = 73.866, p<0.05). The Partial eta square was 0.536 which translates to 53.6% of the total variance in the Youth Corps’ creativity and innovative skills score, which means that the Six Action Shoes technique was relevant to foster creativity and innovative skills. The result further showed that experimental group (exposed to Six Action Shoes technique) displayed high creativity and innovative skills score (mean = 112.09) above the control group (mean = 82.735). It was therefore recommended that the Nigerian National Youth Service Corps members should be exposed to training in the Six Action Shoes during their one-year mandatory National Youth Service so as to foster their Creativity and Innovation skills, which would prevent them from being idle, wanderers or becoming white collar job-seekers alone, but engage themselves in worthwhile creative and innovative ventures after the mandatory national service, and help to reduce unemployment problem as well as crime rate in Nigeria. Further, all other countries in the world should also imbibe this creativity technique to act proactively in preparing their youths for unforeseen future circumstances so that such youths would not turn nuisance to the
nation thereby enhancing sustainable excellence.

**Keywords:** Six Action Shoes technique; Creativity and Innovation skills; National Youth Service Corps members; Unemployment; Crime rate.

## Introduction

Creativity is the primary attribute of God, the Creator who created all things *ex-nihilo*, and consequently, every individual created by Him has a deposit of creativity in him as part of the attributes shared with the Creator, at least to make new and beneficial things out of what the Creator had created. This is otherwise referred to as the innate potential of the individual. However, this dosage of creativity may never see the light of the day or have any impact in the world if not consciously nurtured, boosted, fostered and monitored (Akinboye, 2003a; 2003b; 2007; Animasahun, 2003; 2007; Dickhut, 2003). This is the reason why many people die without realizing their potentials in the world, which gave rise to the adage that the graveyard is the richest in potentials. It is therefore imperative that individual’s creativity skills need to be fostered. Innovation on the other hand, is the end product of creativity; it is the utilization of creative inspiration. Therefore, there is no innovation without creativity, and creativity is useless without innovation. However, the duo can only benefit mankind if vigorously fostered, nurtured and monitored.

The problem of unemployment in Nigeria is fastly assuming a dangerous dimension that may eventually lead to the collapse of the sovereign nation. It seems that all approaches to the solution of the problem have not really yielded the needed success that would allow individuals to sleep well with their two eyes closed (Fasanya, 2009; Animasahun, 2012b). This is the reason why efforts should continue to explore all ideas, strategies, methods and techniques that could possibly put a permanent solution to the problem. To this end, the Six Action Shoes creativity technique, which is a focused thinking and action-oriented creativity strategy that enables an individual to act on his thinking, is hereby proposed as another fantastic measure that can enhance the creativity and innovative skills of an individual which could prepare the individual adequately for the unknown future rather than waiting for a white collar job, leading to the reduction in graduate unemployment in Nigeria.

## Literature Review

The Six Action Shoes, a focused thinking and action-oriented creativity strategy, was developed by Edward De-Bono, to enable an individual to act on his thinking (De-Bono, 1991; 1992; Akinboye, 2003b). It seems the greatest problem to human success is dwelling too much on theories or thinking on the issue for too long a time rather than taking any positive action for immediate implementations. The danger here is that while waiting there could be negative interference, wrong advice, confusion, frustration and distraction which is the greatest energy of distinction. This is the main reason why many lucid ideas died prematurely without seeing the light of the day. Really, a man of words and not of deeds is like a garden full of weeds (Akinboye 2003b).

De-bono (1991; 1992) came out with the Six Action Shoes Creativity technique to liberate individual from the bondage of idleness, endless thinking, confusion, indecision, frustration, complacency, stagnation, wishful thinking and procrastination which are the fastest road network to failure. He is of the opinion that if you are not going anywhere, then you don’t need shoes, but as soon as you put on shoes, then an action must take place reaching for a destination (Gaeme, 2010; Animasahun, 2011).

However, different situations require different actions. Effective action on the other hand requires specific skills. Hence, the birth of Six Action Shoes whereby actions are grouped into six basic styles:
Routine, Crisis, Human Values, Enterprise, Investigation and Authority. The framework of Six Action Shoes is to help both in the training of action skills and also in the use of those skills at the moment of action (Bob-Morris, 2011). The shoes’ colours are everyday colours that suggest the nature of the action mode they indicate. The physical nature of the shoes also suggests the nature of the action mode (Hall, 2000). Each type of shoe reminds the thinker of the type of action that is appropriate in a particular situation. He describes thinking transformed into action as Operacy (De Bono, 1992).

The name and description of the Six Action Shoes as described by De-bono (1991; 1992), Akinboye (2003a; 2003b), Animasahun (2011) and Bob-Morris (2011) are as follow:

**Navy Formal Shoes:** This suggests routines and formal procedures. Navy (dark blue) is the colour of a wide array of uniforms. The navy or other armed series have drills, routines and formal procedures. Navy shoe action mode means doing it by the book by following the laid down procedures, rules and regulations step by step in exact detail. It emphasizes formality and drills which means, putting on these shoes, an individual is expected to take an action according to the laid down rules and regulations because moving outside the accepted procedures may entail making mistake, danger, confusion or indictment as a criminal. However, this could not stifle initiative and flexibility but all things should be done within the provision of the law.

**Grey Sneakers:** Grey is a neutral colour while sneakers are comfortable casual footwear. The action required here is using the little grey matter of the mind to collect the necessary information. Grey sneaker action mode is about collecting information, gathering evidences, thinking about it, exploration, and investigation. Here, the individual doesn’t really know what he is going to find or come out with, however whatever he finds determines the next step to take. For instance, if a clue, opportunity, new area, new ventures etc. comes up, you follow such. According to Akinboye (2003b), grey implies thinking hard and coming up with a brand of product with heavy integrated values. Grey sneakers mode helps where there are two or more competing theories. Whichever one that can stand the heat of detailed critical examination is more likely to be correct and upheld. Grey sneaker action mode is a casual, informal look at the facts and surrounding circumstances. It is the information gathering mode, as typified by an unobtrusive detective leading to the next action to be taken.

**Brown Brogues:** Brown is the colour of the earth and represents what is down-to-earth. It is a practical colour. Brogues are hard wearing shoes worn day to day. Brown brogue action is therefore built on a foundation of practicality, pragmatism, good sense and determination. The main question in this mode is “what can be done in this situation”? It involves the use of initiative and flexible responses to changing situations. It requires great determination to succeed, being solid, resolute, ignoring distractive comments or what others may say, and facing the consequences—all within the requirements of the law. Individuals put on the shoes to take practical action which seems sensible in the present situation or circumstance. Flexibility is a key aspect to Brown Brogue action. You change your behaviour as the situation changes. You apply your common sense and do what can be done, you do what you can do, you do what is right. Really, it is an action, where you might “get your hands dirty” (De-Bono, 1992). However, the individual needs to maintain control of the situation by being flexible enough to cope with whatever arises.

**Orange Gumboot:** Orange is not a gentle colour, it is a bright, vivid and striking one. It shrieks, alarm bell rings, and generally used for warning; while gumboots are worn by firemen/fire fighters or other emergency
workers. Hence, gumboots are not normal wears. You wear them for special situations. Orange gumboot action is directly concerned with emergency situations which may either be danger, explosion, barriers or great opportunity. Once something is classified as an emergency, then priorities change. There must certainly be new rules for action because there is a new direction to follow. For instance, immediate action is needed to eliminate or guard against any threatening situations or eliminate certain barriers, dangers or crisis. In like manner, such action is needed when an opportunity shows up so as not to miss it. The key factor here is that for any orange gumboot situation, the first priority is immediate action as opposed to a period of reflection and study. It implies urgent action rather than studying the possibilities. Hence, it is pertinent that individuals make assessment of all existing and potential dangers, and switch into action immediately to address the dangers so as to move forward.

**Pink Slippers:** Pink is a gentle, warm, soothing, usually and conventionally feminine colour. Slippers are usually worn at home, casually, during quiet, relaxing moments. Pink action mode is all about human feelings, compassion, sympathy, unconditional special regard for the human person, tender loving care, and special consideration for man and sensitivity to the human element. It is put on to take caring and helping action in situation where it is vital to consider respect for the human person. This is beyond ordinary feelings of sympathy or empathy but actually demonstrating the virtues of caring, loving, understanding, accommodating, regarding, hospitality, respect, consideration, and responsiveness, tolerance, being merciful and helping the human element. It is also a way of fostering healthy human relation and values whereby human factors matter and regarded better than machines, no matter who they are. This action shoe also helps an individual not to underrate human help, and therefore seeks for assistance from them whenever necessary because we need ourselves. Nobody is self sufficient, nobody can live in isolation, men are social animals, and need themselves.

**Purple Riding boots:** Purple is a ground, pomp and splendor colour. It was the imperial colour of Rome. It is the colour of royalty which invariably suggests authority. Riding boots are not normal wears. They were traditionally worn by the upper class, people riding horses or motor bikes. Riding boots are associated with privilege. Hence, people in certain privileged positions put them on. A horseman was a superior fighting person, and in the society, the superior people who owned horses looked down on people who were on foot (De Bono, 1992). Purple riding boot action mode indicates an authority role. When people act in this mode, they are acting in an official capacity, issuing orders devoid of personal feelings and prejudice, manifesting transformational leadership. The key factor here is that authority should be respected by individuals while anybody who finds himself in a position of authority should exercise authority with love and caution. Such a leader should issue orders with all honesty without any personal feelings, bias, censorship, prejudice or self-centeredness. You should not look down on people when it is good for you. When you are up, remember others who are down and don’t cheat on them. Remember, an official position may not necessarily be a superior one, and all positions are ephemeral. Individuals should be an exemplary leader, manifesting transformational leadership. Personal abilities should be magnified only within the boundaries of the office. An official role is neither an invitation to suspend basic human rights nor a license to act as if above the law. Rather, official roles should carry out social responsibilities within the framework of justice and respect for all. There must also be consistency so as not to run the risk of compromising one’s position. Similarly, you must treat every action impartially when acting in an official capacity.
In general, the strength of the Six Action Shoes system lies in the doing, not in the thinking. It is not meant to serve as a sophisticated framework for detailed analysis. Rather, it is a useful practical way to increase efficiency and clarity or unity of action. Each person should develop the skills to be able to act in each of the six action modes. Then, when the correct circumstances arise, there is clarity of purpose and action. Some of the world’s largest corporations are using this system to characterize the correct style of action to follow in every situation (European Year of Creativity and Innovation, 2009).

In Nigeria currently, there is no assurance that University graduates will be employed after the NYSC programme. But unfortunately, most of these graduates still wait endlessly for a white collar job for years after graduation. They wander all about, dwell so long on thinking about what to do, get involved in gang activities and often lured into crime and other forms of antisocial behaviours (Fasanya, 2009; Animasahun, 2011; 2012a; 2012b).

Since the Six Action Shoes creativity technique is deliberately propounded to liberate an individual from the bondage of stagnancy and to assist him in taking immediate action on one’s thoughts, it could perhaps, be the antidote to solving the problem of graduate unemployment in Nigeria. This is the reason why this study focuses on the National Youths Service Corps members who are Nigerian graduates currently participating in one year mandatory service to the nation in preparation for the labour market.

Some of the benefits of creativity and innovation include: Generating new ideas to move forward; breaking the yoke of stagnancy and complacency; breaking the routine cycle of doing the same thing the same way all the time; opening new possibilities and alternatives; getting out of problems with ease; crime reduction; doing things in simpler and better ways; seeing what others cannot see and bringing the extra-ordinary out of the ordinary; sharpening one’s power of vigilance; adding value to one’s products; getting wealth without losing one’s health; facilitating good decision making; motivating and getting people interested in doing something productive; generation of alternatives; setting realistic and achievable life goals; facilitating efficiency and effectiveness; preventing stress, boredom and frustration; enhancing longevity of life and facilitating self actualization (Animasahun, 2011). Therefore, the NYSC members currently warming up to join the labour market should be exposed to creativity and innovation training so as to enjoy some of the benefits of creativity and innovation mentioned here.

To this end, one hypothesis stated in the null form is generated to guide the study.

**Hypothesis:** There will be no significant main effect of treatment on the creativity and innovative skills of members of the NYSC in Nigeria.

**Research Methodology**

**Design**

A pre-test post-test control group quasi-experimental design was adopted.

**Population, Sample and Sampling Procedure**

The population consist all National Youths Service Corps members in Nigeria. However, only 70 of them cutting across the six geo-political zones in Nigeria whose age ranged between 21 and 30, with a mean of 26.4 were randomly selected from 2 Local Government areas of Oyo state.

**Instrumentation**

The only instrument used for the study was the Creativity and Innovation rating scale by Animasahun (2007). It contains 33 items constructed on 5-point Likert format, measuring creative and innovative behaviours. It has a Crombach alpha of 0.91 and Guttman split half reliability of 0.85.
Procedure
The researcher purposively selected Oyo state based on the fact that NYSC members serving in the state came from all states of the federation across all tertiary institutions. Two Local Government areas: Egbeda and Irepole were randomly selected through balloting. The researcher, after securing necessary permission, visited each group during their Community Development Programme held on Thursdays where he discussed his mission with them. Only the interested members who signed the consent forms balloted for the 35 spaces provided. The Egbeda group formed the experimental while the Lagelu group made the control. Both groups responded to Creativity and Innovation assessment scale to collect their pre-test scores. The experimental group was subjected to six weeks of intensive training in the utilization of the Six Action Shoes lasting for 2 hours per week, while the control group waited for their turn later. At the end of the exercise, the 35 members in the experimental group remained intact, while only 32 members in the control group completed the exercise. Nevertheless, both groups were made to respond to the same Creativity and Innovation scale again to collect their post-test scores.

Method of Data Analysis
The collected data was subjected to a one-way analysis of covariance (ANCOVA) to determine whether there was any significant main effect of treatment on the creativity and innovative skills of members of the NYSC in Nigeria.

Results
Hypothesis 1:
There will be no significant main effect of treatment on creativity and innovative skills of members of the NYSC in Nigeria.

To test this hypothesis, ANCOVA was adopted to analyse the post-test scores of participants on their creativity and innovative skills using the pretest as covariates to ascertain if the post-experimental differences are statistically significant. The result is presented in Table 1.

Table 1: Analysis of Covariance (ANCOVA) showing the interactive effect of treatment on creativity and innovative skills among members of the NYSC in Nigeria

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>Partial Eta Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>23763.566</td>
<td>2</td>
<td>11881.783</td>
<td>60.917</td>
<td>.000</td>
<td>.656</td>
</tr>
<tr>
<td>Intercept</td>
<td>2890.082</td>
<td>1</td>
<td>2890.082</td>
<td>14.81</td>
<td>.000</td>
<td>.188</td>
</tr>
<tr>
<td>Precreativity</td>
<td>9082.829</td>
<td>1</td>
<td>9082.829</td>
<td>46.567</td>
<td>.000</td>
<td>.421</td>
</tr>
<tr>
<td>Treatment</td>
<td>14411.231</td>
<td>1</td>
<td>14411.231</td>
<td>73.886</td>
<td>.000</td>
<td>.536</td>
</tr>
<tr>
<td>Error</td>
<td>12483.061</td>
<td>64</td>
<td>195.048</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>680695.000</td>
<td>66</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>36246.627</td>
<td>66</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

R Squared = .656 (Adjusted R Squared = .645)

Table 1 reveals that there is a significant main effect of treatment on creativity and innovative skills among members of the NYSC in Nigeria $F_{(1,64)} = 73.886$, $p<0.001$, Partial eta square=.536. The table further reveals that the treatment had large effect on creativity and innovative skills score variation among the members of the NYSC in Nigeria whereby the intervention strategy accounted for 53.6% (Partial eta square=.536) variance in creativity and innovation skills score among members of the NYSC in Nigeria. To further understand where the differences occur, the Y-mean pair-wise comparison was computed using “Bonferroni”. The result is presented in Table 2.
Table 2: Pair-wise comparison (Bonferroni) showing the difference in the NYSC members’ creativity and innovative skills post-test scores in control and experimental groups

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Y-Mean</th>
<th>Partial Eta</th>
</tr>
</thead>
<tbody>
<tr>
<td>control group</td>
<td>82.735</td>
<td>.53.6</td>
</tr>
<tr>
<td>experimental group</td>
<td>112.099</td>
<td></td>
</tr>
<tr>
<td>Overall Model</td>
<td></td>
<td>Adjusted R²=.645</td>
</tr>
</tbody>
</table>

Table 2 reveals that after controlling for pre-creativity and innovative skills scores, Experimental group (exposed to Six Action Shoes creativity technique) displayed high creativity and innovative skills score (mean=112.09) above the control group (mean=82.735). This implies that experimental group exposed to Six Action Shoe creativity technique gained increased creativity and innovative skills (mean-difference (112.099-82.735) = 29.365) above the control group. However the overall model accounts for 64.5% (adjusted R²=.645) variance in NYSC members’ creativity and innovative skills variation.

Discussion

The results obtained in tables 1 and 2 have clearly demonstrated the significant effects of the training in the use of the Six Action Shoes creativity technique in stimulating and enhancing the creativity and innovative skills of the members of the National Youth Service Corps in Nigeria. This is evident in both the ANCOVA result obtained as well as the wide gap in the difference between the means obtained by the experimental compared with the control group. The positive results obtained could be as a result of the fact that the participants were desirous of a change, they needed something which could stimulate them, and they wanted something new to happen to them after their service. The results obtained corroborated those of (De-bono, 1992; Akinboye, 2003a; 2003b and Animasahun, 2003, 2007 and 2011, 2012a, 2012b) who have variously used certain creativity techniques to enhance creativity and positive life skills of individuals in the society.

Implications for Future Research

The result obtained has some implications on the NYSC members, youths in general, the Federal Government and future researchers. There is no doubt that individual’s creative potentials can be fostered and made to function effectively through training in the use of the Six Action Shoes. Therefore, individuals, especially the NYSC members throughout the nation and the Nigerian youths as well as their counterparts worldwide should make themselves available for this kind of training to be active, effective and successful. However, the study is limited in the selection of participants and the approach utilized. Future researchers should therefore endeavour to make use of a larger sample to facilitate authentic generalization. Also, others may employ a survey approach to investigate levels of creativity potentials of participants so as to cover a larger ground.

Recommendation

Based on the results obtained from this study, it is recommended that all members of the National Youth Service Corps in Nigeria should be exposed to training in the use of the Six Action Shoes creativity technique during the service year to prepare them adequately for the labour market. This should be made a compulsory training during the period. This would prevent idleness, confusion, wandering all about and getting involved in gang activities which may eventually lead to committing crime as a result of unemployment. Other Countries in the world which may not currently be experiencing acute graduate unemployment challenges should also share this idea and proactively prepare their youths for unforeseen circumstances and hard period so that the youths would not turn nuisance to their nation; hence, the training would greatly contribute to sustainable excellence.
References


You Measure What You Value: How a Middle Eastern Polytechnic Developed a Sustainable Review and Improvement Framework

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Abstract

Bahrain Polytechnic (BP) was established in 2008 to fill a gap in the Kingdom’s labour market for work ready graduates. Around that time newspaper reports highlighted a lack of quality and consistency in some private universities in Bahrain. Bahrain’s Qualifications and Quality Assurance Authority was in development so, in the absence of national guidelines, BP developed its own Quality Assurance Model to gain stakeholder confidence in the quality of its education. This comprised a Quality Management System with policies and procedures, and a self review loop.

The government was quick to redress quality concerns threatening the reputation of Higher Education in the Kingdom and today there are many external auditing agencies, each with their own paradigms and criteria. However, evidence that accountability audits produce quality improvement where it matters most - in the classroom - is lacking. An essential element in this failure is the dissolution of trust. This case-study tells of BP’s journey towards a more efficient and effective Self Review model that shifts the focus from accountability and control to improvement and sustainability by taking into account Bahrain’s cultural context and the Polytechnic’s unique curricula and building on existing relationships to engender trust and commitment.

Key words: Quality; Review; Audit; Higher Education; Continuous Improvement; Sustainability

Introduction

The depletion of oil resources and an increasingly competitive global trading environment drive economic reform in Bahrain. Bahrain Polytechnic (BP) is a key reform initiative established to fill the gap in the labour market for skilled Bahraini technicians and applied professionals (Polytechnics International New Zealand (PINZ), 2007). In Bahrain 80% of school graduates progress to Higher Education (HE), though many fail to find employment (Torr, 2011). Middle Eastern education systems do not produce what the markets need and the markets are not sufficiently developed to absorb the educated labour force the World Bank (2008) suggests, arguing that quality of delivery is responsible for this “weak” relationship between education and economic growth. Consequently, both unemployment and underemployment are key concerns in the Gulf. (Donn & Al Manthri, 2010).

Lack of quality in Bahrain’s HE sector was an issue19 at the time BP opened in 2008. Back then the national quality assurance system was in development and a qualifications framework was just being considered. In the absence of national guidelines, the Polytechnic developed its own model for quality assurance in order to gain stakeholder confidence in the quality of

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19 Some universities in the GCC refused to acknowledge qualifications awarded by private universities in Bahrain on the grounds that they did not meet international academic standards: Bahrain News Agency, 10 February 2008 (english.bna.bh/?id=66842)
its education. This comprised a Quality Management System, with policies and procedures, and a review and audit cycle, incorporating an Annual Programme Review system (APR).

The government was quick to respond, establishing the Quality Assurance Authority for Education and Training in 2008, extending its role in 2012 to include management of the Kingdom’s Qualifications Framework. Providers wishing to lodge their qualifications on the framework must submit to a compliance review of their Quality Management System, in addition to the institutional and programme reviews overseen by that authority. Adapting the European Foundation of Quality Management model for Performance Excellence, Bahrain Centre for Excellence seeks effectiveness in the public sector.

So today there are many agencies tasked with auditing HE Institutions in the Kingdom, each with its own paradigm and accountabilities. The Polytechnic has been subjected to more than a dozen audits and reviews since it opened, leading to a questioning of their value. An evaluation of these found little time between panel visits to work on the opportunities for improvement identified or to consolidate good practice. Consequently findings were duplicated and, stretched by the demands of establishing a new institution, staff were concerned that their energies were being diverted to establishing compliance, away from improving students’ learning experiences.

With the aim of allowing others to learn from BP’s experience, this case-study tells of the journey towards a more efficient and effective review model that shifts the focus from accountability and control to improvement and sustainability. The background section that follows provides a context to facilitate a greater understanding of the challenges facing this new institution.

Background
BP opened with around 200 foundation level students, but today boasts almost 2000 studying towards qualifications at a range of levels. Underpinned by values of “Excellence”, “Learning” and “Innovation”, BP’s vision is to become a “world class provider of applied higher education” and its mission is to produce “professional and enterprising graduates with the 21st Century skills necessary for the needs of the community locally, regionally and internationally,” (Bahrain Polytechnic, 2003). Judgments about whether BP is providing quality education and delivering on its mission are made by audit agencies as well as employers. At BP industry is strongly linked through the activities of Curriculum Advisory Committees to changes in the labour market (Coutts & Leder, 2010).

Curriculum at Bahrain Polytechnic
Adult education quality rests on its “relevance” to learners and its “effectiveness” within the local environmental context (United Nations Educational, Scientific and Cultural Organization, 2009).

Figure 1: BP’s Curriculum Staircase: A Model that Integrates Employability

<table>
<thead>
<tr>
<th>Degree</th>
<th>Higher Diploma</th>
<th>Diploma</th>
<th>Certificate</th>
<th>Foundation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Technical Skills &amp; Knowledge of Specialization</td>
<td>Care Subjects</td>
<td>English Language</td>
<td></td>
</tr>
</tbody>
</table>

112
Whilst the British Council (2013) suggests MENA countries learn from others in establishing a quality HE sector to support economic growth, much has also been written about the obstacles to curriculum reform in the Middle East (Dakkak, 2011), and the difficulties of applying educational concepts and policies developed in the west to other parts of the world (Billing & Thomas, 2000; Harvey & Williams, 2010).

Aware of best practice, BP first identified industry requirements and the gaps in education provision in order to design its curriculum. This research indicated what programmes were needed by the market place but also found employer dissatisfaction with graduate employability skills. There was a gap between the educational levels of high school graduates and the entry level for tertiary study. These factors determined BP’s multi-entry, multi exit curriculum model (Figure 1). Each programme has a graduate profile and each course specifies and assesses the Learning Outcomes students must achieve. Qualifications are based on credit (a measure of academic achievement) and levels (progressive stages of competence, achievement and complexity) facilitating comparability and transferability.

Utilising a curriculum model recommended by UNESCO and International Labour Organization (2002), the career focused programmes offered by BP aim to produce professional and enterprising work-ready, graduates (Figure 2). This outcome is achieved through Problem Based Learning, with the integration of Employability Skills across the curriculum and the provision of Work Integrated Learning opportunities such as industry experience and cooperative projects (Prendergast, Pringuet, Zahran, & McGirr, 2012). The foundation programme, together with a raft of support services, ensures students develop the skills required for success at tertiary level (Coutts & Dismal, One Side of the Equation, 2013). At degree level, language and learning development continues to be supported and English for Specific Purposes courses are included. Other ‘across the board’ modifications designed to respond to local needs include an Electives component to encourage students to become active citizens and a mandatory course, Bahraini Perspectives, that grounds student learning within a Bahraini context.

Figure 2: Employability Ecology-BP’s Applied Learning Curriculum Model
For efficient start-up accredited programmes were purchased from Australasia. Adapting curricula originally designed to meet the circumstances and culture of one country to meet the needs of another is a well documented problem (Dunworth, 2008) and so the purchased programmes were subsequently contextualized with stakeholder input. Curriculum purchase contracts included an annual review and external moderation to give confidence that BP programmes were of at least the same standard as in the original institutions.

**APR System: Ensuring Curriculum Relevancy**

The performance of Bahrain Polytechnic is determined by how well it meets stakeholders’ requirements. The purpose of the review and audit cycle is to evaluate how well the Polytechnic meets these requirements (Figure 3) and it is operationalised by policy (A/QA/002 Audit, Evaluation and Review).

The review and audit cycle is both outcome focused and process based, ensuring that all programmes are fit for purpose and meet their stated aims, delivering on the graduate profile developed with industry. This cycle involves an internal review system as well as external audits required by government agencies and reviews by professional bodies for accreditation. The APR system was implemented as the main internal mechanism to draw together the elements necessary to evaluate whether there was need for Curriculum change, notably industry, student and tutor feedback. For several iterations the specialised technical knowledge and skills components closely resembled those from the imported curricula. However, within 18 months significant changes to both qualification structure and teaching content were sought. Analysis of the APRs indicated that by enlarge the requirements for these changes were not clearly evidenced, flagging the need for review of the APR process itself. Simultaneously the Polytechnic was experiencing a large number of audits, driving a compliance culture and diverting staff energies away from improving the classroom experience. These two factors prompted this case-study.

![Figure 3: Quality Assurance Model](image-url)
Quality Conundrum: Literature Review

A review of international best practice assisted development of the Polytechnic’s Quality Assurance System. The concept of quality has its origins in industry where, in its various forms, it was utilised to increase productivity and competitiveness, focusing on product consistency to meet customer requirements (Paunescu & Fok, 2004). However, “product” in education is very different indeed from that in industry, so the application of quality to schools and universities has not been without critique: “Central to the debate about quality in the educational context is the issue of whether concepts derived from the profit-centred private sector can be readily transferred to public service organizations” (Greene, 1994). Applying quality concepts in education is difficult: there are many ‘customers,’ the ‘products’ are not easily defined, the outcomes are not easily measured and improvement is challenging to evaluate.

Notwithstanding this, quality principles underpinned the 1970’s Effective Schools Movement that resulted in quality programmes being successfully implemented in many schools (Arcaro, 1997). Arcaro maintains that quality provides the structure and techniques necessary to improve all educational processes. Of particular interest is the identification of key attributes associated with effectiveness, those that make a difference for students’ learning: a clear mission; instructional leadership; high expectations; monitoring of student progress and the opportunity to learn (Lezotte, 2006).

In contrast to this student-centred focus, the appeal of the quality concept to governments globally has been its utility for monitoring accountability of public expenditure. Higher education institutions have experienced huge pressure to drive economic growth and play a key role in securing global positioning (Stiasny & Gore, 2013). But the MENA region’s investment in education has not resulted in the anticipated level of economic growth (World Bank, 2008) and reasons suggested for this relate to educational quality.

Unsurprisingly then, quality is a highly contested concept in education (Tam, 2001), with many definitions (American Society for Quality, 2013). Indeed an analysis of trends in higher education over the last 15 years indicated a change in focus in the way quality is conceptualized from accountability to learner engagement and learning, resulting in a shift from an institutional focus onto programmes (Harvey & Williams, 2010; Harvey & Williams, 2010 b).

This same trend is reflected in Bahrain’s experience. The Quality Assurance Authority for Education and Training conducted seven reviews in the academic year 2008/9 and five in 2009/10 (AMEInfo, 2009). Analysis of findings across these early reviews indicated a number of areas requiring improvement across the HE sector, including “the development and implementation of quality assurance mechanisms in the programmes” (Quality Assurance Authority for Education & Training , 2010). This conclusion is congruent with Schools’ Effectiveness Research, emphasising the centrality of programme review in quality assurance and quality enhancement (Her Majesty's Inspectorate of Education, 2007; Kiely, 2009). An overview of literature concerning Programme Reviews concluded that the most effective frameworks are flexible, comprehensive, integrated and sustainable, incorporating principles; criteria; process; and evaluation. In considering the value added aspects of programme review the Office for Standards in Educations suggests that it is a difficult and time consuming process (Ofsted, 2006). There is a lack of evidence that external quality audits produce improvement where it matters most, in the classroom, especially when they have a strong accountability brief, Billing
and Thomas argue (2000). They maintain this failure is attributable to the dissolution of trust. In contrast, Harvey and Williams’ overview of quality research (2010) suggests that programme review can be very effective when conducted within the bounds of context and purpose, where those teaching the programme are also part of designing and conducting the review. In this conceptualisation, tutors are part of the problem and the solution.

Of particular interest in the Middle Eastern context is the recognition of the importance of relationships in the process of developing a quality culture. People's culture, their beliefs and behavioural norms can contribute to, or block the process of developing and implementing improvements (Kaasa & Vadi, 2010). The Arab Gulf States are characterized by strong family values and consequently trusting relationships and networking are very important in business operations, including the business of managing educational institutions. In the Arab world the deep connections of kin and obligation provide a pervasive foundation for important decisions and information sharing (Rabaai, 2009). This cultural aspect needed to be considered in the APR review to facilitate a sustainable quality improvement process, embedded in the ‘way we do things’ at Bahrain Polytechnic.

**The Way Forward: Research Method**

Building on the findings from the literature review, a process was created to develop a Contextualised Programme Review Framework (CPRF). Conducted over several years, this five stage process included three waves of dialogue (engaging stakeholders) and two stages of development, where the initial format of programme review based on a New Zealand model, was shaped and reshaped to achieve an effective and sustainable model relevant to the local environment.

A case study was selected as the most appropriate research design as this approach allows for investigation using a range of evidence available in a specific case setting (Coutts, 2007). “Intrinsic” case studies such as this have in common the aim to seek greater understanding of a particular case in all “its particularity and ordinariness” (Stake, 2000). This research may also be considered as an instrumental case-study, through which the development of greater understanding of a generic phenomenon can occur.

Typical of many case-studies, this investigation did not begin with any a priori theoretical notions (Gillham, 2000) but maintained openness to what emerged before attempting to understand the findings. An eclectic range of data capture methods was utilised, with documentary analysis followed by focus groups and individual interviews to unpack the meaning of emerging findings and to increase their reliability and validity through triangulation. The participants were all the staff involved in the Reviews, including the Quality Manager who, as participant researcher, had gained ethical clearance from BP’s Research Committee to conduct this case-study. To give weight and central position to the voices of these key informants, what they said is presented as verbatim quotes, recognisable by the use of italics and differentiated from the body of the text by indented blocks of speech or narrative segments placed in quotation marks. In brackets beside the quotes is a unique identifier (ID) that aims to give some degree of anonymity to participants. The ID has a designation that indicates the type of respondents (Tutors [T], Reviewers [R], Challengers [C], Course supervisors/Programme Managers/Deans [PM], Review Facilitator [RF] and the

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Quality Manager [QM]) signified by the first letter (s) of the role and a number to differentiate respondents within the same category, if needed.

Figure 4: Research Stages

Stage 1
*Dialogue (1)
Retrospective analysis of the APRs
*Review Cycle 1 & 2
2008-2009 & 2009-2010

Stage 5
*Three layered CPRF
*Review Cycle 5
* 2012-2013

Emerged Contextualised Programme Review Framework CPRF

Stage 2
*Dialogue (2)
Transitional APR
*Review Cycle 3 & 4
2010-2011 & 2011-2012

Stage 4
*Dialogue (3)
*Reflections on Pilot Review 2011-2012

Stage 3
*Framework development - initial form:
- Pilot Review 2011-2012

Opportunities for dialogue took the form of workshops, facilitated meetings, interviews and discussion at Academic Quality Assurance Committee (AQAC), which had oversight of the process, and these led to changes in the Programme Review processes over four review cycles (Cycle 5 dialogue yet to be held).

Stage 1: Armed with data from the retrospective analysis of the APRs from Cycles 1 and 2 and feedback from the initial dialogue, a full review of the Programme Review Process was initiated.

Stage 2: In parallel with this review, a Transitional APR was implemented for Review Cycles 3 and 4 (Stage 2), and feedback was gathered once again from stakeholders.

Stage 3: On advice that HERU (QAEET’s Higher Education Review Unit) would conduct an audit of the Business Degree utilising four new Programme Review Standards (Figure 5) it was decided to use
this opportunity to inform the Polytechnic’s own programme review process. The review approach, informed by effective review processes found in the literature, built on dialogue with BP staff and incorporated external review indicators. On completion of the Business pilot, another opportunity for dialogue was provided to reflect on the outcomes, particularly on quality improvement planning, as well as on the review process.

Stage 4: Finally a three layered review process was devised, part of which was a new APR template.

Stage 5: Aspects of this new template were run again for all programmes at the end of Review Cycle 5 in academic year 2013-14.

Figure 5: HERU Programme Review Standards

Results

Stage 1: Retrospective Analysis Academic years 2008-2009; 2009-2010

Early Annual Programme Reviews (APRs) were based on a template sourced from New Zealand. This comprised 11 sections (Appendix A). The analysis found some Programme Managers (PM) failed to submit their APRs on time. Many APRs had responses that were descriptive rather than analytical and sometimes did not address the indicator. Where there were recommendations for improvement, some did not base this on evidence. Several recommendations levelled critique at other Polytechnic departments, suggesting they were to blame for programme deficiencies, but there was no institutional mechanism that facilitated this being passed to the relevant areas for action. The overall quality was variable, with only a few APRs that constituted best practice, these having involved tutors in the process. There was clearly a need for training in how to conduct reviews and write reports.

The template itself did not reflect the unique aspects of the Polytechnic’s curriculum model (such as Problem Based Learning) and neither did it comply with BP Policy (A/QA/002 Audit, Evaluation and Review), which had as a requirement that a review should ask how satisfied students were with their learning and whether programme outcomes are meeting the needs of industry. When mapped against QAEET indicators the early APR template showed a lack of alignment.

The QM said that “it was initially difficult to get ‘buy-in’ to the APR system because of the complexity of the process, and also because quality requirements were new to many staff, especially those who had worked extensively in the Gulf Region.” Furthermore, significant changes to both qualification structure and teaching content of many programmes were requested at AQAC, yet there was little evidence of the need for these changes apparent in the APRs. These findings suggested the need for review of the APR process itself.

Stage 2 Transitional APR Academic years 2010-2011/2011-2012

The template remained very similar in the transition phase, but how the review was conducted changed. Training needs were identified as part of the dialogue with PMs following the 2009 APR submission, so for the 2010-2011 APR Cycle, members of the Quality Team worked alongside faculties to
provide both assistance and peer review before the APRs were submitted to AQAC-this resulted in all but one APR being submitted and a general improvement in quality. However this process was very time consuming with the result that submissions and any required changes to programmes were not made within the Academic Board timeframe.

Feedback on the transition phase APRs in early 2011 were captured by facilitated sessions across all programme areas. Eight themes emerged:

Theme 1 Lack of commitment to the process by faculties
“The process is not led by Faculties. It’s seen as a compliance issue rather than an opportunity to improve programmes” [PM1]

Theme 2 Lack of a complete framework: Inconsistency in the way review was undertaken across the programmes, which made it difficult to evaluate risk to a programme and to develop appropriate action plans
“The current process is used as a prescriptive tool for review rather than an evaluative tool for improvement” [PM2];
“Absence of a clear process” [PM3]

Theme 3 Lack of team work in completing the review process
“When staff attended the facilitated session [with the PM] this often raised issues of a shared understanding of the actions recorded in the review” [QM]

Theme 4 Lack of evidence-based decision making
“Statements were often unsupported by data or evidence” [QM]

Theme 5 Lack of Evaluative based review
“Most were descriptive which does not provide an accurate or measurable judgement of the effectiveness of a programme” [QM]

Theme 6 Focus on Improvement
“Issues were identified but in some instances no action was documented to address them....previous years actions were not always reviewed for completion” [QM]

Theme 7 Dissemination of Good Practice
“Most of the focus was on identifying weak areas for improvement rather than strengths” [QM]

Theme 8 Feedback on the facilitated sessions ranged from “useful and challenging” to “what is the point” [QM]

Consequently small changes were made to the APR template for the next cycle (2011-2012), but mostly the emphasis in the Transition Stage remained on the process. Feedback from a workshop to unpack the learning from the APRs completed in 2011-2012 identified institutional-wide themes for Quality Improvement Plans, including: shortages of staffing; delays with labs and equipment; plagiarism; lack of library resources; shortage of Elective courses; under-performing staff; moderation issues and student support and advising. The addition of Quality Improvement Plans provided opportunity for the first time to monitor progress towards programme improvement through Faculty Board reporting to AQAC and Academic Board. As Academic Board minutes are approved at SMT, this also now provided a forum to engage Corporate Divisions in this quality improvement process.

Stage 3: Piloting another model of self-review based on HERU indicators

Based on feedback from the previous stages a new Programme Review and Improvement Process, was designed, based on the HERU Review Standards (Figure 5), but with the key features identified from effective programme reviews in the literature incorporated as underlying principles: leadership (to ensure commitment across the Polytechnic); Rigour (teamwork, evidence based and evaluation
based processes); and Impact (monitoring to provide quality assurance and continuous improvement). These components were put together for Cycle 4 that saw a continued engagement of key stakeholders to build capacity, ensure internal consistency and develop trust in the process through a better understanding of how APR contributes towards improvement, a real focus in this new process (Figure 6).

The Bachelor of Business, being the largest BP programme, provided opportunity to pilot the programme review and improvement process, with twenty staff participating from across the institution. Each Reviewer was allocated one standard or sub-standard and worked with an interdisciplinary team to locate the evidence for it, reporting how well BP, and the Business Degree specifically, matched HERU’s standards. These reports were moderated by a challenge team to ensure consistency. AQAC oversaw the process and set high standards, demanding an evaluative writing style and verifiable evidence: the first indicator was submitted three times before it was finally approved. This rigorous process was very time consuming and, although it developed trusting relationships, providing a safe learning environment for the staff involved, it was not sustainable in a time of staff shortages. As well:

“The outcome was complex and not useful for reviewing and enhancing the programme...this process was getting out of hand...the staff starting to feel overwhelmed. The process was starting to get a life of its own in that staff were spending a lot of time on it and the amount of data was overwhelming and wasn’t being analysed to produce an improvement plan....the aim had been lost” [QM].

Other feedback from a series of interviews held with Review participants showed that for some, there had been a lack of clarity in the indicators and what was required:

“Clarity was an issues at the beginning...you and a colleague might look at the same sub-indicator, and have different evaluations” [R3]. Cultural context was a factor: “Certain terms like assessment have different meanings in different countries. When we sat down and reached a consensus, I was concerned if what we had agreed was what QAA were actually thinking” [R6]. This was a factor in the time it took to do the review: “The fact that it took us 6 weeks to define what they were in Review Indicator 1 means that they weren’t clear” [RR]. However this was not the case for all. Insight was given by the more experienced Challengers: “the indicators are clear to me. For the reviewers, they need training to understand the jargon” [C3].

What constituted evidence had been a big issue for the pilot, suggesting the need for ongoing training and support for effective programme reviews, but also indicating the need for adoption of a consistent review framework: “the bigger question was how they unpacked those [indicators]. When we first met it was clear a conceptual; framework had not been provided” [C1]. Some of the review participants assessed the indicators as relevant to the Polytechnic, but others suggested they lacked completeness, arguing: “it needs to be more about practice....we aren’t checking what actually happens in the classroom.” [RF]. It was felt that the indicators were not appropriate for competency based learning and also that “there isn’t enough focus on students’ views” [RF]. Likewise there was an inadequate focus on quality of teaching: “one thing that isn’t looked at is how you maintain the quality of the people who are teaching”. Importantly it was highlighted that “whether we are meeting the strategic objectives in terms of producing work-ready graduates, work ready learning [was] not central to QAA, but they are to BP,” suggesting that there was a need for BP to write its own indicators.
Figure 6: Programme Review and Improvement Process – Pilot

<table>
<thead>
<tr>
<th>Stage 4: A New Contextualised Programme Review Framework (CPRF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The findings from Stage one and stage two identified a mismatch between the Polytechnic’s Policy (A/QQA/002 Audit, Evaluation and Review), which aimed to improve the experience of the learner, and the output of the reviews. The APR process itself was partly responsible for this: it lacked the engagement of the tutors who knew the courses well; and feedback from students was missing.</td>
</tr>
<tr>
<td>The findings from Stage 3 indicated that the APR, despite its process orientation, failed to meet its intended purposes, which were to improve the delivery of the programme and the learning experience for the students enrolled in it. It did however engage both Bahraini and expatriate staff, establishing a trusting environment that built reviewer capability, as well as preparing to meet external accountabilities established by QQA. The challenge for Bahrain Polytechnic is to be cooperative with such external agencies, whilst at the same time meeting its own needs to become a world class HEI known for its work-ready graduates.</td>
</tr>
<tr>
<td>To meet this challenge a three level programme review framework was developed as shown in Figure 7:</td>
</tr>
<tr>
<td>- Layer One: Annual programme review report (modified templates meet changing needs)</td>
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<tr>
<td>- Layer Two: Periodic programme review (prepares for external audit; covers the bigger picture, includes trends over APRs)</td>
</tr>
</tbody>
</table>
• Layer Three: External Audit Agency Reviews (indicators embedded as appropriate in Layers 1 and 2)

This triple Layered CPRF was constructed as a result of analysis of the critical components that require annual review to ensure Programmes meet their specified aims, in contrast to those for which a periodic review would suffice. These critical components were identified from international best practice, an analysis of BP’s strategic direction (assisted by workshops with stakeholders from industry, government agencies, staff and students) and a matching of the indicators across relevant audit agencies. The focus on ‘measuring what you value’ has seen the requirements of the APR considerably reduced, responding to staff complaints about workload. It builds on existing organisational structures, hence increasing the likelihood of programme review becoming a sustainable practice. Table 1 shows how all these elements fit within the roles and responsibilities of existing committees. The process of engagement (opportunities for dialogue) was found in the case-study to build trusting relationships, creating an environment in which risk taking and innovation were encouraged, and hence this aspect was integrated in the CPRF. Through this process of individual learning and reflection, the institute itself will learn, and consequently improve the learning experiences offered to students.

The lack of a complete framework (criteria, standards, process and training), and an inconsistent understanding of the process and variations in completing the reviews, were revealed in a workshop to unpack the APR process in 2012. The (O)ADRI (Objectives, Approach, Deployment, Results, and Improvements) model (Broatch, n.d) that guides what to investigate, and how, had already been in place within a number of programme areas, notably Business and English, and this best practice has now been incorporated within the CPRF, to ensure institutional consistency. Another action to respond to this critique has seen the establishment of a Measurement and Analysis Unit within the Quality Directorate to ensure that we have internationally benchmarked data definitions, as well as continuing with the regular student course satisfaction and student experience surveys essential to APR.

The major concern emerging from the pilot was the need for BP to follow its own directions for future development congruent with the realisation of its Mission, which drives the Polytechnic’s unique curriculum model. Consistent with experience in the Effective Schools’ movement, CPRF focuses on the key results expected according to BP’s mission, including student academic achievement; retention and graduation targets, as well as graduate employment and employability skills development. Additionally the new streamlined APR process allows for the addition of an annual theme to enhance teaching and learning effectiveness to be added for any cycle. This flexibility allows the new APR process to be responsive to a dynamic economic environment, which drives innovation and the application of technology in programmes. The new APR includes a separate template for each course leader to complete, reducing workload for the PM, whilst ensuring these key course leaders are engaged in their programme’s review and have ownership of the outcomes.

This template was implemented for the 2012-2013 APR, Cycle 5, with a focus on Problem Based Learning. AQAC minutes reported “a pleasing improvement in the standard of the reports compared to last year with comprehensive focus on programme and course issues and well thought out Action Plans”. At the time of writing the opportunity for dialogue has yet to be scheduled to ascertain whether this thematic approach adds value. As a result of Cycle 5 for the first time a presentation to all students was given by Faculty of course and
programme changes planned, based on student survey results, and other considerations such as industry feedback, which are now part of this new APR process. Once the Polytechnic’s new Goals are approved by the Board of Trustees, the Expected Key Results that sit underneath these goals will be incorporated to complete the proposed framework for a sustainable and contextualised Review and Improvement Framework for implementation in future review cycles.

**Conclusions**

Questions were raised in the literature about the transferability of quality assurance systems from one nation to another and, in particular, external quality assurance systems were found to be of doubtful value in ensuring quality unless there is an internalisation of procedures. Best practice indicated that quality assurance systems need to be developed to fit the cultural context of the country and be congruent with the goals of the particular HEI. In this case-study a programme review format based on a New Zealand model was shaped and reshaped to achieve an effective review framework relevant to the Middle Eastern education environment. By building strong relationships, a central tenant to operating in a Bahraini environment to engender trust and commitment, a sustainable model has been developed that takes into account the Polytechnic’s unique student centred and industry driven curriculum.

This three layered Review Framework incorporates a focus on process and outcomes, reflecting the notion of quality as ‘fit for purpose’ within a dynamic operating environment that requires a responsive model to ensure the ongoing relevance of higher education. The annual review component facilitates ongoing incremental change to programmes based on feedback from learners, tutors and industry, within a timeframe where stakeholders see the benefits. The periodic review phase incorporates external review against required standards within Bahrain and selected international benchmarks. Both the annual and periodic review levels inform the accountability reviews initiated by accreditation agencies such as professional bodies and government regulatory authorities.

Its sustainability seems assured through the commitment to quality expressed by the leadership and enshrined structurally through a Quality Directorate, a committee that monitors the review processes and outcomes (AQAC), and the policies and procedures that guide quality review activities. CPRF assists the Polytechnic to meet its external quality accountabilities, but without detracting from its purpose of ensuring continuous improvement in teaching and learning through its focus on the programme, rather than the institution, as the unit of review. Quality Improvement Plans are a critical outcome of all levels of the review process, enabling monitoring of required actions at a high level, to ensure continuous improvements. After all, you measure what you value.

**Implications for Future Research**

However, there is still much more to do. In keeping with international best practice, guidelines, principles; criteria; procedures and evaluation processes need to be developed by BP to support the CPRF and ensure consistency over time and across disciplines. A similar process of shaping and reshaping now needs to occur to further develop the Periodic Review procedure currently underway in two different faculties (using different approaches).

In the GCC the issue of the transferability of quality systems is particularly important because of the wider implications for students seeking to transfer credit and graduates wishing to seek employment outside of their home country. Investigation into the perceptions, expectations and assumptions surrounding the self-evaluation concept and application in the MENA context is needed. Investigation is also
needed into the impact of external quality assurance requirements on internal quality management systems. The challenges faced by Middle Eastern institutions to balance the demands of accountability with their quest for improvement are of particular interest given the fiscally restrained economic environment.

On a global level, more needs to be found out about the impact of quality in higher education. Newton (2012) argues that the quality ‘revolution’ has a deficit of impact research, particularly the impact of quality assurance processes on academic practice, the student experience and student learning. This is probably the most important challenge of all. This case-study is part of BP’s ongoing commitment to a quality culture. By documenting its own quality journey BP seeks to reflect on its own practices to stimulate debate on issues of common concern to the HE sector.

### Table 1: Roles and Responsibilities of Committees in the Three layered Review Process

<table>
<thead>
<tr>
<th>Layer</th>
<th>Quality &amp; Measurement and Analysis QMA</th>
<th>Review Team RT</th>
<th>Challenge Team CT</th>
<th>Programme Committee PC</th>
<th>Faculty Board FB</th>
<th>Academic Quality Assurance Committee AQAC</th>
<th>Quality &amp; Audit Committee Q&amp;A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual programme review (Internal Review) *</td>
<td>Facilitate the process</td>
<td>Carry-out the review</td>
<td>Internal moderation for the review findings (Quality Assurance Process)</td>
<td>Undertake improvement process (issues related to the Programme)</td>
<td>Monitor improvement</td>
<td>Undertake improvement process (issues related to the Faculty)</td>
<td>Monitor improvement</td>
</tr>
<tr>
<td></td>
<td>Decide on review scope</td>
<td>Gathering evidence.</td>
<td></td>
<td>Monitor improvement</td>
<td>Monitor improvement</td>
<td></td>
<td>Monitor improvement</td>
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<td></td>
<td>Formulate review and challenge teams</td>
<td>Develop review judgments.</td>
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<tr>
<td>Periodic programme Review (link to External audit)</td>
<td>Facilitate the process</td>
<td>Carry-out the review</td>
<td>External moderation for review findings (Quality Assurance processes)</td>
<td>Undertake improvement process (issues related to the Programme)</td>
<td>Monitor improvement</td>
<td>Undertake improvement process (issues related to the Faculty)</td>
<td>Monitor improvement</td>
</tr>
<tr>
<td></td>
<td>Decide on review scope</td>
<td>Gathering evidence.</td>
<td></td>
<td>Monitor improvement</td>
<td>Monitor improvement</td>
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<td>Monitor improvement</td>
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<tr>
<td></td>
<td>Formulate review and challenge teams</td>
<td>Develop review judgments.</td>
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<tr>
<td>External agencies (Cycles)</td>
<td>HEC</td>
<td>BCE</td>
<td>QQA</td>
<td>Internal requirement</td>
<td>Accreditation requirements</td>
<td>Industry &amp; Professional requirement</td>
<td>Others e.g. CSB &amp; NAC</td>
</tr>
</tbody>
</table>
Figure 7: Relationships between Annual Reviews, Periodic Review & External Reviews

**Annual Reviews**
- Annual Review Cycle 1
- Annual Review Cycle 2
- Annual Review Cycle 3
- Annual Review Cycle 4

**Periodic Review**
- Every Four Years
- Subject to external validation
- Central point of practice & evidence

**Internal & external requirement**
- Higher Education Council
- Bahrain Centre of Excellence
- QQA
- Accreditation requirement
- Industry & Professional requirement
- Others (CSB, NAC)

**Outcomes**
- Improve Outcomes for all Bahrain Polytechnic Learners
- Providing Public Assurance and Accountability
- Informing Bahrain Polytechnic Vision and Mission Statements (Internal Improvement)
References


Kiely, R. (2009). Small Answers to the Big Question: Learning from Language Programme Evaluation. Retrieved April 19, 2010, from ltr.sagepub.com/content/13/1/99:

ltr.sagepub.com/content/13/1/99

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Appendix A: Review Standards (Requirements) of the Initial Annual Programme 

<table>
<thead>
<tr>
<th>Section number</th>
<th>Section title</th>
<th>Standards / Requirements</th>
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</thead>
<tbody>
<tr>
<td>Section 1</td>
<td>Programme details</td>
<td>Name of Programme:</td>
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<tr>
<td></td>
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<td>Programme Code:</td>
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<td>Programme Leader:</td>
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<td>Programme Manager:</td>
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<td>Review Prepared by:</td>
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<td></td>
<td>Brief Description:</td>
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<td>Target Description</td>
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<td>Section 2</td>
<td>Programme Statistics</td>
<td>Number of Students Enrolled</td>
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<td></td>
<td>Number of Students Withdrawn</td>
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<td></td>
<td>Number of Students Retained</td>
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<td></td>
<td>Retention Rate</td>
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<td></td>
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<td></td>
<td>No. failed</td>
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<td></td>
<td>Pass rate</td>
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<tr>
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<td></td>
<td>Comment on programme and course statistics</td>
</tr>
<tr>
<td>Section 3</td>
<td>Highlights</td>
<td>Positive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Negative</td>
</tr>
<tr>
<td>Section 4</td>
<td>Programme and Course Surveys</td>
<td>None</td>
</tr>
<tr>
<td>Section 5</td>
<td>Programme Review</td>
<td>Provide feedback on actions taken regarding the recommendations made in the last review</td>
</tr>
<tr>
<td>Section 6</td>
<td>Constraints and Risks</td>
<td>Briefly comment on major issues that may impact on the programme</td>
</tr>
<tr>
<td>Section 7</td>
<td>Moderation</td>
<td>7.1 Internal</td>
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<tr>
<td></td>
<td></td>
<td>7.2 External</td>
</tr>
<tr>
<td>Section 8</td>
<td>Learning Services</td>
<td>Comment on the use and accessibility of learning support by students</td>
</tr>
<tr>
<td>Section 9</td>
<td>Resources</td>
<td>9.1 Upgrading of systems</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9.2 Upgrading of equipment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9.3 Library resources</td>
</tr>
<tr>
<td>Section 10</td>
<td>10.1 Actions Taken</td>
<td>Summary of any changes or actions taken to improve the programme during review period</td>
</tr>
<tr>
<td></td>
<td></td>
<td>What has been done?</td>
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<tr>
<td></td>
<td></td>
<td>Why was this done?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Date Completed (if applicable)</td>
</tr>
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<td></td>
<td>10.2 Actions Planned</td>
<td>Summary of any changes or actions planned for next review period.</td>
</tr>
<tr>
<td>Section 11</td>
<td>General Comments</td>
<td>None</td>
</tr>
</tbody>
</table>
Appendix B: Programme Annual Review for Academic Year 2012-2013

PROGRAMME ANNUAL REVIEW FOR ACADEMIC YEAR 2012-2013

Who completes the form and by when:
This form is to be completed by a Programme Manager (or delegate) by 28 November 2013.
The completed document is to be saved as a “read only” file, then uploaded to AQAC SharePoint site.

To complete this form you will need:
- the Course Survey data that can be obtained from QMAP.
- the Course Results from the course summary provided by Registry.

Points to note:
The Programme Annual Reviews are an integral part of our quality assurance practices. In completing the Programme Annual Review, the focus is critical self-evaluation to identify opportunities for improvement in a programme. Appendix 1 is the Programme Action Plan and actions to improve the programme are to be listed here.

**Enrolment, Retention and Pass Rate**
Copy and paste in the row below the Enrolment, Retention and Pass Rate details table.

**Analysis of Enrolment, Retention, Pass Rate and Results data**
*Effectiveness of Quality Assurance & Management, QQA Indicator 4, Sub indicator 2.1.4.7*
Describe the pattern of results within the context of results from previous years (completion and retention rates, gender differences).

**Programme Statistics by Course**
Copy and paste in the row below the results for each course in the programme.

**Comment on Course Statistics and Survey Results**
*Effectiveness of Quality Assurance & Management, QQA Indicator 4, Sub indicator 2.1.4.7*
Describe the pattern of results across the courses within the context of results from previous years (completion and retention rates, gender differences). From this overall course analysis, identify any required actions.

**Response to External Moderator’s Report**
*Academic Standards of the Graduates, QQA Indicator 3, Sub indicator 2.1.3.6*
Analyse the report and identify any required actions to add to the Programme Action Plan.

**Response to Programme Monitor’s Report (if conducted this year)**
*Effectiveness of Quality Assurance & Management, QQA Indicator 4, Sub indicator 2.1.4.2*
Analyse the report and identify any required action to add to the Programme Action Plan.
Appendix B: Programme Annual Review (2012-2013) (Page 2)

Staffing
Efficiency of the Programme, QQA Indicator 2, Sub Indicator 2.1.2.4
Comment on staff changes in the review period that have significant impact on the programme (e.g., resignations to hand; new courses/majors awaiting recruitment. Identify any required action to add to the Programme Action Plan

Professional Development and Research Activities
Effectiveness of Quality Assurance & Management, QQA Indicator 4, Sub Indicator 2.1.4.8
Comment on whether PD activities and research are meeting the needs of staff to keep up to date in their specialisations and/or teaching practice. Identify any required action to add to the Programme Action Plan

Facilities and Resources
Efficiency of the Programme, QQA Indicator 2, Sub Indicator 2.1.2.8
Comment on any issues that specifically affected the programme. Identify any required action to add to the Programme Action Plan

Advisory Committee
Academic Standards of the Graduates, QQA Indicator 3, Sub Indicator 2.1.3.12
Comment on the process of consultation and how feedback from it was used. Focus on employability skills, industry placement and projects where applicable. Identify any required action to add to the Programme Action Plan

Problem Based Learning
Describe how Problem Based Learning is being implemented across this programme, and highlight any best practice or associated challenges. List any required actions in the Programme Action Plan

Good Practice
Identify areas of good practice and/or innovation in the programme that you would like to share with the Polytechnic community

Constraints and Risks Specific to this Programme
Indicator 2
Comment on issues that have impacted on the sustainability and quality of the programme. Identify any required action to add to the Programme Action Plan.
Appendix B: Programme Annual Review (2012-2013) (Page 3)

### Actions

**Last Year’s Annual Programme Review**
- Insert in the row below last year’s Action Plan indicating the current status of each action (Completed, In Progress, Not Started).
- Provide justifications for incomplete actions or those that are beyond the stated timeline.
- Identify any required actions that are to be carried over in the Programme Action Plan.

### Programme Action Plan

**Actions Planned**
Summary of any changes or actions planned for next review period. The following table can be used to complete this section.

<table>
<thead>
<tr>
<th>What is to be done?</th>
<th>Person Responsible</th>
<th>Due Date</th>
<th>Evidence of Completion</th>
<th>Responsibility for Checking</th>
<th>Current Status</th>
</tr>
</thead>
<tbody>
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These should be added to your Faculty Quality Improvement Plan (QIP). Progress towards completion of these actions should be monitored at Programme Committee and reported at Faculty Board.
Appendix C: Course Template

END OF SEMESTER COURSE REVIEW

Who completes the form and by when:
This form is to be completed by the Course co-ordinator or a delegate every time a course runs and at least once each semester.
The completed document is to be saved as a “read only” file, then submitted to your programme manager.

To complete this form you will need:
- the Course Survey data that can be obtained from QMAP
- the Course Results from the course summary provided by Registry
- external moderator’s report - if relevant (please append)
- internal moderator’s report – if relevant (please append)

<table>
<thead>
<tr>
<th>Semester</th>
<th>Choose an item.</th>
<th>Academic Year</th>
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<tbody>
<tr>
<td>Course code</td>
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<td>Course co-ordinator</td>
<td>Enter Co-ordinator name</td>
<td>Staff ID</td>
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</tbody>
</table>

Introduction
Changes introduced this semester
Eg, new assessment type, new topic, new lab or software etc. Special temporary setups eg, different cohort of students

Teaching team review of semester
What worked well
List the positive points from the course

What can be improved
List of points that need to be reviewed

Course Survey review
Response rate
Enter from data provided by QMAP%

Overall satisfied rate
Enter from data provided by QMAP%

Analysis of data
Highlight the positives and negatives of the data section of the Course Survey.

Summary of comments
Summarise the results of the comments section of the Course Survey positive and negative. Comment

Results: Review of grades
Copy the course grade results as provided in the ‘Course Summary’ to Registry and paste below

Analysis of results
Analyse and comment on the grade results and note any issues that need to be addressed

Moderation
Feedback from external moderation
Response to external moderation feedback

Feedback from internal moderation
Note any issues that need to be addressed

Items needing action
List any items that need to be considered for action in the programme review
Prioritizing Quality Attributes in eHealth Design

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Aalto University School of Science, Finland

Abstract
Versatile quality vision is essential when trying to produce high-quality products in the eHealth area. Such vision should occur in the starting phases of a project because it will guide the entire project. Priority thinking and priority setting in a design process may help designers manage the quality work in health information systems and applications. The purpose of priority thinking is to ensure better cohesion and synthetization of quality work in eHealth design projects. Priority thinking in design-related quality management guides to consider innovation value and quality of product plans from all important views of quality and helps integrate product-related quality aspects and connected design activities. This study shines light on the mechanisms of priority thinking by considering quality challenges and activities in different phases of design. A design science approach with pragmatic touches and connected literature serves as a method frame.

Keywords: quality attributes, design, prioritizing, eHealth

Introduction
The demanding eHealth innovation area requires understanding of versatile quality thinking. In eHealth the purpose is to produce high-quality products that embody safety, trustworthiness, innovativeness, and are ethically acceptable. The design process always starts from a value basis, and designers’ visions about quality have an effect on the design process. Understanding values benefits designers “by increasing their awareness of what forms the decisions they make” (Maksimainen, 2011). Versatile quality thinking should have its place in the early design phase of innovations. Such an approach is challenging, but also a venue for more sophisticated products. Priority thinking in the design process may help designers gather and integrate necessary quality frames in design and better understand the mechanisms of quality work.

Priority thinking in an eHealth design process means naturally emphasizing urgent and challenging designs or development areas. However, the most essential idea is that priority thinking clarifies integration of quality work with certain design phases by guiding which quality-related activities are relevant in each design phase and how synthesis in this process can be better acquired. Priority thinking ensures that each important quality attribute gets enough emphasis during design and guides assessment of the relevance of design ideas.

This study considers priority thinking and quality in a design process; how it should be accomplished and how different quality facets should be prioritized in design and development processes in the eHealth area?

By understanding more accurately the quality mechanisms, the path from macro-level attributes to high-quality products is enlightening even if it may happen subconsciously in practice. The design science approach connects to the rigor area and theoretical foundations of design. Quality priority aspects are handled with pragmatic emphasis by considering quality challenges and activities in different phases of design. Literature that connects to quality management, eHealth, and design science serves this research aim. The connected case clarifies priority thinking in practice.
Producing Quality for eHealth Design

The purpose of eHealth is to create and produce more quality for processes of practice by creating products with high quality. Producing quality happens in many levels of design: quality planning, quality construction and implementation, and quality evaluation are all aspects of quality management. Design science research cycles cover areas of rigor cycles (grounding, additions), design cycles, and relevance cycles (requirements, field testing) that are integrated with each other (Hevner et al., 2004). Quality management concerns all these phases, but the nature of connected quality activities differs in each cycle. Attractive eHealth products should embody not only innovativeness, but also features that make them unique, useful, user-friendly, and ethically acceptable. In eHealth policy focus areas cover aspects of meaningful use for consumers, privacy, security and control, access to technology, quality and integrity of applications, and cost for applications and services (Baur, 2012).

In the early design phase, quality planning takes the main role in the process; in the implementation phase, the question is about quality-producing; and when pilot products or later maturation phases occur, quality evaluation has the main role. Such distinctions are only rough outlines, however. Planning procedures contain also evaluative aspects, including the ability to evaluate plans and ideas. Maturation iterations include new idea generation besides streamlining operations. Hence, in the eHealth sector, summative and formative evaluation phases are linked with each other to a certain degree. In eHealth, important quality facets at the macro level are attributes known in common quality thinking; product, process, and customer quality views are necessary, same production quality is needed throughout the project. The importance of ethical, image, and innovation quality grows all the time. Planned products have their intended missions, but requiring alignment with organizational goals means more emphasis on mission fitness. Economic factors, such as a product’s cost-efficiency, increase in importance all the time.

Planning Quality in eHealth

Inspiration and Mission for Design

Rigor area in design refers to design knowledge base; foundations, methodologies, and creative insights of design (Hevner et al 2004, Hevner, 2007). Quality thinking forms one theoretical frame in theoretical problem analysis as a part of knowledge base. New innovations ask for creativity, but existing frames and values also mean inspirational power and a guiding force for innovative design. “Values have always implicitly driven the decisions of the organization” (Sapienza, 1997). Continuous value assessment is therefore needed as a basis for all design in this area. The design process starts by assessing the current process and its renovation needs or by ideas for a new kind a product. Inspiration can arise from clearly identified and prioritized problem areas in diagnostic evaluations. Practical problems may be a starting point for design (Reeves, 2006), as are dysfunctions in some systems (e.g., poor customer or ethical quality). In these cases, defined quality areas of macro level and connected maturity problems get prioritized in product creation, maturation, or product reengineering. When the design process starts with process inspection and connected problem-solving, there is, however, a danger of repeating current practices with only slightly new kinds of tools and techniques. However, even a very innovative product designer must be aware of the current protocols and process models in the field.

When the purpose is to create new kinds of processes and not only empower and modify the existing protocols, it is more fruitful to consider new kinds of products with very new kinds of functions and be open to
totally new kinds of function models. In this way, existing unsolved problems do not form the only source of inspiration (Wang and Wang, 2010). In innovative design, it is almost necessary to combine these two areas through flexibility: by thoughts about new kinds of products and by understanding the sector with its process renovation needs in a way that gives enough space to novel solutions and function models. In this way, product and process ideas and connected quality aspects both are emphasized in the very beginning. Process and its efficiency are bundled, and such an evaluation focus is necessary at the very beginning. eHealth lacks evidence of its cost-effectiveness (Black et al., 2011), which means that there is no idea to produce products that may increase total costs without evidence of their benefits. Cost-effect analysis belongs to the primary phase equally in the process streamlining or in the reengineering projects. When the product idea is clear, its mission fitness must be assessed. Every product should have a mission frame that should be aligned with the goals of the target organization and is understandable to its designers and potential users. Obvious value enhances a product’s acceptance (Denis et al., 2002). If the mission of the planned product is compatible with organizational goals, values, and mission statements, its mission fitness is acceptable. If this mission fitness cannot be achieved, then the development idea should be reorganized, streamlined, rejected, or it should lead to deeper organizational mission reassessment.

Ideas of Quality Frame and Product Quality

The quality idea for the project should also be associated to the idea phase of design. This means awareness of all the necessary quality attributes at a macro level. Necessary quality attributes of macro levels should serve as guiding frames at the very beginning. The primary evaluation should contain a plan and a vision about how different quality aspects will be communicated during the project. All important quality attributes at the macro level must find their ideas at the basic level. This means planning how integration of product, process, and customer quality views will be captured; how production quality will be assessed; the way ethical considerations, image, and innovation values are approached; and the way cost-benefit impacts are considered. Ethical aspects are often presented as the last items on evaluation lists. However, ethical issues are concrete thresholds when the selection of any new product for daily practice is done, and ethical considerations and quality must be in focus at the very beginning because these regulate product acceptance. Ethical considerations are relevant to design features, dissemination strategies, and evaluation (Baur, 2012). As a result, it is best that ethical considerations take place when the product idea and the target groups are defined. Also, maturation cycles may streamline the product’s essence and features; therefore, keeping ethical quality continuously in focus.

When the design process starts by thinking of new product ideas, its main functions and features are also associated at a beginning level, which means that quality requirements also can be identified roughly at the starting process. The Kano curve differentiates quality levels of “attraction and must-be-quality” (Kano et al., 1984). In eHealth, it is essential that products reach at least the “must-be-quality” level. However, the target is the level of customer attraction. Product quality in eHealth requires innovativeness and advantageousness of products with reasonable cost intensity. In the educational area, it is important to cultivate students’ innovation quality (Yao and Liu, 2012). Innovation quality is essential in eHealth design also. The purpose is not to produce only more fluent services, but also to produce more attractive and creative solutions that save time and offer more quality. This requires not only good product quality from design, but also innovation quality. At the level of idea
capturing, it is essential to assess the innovation value of planned products, whether they embody the innovation quality that is required, whether they are ethically acceptable products, and whether they are aligned with organizational values.

In fast-developing design areas, the meaning of innovation quality is essential (e.g., in field-related competitions, one evaluation criterion is often the innovativeness of the product). When new technological possibilities are at hand, there is an eagerness to use them. This may lead to a too-intense production push without remarkable benefits for the target area—that is, that the innovative value and the importance of the planned products are questionable. In health-related development areas, innovativeness and innovation quality are not equal concepts. When the product reflects innovation quality, its importance and meaning must be visible and understandable, and in balance with ethical principles, economic constraints, and mission fitness. Novel products may be innovative, but if they miss needed ethical aspects or when innovativeness is connected only with technology change and no real benefits, innovation quality is then questionable. In fast development areas, it is essential to think about the quality of innovations when prioritizing design aims and plans.

**Customers’ Role in Prephases of Design**

The product idea typically contains an idea of the primary target area with a view of customers’ demands. This means consideration about the product requirements and what kinds of features represent customer quality that makes the product acceptable and attractive. Products are planned for customers (health professionals, organizations, service consumers). This means that customers’ needs and values should be taken into account. Also, customers may produce highly innovative ideas (e.g., Magnusson et al., 2003) and hence their integration into the idea generation may be rewarding (Witell et al., 2008). However, not all needs and problems are apparent and realized even for customers (e.g., customer interviews are useful in registering visible product requirements but insufficient when investigating potential, new, and latent product requirements; Matzler and Hinterhuber, 1998). New technologies offer many new possibilities that consumers cannot especially wait but such products may be delightful, wanted, and useful. Hence, in innovation design, it is important to be aware of customer needs, but these alone should not form the whole inspiration for a project. Customers’ voices must be prioritized by understanding their meaning in the whole design scheme, with the caveat that customers are the ones who accept or reject offered products in the end.

**Producing Quality in eHealth: Phases of Implementation**

**From Macro Level Quality to Product Features**

Requirements and specifications follow idea presentations and early design plans. Knowledge base, grounding, and theoretical frames will inform all content design and product development. Quality views at a macro level will be identified as product requirements. There are many general frameworks for standards for health information systems, content quality and information quality guidelines, as well as criteria for Internet Health Information evaluation. These give more detailed aspects for quality evaluation by clarifying the content of presented subclasses. Each project may select or define the frame or frame combination that is the most informative.

Product quality aspects by Garvin (Tenner and Toro, 1992) contain considerations such as performance, features, reliability, conformance, durability, serviceability, aesthetics, and perceived quality; these are essential attributes for application design also. Innovativeness (Yang and Wang,
product quality attribute in health sector. Criteria for the success of web applications deal with customer and product views with attributes such as usability, security, availability, scalability, maintainability, and time to market (Offutt, 2002). Attributes that regulate adoption contain aspects of usefulness, relative advantage, compatibility, complexity, trialability, and observability (Rogers, 2003) and emphasize process and product quality views. Efficiency-related attributes are necessary in the health sector and cover aspects such as effectiveness, efficiency, optimality (Donabedian, 2002), and productivity (Doerr et al., 2007). Satisfaction, ease of use, and user-friendliness are often mentioned as customer-related requirements. User attitude, perceived usefulness, and perceived ease of use are emphasized as attributes in the health sector as adoption requirements (e.g., Yang and Wang, 2012). Ethical aspects such as attributes of safety, equity, legitimacy, and privacy are requirements for adoption in eHealth (Hong et al., 2008). Respect for privacy and for information property, fair representation, and nonmaleficence are also aspects of the ethical area (Severson, 1997). Department-technology fit is important in the health sector (Gustafson and Brennan, 2007) and refers to mission fitness. Tasks that are critical factors for adopting electronic health record systems contain user attitude, workflow impact, interoperability, technical support, communication among users, and expert support (Castillo et al., 2010). Production quality refers to design process evaluation and covers aspects of control, competence, training, internal audits, monitoring, measurements, and preventive and corrective actions (ISO 9001:2008). Many sublevel attributes are linked with each other and may also refer to aspects of customer, process, and product quality categories; hence, distinction of different categories is not always possible.

Selected quality requirements and criteria are supposed to characterize planned product features. The product idea contains general ideas of its features and functioning. Then in the development iterations identified quality requirements help in streamlining these features towards better direction, help assessment, or inspire to define new features and functions for the product. Product quality acquires its essence through these assessment cycles. Phases of production contain a vision of how quality aspects at a macro level will be notified, converted to requirements and product features, and how the accomplishment will be evaluated during the process. Hence concentration for product quality means simultaneous attention to all the other quality aspects. Shapes must find their real characters and this does not necessarily happen if connected quality ideas at the macro level haven’t had enough space in earlier design iterations.

Evaluating and Informing Quality in eHealth

Evaluative Cycles in Design

Product maturity in eHealth requires generally severe iteration cycles; hence, also product features advance and should be assessed iteratively. Quality evaluation takes place throughout of the design, during early plans, development iterations, empirical testing, and in maturation. “Summative evaluation comes close to product evaluation, and formative evaluation to the combination of plan and process evaluation” (Verschuren and Hartog, 2005). Signals for enhancement in evaluative cycles can connect to ethical issues, process quality, or dysfunctions in other areas; hence, such quality attributes will be prioritized and emphasized through maturation and iterative design cycles. Maturation procedures are typically needed in the eHealth area; however, it is also the truth that “when any technology is about to enter the mature stage, new technologies in the emerging stage of their life cycle may be evident” (Sapienza, 1997).
Communicating Quality in eHealth

Hevner et al. (2004) point out the importance of communication of research and names technology–focused audiences as well as management-focused audiences. Improved communication and teamwork is also needed to ensure efficient health care systems (Schoen et al., 2012). And, communication among users is an important factor for adoption in eHealth (Castillo et al., 2010). The importance of image issues is often noticed at the later phases, which concentrate on communication for interest groups and for marketing purposes. Product image is an important concept in consumer behavior (e.g., Quester et al., 2000). Image is one requirement for product adoption (e.g., Moore and Benbasat, 1991) and hence image values get attention for marketing reasons. However, image issues also must be considered at the starting phase of a design because image cannot be created or attached to products at the end of the process. Image has to be integrated with products and their features. Image is an issue which relates in the eHealth area to communication and quality of production. Image issues are important for focus organizations and also are motivating factors for producers. eHealth projects are often long-lasting projects with many specialists and development groups participating. In such projects, image issues are a task that may enhance the commitment and motivation of interest groups. Versatile quality thinking and an open development culture that take into account the interest groups also affect development of the project’s image issues. When image issues are considered in quality thinking, these aspects receive more attention in the design process. Sustainability is one feature asked for in nearly all cost-intensive designs. If a product reflects values that are ethically acceptable, and taking into account the requirements of sustainability in addition to its overall system quality, such issues are material to image construction. Hence image values and image quality have much to do with the entire design ideology and its priority thinking.

Organizing Priority Thinking

Summary and Guidelines for Management

The purpose of priority thinking is to ensure better cohesion and synthetization in quality eHealth design projects. Priority thinking which underlines versatile quality idea in design-related quality management

- enforces thinking of innovation value and quality of product plans from all views of quality and to prioritize such ideas that are sustainable
- helps to better realize that quality is integrated into each design phase
- guides priority settings in design phases
- guides to allocate priority areas for experts
- ensures quality framing that is wide enough

Quality of production is a well-known principle for information technology project designers. However, the way quality frames must be integrated for design and how to manage the design process from quality ideas at the macro level through requirements and specifications as product features needs more attention. In addition it is essential to assess design plans from the viewpoint of versatile quality.

Product ideas may require that certain attributes will get special attention in the design process, even if the aim of priority thinking is to ensure that all necessary quality facets at a macro level find their space in design. There are many ways to organize priority thinking in the overall quality management of a design process. It is essential to understand quality aspects in the early idea phase. During design phase priority thinking can be organized by defining emphasis periods in a design cycle (e.g., during the production-centered design phases, all quality categories could have an emphasis period in which the features and
principles connected to a certain attribute will be assessed more properly, such as through customer quality). In these design periods, more specific priority lists can be produced according to apparent needs. Even if quality attributes are linked with each other, rough concentration iterations (according to each quality facet) may be useful. “As all projects are different, they cannot be properly supported by a standard method…” (Brinkkemper, 1996). This concerns quality management in information technology projects also. Hence, each case and project dictates how to approach quality work in a reasonable way and how to organize priority thinking in design-related quality management issues. Table 1 presents design phases and their integrated areas of priority thinking in eHealth.

Table 1: Design phases and integrated quality related priority thinking in eHealth

<table>
<thead>
<tr>
<th>Design phase</th>
<th>Areas of priority thinking in quality work</th>
<th>Knowledge &amp; design area interactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning Quality</td>
<td>Identification of the idea of macro level quality</td>
<td>Design ideas &amp; knowledge base</td>
</tr>
<tr>
<td></td>
<td>Innovation quality &amp; sustainability in design</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mission &amp; fitness evaluation</td>
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<td></td>
<td>Customers’ voice</td>
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<td></td>
<td>Integrating novel ideas &amp; process diagnostics</td>
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</tr>
<tr>
<td>Producing Quality</td>
<td>Identification of quality requirements &amp; conversion into product features</td>
<td>Design &amp; knowledge base</td>
</tr>
<tr>
<td>Informing Quality</td>
<td>Understanding &amp; promoting image issues</td>
<td>Environment &amp; knowledge base</td>
</tr>
<tr>
<td>Evaluating Quality</td>
<td>Areas of improvement &amp; design iterations</td>
<td>Environment &amp; knowledge base</td>
</tr>
</tbody>
</table>

Quality Responsibility Allocation in a Project

Quality requirements may be demanding and may require deep understanding of a specialty area in the phase in which product features are developed. An appropriate way to manage priority-setting is responsibility allocation for specialists in each quality area. Team work is needed to ensure patient-centered health care systems (e.g., Schoen et al., 2012). The project may have team specialists from many fields and subfields of expertise, and these members may have a deeper understanding of quality issues in their specialty area. Professionals with deeper contact with patients are capable of better understanding issues connected to customer quality troubles. Process quality problems are well understood by the owners of these processes. Even if quality responsibilities can be allocated, quality also must stand “in one’s hands.” Therefore quality specialists can serve in the role of consultants; assessing and producing ideas, and guiding necessary streamlining when the coordinating unit or designer is involved in the quality portion of the product or system, its cohesion, and work synthesis.

An Example: Application to the Occupational Health Area

In the following example, a priority process of a design phase that concentrates on prevention of neck-and-shoulder disorders in the occupational health area is presented in broad outline (Rissanen, 2013). The aim of the product is support with specially incorporated learning interventions and to intensify training, which is related to the occupational health area, by offering a flexible model for blended learning intervention. The following presentation (table 2) shows the priority areas of certain phases and gives an example of phase-related quality-prioritizing work. The versatile quality frame prevails in the starting phase, but special emphasis is given to innovation, customer, and efficiency quality views. Emphasized product
requirements connect to aspects of serviceability, flexibility, and user-friendliness. Special aspects portraying feature design emphasize clarity of interface design and structure, simplicity, and easiness of management. In a later stage, creativity and customer feedback will be integrated with equal emphasis for future versions.

Table 2: Design phases and quality priorities in an application design (occupational health)

<table>
<thead>
<tr>
<th>Stages of development</th>
<th>Quality work emphasis</th>
<th>Content and priority emphasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mission</td>
<td>Defining product mission, assessing mission fitness</td>
<td>Neck-and-shoulder disorder prevention, well-being at work</td>
</tr>
<tr>
<td>Idea capturing and presentation</td>
<td>Identification of quality facets at a macro level</td>
<td>Versatile quality view with innovation, efficiency, customer facet emphasis</td>
</tr>
<tr>
<td>Requirements and frames</td>
<td>Interpretations; conversion to product requirements</td>
<td>Flexibility, clarity, serviceability, ease of use, understandability</td>
</tr>
<tr>
<td>Specifications of product features</td>
<td>Integration with product features</td>
<td>Featuring that allows enough “space for customers” and tutor support</td>
</tr>
<tr>
<td>Prototyping, piloting, implementation</td>
<td>Feature implementation</td>
<td>Product with few sections, support for blended instruction</td>
</tr>
<tr>
<td>Evaluation</td>
<td>Assessment of realized product and processes</td>
<td>Summative &amp; formative evaluation</td>
</tr>
<tr>
<td>Communication</td>
<td>Quality informing</td>
<td>Identification of interest groups</td>
</tr>
<tr>
<td>Maturation, validation</td>
<td>Evaluation and redesign: feature streamlining</td>
<td>Customer feedback</td>
</tr>
</tbody>
</table>

Discussion and Conclusions

Priority ideology is aimed to help understand and learn skills to manage quality thinking that is versatile and wide enough and gives enough emphasis to each important category of quality. Priority ideology helps designers take different quality aspects into account more efficiently and emphasize activities that are connected to each design phase. Priority ideology underlines that quality is not only a task for evaluation, but also a tool for feature creation, feature integration, and streamlining. Priority thinking in design process–integrated quality management does not mean that some attributes are more important than others, although concentration on urgent problem areas must take its place. Moreover, its purpose is to ensure that each important view gets enough attention in the design process by guiding right timing, concentrating on a certain view in its right place, and addressing such activities that come in question. Priority thinking also could widen the understanding of those issues that should be integrated into necessary quality views in addition to those facets that are already identified. Priority thinking that connects to product features in product design–related quality management helps to ensure the challenging entity better and not to ignore certain important aspects that are necessary for information technology projects in eHealth. Understanding this mechanism enlightens quality work in eHealth projects and makes quality work and frames less abstract and less complex for health professionals and designers in this area.

It is said that, for competitive reasons, “the time from idea development to product introduction should be as short as possible” (Sapienza, 1997). However, well-planned quality management should strengthen the development process, not load it down with too much bureaucracy or delay. Understanding the mechanisms of quality chains should intensify design processes; however, instead of linear progression, the process from knowledge to product means a circuitous, iterative, or step-function progression (Faulkner and Senker, 1995). This applies to integration of quality issues in product features as well.
References


Moore, G. and Benbasat, I. 1991. ‘Development of an Instrument to Measure


Abstract

This case examines the relationship between the subordinates’ perception of the leadership styles and leadership effectiveness of newly trained Six Sigma professionals. The Multifactor Leadership Questionnaire (MLQ) was given to 150 recipients in aerospace business units at three different sites. It is of special interest to this industry which faces on-going reengineering processes to see the impact of Six Sigma training on the aerospace workers in terms of motivational needs and relationships between perceived leadership style and the self reported leader effectiveness behavior of the employees they supervise. The results showed a positive relationship on the outcome variables. Following Deming’s (1986) suggestion of instituting leadership focus, going beyond a managing-only perspective, into organizational effectiveness and quality improvement, a model (Mazouz, A and Hamamoto, 1999) was developed that integrated business conditions, customer values and transformational vision. This case study gives food for thought about the impact and usefulness of transformational and transactional leadership styles and their impact on motivation, extra effort and satisfaction when using Six Sigma methodology in business quality improvement initiatives.

Introduction

The primary intent of this research was to investigate the Impact of “Six Sigma Training”, in today’s workers in industry, given the on-going reengineering processes that industry is experiencing. Of special interest are the motivational needs and relationships if any, between the two variables perceived leadership style of Six Sigma Trained managers and self-reported leader effectiveness behavior of the employees the supervise. The management challenges of the 21st Century require a fundamental paradigm shift in managerial approach and leadership style to address the impacts of rapidly evolving technology accompanied by increasing completion and market globalization. Six Sigma is one of the quality and productivity improvement initiatives employed by some enterprises to address these new challenges. Considerable literature exists analysing and comparing various theories of leadership and motivation related to effective organizational change management. For instance Burns (1978) observed that transformational leadership involves the process of influencing major changes in organizational attitudes in order to achieve the organization’s objectives and strategies. Bass (1985) described the recursive relationship of the organization culture and leadership style, noting that culture develops
in large part from its leadership and also affects the development of its leadership. Bass further observed that transactional leader work their organizational cultures following existing rules, procedures, and norms; while transformational leaders change their culture based on a new vision and a revision of shared assumptions, values, and norms. Transformational leaders inspire, energize, and intellectually stimulate their employees. When an organization must adapt to changes in technology and the environment, its leadership is a critical factor in its successful change.

In the industrial and business sector, Maccoby (1979) concluded, “a higher level of leadership than ever before is necessary to survive and prosper in a world of increasing competition, of technology advances, changing government regulations, and changing worker attitudes.” A number of researchers in this field concur that leaders can transform followers, can create visions of goals that may be attained, and can articulate the ways to attain those goals (Bass, 1985; Bennis & Nanus, 1985; Burns, 1978; Tichy & Devanna, 1986). The specific research questions are:

1. Does Six Sigma Training Increase Leadership Skills?
2. Do Six Sigma Leaders after Training Influence Major Changes in the Organization And Achieve The Objectives Of The Organization?

Six Sigma can be very beneficial to improving the bottom line- if implemented wisely. However, if the techniques are not used wisely, there is a very large danger that the program will be counterproductive and frustrating. Organizations can sometimes get too involved in “how to count defects” and report defect rates that they lose sight of the real value of Six Sigma- orchestrating process improvement and reengineering and bottom-line benefits through the wise implementation of statistical techniques. (Breyfogle, 1999).

If an organization does not apply Six Sigma techniques wisely, it will fail. When this occurs there is a tendency to believe that the statistical techniques are not useful, when in fact the real problem is how the program was implemented and/or how the techniques were not effectively applied. Adapt the discipline and methods of Six Sigma to best improve the unique culture, industry, market position, people and strategy. Six Sigma will not work as a thing- it has to be used in a flexible system. As the use of Six Sigma matures, professionals will quickly spot:

- Problem identification- by utilizing statistical process control and control charts
- Problem definition and root cause analysis- Test of statistical significance: (Chi square, t-test and ANOVA)
- Root cause analysis and prediction of results- Correlation and regression.
- Optimal solution analysis and result validation- Design of Experiments.
- Problem prioritization and prevention- Failure mode and effect analysis.
- Defect Prevention and process improvement- Mistake proofing.
- Product, service and process designs- Quality Function Deployment.

Bass (1985) theory of transformational leadership is derived from Burn’s (1978) which indicated that transformational leadership refers to the process of influencing major changes in the organizational attitudes in order to achieve the objectives and strategies of the organization. Burns also stated that transformational leadership occurs when one or more individuals interact with others in such a way that leaders and followers raise each other to higher levels of motivation and moral values. Top level managers will continue to face the challenge of significantly changing organizations in order to maintain a competitive advantage. Because of this, transformational leadership will continue to be the centre of management research.
Approach and Methodology

The relationship between subordinate perceived leadership styles and subordinate self-reported leadership effectiveness outcomes for managers recently trained in Six Sigma and to determine the perceived tendency for using transactional versus transformational leadership behavior. The most widely used measure of transformational leadership is the Multifactor Leadership Questionnaire (MLQ, Form5x-Short) to assess the independent variables (transformational and transactional leadership) and the outcome (or dependent) variables (extra effort, effectiveness and satisfaction).

A direct survey questionnaire was distributed to the business sites to collect the data. The target population for this research was Six Sigma recently trained professionals. The survey was stratified into business unit groups. The actual return with over 150 surveys distributed was 110. This procedure provides for random selection of sample firms and will meet the criteria for simple random samples. As outlined in the MLQ questionnaire the dependent variable are transformational/transactional leadership styles and the independent variables were Idealized attributes (IIA), Idealized behavior (IIB), Inspiration Motivation (IM), Intellectual Stimulation (IS), Individualized Consideration (IC), Contingent Reward (CR), Management by Exception Active (MBEA), Management by Exception Passive (MBEP), Laissez-Faire (LF), Extra Effort (EX), Effectiveness (EFF) and Satisfaction (SAT).

The following hypotheses examine the research questions stated:

H1O There is no statistical relationship between transformational leadership and satisfaction.
H1A There is statistical relationship between transformational leadership and satisfaction.
H2O There is no statistical relationship between transformational leadership and extra effort.
H2A There is statistical relationship between transformational leadership and extra effort.
H3O There is no statistical relationship between transformational leadership and effectiveness.
H3A There is statistical relationship between transformational leadership and effectiveness.
H4O There is no statistical relationship between transactional leadership and satisfaction.
H4A There is statistical relationship between transactional leadership and satisfaction.
H5O There is no statistical relationship between transactional leadership and extra effort.
H5A There is statistical relationship between transactional leadership and extra effort.
H6O There is no statistical relationship between transactional leadership and effectiveness.
H6A There is statistical relationship between transactional leadership and effectiveness.

The multivariate interactive hypothesis and null are stated as follows:

H7O There is no statistical significant difference between the transformational and transactional leadership scores.
H7A There is statistical significant difference between the transformational and transactional leadership scores.

The Transformational Leadership Significance is Comprised of Five Segments

Idealized Influence (Attributed-4 Items): inspires in the followers’ unquestioning loyalty and devotion without regard to their
own self-interest (Bass, 1985). The leaders are highly respected, and are seen by their followers as having an attainable mission and vision (Bass & Avolio, 1994, 1990; Avolio, Bass & Jung 1995).

Idealized Influence (Behavior-4 Items): Specifies the importance of having a strong sense of purpose (Bass & Avolio, 1995).

Individualized Consideration (4-Items: is the individualized attention and a developmental or mentoring orientation toward subordinates (Bass, 1995). The leaders communicate personal respect to followers by giving them specialized attention and recognizing each one’s unique needs (Tepper & Percy, 1994).

Inspiration Motivation (-4 Items): is the arousal and heightening of innovation by persuasively appealing to the faith and emotions of the follower rather than logical discourse (Bass, 1995). The extent to which the leader inspires followers to enthusiastically accept and pursue challenging goals and a mission or vision of the future (Tepper & Percy, 1994). Leader’s behavior results in the arousal of a shared vision and in the display of enthusiasm and optimism (Bass, Avolio, 1994).

Intellectual Stimulation (4-Items): is the arousal and change in followers of problem solving, of thought and imagination, and of beliefs and values (Bass, 1985). The extent to which the leader enables followers to rethink the ways they do things, to challenge the conventional practice and thinking are important factors (Tepper & Percy, 1994). Followers are encouraged to try new approaches to problem solving, even if their approaches differ from choosing of their leader (Bass, Avolio, 1994).

The Transactional Leadership Significance is Comprised of Three Segments

Contingent Rewards (-4 Items): This style of leadership involves an interaction between the leader and the followers that emphasizes an exchange. The leader provides appropriate rewards when followers agreed upon objectives.

Management by Exception (MBE) (Active-4 Items): Leadership behavior where the leader arranges to actively monitor deviations from standards, mistakes and errors in a followers assignments and to take the corrective action as necessary.

Management by Exception (MBE)(Passive-4 Items): Leadership behavior where the leader waits for deviations, mistakes and errors to occur and then takes corrective action.

The Non-leadership Significance is Comprised of One Segment:

Laissez Faire Leadership (-4 Items): is the absence of leadership and/or the avoidance of intervention by the leader with no attempt to motivate or satisfy the follower’s needs (Bass & Aviola, 1990). The extreme degree of inactivity by leaders and this inactive style go beyond even passive MBE, and thus is a “do nothing” approach (Tepper & Percy, 1994).

The Outcome Variable Significance is Comprised of Three Segments:

Extra Effort (-3 Items): Increases other’s willingness to try harder

Effectiveness (-4 Items): Effective in representing others to higher authority

Satisfaction (-2 Items): Work with others in a satisfactory way.
Table 1: Displays Regression Analysis - Rater
Variables Entered/Removed \(^a\)

<table>
<thead>
<tr>
<th>Model</th>
<th>Variables Entered</th>
<th>Variables Removed</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>EX</td>
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<td>Stepwise (Criteria: Probability-of-F-to-enter &lt;=.050, Probability-of-F-to-remove &gt;=.100)</td>
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<tr>
<td>2</td>
<td>IIB</td>
<td></td>
<td>Stepwise (Criteria: Probability-of-F-to-enter &lt;=.050, Probability-of-F-to-remove &gt;=.100)</td>
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<td>IM</td>
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<td>4</td>
<td>CR</td>
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<td>Stepwise (Criteria: Probability-of-F-to-enter &lt;=.050, Probability-of-F-to-remove &gt;=.100)</td>
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<td>5</td>
<td>MBEA</td>
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<td>Stepwise (Criteria: Probability-of-F-to-enter &lt;=.050, Probability-of-F-to-remove &gt;=.100)</td>
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</table>

\(^a\) Dependent Variable: EFF

Table 2: Displays Model Summary – Rater

<table>
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<tr>
<th>Model</th>
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<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
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<td>.841</td>
<td>.30564</td>
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<tr>
<td>2</td>
<td>.929(^b)</td>
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<td>.860</td>
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<td>3</td>
<td>.934(^c)</td>
<td>.871</td>
<td>.868</td>
<td>.27870</td>
</tr>
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<td>.938(^d)</td>
<td>.881</td>
<td>.876</td>
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<td>5</td>
<td>.949(^e)</td>
<td>.900</td>
<td>.896</td>
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\(^a\) Predictors: (Constant), EX 
\(^b\) Predictors: (Constant), EX, IIB 
\(^c\) Predictors: (Constant), EX, IIB, IM 
\(^d\) Predictors: (Constant), EX, IIB, IM, CR 
\(^e\) Predictors: (Constant), EX, IIB, CR, MBEA
The dependent variable is EFF. The independent variables are EX, IIB, IM, CR, and MBEA in the final model. We used stepwise regression analysis, to check the final model derived. The model is adequate with F ratio equals to 187.902 and p-value 0.000 which is significant as alpha of 1%. The R square is 0.90 and the R square adjusted is .96. In other words, 96% of the variation of Effectiveness is explained by the following variables: EX, IIB, IM, CR, and MBEA.

The model developed is: 
$$\text{EFF} = 8.282E-03 + 0.894 \times \text{EX} + 0.585 \times \text{IIB} - 0.598 \times \text{IM} + 0.627 \times \text{CR} - 0.529 \times \text{MBEA}$$

### Table 3: Displays ANOVA

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<tr>
<th>Model</th>
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<th>F</th>
<th>Sig</th>
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<sup>a</sup> Predictors: (Constant), EX
<sup>b</sup> Predictors: (Constant), EX, IIB
<sup>c</sup> Predictors: (Constant), EX, IIB, IM
<sup>d</sup> Predictors: (Constant), EX, IIB, IM, CR
<sup>e</sup> Predictors: (Constant), EX, IIB, IM, CR, MBEA
<sup>f</sup> Dependent Variable EFF
Table 4: Displays Coefficients\(^{a}\) – Rater

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</table>

a. Dependent Variable: EFF

Table 5: Displays Excluded Variables\(^{f}\) – Rater

<table>
<thead>
<tr>
<th>Model</th>
<th>Beta In</th>
<th>t</th>
<th>Sig</th>
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<td>IIA</td>
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<tr>
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<td>.219(^{a})</td>
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<td>MBEA</td>
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<tr>
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<td>.573</td>
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<tr>
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<td>.157</td>
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<tr>
<td>IIA</td>
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<td>.750</td>
<td>.455</td>
<td>.074</td>
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a. Predictors in the model: (Constant), EX
b. Predictors in the model: (Constant), EX, IIB
Cc. Predictors in the model: (Constant), EX, IIB, IIB
D. Predictors in the model: (Constant), EX, IIB, IM, CR
e. Predictors in the model: (Constant), EX, IIB, IM, CR, MBEA
f. Dependent Variable EFF

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The dependent variable is SAT. The independent variables derived from the model 6 in ANOVA are: EX, IIB, IM, CR, MBEP, and IS.

The technique used is stepwise regression.

The model is adequate with F ratio of 78.473 and p-value 0.000 which is significant at alpha of 1%. The R square is 0.82 and R square adjusted is 0.812. Thus we have 81% of the variation of satisfaction is explained by the following variables: EX, IIB, IM, CR, MBEP and IS.

The mode is:

\[
SAT = -0.459E-02 + 0.989 \times EX - 0.438 \times IM + 0.756 \times CR - 0.678 \times MBEP - 0.328 \times IS
\]

All the slopes are significant for the variables in the model. The slopes for variables CR and MBEP are significant at 1%, on the other hand the slopes of IM and IS are significant at 5%.

### Table 6: Displays Regression Analysis – Rater Satisfaction

<table>
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<tr>
<th>Model</th>
<th>Variables Entered</th>
<th>Variables Removed</th>
<th>Method</th>
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a. Dependent Variable: SAT

### Table 7: Displays Model Summary – Rater

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a. Predictors: (Constant), EX
b. Predictors: (Constant), EX, IIB
c. Predictors: (Constant), EX, IIB, IM
d. Predictors: (Constant), EX, IIB, IM, CR
e. Predictors: (Constant), EX, IIB, CR, MBEP
f. Predictors: (Constant), EX, IIB, IM, CR, MBEP, IS
### Table 8: Displays ANOVA

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a. Predictors: (Constant), EX
b. Predictors: (Constant), EX, IB

c. Predictors: (Constant), EX, IB, IM
d. Predictors: (Constant), EX, IB, IM, CR
e. Predictors: (Constant), EX, IB, IM, MBEA
f. Dependent Variable: SAT

### Table 9: Displays Coefficients – Rater

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a. Dependent Variable: SAT
The dependent variable is EFF. The dependent variables are: EX, IIB, CR, MBEA, and IM.

The model is adequate with F ration equals to 83.235 and p-value of 0.000 which is significant at even alpha of 1%. The R square is 0.80 and the adjusted R square is .79.

The model is:

\[ \text{EFF} = 0.231 + 0.844 \times \text{EX} - 0.297 \times \text{CR} - 0.733 \times \text{MBEA} - 0.259 \times \text{IM} \]

All the slopes are significant for the variables in the model at alpha 1% except IM which is significant at alpha 5%. The technique used in regression was stepwise.
<table>
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<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig</th>
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a. Dependent Variable: EFF
Table 21: Displays Excluded Variables \(^h\) – LEADER

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</tr>
<tr>
<td>4</td>
<td>IIA</td>
<td>-.202(^h)</td>
<td>-.212</td>
<td>.833</td>
<td>-.021</td>
</tr>
<tr>
<td></td>
<td>IM</td>
<td>.000(^h)</td>
<td>.001</td>
<td>.999</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>IS</td>
<td>-.250(^h)</td>
<td>-.2.174</td>
<td>.032</td>
<td>-.208</td>
</tr>
<tr>
<td></td>
<td>IC</td>
<td>-.168(^h)</td>
<td>-.1.465</td>
<td>.146</td>
<td>-.142</td>
</tr>
<tr>
<td></td>
<td>MBEA</td>
<td>-.614(^h)</td>
<td>-.4.576</td>
<td>.000</td>
<td>-.409</td>
</tr>
<tr>
<td></td>
<td>MBEP</td>
<td>-.278(^h)</td>
<td>-.2.053</td>
<td>.043</td>
<td>-.197</td>
</tr>
<tr>
<td>5</td>
<td>IIA</td>
<td>-.117(^h)</td>
<td>-.1.306</td>
<td>.194</td>
<td>-.128</td>
</tr>
<tr>
<td></td>
<td>IM</td>
<td>-.257(^h)</td>
<td>-.1.882</td>
<td>.063</td>
<td>-.182</td>
</tr>
<tr>
<td></td>
<td>IS</td>
<td>-.231(^h)</td>
<td>-.2.197</td>
<td>.030</td>
<td>-.212</td>
</tr>
<tr>
<td></td>
<td>IC</td>
<td>-.059(^h)</td>
<td>-.542</td>
<td>.589</td>
<td>-.053</td>
</tr>
<tr>
<td></td>
<td>MBEA</td>
<td>-.069(^h)</td>
<td>-.123</td>
<td>.903</td>
<td>-.012</td>
</tr>
<tr>
<td>6</td>
<td>IIA</td>
<td>-.126(^h)</td>
<td>-.1.413</td>
<td>.161</td>
<td>-.137</td>
</tr>
<tr>
<td></td>
<td>IM</td>
<td>-.271(^h)</td>
<td>-.1.990</td>
<td>.049</td>
<td>-.192</td>
</tr>
<tr>
<td></td>
<td>IS</td>
<td>-.178(^h)</td>
<td>-.1.736</td>
<td>.086</td>
<td>-.168</td>
</tr>
<tr>
<td></td>
<td>IC</td>
<td>.008(^h)</td>
<td>.077</td>
<td>.939</td>
<td>.008</td>
</tr>
<tr>
<td></td>
<td>MBEA</td>
<td>-.103(^h)</td>
<td>-.915</td>
<td>.362</td>
<td>-.089</td>
</tr>
<tr>
<td></td>
<td>MBEP</td>
<td>-.141(^h)</td>
<td>-.1.339</td>
<td>.184</td>
<td>-.130</td>
</tr>
</tbody>
</table>

\(^a\) Predictors in the model: (Constant), EX
\(^b\) Predictors in the model: (Constant), EX, IIB, LF, CR, MBEA
\(^c\) Predictors in the model: (Constant), EX, IIB, CR, MBEA
\(^d\) Predictors in the model: (Constant), EX, IIB, CR, MBEA
\(^e\) Predictors in the model: (Constant), EX
\(^f\) Predictors in the model: (Constant), EX, IIB
\(^g\) Predictors in the model: (Constant), EX, IIB, CR, MBEA, IM
\(^h\) Dependent variable: EFF

154
Table 22: Displays Regression Analysis - LEADER
Satisfaction
SAT = f (jia, iib, im, is, ic, cr, mbea, mbep, if, ex)
Variables Entered/Removed a

<table>
<thead>
<tr>
<th>Model</th>
<th>Variables Entered</th>
<th>Variables Removed</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>EX</td>
<td></td>
<td>Stepwise (Criteria: Probability-of-F-to-enter &lt;= .050, Probability-of-F-to-remove &gt;= .100)</td>
</tr>
<tr>
<td>2</td>
<td>LF</td>
<td></td>
<td>Stepwise (Criteria: Probability-of-F-to-enter &lt;= .050, Probability-of-F-to-remove &gt;= .100)</td>
</tr>
<tr>
<td>3</td>
<td>CR</td>
<td></td>
<td>Stepwise (Criteria: Probability-of-F-to-enter &lt;= .050, Probability-of-F-to-remove &gt;= .100)</td>
</tr>
<tr>
<td>4</td>
<td>MBEA</td>
<td></td>
<td>Stepwise (Criteria: Probability-of-F-to-enter &lt;= .050, Probability-of-F-to-remove &gt;= .100)</td>
</tr>
</tbody>
</table>

a. Dependent Variable: SAT

Table 23: Displays Model Summary - LEADER

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.742 a</td>
<td>.551</td>
<td>.547</td>
<td>.34902</td>
</tr>
<tr>
<td>2</td>
<td>.773 b</td>
<td>.598</td>
<td>.590</td>
<td>.33193</td>
</tr>
<tr>
<td>3</td>
<td>.807 c</td>
<td>.651</td>
<td>.641</td>
<td>.31081</td>
</tr>
<tr>
<td>4</td>
<td>.828 d</td>
<td>.686</td>
<td>.674</td>
<td>.29619</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), EX.
b. Predictors: (Constant), EX, LF.
c. Predictors: (Constant), EX, LF, CR.
d. Predictors: (Constant), EX, LF, CR, MBEA.
The dependent variable is SAT. The dependent variables are: EX, LF, CR, and MBEA.

The model is:

\[ EFF = 0.545 + 1.093 \times EX - 0.425 \times LF + 0.711 \times CR - 0.529 \times MBEA \]

All the slopes are significant for the variables in the model at alpha 1%. The technique used in regression was stepwise.

### Table 24: Displays ANOVA

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Regression</td>
<td>16.162</td>
<td>1</td>
<td>16.162</td>
<td>132.678</td>
<td>.000&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Residual</td>
<td>13.156</td>
<td>108</td>
<td>.122</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>29.318</td>
<td>109</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Regression</td>
<td>17.529</td>
<td>2</td>
<td>8.765</td>
<td>79.350</td>
<td>.000&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Residual</td>
<td>11.789</td>
<td>107</td>
<td>.110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>29.318</td>
<td>109</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Regression</td>
<td>19.078</td>
<td>3</td>
<td>6.359</td>
<td>65.829</td>
<td>.000&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Residual</td>
<td>10.240</td>
<td>106</td>
<td>9.666E-02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>29.318</td>
<td>109</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Regression</td>
<td>20.017</td>
<td>4</td>
<td>5.027</td>
<td>57.297</td>
<td>.000&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>Residual</td>
<td>9.212</td>
<td>105</td>
<td>8.773E-02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>29.318</td>
<td>109</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), EX
b. Predictors: (Constant), EX, LF
c. Predictors: (Constant), EX, LF, CR
d. Predictors: (Constant), EX, LF, CR, MBEA
e. Dependent Variable: SAT

### Table 25: Displays Coefficients

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std Error</td>
</tr>
<tr>
<td>1 (Constant)</td>
<td>.788</td>
<td>.193</td>
</tr>
<tr>
<td>EX</td>
<td>.774</td>
<td>.067</td>
</tr>
<tr>
<td>2 (Constant)</td>
<td>.813</td>
<td>.184</td>
</tr>
<tr>
<td>EX</td>
<td>1.165</td>
<td>.128</td>
</tr>
<tr>
<td>LF</td>
<td>-.400</td>
<td>.114</td>
</tr>
<tr>
<td>3 (Constant)</td>
<td>.495</td>
<td>.189</td>
</tr>
<tr>
<td>EX</td>
<td>1.139</td>
<td>.120</td>
</tr>
<tr>
<td>LF</td>
<td>-.586</td>
<td>.116</td>
</tr>
<tr>
<td>CR</td>
<td>.312</td>
<td>.078</td>
</tr>
<tr>
<td>4 (Constant)</td>
<td>.545</td>
<td>.181</td>
</tr>
<tr>
<td>EX</td>
<td>1.093</td>
<td>.115</td>
</tr>
<tr>
<td>LF</td>
<td>-.425</td>
<td>.120</td>
</tr>
<tr>
<td>CR</td>
<td>.711</td>
<td>.138</td>
</tr>
<tr>
<td>MBEA</td>
<td>-.529</td>
<td>.155</td>
</tr>
</tbody>
</table>

a. Dependent Variable: SAT
Discussion of Findings

The purpose of this study was to examine the relationship between transformational and transactional leadership and three outcome variables among trained Sigma trained professionals in the Aerospace Sector. First does Six Sigma Training Increase Leadership Skills? And second does Six Sigma Leaders after Training Influence Major Changes in the Organization and Achieve the Objectives of the Organization? The Multifactor Leadership Questionnaire (MLQ) was used to measure leadership behavior (transformational and transactional style) and three organizational outcomes extra effort on the job, perception of leaders’ effectiveness, and subordinates’ job satisfaction. The MLQ was very useful in providing meaningful and valid data to individuals and the organization overall that served to help this organization examine its practices and consider the steps they needed to take to remain competitive in a very difficult time for the aerospace industry. The population for this study consists of the Six Sigma trained professionals at three manufacturing sites. Responses were received from 110 of 150 surveys (73%) in...
this study. Based on the statistical analysis, the results indicate that there is a positive linear relationship between transformational leadership and satisfaction (Hypothesis 1), and there is a positive linear relationship between transformational leadership and extra effort (Hypothesis 2). The results also indicated that there is a positive linear relationship between transformational leadership and effectiveness (Hypothesis 3) as also indicated, that there is a negative linear relationship between transactional leadership and satisfaction (Hypothesis 4). The results indicated that there is a negative linear relationship between transactional leadership and extra effort (Hypothesis 5). The results indicated that there is a negative linear relationship between transactional leadership and effectiveness (Hypothesis 6).

The results indicated that there is a significant difference between the transformational and transactional leadership scores (Hypothesis 7).

The analysis showed the significant relationship on both transformational and transactional leadership styles and subordinates’ job satisfaction, extra effort on the job and perception of leader effectiveness on individual and work group performance. Three outcome variables showed the significance for the transformational leadership factors. Idealized Influence explained most of the variance for subordinates’ job satisfaction, extra effort on the job and perception of leader effectiveness. However, the Intellectual Stimulation provided the negative affect on the subordinates’ job satisfaction model. On the other hand, there is both positive and negative relationship between transactional leadership and subordinates’ job satisfaction, extra effort on the job and perceptions of leader effectiveness. The Contingent Reward showed the positive affect on three outcome variables as transformational factors. And the rest of the factors (Management-by-Exception (Passive), and Laissez-Faire) provided the negative relationship with all outcome variables as Bass’s theory (1985).

**Limitations and Future Research**

In the transformational styles, leaders move the followers to transcend their own goal deployment initiatives for the good of the group, organization or business unit. The present findings should be viewed in the light of some limitations of the investigation that are suggestive of further study. Transformational leadership should be related to the different stages of mergers and acquisitions. The data analysis should also include both subordinates and their acquiring company representatives. In addition, the study has implications for understanding the development of leadership as an organizational capacity. It is extremely useful as a feedback tool for individuals and teams to see what behaviors they could do more of, and less of to improve outcomes. Second, research could examine additional word outcomes other than those investigated here. Extensive research attention has been devoted to such variables as work objective, additional components of motivation and components of job satisfaction that predict patterns for transformational and transactional leadership behaviors. Identifying other key variables related to desired outcomes can help organizations in employee Retaining, recruitment, placement and promotional policy.

Third, an interesting issue would be to explore demographics and other variables that my influence leadership style such as implementing Six Sigma tools before mergers and acquisitions are transacted.

Finally, the current study was a cross section. We examined a non-union environment with supporting business interest. Given the roadmap to business success, could a two tiered approach work (non-union to union and union to non-union) environment succeed?
References


Hollow Fiber Spinning Optimization Process

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Systèmes d’Informations, Supply Chain Management et Aide à la Décision
NEOMA Business School, Rouen, France

Abstract
Improving the quality of a product and manufacturing processes at a low cost is an economic and technological challenge which quality engineers and researchers must contend with. In general, the quality of products and their cost are the main concerns for manufacturers. Improving quality is very crucial for staying competitive and improving the organization’s market position. However, when the process is stabilized, then it needs to be improved and optimized. The goal of this article is to concentrate on identifying the optimization techniques, comparing them and then choosing the most economical one in terms of time and cost. The procedure is supported by a manufacturing applications used as test bed to validate the procedure undertaken in using first Full Factorial, Fractional Design to identify the key variables that have an effect on the desired response, then the Tagushi Orthogonal Two Step Optimization and a Natural Neural Network are used to optimize the process. It is shown that the Tagushi approach requires less number of experiments while providing the same optimization results as full and fractional factorial designs.

Keywords: Design of Experiments (DOE), Tagushi Method, Two Step Optimization, Orthogonal Arrays, Factorial Design

Introduction
The process optimization is to have a process delivers higher yield, more product or higher return from existing assets. Business activities need process optimization at various stages during manufacturing or services. Business process optimization involves procurement, marketing, research and other business functions. The best companies continue to strive for continuous process optimization exercises throughout their existence. The most important step in process optimization is the “what if” scenario modelling. In an environment of increasing international competition where countries with lower production costs quickly catch up technologically, new thinking is required in order to meet the competition. A proactive way of meeting the increasing competition is to focus on maximizing the utilization of existing technology and, faster than the competitors, being able to continuously introduce and make use of new technology. This means much more than just investing in new equipment. The ability to optimize or improve a process is dependent upon the ability to control the process. The ability to control the process is dependent upon the access to reliable and valid measurements.

A successful industrial optimization thus entails a strategic approach encompassing the whole chain: Measuring, Controlling then Optimizing. Optimizing is the final stage. Design of Experiments (DOE) is a data driven optimization approach which translates into time and cost savings, and provides a systematic approach. DOE is the design of any information-gathering exercises where variation is present. It is a way to optimize processes where problems are afflicting operations. It provides information about the interaction of factors and the way the total system works.
This article demonstrates the comparison of the findings in an industrial setting between full factorial, fractional design and the Tagushi Orthogonal Array Two Step optimization. The procedures of the findings from the first step are carried out on the second step of the study, where the full factorial and/or fractional factorial design identifies the key and main variables that have an effect on the response, then the Tagushi Orthogonal Two Step Techniques will refine the study by optimizing the process are done in the first step, then a Neural Network is used to optimize the process.

There are several approaches, the objective is comparing several optimization approaches and identify the best technique relevant to the situation. A comparison is made between Full Factorial Design, Fractional Design and Tagushi Orthogonal Two Step Design. A platform of for the study is considered related to a bioengineering application of a hollow fiber spinning process.

The objective is to optimize a manufacturing process in the bioengineering area. The study in consideration is the optimization of a hollow fiber melt spinning process, the aim is to determine the expected Core Gas pressure, a measure of the spun fiber quality. First a full factorial is run, then an analysis of variance is conducted in order to determine the main variables that have an effect on the Core Gas, then a two-step optimization procedure will be performed using the Tagushi technique.

**Background**

Douglas Montgomery (2004) presents an effective approach how to design, conduct, and analyze experiments that optimize performance in products and processes. He provides a thorough description on the Design of Experiments, full factorial and fractional design, and applications of Analysis of Variance (ANOVA). He shows the use statistically designed experiments in obtaining information for characterization and optimization of systems, improve manufacturing processes, and design and develop new processes and products. An approach on how to improve the quality and efficiency of working systems. On the other hand Tagushi (1987), the orthogonal arrays are highly fractional orthogonal. The designs are used to estimate main effects using only a few experimental orthogonal. These designs are applicable for two level and more experiments, where they can investigate main effects for certain mixed level experiments as factors do not have to have the same number of levels. Some applications are portrayed in the book by G. Tagushi and Elsayed (1992). Mazouz, Chirchid and Pantia (2002) approach the design of Experiments on using Artificial Neural network (ANN) and Fuzzy Logic, where a new set of variables and levels are identified, then the data is generated through the ANN system embedded with fuzzy logic. It will account for the viability between experiments with the same variables and levels. The orthogonal arrays helps on minimizing the number of runs without losing the efficiency of the experiments.

In terms of industrial applications, several related articles have been identified among the few is the article by Hafeez et al. (2002). This paper describes the design optimization of a robot sensor used for locating 3-D objects employing the Taguchi method in a computer simulation scenario. The location information from the sensor is to be utilized to control the movements of an industrial robot in a 'pick-and-place' or assembly operation. The Taguchi method, which is based on the ANOVA approach, is utilized to improve the performance of the sensor over a wider operating range. A review of the Taguchi method is presented along with step-by-step implementation details to identify and optimize the design parameters of the sensor. The method shows the impact of various interactions present in the sensor system exclusively and permits to single out those factors that have a dominant influence.
on the overall performance of the sensor. The findings suggest that the Taguchi method is a more structured and efficient approach for achieving a robust design compared with the classical full factorial design approach. The second application set by Han, Mazouz and Saravan (1993) is related to Printed Circuit Board (PCB) inspection using Artificial Neural Networks (ANN). The challenge is similar to the work done on Screen Printing, mainly in identifying the main effects. The network is trained to distinguish between correct and faulty PCB assembly boards. The setup consists of a video camera, a robot, and a machine vision system along with an IBM PC. The backpropagation algorithm is used to train the network.

The next application by Gupta et al. (2011) is aimed at enhancing system design productivity by exploiting the principle of “design and reuse” to its full potential. A statistical model is set for selecting from a component library the optimal components for a network-on-chip architecture such that to satisfy certain system performance requirements. Our model is based on regression analysis and Taguchi’s optimization technique. The model estimates the relationship between system performance and component attributes, to help the architect in the component selection process. Having such a model in the system design phase will allow the architect not only to make informed decisions when selecting components but also to exchange components with similar characteristics to fine tune system performance.

Chirdchid and Mazouz (2002) foresees to optimize the parameter and tolerance designs. As it’s well documented, parameter and tolerance design are the main key to achieve high quality of products. However, high cost still remain in the process due to reducing the tolerance limit. The objective of this work is combines the optimization of parameter and tolerance design in one stage in to the cost function. This cost function is the sum of tolerance cost function and Tagushi’s quality loss function. Taylor expansion will be applied in the genetic algorithm, is considering close attention regarding its potential as a novel optimization technique for searching the optimization value. Kuo, Hsin-chuan, Wu, Jeun-len (2009) In this paper, an approach is developed to determines the overall best parameter setting in design of experiments. It first sets a successive orthogonal array experiments and ends with a full factorial experiment. The setup for the next orthogonal-array experiment is obtained from the previous one by either fixing a factor at a given level or by reducing the number of levels considered for all currently non-fixed factors. An industrial problem with seven parameters at three levels each, translating to 2,187 points. With the new method using 3% of the number of experiments, compared to the Taguchi approach which in this case corresponded to the 366th of the 2,187 possibilities. We conclude the proposed approach would provide an accurate, fast, and economic tool for optimization using design of experiments and orthogonal arrays approach. Koukouvinos (2008) in his article uses non-isomorphic orthogonal arrays as combined arrays, in order to identify a model that contains all the main effects (control and noise), their control-by-noise interactions and their control-by-control interactions with high efficiency. Some cases where the control-by-control-noise are of interest are also considered.

Boby, John (2011) demonstrates the variation between the set torque and the actual torque at which the actuator trips can be minimized using Taguchi’s robust engineering methodology and shows the application of feature selection approach for the identification of insignificant effects in unreplicated fractional factorial experiments. The effect of five control factors (with two levels each) and two interactions were studied. The experiments were designed using L8 orthogonal array. The findings showed that the factors spring height, spring thickness, star washer
position and the interaction between drive shaft length and spring height play a significant role in actuator performance. The implementation of the optimum combination of factors resulted in improving the overall capability indices.

**Approach**

In both experimental cases, the study of the effect of four factors on process is conducted. In the case, these factors are varied at three levels each as part of a $3^4$ full factorial design. Through the analysis of variance, we test the hypothesis that the factors have or don’t have no effect on the output response. A one half fractional resolution IV design is also analyzed and compared to the Full Factorial model for the study, and One Way ANOVA is conducted on each factor, to state whether there is a difference between the levels for each factor. A regression analysis and a multivariate model are developed. Then a Two Step Tagushi orthogonal Array is performed.

The key critical input variables that have an impact on the output response are selected mainly from past experience coming from engineers knowledgeable on Hollow Fiber Spinning Optimization Process. The ongoing work concentrates on pre-selected critical process variables and through the use of DOE, the current setting is validated or determine new optimal ones. Finally, making sure that there is correlation between both pieces of equipment, with identical settings, is of course a must. The objective is to determine the expected Core Gas pressure, a measure of the spun fiber quality. First a full factorial is run, an analysis of variance is conducted in order to determine the main variables that have an effect on the Core Gas as depicted in Figure 1, Table 1 and Table 2.

The core gas process consider four factors, Temperature, Flow Rate, Cooler Level and Speed of Pump, the response the desired is Pressure. Each factor is set at three levels as shown below in table 1.
Table 1: Factors, level and number of runs

<table>
<thead>
<tr>
<th>Factor</th>
<th>Level</th>
<th>Number of runs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp</td>
<td>344</td>
<td>81</td>
</tr>
<tr>
<td></td>
<td>347</td>
<td>81</td>
</tr>
<tr>
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<td>350</td>
<td>81</td>
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<tr>
<td>Flow</td>
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<td></td>
<td>88</td>
<td>81</td>
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<tr>
<td></td>
<td>91</td>
<td>81</td>
</tr>
<tr>
<td>Cooler</td>
<td>10</td>
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<td></td>
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<td>81</td>
</tr>
<tr>
<td></td>
<td>12</td>
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<td>Speed</td>
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</tr>
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<td>81</td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>81</td>
</tr>
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</table>

Table 2: Runs with 3 replicates

<table>
<thead>
<tr>
<th>Temp(A)</th>
<th>Speed (D);23</th>
<th>Speed (D);24</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cooler (C);10 Flow (B)</td>
<td>Cooler (C);11 Flow (B)</td>
</tr>
<tr>
<td></td>
<td>85 88 91</td>
<td>85 88 91</td>
</tr>
<tr>
<td>344</td>
<td>0.481 0.496 0.509</td>
<td>0.476 0.491 0.51</td>
</tr>
<tr>
<td></td>
<td>0.481 0.49 0.51</td>
<td>0.478 0.492 0.506</td>
</tr>
<tr>
<td></td>
<td>0.477 0.491 0.513</td>
<td>0.474 0.494 0.508</td>
</tr>
<tr>
<td>347</td>
<td>0.49 0.502 0.52</td>
<td>0.483 0.498 0.514</td>
</tr>
<tr>
<td></td>
<td>0.486 0.506 0.514</td>
<td>0.488 0.502 0.518</td>
</tr>
<tr>
<td></td>
<td>0.487 0.507 0.517</td>
<td>0.485 0.504 0.516</td>
</tr>
<tr>
<td>350</td>
<td>0.499 0.509 0.521</td>
<td>0.499 0.51 0.52</td>
</tr>
<tr>
<td></td>
<td>0.496 0.513 0.524</td>
<td>0.495 0.507 0.523</td>
</tr>
<tr>
<td></td>
<td>0.5 0.511 0.526</td>
<td>0.496 0.509 0.519</td>
</tr>
<tr>
<td></td>
<td>0.46 0.472 0.495</td>
<td>0.455 0.478 0.488</td>
</tr>
<tr>
<td></td>
<td>0.464 0.471 0.491</td>
<td>0.452 0.476 0.485</td>
</tr>
<tr>
<td></td>
<td>0.459 0.471 0.495</td>
<td>0.451 0.472 0.487</td>
</tr>
<tr>
<td>344</td>
<td>0.472 0.494 0.504</td>
<td>0.465 0.488 0.5</td>
</tr>
<tr>
<td></td>
<td>0.474 0.489 0.502</td>
<td>0.471 0.484 0.498</td>
</tr>
<tr>
<td></td>
<td>0.478 0.491 0.499</td>
<td>0.469 0.482 0.502</td>
</tr>
<tr>
<td>347</td>
<td>0.486 0.495 0.508</td>
<td>0.48 0.494 0.507</td>
</tr>
<tr>
<td></td>
<td>0.483 0.499 0.512</td>
<td>0.485 0.497 0.51</td>
</tr>
<tr>
<td></td>
<td>0.48 0.497 0.509</td>
<td>0.482 0.492 0.504</td>
</tr>
</tbody>
</table>
The ANOVA for the full factorial is shown in Table 3. All the main variables are significant: Temperature, Cooler, Flow rate and Speed. Moreover, some interaction like Temperature and Flow Rate, and Temperature and Speed and are significant at both level of 5 percent and 1 percent. However the interaction between Flow Rate and Cooler, and between Flow Rate and Speed are significant at 5 %, but not at 1 %. At 5 percent, F 0.05,4,∞ =2.37 and F0.01,4,∞ =3.32 which all of combinations specified above are greater than the F table. Other combinations are not significant. The R Squared = .990 and the Adjusted R Squared = .984. If we look at R² which is 99% and also at R2 adjusted which is still very high = 98.4%. These could prove that all variables that we have are good enough to use for evaluating and they do contribute to the variability of the output response.

<table>
<thead>
<tr>
<th>Temp(A)</th>
<th>Speed(D):25</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cooler (C);10 Flow (B)</td>
</tr>
<tr>
<td>344</td>
<td>0.443 0.46 0.48</td>
</tr>
<tr>
<td></td>
<td>0.445 0.458 0.478</td>
</tr>
<tr>
<td></td>
<td>0.446 0.46 0.476</td>
</tr>
<tr>
<td>347</td>
<td>0.458 0.475 0.488</td>
</tr>
<tr>
<td></td>
<td>0.461 0.471 0.493</td>
</tr>
<tr>
<td></td>
<td>0.456 0.469 0.491</td>
</tr>
<tr>
<td>350</td>
<td>0.468 0.479 0.494</td>
</tr>
<tr>
<td></td>
<td>0.472 0.482 0.498</td>
</tr>
<tr>
<td></td>
<td>0.47 0.484 0.496</td>
</tr>
</tbody>
</table>

Table 3: Tests of Between-Subjects Effects

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>9.487E-02</td>
<td>80</td>
<td>1.186E-03</td>
<td>191.986</td>
<td>.000</td>
</tr>
<tr>
<td>Intercept</td>
<td>57.129</td>
<td>1</td>
<td>57.129</td>
<td>924867.770</td>
<td>.000</td>
</tr>
<tr>
<td>TEMP</td>
<td>1.683E-02</td>
<td>2</td>
<td>8.415E-03</td>
<td>1362.264</td>
<td>.000</td>
</tr>
<tr>
<td>FLOW</td>
<td>3.706E-02</td>
<td>2</td>
<td>1.853E-02</td>
<td>2999.667</td>
<td>.000</td>
</tr>
<tr>
<td>COOLER</td>
<td>8.958E-04</td>
<td>2</td>
<td>4.479E-04</td>
<td>72.514</td>
<td>.000</td>
</tr>
<tr>
<td>SPEED</td>
<td>3.881E-02</td>
<td>2</td>
<td>1.941E-02</td>
<td>3141.574</td>
<td>.000</td>
</tr>
<tr>
<td>TEMP * FLOW</td>
<td>4.551E-04</td>
<td>4</td>
<td>1.138E-04</td>
<td>18.419</td>
<td>.000</td>
</tr>
<tr>
<td>TEMP * COOLER</td>
<td>2.318E-05</td>
<td>4</td>
<td>5.794E-06</td>
<td>.938</td>
<td>.443</td>
</tr>
<tr>
<td>FLOW * COOLER</td>
<td>6.737E-05</td>
<td>4</td>
<td>1.684E-05</td>
<td>2.727</td>
<td>.031</td>
</tr>
<tr>
<td>TEMP * FLOW * COOLER</td>
<td>6.961E-05</td>
<td>8</td>
<td>8.702E-06</td>
<td>1.409</td>
<td>.196</td>
</tr>
<tr>
<td>TEMP * SPEED</td>
<td>2.995E-04</td>
<td>4</td>
<td>7.489E-05</td>
<td>12.124</td>
<td>.000</td>
</tr>
<tr>
<td>FLOW * SPEED</td>
<td>7.352E-05</td>
<td>4</td>
<td>1.838E-05</td>
<td>2.976</td>
<td>.021</td>
</tr>
<tr>
<td>TEMP * FLOW * SPEED</td>
<td>6.932E-05</td>
<td>8</td>
<td>8.665E-06</td>
<td>1.403</td>
<td>.199</td>
</tr>
<tr>
<td>COOLER * SPEED</td>
<td>1.545E-05</td>
<td>4</td>
<td>3.862E-06</td>
<td>.625</td>
<td>.645</td>
</tr>
<tr>
<td>TEMP * COOLER * SPEED</td>
<td>2.998E-05</td>
<td>8</td>
<td>3.748E-06</td>
<td>.607</td>
<td>.771</td>
</tr>
<tr>
<td>FLOW * COOLER * SPEED</td>
<td>2.527E-05</td>
<td>8</td>
<td>3.158E-06</td>
<td>.511</td>
<td>.847</td>
</tr>
<tr>
<td>TEMP * FLOW * COOLER * SPEED</td>
<td>1.493E-04</td>
<td>16</td>
<td>9.331E-06</td>
<td>1.511</td>
<td>.101</td>
</tr>
<tr>
<td>Error</td>
<td>1.001E-03</td>
<td>162</td>
<td>6.177E-06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>57.25</td>
<td>243</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>9.587E-02</td>
<td>242</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The next step a One Way ANOVA is run for each factor. The objective is to check if there is a difference between levels for each factor or not as shown in Table 4, Table 5, Table 6 and Table 7.

### Table 4: One Way ANOVA for Temperature

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F ratio</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1.585E-02</td>
<td>2</td>
<td>7.925E-03</td>
<td>22.455</td>
<td>.000</td>
</tr>
<tr>
<td>Within Groups</td>
<td>8.470E-02</td>
<td>240</td>
<td>3.529E-04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>.101</td>
<td>242</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The analysis of variance is summarized in the Table 4. Comparing the F value to the F table at $\alpha = 0.05$, $V_1 =2$, $V_2 = \infty$ which provide $F = 3.00$. This indicates that the Temperature means are not equal. More formally, the F value that we get from data is more than F form table which means the null hypothesis has to be rejected and conclude that the temperature significantly affects the mean pressure.

### Table 5: One Way ANOVA for Speed

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>4.047E-02</td>
<td>2</td>
<td>2.024E-02</td>
<td>80.846</td>
<td>.000</td>
</tr>
<tr>
<td>Within Groups</td>
<td>6.007E-02</td>
<td>240</td>
<td>2.503E-04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>.101</td>
<td>242</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The analysis of variance of speed is summarized in the table. Comparing the F value to the F Table 5. at $\alpha = 0.05$, $V_1 =2$, $V_2 = \infty$ which provide $F = 3.00$. This indicates that the Speed means are not equal. More formally, the F value that we get from data is more than F form table which means the null hypothesis has not been rejected and conclude that the speed means are the same, so that the cooler are not significantly affects the mean pressure.

### Table 6: One Way ANOVA for Cooler

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>6.727E-04</td>
<td>2</td>
<td>3.363E-04</td>
<td>.808</td>
<td>.447</td>
</tr>
<tr>
<td>Within Groups</td>
<td>9.987E-02</td>
<td>240</td>
<td>4.161E-04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>.101</td>
<td>242</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The analysis of variance is summarized in the table. Comparing the F value to the F Table 6. at $\alpha = 0.05$, $V_1 =2$, $V_2 = \infty$ which provide $F = 3.00$. This indicates that the cooler means are equal. More formally, the F value that we get from data is less than F form table which means the null hypothesis cannot be rejected and conclude that the cooler means are the same, so that the cooler are not significantly affects the mean pressure.

### Table 7: One Way ANOVA for Flow Rate

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>3.691E-02</td>
<td>2</td>
<td>1.845E-02</td>
<td>75.323</td>
<td>.000</td>
</tr>
<tr>
<td>Within Groups</td>
<td>5.880E-02</td>
<td>240</td>
<td>2.450E-04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>9.570E-02</td>
<td>242</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The analysis of variance is summarized in the table. Comparing the F value to the F Table 7. at $\alpha = 0.05$, $V_1 =2$, $V_2 = \infty$ which provide $F = 3.00$. This indicates that the flow rate means are not equal. More formally, the F value that we get from data is more than F form table which means the null hypothesis has to be rejected and conclude that the flow rate means differ, so that the flow rate significantly affects the mean pressure.

A L9 orthogonal array with 3 replicates is used, this has reduced the number combination runs. The results from both technique, Tagushi Orthogonal Array Two Step procedure and Full factorial yielded be the same results. The Table 8. below shows all data, mean and S/N computations.
Table 8: L9 Layout and Computations

<table>
<thead>
<tr>
<th>No</th>
<th>x1</th>
<th>x2</th>
<th>x3</th>
<th>x4</th>
<th>N1</th>
<th>N2</th>
<th>N3</th>
<th>Y</th>
<th>S/N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0.481</td>
<td>0.481</td>
<td>0.477</td>
<td>0.47967</td>
<td>46.349</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>0.478</td>
<td>0.476</td>
<td>0.472</td>
<td>0.47533</td>
<td>43.839</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>0.475</td>
<td>0.474</td>
<td>0.475</td>
<td>0.47467</td>
<td>58.299</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>0.453</td>
<td>0.456</td>
<td>0.458</td>
<td>0.45567</td>
<td>45.156</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>0.502</td>
<td>0.496</td>
<td>0.498</td>
<td>0.49867</td>
<td>44.256</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>0.504</td>
<td>0.502</td>
<td>0.499</td>
<td>0.50167</td>
<td>45.992</td>
</tr>
<tr>
<td>7</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>0.479</td>
<td>0.48</td>
<td>0.482</td>
<td>0.48033</td>
<td>44.784</td>
</tr>
<tr>
<td>8</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>0.479</td>
<td>0.482</td>
<td>0.484</td>
<td>0.48167</td>
<td>45.638</td>
</tr>
<tr>
<td>9</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0.52</td>
<td>0.523</td>
<td>0.519</td>
<td>0.52067</td>
<td>47.963</td>
</tr>
</tbody>
</table>

Then the Two Step procedure is done by computing the means and S/N ratios in order to come up with the Response Tables for the Mean (Table 9.) and S/N ratio (Table 10.) to eventually generate the Two Step table (Table 11.):

\[
S/N = 10 \log \left( \frac{\text{Sm} - \text{Vo}}{\text{Vo}} \right)
\]

Where: \( \text{Sm} = \frac{\text{total}^2}{m} = (Y1+Y2+Y3)/4 \)
And \( \text{Vo} = \frac{\sum (Yi - Y)^2}{n-1} \)

Table 9: Respond table for the Mean

<table>
<thead>
<tr>
<th>Level</th>
<th>x1</th>
<th>x2</th>
<th>x3</th>
<th>x4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.48</td>
<td>0.472</td>
<td>0.488</td>
<td>0.5</td>
</tr>
<tr>
<td>2</td>
<td>0.49</td>
<td>0.485</td>
<td>0.484</td>
<td>0.49</td>
</tr>
<tr>
<td>3</td>
<td>0.49</td>
<td>0.499</td>
<td>0.485</td>
<td>0.47</td>
</tr>
<tr>
<td>Delta</td>
<td>0.01</td>
<td>0.027</td>
<td>0.004</td>
<td>0.03</td>
</tr>
<tr>
<td>Rank</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

In the table X4 has the most effect to the mean (Y).

Table 10: S/N respond table

<table>
<thead>
<tr>
<th>Level</th>
<th>x1</th>
<th>x2</th>
<th>x3</th>
<th>x4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>49.5</td>
<td>45.43</td>
<td>33.78</td>
<td>46.19</td>
</tr>
<tr>
<td>2</td>
<td>45.13</td>
<td>44.58</td>
<td>45.65</td>
<td>44.87</td>
</tr>
<tr>
<td>3</td>
<td>46.13</td>
<td>50.75</td>
<td>49.11</td>
<td>49.7</td>
</tr>
<tr>
<td>Delta</td>
<td>4.361</td>
<td>6.174</td>
<td>15.33</td>
<td>4.826</td>
</tr>
<tr>
<td>Rank</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

The results show in the table which could see that X3 has the most effect to the S/N or \( \eta \). X2 is the second one and the last group, which include X1 and X4, they have almost the same value.

Table 11: Two Step Optimization

<table>
<thead>
<tr>
<th>Factor</th>
<th>Effect S/N</th>
<th>Effect Y</th>
<th>Effect only S/N</th>
<th>Effect S/N &amp; Y</th>
<th>Effect only Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>X1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X1123</td>
</tr>
<tr>
<td>X2</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td>X23</td>
</tr>
<tr>
<td>X3</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td>X33</td>
</tr>
<tr>
<td>X4</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td>X43</td>
</tr>
</tbody>
</table>

Therefore, the conformation runs bases on the optimum combination = X1X2X3X4.

Comparing the result with the Full Factorial design both give the same answer that all main factor are significant to the data set.

Neural Network is a maintain tool for controlling the quality or the value of the data set. This technique will applied after we finished setting up the parameter by use those all king of technique to help. The Neural network uses the data that get from all combination to train the system and let the system learn by itself. The best system of neural network is depending on how good the data and how many the data are. For this experiment the data set will divide in three set that are 70 percent will use for training, 20 percent for testing and another 10 percent for validation. This data set also applied into NeuroGenetic Optimizer.

The Figure 2, below depicts the closeness between the predicted values of Pressure and the Desired ones. The graphs are very close together which indicates that the Neural Network provided a good learning process from the past data taken.
This is another window of picture as shown in Figure 3. It identifies the best network, which we could see that R square is very high. The Summary result from the system:

Summary Results of NeuroGenetic Optimizer

Source Data File: project DOE.csv

This file contains 243 records and 5 fields.
Every 2 records were split to create 122 training records and 121 testing records.

Parameters used in this run:
Generations Run: 10
Population Size: 30

The minimum network training passes for each network were 20
The cutoff for network training passes was 50
The input neural node influence factor used was 0
The hidden neural node influence factor used was 0
The limit on hidden neurons was 8.
Selection was performed by the top 50% surviving.
Refilling of the population was done by cloning the survivors.
Mating was performed by using the TailSwap Technique.
Mutations were performed using the following technique(s):
Random Exchange technique at a rate of 25%.

Information on network rank: 1 that evolved:
Found on generation 1 after a runtime of 00:00:03
Training of this network is considered complete.
R Squared on training set: 0.9719
Max. R Squared on test set: 0.9704
R Squared on validation set: 0.00
This network is a Fast-Back Propagation neural network.
The network employed 4 inputs and 1 hidden layer with 3 Logistic 3 Tanh 3 Linear neurons.
There were 1 output neurons using the logistic transfer function.

The following columns in the data file were used:
- Temp
- Flow rate
- Cooler
- Speed

As we could see that the result show very high the R square and this indicate that the system be able to predict the right of above 90 percent for the new combination of data which is very good. So this system is ready to test and be used for the maintaining the system.

Conclusions
This article demonstrates the comparison of the findings in an industrial setting between full factorial, fractional design and the Tagushi Orthogonal Array Two Step optimization. The procedures of the findings from the first the first step of the study are carried out on, where the full factorial and/or fractional factorial design identifies the key and main variables that have an effect on the response, then the Tagushi Orthogonal Two Step Techniques will refine the study by optimizing the process.

The key critical input variables that will impact the output response were selected mainly from past experience coming from engineers knowledgeable on the process. The ongoing work concentrates on pre-selected critical process variables and through the use of DOE, validate its current settings or determine new optimal ones. Four factors were varied at three levels each as part of a $3^4$ full factorial design. The full factorial will set the pace in identifying key variables affecting the response, the second step is carried by the Tagushi Orthogonal Array Two Step Optimization to optimize the process. The analysis has been used to set the pace for the procedure. This approach has been proven to be time and cost efficient at the token optimizing the process where quality is achieved and maintained at the desired level.
References


The Relevance of Qiyas Principles as Source of Shariah in Contemporary Islamic Banking

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Introduction
The word Sharia has literal linguistic meaning of unlimited source of water which is used to satisfy the thirst of people. This word means that it is a source of unlimited guidance to people who are following it. Just like the water is the most basic for the human body, Sharia is the most basic for the human life. Sharia is derived from all the text of Quran which are related to the way of human society. The laws are not limited to one or two aspects of life, they cover just about everything in human life and society. Sharia also deals with the supernatural. It talks about the relation between Men and God (Institute of Islamic Banking and Insurance, n.d.).

One example to understand the wrong application of Sharia is to apply the rules of punishment of Sharia while implementing an economic system based on capitalism which is prohibited. It is said the punishment laws of Sharia are made with the protection of society in mind.

When there is an implementation of Economic rules of implementation, it involves the implementation of rules called Zakah, Nafaqah, and Al-Jizyah. The economic system implementation in Islam requires the implementation of the Ibadaah, social system and everything related to the rules of the people of the book. In the Islamic every sub-system is inter-connected with each other. Implementing one part initiates the implementation of another (Institute of Islamic Banking and Insurance, n.d.).

This report covers the concept of Qiyas principles in Shariah law, authority and types of Qiyas principles in Islamic law, application of Qiyas in contemporary Islamic bank, practical examples and conclusion.

Concept of Qiyas Principles in Shariah Law

Qiyas
The literal meaning of Qiyas is measurement. Qiyas is the extension of the word Sharia. It is the case in which an original case from the past is compared to the new one because of the similarity of circumstance between both of them.

There are many specific conditions and requirement for Qiyas to follow and they are explained books of Usul al Fiqh. One of the most basic of these requirements is that there should be no ruling from Quran, Sunnah, and Ijma as Sahabah existing regarding this new case (Institute of Islamic Banking and Insurance, n.d.).

Another requirement for Qiyas is that the new ruling that has been formed should be based on Quran, Sunnah, and Ijma as Sahabah not on another Qiyas. It means that the new ruling that has been formed from Qiyas should be justified by the existing rulings from Quran, Sunnah and Ijma as Sahabah.

Over the past centuries, there has been an intellectual decline which affected Muslim resulting in the concepts of Usul ul Figh becoming vague in the minds of some people. This also led to some misconceptions. The following are some of the most common misconceptions that have formed regarding Qiyas (Islamic Revival, 2005).
- There is no evidence for Qiyas therefore it is not a source of Shariah.
- Qiyas comes from human reasoning. It is a matter of personal reasoning making its outcomes not a part of Shariah.
- Qiyas can applied to everything.
- The Illah (reason) for forming a rule can be from the mind and it does not have to be in the texts of Shariah.
- Sometimes the Illah (reason) can be from customs and traditions.
- For all the Shariah rules, material benefits is generally the reason.
- The wisdom behind a rule and reason for it have no difference.
- Qiyas is the same as applying a known rule of Sharia.

These misunderstandings are very widespread and they need to be explained clearly. These misconceptions affect the normal Muslims on the street when they are posed with questions about Shariah rules. They might device their own answers and justify it on the basis of these misconceptions. There are also people who say that material benefit is the reason for all Shariah rules thereby justifying their clear violations of prohibitions.

**Authority of Qiyas Principles in Islamic Law**

**Islamic Law**

Sharia is the Islamic law that Muslims follow and it is based on the two sources of Quran and Sunnah. The Sharia law aims at maintaining welfare and good nature in humanity in life and afterlife. It teaches a code to follow aimed to creating good and eliminating evil from the society. The main source of the rules of Sharia is from Quran and the application of these rules are taken from the Sunnah. Other sources for Sharia include, Ijma and Qiyas. When the Quran and Sunnah cannot give a proper guidance in a situation, Ijma (consensus) is used. Qiyas is the process of arriving to a conclusion based on the analysis of a similar situation that has occurred in the past. Sharia became what it is from the development it went through since 14 centuries of existence of Islam (Hakeem, Haberfeld and Verma, 2012).

According to the classical theory, Sharia contains the commands from Quran, the legislation which came from the practices of the Prophet and the opinions of jurists. But Sharia is not just unchangeable code, it is an evolving and adaptable code. Even though there are lots of schools of Sharia, all of their basic points are very similar to each other. The different opinions that have been formed regarding sharia are because of the political, historical and cultural factors.

**Islamic System of Criminal Law**

The system of Sharia law is very different from the western law. It is executed very differently than the western law. According to Schacht (1964), Sharia is an embodiment of religious duties and Allah’s commands. Sharia laws treat everyone with a much wider scope than western law. It considers an individual’s relationship not just with their neighbors or their state, but with God Himself. There are many rituals like prayer, charity, fasting and pilgrimage which are a part of the Sharia law (Hakeem and et al., 2012).
Sharia law is not about legal issues, it also deals with ethical standards. It does not just talk about what humans are allowed to do, it talks about what humans should avoid doing. In Sharia, all actions are divided into five categories. One of the categories is Fardis which talks about the actions and duties that should not be omitted at any costs. Omitting them will make the follower liable to punishment. The second category is Haram, which talks about those actions that are completely forbidden from doing (Hakeem and et al., 2012). Whoever commits them are liable to getting punished as per the law.

The above mentioned categories are the extreme cases of actions a person can commit. The third category is Mandub, it talks about those actions which are advisable to commit. But omission of these actions do not make a person liable to punishment. Then there is Makruh which advises those actions one should refrain from. Generally these actions are disliked but not punished.

The fifth category is Jaiz. It refers to those actions which are not related to religion and are therefore permitted. These fivefold classification shows that Sharia contains all the actions of humans. This classification divides actions which are morally commanded from those that are legally commanded. Dividing moral and legal commands helps prevent any confusions that could come because of the differences in moral and legal obligations (Hakeem and et al., 2012).

Authority of Qiyas Principles

There are two primary and secondary sources for the authority of Sharia rules. The first main source of the Sharia is the Quran. The second source is the Sunnah. The literal meaning of the word ‘Sunnah’ is the ‘Way’. The ‘way’ here means the way the prophet Muhammad lived his life. Everything that Muhammad said, did or approved of doing is called the Hadith.

The lesser level authority comes from Qiyas. Qiyas is the extension of existing Sharia laws according to new situations. The last source for Sharia laws will from Ijma. Ijma is the consensus. This final approach of using consensus is justified by the quotation that Muhammad has stated. Muhammad has stated that all of his nation cannot agree on an error. Sharia law tries to provide everything that is necessary for a person to be well spiritually and physically. The actions of any Muslim are divided into five categories (Saint Group, n.d.).

- Obligatory
- Meritorious
- Permissible
- Reprehensible
- Forbidden

There are five pillars which are obligations to every Muslim:

The first is the testimony of faith. This declares that there is no one other than Allah that is worthy of worship. It also declares that Muhammad is His messenger. The second is the ritual of prayer. A Muslim should establish five daily prayers. The third is the obligatory almsgiving. A rich man working in trade or industry should give 2.5% of his total savings. People working in agriculture should give 10% or 20% of their annual produce. All these charity will be distributed among the poor. The fourth pillar states about fasting. The fifth pillar explains the pilgrimage to Mecca which is done in the month of Zul Hijjah. Every individual should compulsory visit at least once in his/her life time except he/she has health and financial problems. This should be done to show how much importance is given to Allah and to join in the family of Islam (Saint Group, n.d.).

Types of Qiyas Principles in Islamic Law

Qiyas have been divided into three types based on the strength or weakness of the Ilah. They are:
The first is the analogy of the superiors: These are the cases in which the effective cause is more evident in the new case than the original case in the past to which it is compared. One example can be seen from the Quranic text in sura al-Isra (17:23) which talks about parenting. From the texts it can be deduced that there is more prohibition on beating or lashing children more than verbal abuse (Islamic Board, n.d.).

The second is the analogy of equals: In these cases the Illah in both the new and original cases are equally effective. One of the examples for this can be seen from the Quran text which forbids the taking the property of orphans. From this text, it can be deduced that any other act of mismanagement or crime that could lead to the loss of such property are forbidden too. The hanafis regard this analogy to be a part of interpretation rather than an analogy.

There is another rule that a container licked by a dog must be washed seven times. Based on this, the shafis extended the same rule to a container licked by a swine. However, this rule was not allowed by the Hanafis (Islamic Board, n.d.).

The third is the analogy of the inferior: In this form of Qiyas, the effective cause of the new case is less clear than the effective cause of the original case. In this case, it becomes unclear whether the new case falls under the same ruling that applied to the original case. An example in this can be seen from one of the rules of riba. One of the rules forbid the exchange of wheat or other special commodities unless the two exchange amounts are equal and the delivery is immediate. Based on the same analogy, it can be extended to apples as both apples and wheat are edible.

But, the Illah for this Qiyas of apples is weaker than wheat because apples are not a staple food. This type of Qiyas is accepted completely, but some Hanafis and Zahiris consider the first two categories to be under the meaning of the text. Based on this considerations by Hanafis, it can be seen that they apply the term “Qiyas” to only that type of deduction which involves ijtihad (Islamic Board, n.d.). The first two categories are considered too direct in the point of view of the Hanafis.

Application of Qiyas in Contemporary Islamic Banks

The industry of Islamic banking and financing have become one of the fastest growing industries. Islamic banking has spread all over the world for Muslim and Non-Muslim customers. The way Islamic banking runs is very different from the way traditional banking. The differences are not just in the way things are run but also in the way the values of banking. Islamic banking has the value of Sharia in it. The Islamic rules of Sharia for transactions are called fiqh muamalat and Islamic banking follows these rules. These rules come from Quran and Sunnah along with secondary sources of Islamic law such as consensus and reasoning. The major difference between Islamic banking and traditional banking is that Islamic banking must follow the rules of Sharia at all times (Anas, 2010).

Islamic banking has developed many financial techniques making sure they fall under the view of Sharia. These financial techniques are basically taken from Islamic contracts of partnerships, exchanges, loans, fee-based and other contracts. In their day-to-day banking activities, Islamic banks use these developed financial techniques that satisfy Sharia laws and at the same time satisfy investors with financial returns.

Islamic finance has goals which are not materialistic but rather based on human well-being and achieving a good life overall (Anas, 2010). It focuses on values, socio-economic justice and balancing the various aspects of life for its followers.

The following are the Main Principles of Islamic Banks

Taking or receiving interest is prohibited: All financial transactions that occur in
Islamic banks should be free of any interest. They must all be related to an actual economic transaction. It is considered unethical if any transaction gives profit from indebtedness.

**Money should not be used to make more money in Islam:** In the concept of Islam, money is just for the sake of exchange. It exists to give value to something but does not have value of its own. Therefore it is prohibited to make money from money.

**No financial transaction should exploit someone:** There should not be any kind of exploitation in any financial transaction. The parties in a financial transaction should share the risks and rewards that come from their financial transaction or investment.

**It is the lender’s responsibility to bear any profit or loss:** If a lender has lent money for a particular work, then it is the lender’s duty to bear the losses or profits that come out of it. The financial law of Sharia is based on the belief that the investor of the capital and the user of the capital should equally bear the risk and rewards. This applies to all industries.

**Illegal assets are banned:** There should not be any transaction which is related to something that is considered unlawful. For example: there should be no investments in businesses related to tobacco, alcohol, drugs, harmful substance and pork etc. Any other enterprise which does not need any financial leverage is not given financial investment. All other activities that are considered sinful in the view of Sharia are banned.

**Transactions that are related to Maiser (speculation or gambling) are banned:** Transactions which have too much of ambiguity or uncertainty are prohibited. Transactions like selling something that one does not own come under this category. The business principles of Islam respect the aspects of environment, human welfare in the world. The principles talk about fair dealing and fair employment (Anas, 2010).

Over the time, Islamic banking has developed and modified the operations of conventional banking to fit the needs of Sharia law. Shareholder’s capital, deposits from depositors and funds invested by investors are the main finance for Islamic banks. There have been many studies on the sources of Islamic banks and how the funds are used. Some of the popular studies are (Abdul-Gafoor (2003), Alam (2000) and Haron (1995); Gail and Worthington, 2007).

There are three main types of Islamic deposit accounts. The Islamic current accounts is a service to depositors which lets them process bank transfers and pay cheques via a prime on Islamic finance existing transfer and settlement systems. These accounts let the depositors withdraw money whenever they want but they have no interests on the money. Current accounts also give the option of storing foreign currency to enable international trade.

Even though interest is not available, depositors can get benefits in the form of prizes. These prizes depend on the value of the deposit and the profitability of the bank. These prizes or services are offered without any fee from depositors.

The Islamic investment deposit accounts were designed with the purpose of satisfying customers who wish to invest funds using profit/loss sharing principles. There are two types of investment accounts in practice. They are: specified and unspecified. Specified accounts are those in which the depositor gives the banks rights to invest the funds in conditional or limited investments. The second category that is unspecified category is when the depositor gives the bank rights to invest the funds in anything that the bank wishes (Gail and Worthington, 2007).

The investment accounts generally work under the principles of Mudarbah and Musharkah. These principles are what establish the bank as the entrepreneur and the depositor as the investor. The banks
share profits or losses based on a pre-agreed ratio.

The usage of offered funds is very complicated in the Islamic banking system. In the conventional banks it is possible for money to earn returns, but in Islamic banks money should not earn returns without proof of a direct collaboration between capital and effort. As a result, Islamic banks cannot be the financial intermediary because this would require the banks to accept deposits from one investor and lending it to other borrowers.

However, there are many financing tools that can be used to meet financial needs in the market and to give short, medium and long term funds. They are all under the principles of Islamic finance. These include Mudarabah, Musharakah, Murabaha, Bai muajjall, Bai Salam, Istisna, Ijarah and Quard Hassan.

There are many services that Islamic banks offer that are similar to conventional banks. These do not include retail services. Some of the services are: performance bonds, letters of guarantee, letters of credit, travelers’ cheque, and money transfer, foreign exchange transactions and safe deposits. In the above cases, the Islamic bank would generally collect a service fee according to the expense incurred on the service.

The bank also has the right to charge commission when there is a transaction of metals like gold. This right is given to the bank because they act as an agent. This right is permitted by Sharia (Gail and Worthington, 2007).

**Practical Examples of Qiyas**

**Contemporary Practices of Sharia Law**

In today’s world there is a lot of difference between the way Sharia is interpreted and implemented. There are some people who believe that this difference has occurred due to colonialism, as it emphasized on secular laws rather than religion laws. In the recent past, liberal movements that occurred have questioned the relevancy of sharia law from many perspectives. All these changes have resulted in many countries with large Muslim population to shift to secular constitutions and few Islamic provisions. These countries include Indonesia, Bangladesh, and Pakistan etc. (Saint Group, n.d.).

There are countries like Turkey which have a strong secular constitution. Similarly there are many countries in Middle East that maintain dual system of courts. In these countries religious courts would take care of marital and similar issues.

Saudi Arabia and Iran have religious courts which deal with all aspects of law. Sharia law was also used in the countries of Sudan, Libya and modern Afghanistan (Saint Group, n.d.). The new Sharia courts have introduced harsh punishments without respecting the much tougher rules of evidence and testimony.

The punishments in these courts would include amputation of one/both hands for theft and stoning the person for committing adultery. All these laws of Shari have been implemented with the purpose of maintaining a society that is just and harmonic. From a western point of view, the above mentioned punishments are very harsh, but from the perspective of Islamic scholars, these punishments would prevent crimes.

There have also been arguments that the Prophet Muhammad would not introduce courts with such overly tough punishments instead of creating prisons. Islamic law, like Christian and Jewish law have been interpreted in many different ways by many different people and different places.

Moderates might treat the religious law in a moderate way and even make it liberal. On the other hand, if post-enlightenment readers of philosophy read the religious law, they might consider it unfit for today’s society. They would relate the law with rituals and theology. Fundamentalists might
consider religion law as something that is legally binding on everyone belonging to the faith and everyone who come under their control.

The Islamic law can be viewed in many perspectives even among Muslims. The Muslims in countries like America treat it very differently from the Muslims in countries like Saudi Arabia. Even though they all follow the law, their perspectives are very different (Saint Group, n.d.).

**Hukum Sharii**

Topics like previous Ummahs, Judgement day etc. are covered in the texts of Quran and Sunnah. But the text that talks about what people are to do and what not to do is called Hukum Sharji.

**Types of Hum Sharii**

There are many commands in the legislative sources, but they are all not compulsory or prohibited. Everything is not so extreme, there are many middle zones. There are five different types of Hukm Sharji. The two extremes are compulsory actions and prohibited actions. Then there are recommended actions, disliked actions and permissible actions. All these actions are neither compulsory nor prohibited. Whether they are followed or not followed, punishment is not resulted because of them.

**Practical Examples of Qiyas**

The Qiyas are also divided in to two types. They are ‘obvious analogy’ and ‘hidden analogy’. This division has be done by the Hanafis. In the obvious analogy, the relation between asl and far is clear and obvious, hence the name. Any discrepancy between them is removed based on clear evidence.

The hidden analogy is different from the obvious analogy in the way that there is a chance the discrepancy between asl and far could remain. Using the example of two wines (nabidh and Khamr), Shawkani has demonstrated this analogy. Nabidh is obtained from dates and Khamr is obtained from grapes. Even though there is some discrepancy between the two, the analogy to prohibit nabidh is created (Islamic Board, n.d.).

**Some Examples are Given Below** (Islamic Board (n.d)...)

- Selling and buying is forbidden after the last for Friday prayer which is extended to all kinds of transactions.
- The killer cannot get any benefit from the victim.
- Drinking wine and taking drugs or other intoxicating materials are prohibited.
- A man shall not offer a proposal of betrothal to a woman who is already betrothed to another man except when the man who betrothed the woman abandoned his proposal or permits the former man to betroth the woman.

**Conclusion**

Following Sharia is not just about knowing the laws, the follower must know the situation, the rules and the methods of applying these rules. For example, there is a rule in Sharia which dictates to cut off the hand of a thief. But there is more to this rule, if the thief steals food when he/she is hungry, then this rule does not apply. It is important for the follower of Sharia to know all the conditions. Knowing when and how to apply a rule is important in following Sharia.

These are some of the reasons why it is important to clarify the subjects of Illah (legal reason) and Qiyas. The financial transactions should be occurred free of any interest in Islamic banks must be done for actual transaction amount. In order to clarify the subjects that are related to these principles it is important to understand the depths of the subject.
References


Improving Local Hospital Services with Quality Function Deployment

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Abstract

Research Problem
Quality as a term is often defined as meeting or exceeding the expectations of customers. This concept can relatively be easier to adopt at typical manufacturing and service companies. However, for healthcare systems in general and hospitals in particular, it is often a more complex and challenging task. Quality Function Deployment (QFD) is a commonly used quality tool for translating customer needs into design and operational measures in both manufacturing and services. Throughout the years, the QFD method has significantly developed and was widely implemented for quality improvement in both industrial and service sectors. Each new QFD application often presents an opportunity for practitioners to think about other areas where QFD concept could be used. QFD application in a hospital context presents further unique challenges due to the nature and criticality of hospital operations.

Study Significance
Recent assessment by the Lagatum Institute (2013) shows that the UAE is currently ranked 28 worldwide in the prosperity index. Healthcare quality is one of the key aspects assessed when measuring the prosperity of a country. Both the UAE government 2021 strategic vision and the Abu Dhabi 2030 vision have also highlighted the importance of the quality of healthcare services as one of categories that make the UAE a more prosperous country. Quality methods and standards have played a major role in transforming the quality level of healthcare services especially in the major public hospitals of the country. In addition, studies showed that the increase in satisfaction level can improve the overall physical and mental conditions of the patients in the hospital. This paper presents a case study of implementing Quality Function Deployment (QFD) model to improve the operations and the customer satisfaction at a major public hospital in the UAE. The study follows a systematic approach that is based on surveying hospital customers, assessing their current satisfaction level, and identifying specific actions that can result in improving the overall quality of hospital services.

Literature Brief
QFD was first developed in Japan in the late 1960s by Yoji Akao and Shigeru Mizuno as a tool for integrating quality into the development of products and services (Mizuno and Akao, 1994). Nowadays, QFD application in the industry has extended to become a systematic process for capturing customer requirements and translating them into process changes that must be met throughout the supply chain. QFD applications include enhancement of products and services of companies in many industries (Besterfield et al., 2003). The QFD application to service industry is growing along with the growth of service sector as more companies are using the tool for enhancing the services provided to their customers as well as for designing new services. Common industries include healthcare, hospitality, financial institutions, law enforcement, airports, utility companies, and many others. Details of QFD application to real-world problems can be found in Bossert (1991). An extensive review of QFD literature can be found in Chan and Wu (2002).
Research Methodology

The main objective of this case study is to assess the quality level of hospital operations, to identify the key customer needs, and to set specific actions of improvement. To this end, the study utilized online surveys to characterize the voice of the customer, Pareto analysis to identify the vital few customer-valued improvement opportunities, and QFD analysis to set improvement actions. The study approach can be summarized in four main stages:

- Stage 1: defining and ranking the customer needs.
- Stage 2: Using the Hospital report to assess the current customer satisfaction level regarding the identified needs.
- Stage 3: Benchmarking the collected customer feedback and quality levels with that of similar hospitals and at the same criteria.
- Stage 4: Running QFD analysis to identify the set of improvement actions

Findings

The study has showed diversity in results, which can be understood with the nature and diversity of the services provided by the hospital. Still, however, the study was able to identify specific set of actions that can be sued to improve the quality of hospital services. These mainly include focusing on the vital few value-adding measures in a systematic approach for quality auditing, shifts operating pattern, and response to customer’s feedback. Further recommendations were set for implementing the customer requirements based on the results of the study and the experts’ opinions. In addition, the study has confirmed that the hospital has an advantage over similar hospitals in the services that require high capital expenditure, because of the governmental funding. Finally, a future plan for improvement is developed jointly with hospital officials.

Keywords: Hospital quality, Quality Function Deployment, House of Quality, Pareto Analysis, UAE hospitals.

Introduction

When Prosperity is to be measured for a country, different aspects are evaluated, and one of which is the healthcare. Recent assessment by the Lagatum Institute shows that the UAE currently ranked as the 28th worldwide in its prosperity index (Lagatum Institute, 2013). Abu Dhabi the United Arab Emirates capital has established on 2007 a vision that will help in its different categories to make the UAE a more prosperous country by 2030. Eagerness to achieve this vision, it empathizes on the quality of the healthcare system being one of its main categories.

Quality as a term can be defined as meeting or exceeding the customers’ satisfaction, which can relatively be easier to adopt by normal service or production companies. However, for healthcare systems it is more complex than just obeying a guideline because of its critical service provided by hospitals.

Besides the potential profit increase by satisfied customers, studies have showed an improvement in overall physical and mental conditions for patients with higher satisfaction level. For example, a cross-sectional study states that patients who have suffered from angina pectoris has about 9% and 7% improvement in their physical and mental conditions, respectively (Guldvog, 1999).

This paper is going to case study the implementation of Quality Function Deployment (QFD) model on one of the healthcare providers in the UAE. Surveys will be conducted in finding the customers’ needs, and current satisfaction level of the service provided by the hospital and other competitors. Giving better understanding of the technical requirements that would help in attaining better value-added quality, and then make a plan in pursuing them.
Methodology

In applying Quality Function Deployment on healthcare systems and focusing on the voice of the customer, surveys have to be conducted in finding the satisfaction level of the service provided.

However, important questions shall be answered before, would it be helpful to provide customers with a feature/service that they might not desire? Even with high quality? And where is the value added to the overall service? Thus, satisfaction level without defining what is important to customers is not beneficial.

The approach to be used in collecting required data will be online surveys, including questions ranking different features in a scale of 5. In addition, a space will be added for freedom of feedback and will be considered upon response frequency.

Mainly three stages of surveys will be conducted, where the first one will be done in series with the second and third being in parallel, and they are:

- Stage 1: defining the customer needs from healthcare systems, and ranking their importance making it clearer of what to focus on in assessing hospitals, and will be used in the customer needs column in the HoQ.

- Stage 2: selected hospital current service feedback, showing satisfaction level from the customers’ view focusing on the demands found in stage 1.

- Stage 3: surveys examining customers’ satisfaction level on competitor healthcare providers, considering the same criteria as above.

One of the challenges can be faced is the sample size because the huge population and hardness in attracting the right people particularly for the second and third surveys. The first survey is looking for general requirements that hospitals are expected to achieve in serving their customers in the UAE. The sample size is set to 30 (large sample) based on the study limitations. For the other two surveys, it is critical to get the same sample sizes. This will allow better comparing grounds, fairness, and provide the same area of opportunity.

First stage has included a total of 13 questions with answer that are represented by a scale from 1 to 5, with an actual sample size of 42. Because the verity in the answers, the final scale to be used for each question is an average, considering the weight of each answer.

As far for the second and third surveys they have included one extra question that has been frequently recommended in the freedom question.

Selecting the proper technical Requirements for HoQ can be difficult, especially for someone who doesn’t has enough knowledge about hospitals. However, with the help from hospital personnel, an interview has been appointed with one of the employees responsible for the quality in the hospital. In addition, assistance was provided in making a more appropriate correlation and interrelation between the customers’ needs and technical requirements from his professional view. In which, a more realistic, and possible technical parameters to help improve overall quality can be determined.

Finally, results from HoQ are going to be used in Pareto chart in order to visually separate the vital few from the trivial many. Making it easier for the author to focus on smaller number of technical requirement and recommend possible ways to achieve them.
Case Study

In its first days, House of Quality (HoQ) has been used for products, appearing first time in an oil tanker design by Mitsubishi (John and Hauser, 1988). Yet, with the developments over the past four decades it became one of the most powerful quality tools for service providers, too. This is because its final results provide a clearer picture of how to increase quality by achieving tangible set of goals. Nevertheless, to get the optimum results from it, data gathered and entered need to be accurate and well-studied.

First, feedback are collected from customer’s importance requirements and averaged. Results show the high demand and customers’ expectation from the healthcare providers, which can be understood because of its critical importance and value-added to the human’s life. Figure 2 has been developed to show each attribute.

Figure 2: Customer Importance derived from the Survey

![Customer's Importance](image-url)
Hence, by looking at the results from the second and third stages high competitiveness level can be noticed. Figure 3 shows the averaged ratings for hospitals within the study for each of the attributes.

Figure 3: Feedback Results for the Three Hospitals

![Hospital Feedback Compression](image)

As mentioned earlier, selecting the right technical requirements is a challenging process. However, with the help from different hospitals quality personnel, relative technical requirements to the customer’s demands are summarized in Table 1 with the reasons of their selection.

The interrelationship matrix that has been developed with the help of professionals, assessing the impact relation between the customer needs and suggested technical requirements, that can be seen in the fully developed HOQ Appendix A. In this situation, the variety of the technical requirements and lack of interrelationship between all of customers’ needs have resulted in low final ratings. However, there are few which are standing out and can be considered as the vital few (systematic approach, quality officer, customer feedback, and clinics two shifts). A Pareto Chart Figure 4 shows that focusing on the mentioned four areas can contribute to approximately 45 percent of the overall improvement.

<table>
<thead>
<tr>
<th>Table 1: Technical Requirement Selection and Rational</th>
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<tr>
<td><strong>Systemic approach</strong></td>
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<td><strong>Soft skills training</strong></td>
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<td><strong>Food out-sourcing</strong></td>
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<td><strong>Customer feedback after treatment sessions</strong></td>
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</tbody>
</table>
Community awareness program  | Showing the community how the hospital is operating, gaining the trust by transparency.
--- | ---
Open statistics sources  | Sharing the success with the public to increase the reputation.
Poly-clinics double shifts  | Reducing bottle-neck effect and time required to make new appointment.
Alternative roots  | More ways to get to the hospital reducing traffic and making it more convenient.
Shuttle service  | To solve the problem of far parking spaces, since physically nearby spaces are limited.
Privileged Physicians  | Contracting with different doctors from different hospitals and universities, to accommodate a bigger number of customers as an outcome.
Insurance plan range  | Increasing the type of accepted insurance card plans, becoming different customers’ target.
Customer’s online access to medical results  | Improving the transparency of medical results and process to take next action step, and easiness of seeking second opinion.
Online appointment booking  | Effectiveness and time saving for both customer and hospital.
Quality auditing officer  | To keep track on the issues that are faced in improving the quality, using some expert in the field.

By benchmarking with the other two evaluated hospitals we can conclude that selected hospital has the lead in the manners that requires funding, and that is because it is governmentally sponsored. However, a lot of improvements are required in the other different attributes that can be categorized as “quality of response”.

**Figure 4: Pareto Chart for HoQ Final Results**

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**Recommendation**

In this context, making a future plan to be implemented and potentially improve the vital few for the selected hospital is essential. This part will address some of them, giving recommendation that the author have developed by collecting
information from relevant case studies and experts opinions.

**Systematic Approach**

According to the assessments done by the HoQ, adopting a systematic approach has the highest importance. The adoption can result in tangible time saving, and since time is money, that too. A study done by Kristin Furfair, MD in University of Colorado Hospital summarizes wasted time in hospitals into categories Figure 5. In addition, in his study he showed time required to finish different paper work in the hospital shown in the same figure.

For this case, one of the most suggested solutions is the lean system, because of its impact in eliminating waste. There are seven areas of waste lean production system involves in, which can be related to some of the healthcare operation in Table 2.

![Figure 5: The Time Wasted in Hospitals](image)

*Source: pricewaterhousecoopers survey of hospitals and health system, 2001*

Moreover, as part of continues improvement strategy, it is beneficial to make a detailed process diagrams of each operation. This way defining each step as either non-value added, value enabling, and value added can be conducted (Berczuk, 2008). Resulting in improvements for a process that is time efficient without removing the value added steps, and finally to standardize the new process.

**Quality Auditing Officer**

Setting rules and goals to improve the overall quality are not enough without the enforcement of the management. Expecting employee to change just with the announcement is not realistic. Here the quality auditing office/officer comes in; to make sure that the quality model applied in the organization is followed. However, some organizations aim to recruit existing employees from different departments. This can be problematic, because quality management is a full time job. It also requires someone with knowledge of both the organization processes and the proper quality tools to be implemented for each situation.

One of the common mistakes that are noticed to occur when trying to improve the quality is blaming individuals for poor quality. The right act is to blame the system, since individuals tends to swim with the flow not against it. Furthermore, we need to keep in our mind that employees change over time; conversely the system doesn’t.
Table 2: Waste Types in Hospitals

<table>
<thead>
<tr>
<th>Waste type</th>
<th>Healthcare relation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste of overproduction</td>
<td>• Entering repetitive information on multiple forms.</td>
</tr>
<tr>
<td>Waste of time</td>
<td>• Patient making follow-up appointment.</td>
</tr>
<tr>
<td></td>
<td>• Delays in bed assigning.</td>
</tr>
<tr>
<td>Waste of processing</td>
<td>• Ordering more diagnostic tests than required.</td>
</tr>
<tr>
<td></td>
<td>• Retesting.</td>
</tr>
<tr>
<td></td>
<td>• Multiple computer programs documenting patient information.</td>
</tr>
<tr>
<td>Waste in inventory</td>
<td>• Duplicate medication/supplies in excess of normal usage.</td>
</tr>
<tr>
<td></td>
<td>• Not related instruments in operating rooms.</td>
</tr>
<tr>
<td></td>
<td>• Outdated charts, files, equipment, and paperwork.</td>
</tr>
<tr>
<td>Waste in transportation</td>
<td>• Unnecessary travelling to different floors.</td>
</tr>
<tr>
<td></td>
<td>• Patient transportation (testing, surgery, discharge)</td>
</tr>
<tr>
<td>Waste of movement</td>
<td>• Disorganized office.</td>
</tr>
<tr>
<td></td>
<td>• Looking around for charts, patients, medications.</td>
</tr>
<tr>
<td></td>
<td>• Common used supplies not in patient room.</td>
</tr>
<tr>
<td>Waste of defects</td>
<td>• Medication errors.</td>
</tr>
<tr>
<td></td>
<td>• Paper work errors.</td>
</tr>
</tbody>
</table>

Customer Feedback

As obvious as it may sounds, customer’s feedback is important to be done it in the right way. It was found that in selected hospital it is required by the management that patient are offered to leave their feedback after each treatment session. But, from past experience of the author in addition to other customers that have been interviewed, feedback forums were never carried out. In another word, the system tries to gather data for the customers; nevertheless it is not taken seriously and implemented.

Even if it is implemented, a lot of organizations find surveys challenging to be dealt with, particularly in cases of huge number of customer. Likewise, the selected hospital would easily exceed the range of 100,000 customers over the year. That is too much of time wasting and paperwork.

A proposal was discussed with the hospital, looking into embracing a new feedback system that is technology based. This can be done by using tablets where customer can evaluate the treatments they just had. This system should be linked with a database that both the quality department and the person of interest (doctor/nurse) can access.

Analysis

In this circumstance, discussion was open with the quality persons of interests in the hospital looking into the future plan concentrating on the vital few. To their point of view, it is necessary to adopt technical requirements that are feasible within their hands and strategy. To this extent, the have mainly encouraged the idea of implementing systematic approach using lean method, and a plan to promote a quality officer that is devoted to issues that are linked with increasing customers’ satisfaction.

Lean system comes as one of their priority; this because of the high potential time saving that can help in reducing the bottle neck in attracting more patients. The quality team expect after attaining the management approval, it might take up to two years at least to fully adopt the new system. This is because of the huge number of departments and employees working in the hospital.

A brief plan was jointly prepared with the team, prioritizing possible technical requirements that can be linked to customer demands, summarized in the table below:
### Table 3: Priorities - Implementation Plan

<table>
<thead>
<tr>
<th>Priority</th>
<th>Target/objective</th>
<th>Currently status</th>
<th>Expected duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systematic Approach</td>
<td>To embrace a company-wide system that has the potential to increase efficiency and reduce time wasted.</td>
<td>Almost each department with different approach that find suites them most.</td>
<td>Approx. two years.</td>
</tr>
<tr>
<td>Quality auditing officer</td>
<td>Fully dedicated officers with background in quality and the hospital, with the concern of methods to keep improving.</td>
<td>Employees from different departments are requested to form a quality team.</td>
<td>To be discussed with related departments.</td>
</tr>
<tr>
<td>Customer feedback</td>
<td>Technology based feedback system with the increase of customer’s awareness of using it for future improvements.</td>
<td>Paper based feedback system that in most cases not presented to customers.</td>
<td>Within a year.</td>
</tr>
<tr>
<td>Alternative routes</td>
<td>Adding more routes to get in and out the hospital for more convenient.</td>
<td>One in/out route with traffic jams during peak hours.</td>
<td>Currently on progress. Approx. 3 months</td>
</tr>
</tbody>
</table>

**Conclusion**

The recent decades have proven the importance of quality in a competitive market globe. Hence, companies use different ways that accommodate their variety operational sectors to improve their quality. One of which, is the use of QFD model that can help significantly in providing better service/product and increasing the overall quality if used properly.

Being the oldest in the area doesn’t mean it is the customers’ first choice, as the surveys conducted for the selected hospital have verified. Also, it was confirmed that the hospital has an advantage in the areas where money is an issue, because of the governmental funding. However, in other areas, competitors are leading the way. The hospital need to start focusing on areas it is not doing great in, found by the HoQ.

Since culture is an important factor in how healthcare providers should operate to achieve customer satisfaction, benchmarking with hospitals in the same area is advisable. Competitors 1 & 2 are examples that have also been presented in the paper, and showed competitiveness level in overall performance.

Finally, an initial plan based on study recommendations has been jointly developed, aiming to achieve better quality in areas that are considered from the vital few. Although this plan was established in short period of time, improvements in hospital services are highly expected.
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Smith, S., 2013. 'Determining Sample Size: How to Ensure You Get the Correct Sample Size'. *Qualtrics*. 
Appendix A: Complete House of Quality on Selected Hospital Service
Towards Quality Civil Service in Singapore and Brunei via Core Values

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Abstract

Organizations have to excel over the long run and use creativity and innovation to add value for quality services to its internal and external stakeholders, including the people of the country concerned. Excellence is facilitated by understanding, anticipating, fulfilling, and exceeding the needs and expectations and by producing a lasting prosperity that preserves natural resources for the future generations. It must also be long lasting and sustainable, as maintaining and sustaining excellence is more challenging than achieving it. Valuing staff meritocracy can in fact be the single most important practice resulting in a clean, efficient and effective civil service as well as ensuring efficient service quality management. Over the years, Singapore and Brunei in Southeast Asia have advanced service excellence through quality public administration. While Singapore is known to have maintained this ‘quality’ by preserving neutrality/meritocracy in civil service, Brunei has been credibly upholding ‘quality’ in customer care by instilling the values of Melayu Islam Beraja (MIB)22

When Mr. Lee Kuan Yew retired as Prime Minister of Singapore in 1990, senior civil servants attended a farewell dinner in his honor. His opening remarks were that all the guests there that day were there because of “who they were and not because of their fathers were”, and that was something Mr. Lee said he was going to be his legacy. In the case of Singapore, the principle of meritocracy has entailed that scholarships were given to the best and brightest 18-year-old students to attend the world’s best universities and thereafter be bonded to work for the Singapore civil service for eight years. Promotion is not based on seniority alone and performance and potential would be more important. Postgraduate scholarships were given to those identified for higher appointments.

In Brunei, the core values of MIB, significantly contributed to the efficiency, effectiveness and quality of the Bruneian civil service. Not only it gives the foundational and theoretical underpinnings, but also contributes to the service quality management of the entire civil service organization in the Sultanate. Drawn from the values of Islam, Brunei encourages moral learning in public service delivery, and these values are reflected in the country’s long term policy vision or commonly known as Wawasan 2035 (Government of Brunei, 2014).

However, it is certainly worth observing that in the Singapore civil service, procedures or rules are stressed (rule orientation). Some critics have argued that in an environment, where government tends to chide and admonish rather than to praise and encourage, no civil servant is willing to go beyond his or her scope of duty or take the risk of making his or her decisions. In that sense, the civil service is mechanical

22 The abbreviated term MIB stands for Melayu Islam Beraja or Malay Islamic Monarchy - “Malay” as the nation’s cultural tradition, “Islam” as religion and “Monarchy” (Beraja) the state governance.
and inflexible. But to be fair, it is not that the Singapore government likes to chide and admonish, but it is more the nature of the civil service bureaucracy, where rule bound or rule orientation value prevails and works better.

In this study, the authors are examining how the City-State of Singapore and the Sultanate of Brunei are applying their core values as facilitators to enhance service quality for citizen satisfaction. Some of the core values the two small countries share include continuous learning, resilience, service quality and various other values that help them to sustain excellence and service quality. Being small, they must be effective, resilient, truly learn, update and be on a continuous improvement path (Government of Brunei, 2014; Said Ya’akub, 2007; Mohiddin, 2007; Mohiddin and Low, 2008; Low, 2002; 2008a; 2009).

The results of the study shows what the authors are emphasizing, that is, the core values held by the two countries are what make their civil services being able to sustain excellence and quality. Both being small countries do appreciate the fact that they cannot afford to make mistakes, and at the same time they must uphold the values of service quality and excellence to be efficient and effective. And that they must be good in what they are doing to maintain, sustain and excel to prosper, if not just to survive.

**Key Words**: Core values, service quality, efficiency, effectiveness

**Introduction**

Organizations have to excel over the long run and use creativity and innovation to give or add value for quality services to its internal and external stakeholders, including the citizens of the country concerned. Excellence is facilitated by understanding, anticipating, fulfilling, and exceeding the needs and expectations and by producing a lasting prosperity that preserves natural resources for the future generations to come. Good interpersonal skills and service quality will surely enhance or boost sales (Slesinski, 1986). It must also be long lasting and sustainable, as maintaining and sustaining excellence is more challenging than achieving it.

In this paper, the authors examine the core values held by Singapore and Brunei as to how they inspire the respective civil services of these two small states of Southeast Asia to sustain excellence and quality in public services. The study was conducted through literature review and a modest consultation. During the study, five respondents - three from Singapore and two from Brunei - added values by sharing their insights on core values vis-à-vis public service quality. The study thus relied on the qualitative research method. It is worth noting that similar to Low’s 2006 studies, being assured of confidentiality and anonymity, the interviewees expressed themselves freely; these were further added by the fact that these respondents had earlier approached the researchers and volunteered their participation.

**Conceptualizing Value and Service Quality**

Values are convictions or key beliefs. And interestingly, to the authors, they also supply the standard(s) or as what has been indicated in The Little Oxford Dictionary (1973: 539) “specimen or specification by which something may be tested or measured; required degree of some quality; degree of proficiency”. Ovretveit, on the other hand, places ‘public service quality’ within the overall framework of total quality management (TQM). He defines public service quality as “meeting the needs of those most in the need of the service, within higher level requirements, available resources and at the lowest cost within the TQM strategy of organizational and attitude change for enabling staff to learn and use quality methods in order to reduce costs and meet the requirements of customers (Ovretveit, 2005). In service delivery, the term ‘quality’ is more widely perceived by
Bovaird and Loffler, who think that quality ranges from ‘fitness for purpose’ (i.e. meeting organizational objectives’) to ‘meeting customer expectations’ (i.e. deriving service excellence from customer psychology) and even to the extent of ‘passionate emotional involvement’ (i.e. going beyond language and number) (Bovaird and Loffler, 2009). In their conceptual construct on public service quality, Bovaird and Loffler go beyond quality of public services to the ultimate value of ‘quality of life’ (Bovaird and Loffler, 2009).

Core Values and Service Quality in Singapore and Brunei

In valuing staff, meritocracy can in fact be the single most important practice that resulted in a clean, efficient and effective civil service as well as even ensuring service quality management (Singapore Government. 2014a). When Mr. Lee Kuan Yew retired as Prime Minister to become Senior Minister in 1990, senior civil servants attended a farewell dinner in his honor. His opening remarks were that all the guests there that day were there because of “who they were and not because of who their fathers were”, and that was something Mr. Lee said he was going to be his legacy. In the case of Singapore, the principle of meritocracy has entailed that scholarships were given to the best and brightest 18-year-old students to attend the world’s best universities and thereafter be bonded to work for the Singapore Civil Service for 8 years. Promotion is not based on seniority alone and performance and potential would be more important. Postgraduate scholarships were given to those identified for higher appointments. Since being ejected from Malaysia and having attained independence in 1965, the founding fathers/ruling party of Singapore have often emphasized quality and excellence as a key driver to succeed in both public and private sector services.

As for the Sultanate of Brunei Darussalam, the core values of Malay Islam Beraja (MIB), significantly contributed to the efficiency, effectiveness and quality of the Bruneian civil service. Since 1984, the Sultanate has chartered its post-independence course through its proclaimed ideological compass of MIB. All three pillars of MIB – Malay culture, the religion of Islam, and the institution of an absolute Monarchy - are traditional, long standing Bruneian features, which have been expertly crafted to act as the filter by which modernisation and development can occur. As the ideology is all-encompassing, law has not only been one of the vehicles for implementation, but is being shaped to accord with the tenets of MIB (Black, 2008).

Not only it gives the foundational and theoretical underpinnings, but also contributes to service quality management of the entire civil service organization in the Sultanate. Drawn from the values of Islam, Brunei encourages moral learning in public service delivery, and these values are reflected in the country’s long term policy vision or commonly known as Wawasan 2035 (Vision 2035). (Government of Brunei, 2014). The sultanate upholds the MIB concept as a guiding value in all public services. Sultan Hasanul Bolkiah from time to time reminds citizens through his titah (occasional speech) on special days. His recent speeches reflected this concern for : National service for the youth, Service Integrity, Public private partnership, Shariah law implementation and External relations. In his New Year 2014 Titah (speech), the Sultan inspires the civil servants saying: “...public service is “the government’s engine” in providing quality service to not just the public but also the business community. In the same speech, he reiterated his promise to adopt Islamic principles in state management: “the country will begin the introduction of the first phase of Shariah Law in April....” (Borneo Bulletin, 2014).
Nonetheless, it is certainly worth observing that in the Singapore civil service, procedures or rules are stressed (rule orientation). Some critics have argued that in an environment where the government tends to chide and admonish rather than to praise and encourage, no civil servant is willing to go beyond his or her scope of duty or take the risk of making his or her decisions. In that sense, the civil service is mechanical and inflexible. But to be fair, it is not that the Singapore government likes to chide and admonish, but it is more the nature of the civil service bureaucracy, where rule bound or rule orientation value prevails.

From the above, thus far, some of the core values the two small countries share include continuous learning, resilience, service quality and various other values that help them to sustain excellence and service quality. Being small, they must be effective, resilient, truly learn, update and be on a continuous improvement path (Government of Brunei, 2014; Said Ya’akub, 2007; Mohiddin, 2007; Mohiddin and Low, 2008; Low, 2002; 2008a; 2009).

Contemporary Civil Service Reforms to Promote Service Quality

Singapore

Singapore is a sovereign city-state and island country in Southeast Asia. It lies off the southern tip of the Malay Peninsula. Singapore declared independence from the United Kingdom in 1963 and united with other former British territories to form Malaysia, from which it departed two years later. Since then, it has developed rapidly. Singapore is one of the world’s leading commercial hubs, with the fourth-biggest financial centre and one of the five busiest ports. Singapore is a unitary multiparty parliamentary republic with a Westminster-style unicameral parliamentary government. The People’s Action Party has won every election since self-government in 1959. Slightly over five million people live in Singapore, of which around 2 million are foreign-born (Wikipedia, 2014). Singapore has been scored highly in a range of governance measurements such as by Transparency International, World Bank, World Economic Forum, and Ease of Doing Business. It is often ranked at or near the top. The civil service reform program - Public Service for the 21st Century or known as PS21, introduced in the mid-1990s, has two basic objectives: (a) to nurture an attitude of service excellence in meeting the needs of the public with high standards of quality, courtesy and responsiveness; and (b) to promote modern management tools and techniques for efficiency. In the words of Singapore Government:

As the change movement of the Singapore Public Service, PS21 aims to build a Public Service that is ready for change and ready to change. It is a people-centred mass movement that encourages public officers to embrace change in their daily work in order to keep the Public Service at the leading edge. This in turn contributes towards the continued success of Singapore (Singapore Government, 2014b).

E-Government and customer surveys have been adopted as modern management tools for efficiency in services. The other success factor was to introduce a special feature is political meritocracy alongside administrative talent pool. Potential ministers are talent spotted outside parliament based on (a) strong academic qualifications at a reputable university; and (b) a successful professional, administrative or business career, in which they reached a senior management level or had made a noticeable impact within their profession. This all points to a political meritocracy that parallels the meritocracy in civil service A great deal of policy implementation and service delivery responsibilities are now exercised by statutory boards, which enjoy operational autonomy. The decentralization
is reflected in the increase in the number by statutory boards from 31 in 1990 to 64 in 2012 (Jones, 2012). The PS21 package also promotes reforms through performance measurement as agencies use performance indicators focusing on standards of service, workload and outcomes. Some agencies have adopted targets so performance can be assessed in terms of target accomplishment. One special feature was to emphasize on meeting the needs of the public by giving priority to (i) customer service (one aspect is the improvement in counter services); (ii) cutting red tape - important role of Cut Waste Panel; and (iii) providing on-line services (e.g. GeBiz). There is minimum corruption in Singapore. Over the years, the public commitment of the government of Singapore to combat corruption has been matched by effective action in bringing to book any politician, official or business leader involved in corruption through the enforcement work of its anti-corruption agency, the Corrupt Practices Investigation Bureau (Jones, 2011).

Brunei

Brunei Darussalam is a small Sultanate with less than 400,000 in an area of 5,765 square kilometers. Located in the Borneo Island in Southeast Asia, the country has a combination of Weberian bureaucracy and a traditional monarchic system. The 1959 Constitution preserves the concept commonly referred to now as the ideology of the MIB (Melayu Islam Beraja) (MIB). As part of a closely-knit society, Brunei public administration is deeply influenced by its national culture and being small sovereign state, Brunei has a unique culture in terms of its socialization. Since its independence in 1984, the government of Brunei has made economic diversification as its prime economic agenda to decrease its heavy dependence on oil and gas industry (Farhana, 2013). With its 44,800 employees in 13 Ministries, the Sultanate of Brunei has a modest size of civil service serving citizens. Policy direction in the following areas is given by the Prime Minister’s Office: public finance, economic planning, energy, social welfare and justice. Brunei also follows some of Singapore strategies in customer care including e-Government and customer orientation. The progress of e-Government initiatives in Brunei continued throughout the current decade. The E-Government Strategic Plan 2009-2014 was launched in May 2009 with “Citizen-Centric Services” as its guiding principle. The strategic document has set out the country’s e-Government mission as “Electronic Governance and Services to Best Serve the Nation”. It set out five key strategic priorities in the areas of capacity, governance, trust, connectivity and service-delivery. The Sultanate’s efficiency and administrative effectiveness has largely been enhanced and, like Singapore, ‘compact’ through the e-government process, with its people attuned to e-government acceptance and practices. The government generously spends on education as well skills development and training to bring the nation to the threshold of economic prosperity and social development. For better customer service, the Client’s Charter was also introduced in 1998, laying out the way in which public officials should deal with the public in delivering services and it gives clear guidelines on application procedures etc. The Sultanate also introduced performance management system in 1988 and more transparency was introduced in 1997. However, there are still flaws in the application process of the new public management-driven model of performance management in Brunei. Farhana observes:

The PM system was introduced without seriously challenging the prevailing institutions or the interpretive scheme (beliefs) of the organisational members. The PM system in the Ministry has proved decoupled with other management systems at the administrative level, despite the government’s intentions to reform. This subsequently has paved way for path dependency in the
change process which has preserved the traditional features such as management style, rules and regulations and personnel management that do not seem conductive to the application of PM tools (Farhana, 2013).

Achieving Developmental Milestones through Quality Public Service

As a result of better public services, based on selected core values, both Singapore and Brunei have climbed up in different developmental rankings.

GDP Per Capita

As table 1 shows, both countries have consistently improved GDP per capita over the past few years. Singapore has made an increase of 22% from 2011 to 2012 and Brunei has registered 2%.

Table 1: GDP Per Capita (US$) in Singapore and Brunei

<table>
<thead>
<tr>
<th>Country</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singapore</td>
<td>38,923</td>
<td>42,784</td>
<td>47,268</td>
<td>51,709</td>
</tr>
<tr>
<td>Brunei</td>
<td>27,212</td>
<td>30,880</td>
<td>40,244</td>
<td>41,127</td>
</tr>
</tbody>
</table>


Human Development Index (HDI)

Table 2 displays that out of 187 countries included in the HDI of 2013, Singapore has occupied 19th position and Brunei was ranked at 30. Again, both countries have improved their overall rank between 2011 and 2013.

Table 2: HDI in Singapore and Brunei

<table>
<thead>
<tr>
<th>Country</th>
<th>2007</th>
<th>2009</th>
<th>2011</th>
<th>2013</th>
<th>Rank Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brunei</td>
<td>30</td>
<td>30</td>
<td>33</td>
<td>30</td>
<td>+3</td>
</tr>
<tr>
<td>Singapore</td>
<td>25</td>
<td>23</td>
<td>26</td>
<td>19</td>
<td>+7</td>
</tr>
</tbody>
</table>


Singapore has achieved the 10th rank in 2012 from 11th in the previous year. Brunei has climbed up 14 places in the e-Government Development ranking to 54th position in 2012 from 68th spot in 2008, according to the 2013 United Nations e-Government Survey. The considerable leap in Brunei’s ranking reflects the good pace of progress in the Brunei’s e-Government initiatives to build ICT infrastructure, deliver electronic services and developing human resource capacities and capabilities within the country. Organizationally, the Prime Minister’s Office has been given the overall responsibility of coordinating the efforts of a number of implementing agencies. The e-Government National Centre (EGNC) and the e-Government Technical Authority Body (EGTAB) have also been constituted to strengthen the e-Government initiative and to promote e-Governance culture in the society. The e-Government Innovation Center (eGInc), constituted in the University of Brunei Darussalam is also facilitated the developmental process through training and research.

Table 3: E-Government Development Index

<table>
<thead>
<tr>
<th>Country</th>
<th>2010</th>
<th>2012</th>
<th>Rank Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singapore</td>
<td>11</td>
<td>10</td>
<td>+1</td>
</tr>
<tr>
<td>Brunei</td>
<td>68</td>
<td>54</td>
<td>+14</td>
</tr>
</tbody>
</table>

Source: UNDP, 2013b.

Singapore has been consistently occupying the top rank in Ease of Doing Business and Brunei has moved from 79th position in 2013 to 59th this year (Table 4).

Table 4: Ease of Doing Business record

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Brunei</td>
<td>84</td>
<td>94</td>
<td>96</td>
<td>112</td>
<td>83</td>
<td>79</td>
<td>59</td>
</tr>
<tr>
<td>Singapore</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Findings from the Survey

All five respondents made it clear that the value of meritocracy/competence and excellence was the key driving factor that emphasized on competence and training in both countries. On learning their observations was that continuous learning is a value that helps the civil service and civil servants to be in a good quality stead as well as in the pursuit of quality. The issue of resilience has been reflected by the respondents as an important factor on which one respondent said, “The civil service must be relied on, serving as an effective machinery to help governments to implement policies and carry out national development projects”. Four out of five respondents felt that knowing the needs of the customers can play a critical role in improving service quality service.

Core Values and Service Quality in the Singapore Civil Service

The emphasis on competence and excellence helped a lot to improve the public service standards in Singapore – most respondents felt. In this aspect, one can safely say that the value of integrity (Low and Ang, 2012) can in turn help to promote meritocracy as well as competence and excellence in the Singapore civil service context (Low, 2009; 2002). Quah has also highlighted that the island-Republic’s reliance on meritocracy in selecting and promoting talented civil servants and their reliance on competitive salaries to attract and retain them has contributed the Singapore’s civil service’s effective control of corruption as well as the public trust of the civil service (Quah, 2013). This indeed reflects the emphasis on service quality and excellence which also helps not only to facilitate the growth of the civil service, but also the City-state’s economic development, growth and progress.

Core Values and Service Quality in the Brunei Civil Service

In case of Brunei, the value of competence and excellence can be interpreted as the value of integrity (Low, Mohd Zain and Ang, 2012). Here, integrity embraces honesty and trustworthiness (Low and Ang, 2012; Low, Mohd Zain and Ang, 2012); others or the subordinates can depend on or trust us. Integrity refers to behaviour that is honest and ethical, making a person trustworthy.

The respondents view that in Brunei, there is a strong stress on competence among the Malays as a result of its national ideology and these tie-in with Brunei’s long term vision or Wawasan 2035 It is aimed to build a strong Sultanate with a good civil service (of high integrity) and a strong infrastructure. One respondent thinks, “Learning or continuous learning is a value that helps the Civil Service and civil servants to be in a good quality stead as well as in the pursuit of quality.” It matches with the Islamic value of learning and the Sultanate’s MIB ideology. The tips from the respondents include continuous learning as a value that would help the civil service to improve quality. They explained that quality is about continuous learning since it is an ongoing journey, and there should always be continuous improvement. The Civil Service Institute emphasizes on this in its training programs for the civil servants. In the case of Brunei, the supportive core values can be faith in Islam, political leadership and will, collectivism, human relations and extended family values.

Conclusion

In this paper, the authors have examined how the City-State of Singapore and the Sultanate of Brunei are applying their core values as facilitators to enhance service quality for citizen satisfaction. The results of the study show what the authors are emphasizing, that is, the core values held by the two countries are what make their civil services being able to sustain excellence and quality. Both being small countries do appreciate the fact that they cannot afford to make mistakes, and at the same time, to survive, they must uphold the values of excellence and quality. And that they must be good in what they are doing to maintain, sustain and excel to prosper, if not just to survive.

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From Bureaucracy to Wiki-Government and Collaborative Policy Making: Examples from Public and Private Organizations

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Abstract

The objective of this paper is twofold: first to explain the novel idea of wiki-government (i.e. crowdsourcing) which represents a radical departure from bureaucratic management and second, to cite some successful examples of wiki-government from private and public organizations. The lack of information, partially an outcome of bureaucratic secrecy and closed-doors culture in government, is a strong impediment to sound policy making. The bureaucratic secrecy and closed-doors culture in government and business hinders the process of seeking relevant information from self-selected experts and the general public to improve the process of policy making. The concept of wiki-government (or crowdsourcing in the private sector), encouraged by the Internet, is a new effort to bridge this information gap and enhance popular participation and good governance. The concept of "wiki-government" originates in the writings of Noveck (2009); Tapscott &Williams (2008 & 2010) and Howe (2008). It revolves around experiences of many government and business organizations to use the Internet to seek the participation of freelance and volunteering experts from outside and inside government as well as other interested stakeholders and the general public to contribute to the formulation of policies and administrative decision-making that is relevant to their area of interest.

Keywords: wiki-governance, crowdsourcing, bureaucracy, government, technology

Introduction

Governance as a new way to manage organizations and societies is in high vogue in the current literature of public and business management. The term wiki-government is used in this paper to refer to the use of the Wiki technology and the Internet to integrate organizations with their environment, stakeholders and the networked communities of experts and enthusiasts. The emergence of the Internet, (and especially the so called Web2), and the recent developments in Information Technology (IT) and Communication Technology (CT) have revolutionized not only the communication among different local and foreign groups of people, it has also opened new ways for doing business in both public and private organizations thereby changing their modus operandi forever. This is made possible by the evolution from the initial Web to Web 2.0 which is known by many names: the living Web, the Hypernet, the active Web and the read/write Web. Whereas the old Web was about “Websites, clicks, “eyeball”, Web 2.0 “…is about communities, participation and peering”, (Tapscott and Williams, 2008, 19).

The objective of this paper is twofold: first it attempts to explain the novel idea of wiki-government which represents a radical departure from bureaucratic management by involving volunteering self-selected experts, consumers and stakeholders to help in providing information and finding solutions for business and government policy-making problems, and second, to cite some successful examples of wiki-government from public and private organizations. In
this paper, Wiki-governance refers to the use of the Internet and the Wiki technology to seek policy advice from experts outside the organization as well as the general public to provide relevant information related to different policy problems and their implementation in both public and private organizations. This practice is nicknamed by some writers as wikinomics in business organizations, macrowikinomics in public and other organizations, and wiki-government in exclusively governmental organizations.

**Literature Review: From Bureaucracy to Wiki-government**

The new concept of Wiki-government, and associated concepts of crowdsourcing, virtual state and virtual organizations (Margetts, 2007), carries in them wild calls for abandoning government by bureaucracy and hierarchy. Thus it is natural in this paper to start our discussion with the concept of bureaucracy and its evolution. Bureaucracy as a systematic organization of human effort to achieve certain objectives is as old as human civilization itself and its existence “in Egyptian, Chinese, Greek, Roman and other early civilizations has long been acknowledged (Lynn, 2007, 29). In fact, the history of modern administrative sciences revolves around debates over bureaucracy and democratic theory (Albrow, 1970; Lane, 1987; Lynn, 2007; Hood, 2007)

The evolution of administrative theory and practice has always been influenced by ecological factors and cultural change. Historically speaking, the emergence of bureaucratic forms of human organizations reflected the cultural change brought about by the industrial revolution and the consequent supplanting of feudal cultural values by those of modern capitalist mode of production. Whereas the concerns of the former evolved around inherited prerogatives, the latter worshiped the values of merit, effectiveness and efficiency. These values are reflected in important theoretical contributions chief among which are the contributions of Fredrick W. Taylor (1911), Henri Fayol (1930) and Max Weber (1947). Although these writers presented different views about management, they all more or less assumed the natural existence of a bureaucratic form of organization as developed in the writings of the German sociologist Max Weber. Max. Weber’s ideal type of bureaucracy emphasized “division of labor, clearly defined hierarchy, detailed rules and regulations and impersonal relationships” (Robins & Coulter, 2005, 30). Modern theoretical approaches such as quantitative, contingency theory, behavioral and system approaches and even total quality management were developed with bureaucracy standing up in their backdrops.

In the industrial-world governmental contexts bureaucracy is characterized by departmentalization, vertical decision-making and the existence of many formal rules. Although these characteristics are found in both government and private sector organizations they are more pronounced in government settings than private ones (Cumming & Worley, 2001). These ideal characteristics have undergone certain mutations in developing countries by traditional semi feudal tribal cultures to take the form of what Fred Riggs called prismatic administration (Riggs, 1964). In the contexts of developing and developed worlds, intellectual debate in traditional public administration, as an academic discipline and a tool of traditional governance, revolves around two concepts: dichotomy of politics and administration and rationality of bureaucracy (Wilson, 1887; Lane, 1987). Despite many attempts to dislodge it, bureaucracy dominates in governments of both developed and developing countries (Lynn, 2007). Whereas in the former it evolves intellectually and practically from the needs of the industrial era for rational constitutional governments, in the latter it was transplanted by both physical colonialism and intellectual contacts with western societies and cultures. Although bureaucratic forms of
organizations were transplanted in developing countries by colonialism, its existence in these countries was later enhanced by western systems of education and intellectual globalization. Being an USA innovation, the discipline of public administration succeeded to influence thinking about government and business all over the globe and especially in the developing world where American Public Administration and Business Administration textbooks and expertise were well-received by both the academia and the professions. Although the dichotomy faded away in many countries, the traditional Weberian model of bureaucracy, in its different versions, persists in governments and to a lesser extent in business, for good reasons. One salient reason is that the bureaucratic model is consistent with the hierarchical structure of power politics embedded in any form of human or even animal organization. It represents a good reference to the distribution of political power between power elites and the masses.

Although the term bureaucracy was correctly used by Mill and others as a “rule by officials, it has also been used to represent negative dimensions; the word is used as a pejorative term coined by a Frenchman in the 18th century to refer to routine and complexity (Lynn, Jr., 2007). The withering away of bureaucracy has been predicted by many experts (Bennis, 1966; Marini 1971; Thayer, 1973; Kanter, 1989; Osborne and Gaebler, 1992; Lane, 2000). Against this intellectual backdrop, many theoretical and practical ventures are developed to transform bureaucracy in both developed and developing countries. Though intermittent and loosely related, these ventures impliedly intend to change or modify the hackneyed bureaucratic behaviors in governmental and business contexts. These include, the ambitiously amorphous development administration movement (Swerdlow, Riggs), the overly emphasized total quality management (TQM) (Deming, Juran, Crosby), the market-oriented model of the new public management (Niskanen, 2007), reinventing government (Osborne and Gaebler, 1992), and finally the movement for good government, and its electronic versions: e-government and e-governance (Osborne, 2010).

Even before the arrival of these modern critics, the idea that bureaucracy was incompatible with democracy was a central issue in 19th century debates among the enemies of imperial bureaucracy, a criticism that has been revisited in modern times by postmodern democratic theory (Lynn, 2007). However, bureaucracy has its supporters who argue that “bureaucracy will not only survive in the twenty-first century but will flourish” (Meier and Hill, 2007, 51). Since the issues of running national defense, managing big social welfare enterprises, and monitoring the economy will remain salient tasks of government in the twenty-first century, public bureaucracies or private ones will continue to provide the most effective methods to carry out these tasks.

However, increasing global competition and massive technological developments compelled organizations to devise new structures to depart from the rigidity of bureaucratic forms to more flexible forms. These attempts range from traditional methods of allocating organizational work on “functional, self-contained units, matrix structures to more integrative and flexible forms such as process based and networked structures” (Cumming & Worley, 2001). Although most of these ventures have originated in USA, they have been embraced under different tags by voluminous groups of intellectual audience and public and private sector reformers in other countries.

However, despite the fact that the experiences of some of these novel ideas in government settings have registered modest successes and some of them proved faddish, they more or less paved the way for the emergence of the new venture of wiki-government by highlighting the flaws of
traditional bureaucracy. Nevertheless the latter die-hard prerogatives resisted annihilation. This is explainable by the fact that these reform ventures did not change the hierarchical foundations of social, political and administrative power that represent the justification for bureaucratic rule and administration. Therefore, Tapscott and Williams (2010, 260) grotesquely lament those ventures by warning us that ….

Despite being a decade into the twenty-first century, the unfortunate reality is that most governments still reflect industrial age organizational thinking, based on the same command-and-control model……it seems even the most irresistible force of our times is struggling to dislodge the immovable mass of government bureaucracy.

The Internet as Web 2 and its attendant global social networking webs that connect the whole world are about to change all that. This new trend is bringing about new ways of doing business utilizing, inter alia, the wiki technology.

The Wiki- Technology in Perspective

The word Wiki refers in the current net vernacular to an online electronic device that allows people to create contents, edit and contribute to contents created by themselves and others. Ines Mergel (2012) explains the etymology and meaning of Wikis as well as the evolution of the famous electronic encyclopedia “Wikipedia” that represents a successful living example of the Wiki technology in the following terms…. Wikis are websites whose content can be created, edited, discussed, and changed by users working in collaboration. The word Wiki comes from the Hawaiian; meaning “quick,” it highlights the easy, fast editing capability of Wikis. Wikis facilitate interaction and project collaboration. The most prominent Wiki is Wikipedia, known as the world’s online encyclopedia. Wikipedia was founded in 2001 by Jimmy Wales to quickly create, edit, and change information on every term its contributors want to define. Authors can create a page on a specific topic and publish a draft, which is then open to the whole world for edits and changes—and even deletion. The original Wikipedia page is structured through hyperlinks that connect keywords used in one article to the definitions provided in other articles. Definitions or content should not be replicated; instead, authors link to the original. The WYSIWYG principle (What You See Is What You Get) makes editing simple and easy. The formatting possibilities are reduced to a minimum, and pages are not intended to be flashy or nicely decorated, so that the content of the page is the focus of its authors and readers. Every registered user—but also every anonymous web surfer—can edit content with a simple mouse click.

This simple and innovative technology opens up new windows of opportunity for mass collaboration in policy making and management in both government and business; i.e. to utilize this simple technology to revolutionize the traditional ways of doing business. The use of Wiki technology in government and business represents a radical departure from the traditional bureaucratic ways of doing government and private business. Tapscott and Williams (2008, 245) argue that…” There has long been recognition that organizational bureaucracy impedes innovation, agility, and success”. Therefore, he urges that public policy makers and business managers live up to the challenge of devising new methods to open the doors of the closed silos in government and business organizations. Bureaucracy as style of organization is a product of the industrial age era. As a method of organization bureaucracy dominates the workings of business and government since the industrial revolution. Its guiding principles are secrecy, closed doors, the belief that government bureaucrats and CEOs know more than any other body else regarding the issues of their specialization, and the disdain for non-bureaucratized experts and popular
participation or interference in their work and their decision-making.

The closed doors of bureaucracy limit the amount of information and creative solutions to managerial problems. This lack of information, partially an outcome of bureaucratic secrecy and closed-doors culture in government and business, is a crippling impediment to sound policy making and management. The bureaucratic secrecy and closed-doors culture in government and business organizations hinders the process of seeking relevant information from self-selected experts and the general public to improve the process of policy and decision making in both government and business organizations. The Wiki approach exemplified by the concept wiki-government in the public sector and its business counterpart of wikinomics, is a novel endeavor to bridge the gap between the organization and its environment to enhance popular participation in policy making and provide for a new form of collaborative management and governance.

The concepts of "wiki-governance" originate in the writings of Noveck (2009) and Tapscott &Williams (2006, 2008 & 2010). Whereas Noveck’s book (2009) concentrates on the application of the concept to government organizations, Tapscott &Williams’ books (2008 & 2010) concentrate on government, non-government and business organizations. These books explore the theoretical framework for the concepts of wiki-government and wikinomics and provide successful examples of their application to many government and business organizations. The concepts induce the use of the Internet to seek the mass collaboration of freelance and volunteering experts as well as amateur enthusiasts from outside and inside government and business as well as other interested stakeholders to contribute to the formulation of policies and managerial decision-making that is relevant to their area of interest. The idea does not only involve the passive participation of stakeholders in the deliberations of policy and managerial issues but also their ability to contribute inputs to the process of decision-making itself. Therefore, the Wiki approach aspires to encourage the collaborative coproduction of goods and services. Many examples of successful experiments of co-production of many goods and services in the private sector through the facilitation of the expertise of self-selected experts and enthusiast drawn from the networked general public and experts are well documented in these books. In fact the wiki technology has transformed the entertainment, culture-producing and newspaper industry by popular websites such as My Space, Flickr and many companies like Amazon and Google have created networked platforms for mass collaboration for the production of values by networked communities.

In their best seller book, "Wikinomics How Mass Collaboration Changes Everything", Tapscott and Williams (2008) propound the main principles of the wiki approach and demonstrate its successful contributions to reputable innovations such as the famous encyclopedia Wikipedia and the powerful computer program Linux. The latter is the famous operating program developed through the collaboration of self-selected programmers working through the Internet Mergel (2012) has this to say about this approach…

Many of us are familiar with Wikipedia, which relies on thousands of active contributors who share their knowledge freely on a dazzling breadth of topics, with an accuracy rate rivaling that of traditional encyclopedias”.

Tapscott and Williams also demonstrate the drive of many companies to employ the Wiki technology to find solutions for their business problems. The miraculous success of Linux, which is used now in countless applications from airplane, cars and home appliances, encouraged IBM and other computer companies to collaborate with the Linux group in software development.
Moreover, many software companies now seek to source their software projects from networked communities by sharing their data, patents and research with these communities.

Tapscott and Williams identify seven models that have shaped up the process of mass collaboration utilizing the internet-networked global communities (Tapscott and Williams, 2006, 2008). The first model is “the peer pioneers” that brought open software products like Linux operating program and Wikipedia which proved that thousands of networked volunteers can produce innovative projects that outperformed big well-financed mammoth in the industry. The second model is “ideagoras”, which refers in the nomenclature of wikinomics, to the online market for innovative ideas, solutions, and inventions. This model is represented by the famous online InnoCentive Company. InnoCentive provides a platform for private and public sector entities like Proctor & Gamble (P&G) to shop for solutions from highly skilled freelance experts. The practice supports P&G’s R&D efforts and reduces its costs by providing more than ten times the size of its manpower. The third model is “prosumers”, a term coined by combining the two words “producer and consumer” to refer to the participation of consumers in the production of the goods they consume. A good example of this model is BMW’s experience. Inspired by the successful experiment of Linux, BMW sought customers’ innovation by releasing a digital design kit on its Web and invited interested customers to participate in their design. Thousands of customers responded by sharing their ideas with company engineers and many of these ideas proved to be valuable.

The fourth model is “Alexandrians”, which refers to the Greeks ancient effort to house all human knowledge in the Library of Alexandria, and signifies now the online efforts to make possible the sharing of all human knowledge through global databases. This sharing of knowledge will help tapping global knowledge to find solutions for human health, environmental problems and other global concerns. The best example of this model is the Large Hardron Collider (LHC) project sponsored by the European Council for Nuclear Research (CERN) and started in 2007. It represents the largest particle accelerator that expected to produce vast amounts of data to be analyzed by teams of thousands of physicists around the world. Another example of this model is the Earth System Grid (ESG) which integrates super computer power and vast data to help specialist and experts in the area of climate research. The project sponsors believe that the project will transform the present knowledge of global climate change. Universities like MIT post online all its academic courses and all relevant stuff for the possible use by students from all countries in the world. These and other similar endeavors may be the first foundations for the establishment of a global electronic company.

The fifth model is “platforms for participation” which refers to the efforts of smart companies which open up their proprietary technology and products to create an open place for networked communities of partners to co-create new values and new business. This model is represented by the attempts of big online companies like Amazon and Google and e-Buy to encourage the formation of networked collaboration communities and individuals to create new values using the companies’ platforms and even to establish their own businesses by utilizing the companies’ made-available wiki tools. Google, for example, permitted many developers to use its Google Earth to create new services that were successfully used by informal and formal relief groups. Moreover, The British Broadcasting Corporation (BBC) represents another good example of the permeation of participation platforms in well-established institutions. The BBC encouraged developers to use its platform to create new services utilizing the
Corporation services and feeds of news, weather and traffics.

The sixth model is the “Global Plant Floor”. This model embodies the attempts of even physical-goods producing industries to involve themselves in building networked ecosystems for designing and producing physical goods through mass collaboration. Companies that utilize this model are moving away from the bureaucratized model of the traditional multinational company to become real global entities that dismantle and transverse national boarders and bureaucratic silos to embrace wikinomics by utilizing global minds and facilitating the human capital available online. Tapscott and Williams (2008, 215) argues that these developments do not constitute the reemergence of the “… old multinational with a new twist. Smart firms are abandoning the multinational model completely”. The prominent example of this model is the Chinese motorcycle-producing company “Lifan”. Unlike traditional companies whose production are mostly done in-house and depend on tight bureaucracy, Lifan utilizes hundreds of different companies that are involved in motorcycle design and manufacturing. With very little central control these companies, each specializing in producing different parts of the motorcycle, were able to design and manufacture new motorcycles faster and less expensive than any traditional company. Lifan was able to out-compete the well established companies in the industry, like Honda, and to take large portions of their traditional markets. Honda in fact lost 70% of its market in Vietnam to Lifan. The seventh model is the “Wiki Workplace” shows how the mass collaboration is invading the work place and creating new work cultures that help modifying the bureaucratic modus operandi of business and, to a lesser extent, government organizations. This change in the workplace culture, according to Tapscott and Williams, is an outcome of the arrival of the Net Generation (teens who have grown up using the Net) to the workplace. This development is expected to revolutionize the workplace. All these seven models are equally applicable to government situations.

In their second book on “Macrowikinomics: Rebooting Business and the World, Tapscott and Williams (2010) urge for the use of Wiki technology in other types of organization such as the media, newspapers, universities and government and they demonstrate certain successful experiments in these sectors. In her famous book “Wiki Government: How technology Can Make Government Better, Democracy Stronger, and Citizens More Powerful” Beth Simone Noveck (2009), relates her successful experiment with Peer-to-Patent project which helped to relieve the United States Patent and Trademark Office (USPTO) from the burden of searching for prior arts to facilitate decisions on new patents. The success of the of peer-to-patent experiment encouraged other countries to utilize it in their patent offices, such as IP Australia, the Japan Patent Office, and the Korean Intellectual Property Office and the UK Intellectual Property (Wikipedia, 2012). Simon believes that the Peer-to-Patent experiment can be extended to other parts of government operations and fields.

The Wiki-governance Technology in Public Sector Organizations

The concept of governance emphasizes the importance of facilitating the participation of stakeholders and non-governmental organizations in policy-making and implementation (Osborne, 2010). The question to be raised here is: can the Wiki technology helps in the realization of that mission? Macrowikinomics changes the modus operandi of many previously bureaucratized forms of human productive and intellectual activities ranging from transportation, finance, universities, the media, in short, everything including the family and governments. However, wiki-government is not a completely new concept. It may be thought of as a natural upshot of e-government and e-governance.
In fact the concept of wiki-government, as propounded by Tapscott and Williams (2010) and Noveck, (2010), means more than just e-government or e-governance. E-government is a top-down approach to government which intends to improve the delivery of public services to the people. Citizens in e-government are treated as consumers, clients rather than co-creators (or prosumers in the jargon of wikinomics) in the collaborative process of producing these services as required by the idea of wiki-government.

With E-government the concept of e-government is expanded to embrace popular participation or e-participation by activating and involving organizations of civil society. Nevertheless, even with the promises of e-governance, the boundaries between citizens and government are preserved and citizens participate as clients and are not involved directly in co-creating public services and continue to participate as passive consumers. In this context we may think of wiki-government as an advanced stage in the path of full e-governance; i.e. government by the people. The concept of wiki-government may be attributed to postmodern approaches which developed a skeptical view of formal bureaucratic boundaries and seek to integrate clients into organizational operations not only to have a say in organization’s productive operations but to participate in them (Meier and Hill, 2007).

Examples of Wiki-governance in the Public Sector

The use of Wikis technology in government can be classified in different ways. Mergel, (2012) distinguishes three possible uses of Wiki technology in government. First: they are used to create open information-creating environments, such as Wikipedia, in which everyone can freely create collaborative content. Second, they are used for specific purposes, in which case authorship rights might be limited to specific authorized users to co-create and share professional knowledge. Third, they may be used in personal note taking or full-fledged knowledge management systems on the corporate intranet.

The real breakthrough of the wiki approach and technology in government is made by Noveck (2010). In her famous book Wiki Government: How Technology Can Make Government Better, Democracy Stronger, and Citizens More Powerful, she displays her practical experience of transforming the work styles in the United States Patent and Trademark Office (USPTO). Overburdened with examining and deciding on voluminous amounts of complex patent applications in a short time and suffering from insufficient sources of information, the USPTO passes sometimes undeserving patents. Noveck wiki project proposed the use of self-selected volunteering experts to help the USPTO with locating information regarding prior arts and non-obviousness – the two criteria for judging the patentability of a certain invention. Her project is nicknamed Peer-to-Patent and its adoption by the USPTO has resulted in tremendous success.

The success of the Peer-to-Patent project has encouraged Noveck to argue for the possible extension of the idea underlying the approach to all government organizations. Likewise the idea captures the imagination of many academicians and practitioners. For example Mergel (2012) examines the possibility of using the Wikis to produce valuable relevant information from government employees themselves or from the public at large to facilitate the smooth cost-effective working of the government machine. She elaborates on "the managerial, cultural, behavioral, and technological issues that public managers face in starting and maintaining Wikis". All the nine cases of government organizations that adopted the Wiki approach she studied, found Wiki approaches together with their current workplace tools effective in soliciting information from their employees as well as the general public. Mergel (2012) observes that...

Wikis “are on the one hand relatively easy
to create. On the other hand, maintaining collaboratively produced content while sustaining the quality and quantity of contributions over time is a formidable task for public managers.”

Mergel, (2012) discusses nine successful cases of Wikis used in government in different settings and for different purposes. The nine case studies were designed at different levels of government to achieve varied purposes and goals. Mergel categorized these cases into three types: Wikis for intra-organizational use, Wikis for inter-organizational use, and Wikis for engaging the public.

**Wikis for Intra-Organizational Use**

The first case Diplopedia was launched in 2006 by the US State Department in the office of e-Diplomacy using the MediaWiki software used by Wikipedia. The goal of Diplopedia is to facilitate creation and sharing of intra-organizational knowledge. This Wiki allows access only to State Department employees. It currently contains more than 10,000 pages of content that provide information for foreign affairs specialists. The Wiki, which was originally part of Condolezza Rice’s initiative of “Transformational Diplomacy”, has eventually developed to include “a set of social media tools, such as blogs, communities, and virtual work environments for teams (Mergel, 2012). A similar Wiki, with similar goals and purposes, was established by the USA Department of Defense in 2008 with limited access to the Department employees. It is noticeable that these two cases are mainly targeted towards intra-organizational use to allow the employees to create and share information and knowledge among themselves. They also coexist with other information-sharing applications.

**Wikis for Inter-Organizational Use**

Another two cases which are planned for inter-organizational use are Intellipedia and GCPedia. Intellipedia, launched in 2006, was designed to facilitate inter-organizational knowledge sharing among USA federal government multiple intelligence agencies. Access to this Wiki is limited to members of US intelligence community by invitation. GCPedia, on the other hand, was established by the government of Canada in 2010 to serve all levels of Canadian government with access limited to holders of gc.ca email addresses.

**Wikis for Engaging the Public**

The other five cases of wiki-governance are designed to involve the general public. The main purpose of this type of Wikis is to create information-sharing environment for the use of different government agencies which are not connected through their official intranets. The first case is BetterBuy Wiki in USA. It was launched in 2010 in the office of Assisted Acquisition of the General Services Administration (GSA) and targeted stakeholders across government, industry, and the general public. The access is opened to the public with anonymous posting allowed with login required. The second case EPA Watershed Wiki was launched in USA in 2009 to bring experts together on all levels in an information-sharing environment. This Wiki involves Federal Government expert including external experts who are involved in watershed conversations. The access to this Wiki requires pre-approval.

Whereas all the above cases were launched at central governments levels, the remaining three cases address local government organizations. The first of these cases is the Australian Future of Melbourne Wiki, Australia Wiki. This wiki was designed to serve local governments in facilitating citizen-government interaction. It requires pre-approved access. The second case is San Jose, California Wiki planning. Launched in USA in 2009, this Wiki also facilitates citizen-government interaction and requires pre-approval access. The ninth case, Manor (TX) City Wiki, was launched in 2009 to facilitate citizen-government interaction. These Wikis were designed to engage the general public in the work of local government. In these Wikis the general
public can generate ideas for new policies and engage in definition of public problems. Citizens are invited to express their own ideas regarding specific issues and comment on different ideas and participate in formulating final policy proposals.

The Wiki- governance Technology and the Business Organizations: Examples

Wiki-technology is sometimes nicknamed in the business world as “crowdsourcing”, or “open sourcing”. Wikinomics from which the concept of wiki-government is branched out, is, according to its protagonists, a new art and a science. Whereas the science component refers to an inevitable process in which the revolutions in IT and the Internet are leading to a new economic reality, the art component points to the desirability of its adoption by economic enterprises and governments. In its scientific form, wikinomics adverently asserts that the new global economic reality created by the tremendous developments in ICT and the Internet is inevitably leading to the emergence of new forms of productive relations that threaten to displace the old economic enterprise and create a new surrogate, i.e. the so called the business web or b-web (Tapscott and Williams, 2008).

In this new unfolding economic reality the traditional boundaries between the enterprise and its customers is blurred and through wired mass collaboration, facilitated by the Internet, customers become co-creators or prosumers rather than passive consumers (Howe, 2008). This situation is inevitable and laggard enterprises which choose to ignore it are going to encounter unfortunate failures and assured demise. Tapscott and Williams revisit in their treatise the Marxist presentiment about the inevitable contradiction between the means of production exemplified by modern ICT and the Internet on the one hand and the capitalist productive relations embodied in the traditional firm on the other. This fact understandably arouses the suspicions of the traditional protagonists of the firm and accusations of communism abound.

In its normative form, wikinomics encourages firms to change their old competitive behavior and open their doors and abandon their trite method of secrecy and harness the fruitions of the new mode of electronic mass collaboration. They ought to integrate consumers and experts and free Internet collaborators into their workforce to add value to their activities; that is to transform from traditional business firm to b-web or enterprise 2. Otherwise they are going to be sidelined and dustbinned. In this endeavor they ought to espouse the four fundamental principles of the art and science of wikinomics: openness, peering, sharing and acting globally. Howe (2008) distinguishes four types of crowdsourcing: collective intelligence, crowd creation, crowd voting and crowd funding. He relates in his book many successful experiments in different industries in areas of product design, filmmaking, music, journalism and even microfinance. However, the crowdsourcing experiments do not always have happy ending and Howe documented many of these failures.

The Success Story of Threadless.Com Company

This successful company was established by two young men, Jake Nickell and Jacob DeHart (the Jakes) using the Wiki technology. In 2000 both men were unemployed college dropouts. After participating in an online T-shirt competition, they decided to start their own design competition in which online designers are to design and vote to pick the winner design and thereby a new T-shirt business began. The two young men launched two month later the Threadleaa.com requiring people to submit proposed designs for cool T-shirts and then vote to select the best design. The winner will be awarded free T-shirts of his design and all others have to buy their T-shirts. The company grew gradually to out-compete
well established T-shirt companies such as Urban Outfitters or Old Navy and to have its designs “appearing on hit TV shows and on the backs of hip-hop artists” (Howe, 2008, 2). The company grows in size doubling its revenue each year and receives one thousand T-shirts designs to be voted on by the growing Threadless community. Nickell and DeHart have become icons and, ironically, gave lectures to MBA students at MIT’s Sloan School of Management (Howe, 2008). In 2006 the revenue of Threadless.com reached $17 million selling an average of ninety thousand T-shirts a month (Howe, 2008). The story of Threadless.com Company did not stop here because, as Howe, (2008, 3) puts it ….

(Now) Aspiring executives spent much of the time explaining the basic business tenets the Jakes had broken in building Threadless. Good thing they weren’t there when Nickell and DeHart were first launching their company. Nickell and DeHart are smart enough to know a good idea when they stumble on it.

Later the two successful young men established a parent company, skinnyCorp, that include not only the original Threadless but a new branch that utilize the same crowdsourcing or Wiki technology to produce everything from sweaters to tote bags to bed linens and contemplating to venture in the future into the production of housewares.

The Success Experience of Goldcorp Company

Tapscott and Williams (2008) relates the success story of Goldcorp as an example of wiki (crowd sourcing) in helping companies to find solutions. Goldcorp Inc. was small Toronto-based gold mining company. The company was facing problems caused by strikes, debt and rising costs of production that forced them to cease mining activities. Moreover, the market conditions were not favorable to the wretched company because demand for gold was declining and many observers predicted the death of the company’s fifty-year-old Red Lake mine. Without the discovery of new mines, the Red Lake mine was deemed to close up and Goldcorp was predicted to go down with it. The geologists in the company were able to find new substantial deposits but they were not sure about the gold value in them and extract location.

After the CEO of the company attended a MIT conference for young CEOs in which the successful story of Linux was discussed. He was surprised with how Linus Torvald was able to attract a group of software developer to create the most powerful operating system over the Internet by generously revealing his Linux code for anyone to edit and contribute to it. The CEO thought if his geologist could not find the Red Lake gold, maybe somebody else could. It came to his mind that this could happen by opening up his exploration process in the same way Torvald open-sourced his program code. This he did. With prize money of 575000 for the best methods, the crowd responded and submissions arrived from different parts of world from surprising sources; The participants included not only professional geologists but also graduate students, consultants, mathematicians, and military officers. The crowd identified 110 targets on the Red Lake property, 50% of which had not been previously identified by the company geologists. The company was able to harvest substantial amounts of gold from the 80% of the new targets identified by the wiki experiment and thereby saving, according to the Goldcorp CEO, three years of their exploration time.

Conclusion

In conclusion to this paper, it may be pertinent to restate Howe (2008) statement that “there are reasons to believe that the current manifestation of crowdsourcing is just a prelude to a far more pervasive transformation”. This transformation is going to affect both public and private sectors modus operandi. The effect it may
have in the future is to transform the nature of the firm and public organization by flattening their organization structure and methods of management. The boundaries of the organization with its environment will be blurred and the separation between consumers and producers will fade away. The internet has created a global mind that is waiting to be taped by government and private business. The question to be raised here is: can the United Arab Emirates public and private sectors tap the internet networked communities and customers to help policy, service and product designs? Is it possible to strike down the century-old bureaucratic mentality and open organization to their customers and stakeholders? It is needless to say here that UAE possesses the necessary technological infrastructure as evidenced by its impressive ranks in UN e-government reports and the technological reports of the World Forum.

The answer to these questions was provided by H.E the Prime Minister of UAE. The Prime Minister has recently posted in his website a pioneering venture in this direction. He opened up in his website a brainstorming session asking for possible solutions for two strategic policy issues: education and health. Each issue was broken down into sub-issues or its constituent elements such as graduates, and curriculum. This is exactly the quintessential of wikinomics and crowdsourcing and may be placed under the model of “ideagora”; i.e. seeking information from the local networked groups and citizens. This experience can be generalized to the whole public sector. Therefore, this paper recommends that all government and business organizations to open up their bureaucratic silos to tap the collective intelligence of the crowd. In doing so they must pick the right crowd for each issue, provide the right incentives, supervise and direct the contributions of the crowd and make the crowd outsourcing simple and break selected tasks into small manageable elements. Finally, the author recommends that every CEO or government manager should read the four books of wikinomics, macrowikinomics, wiki-government and crowdsourcing cited in this paper.
References


From EXPO Exhilarating the Innovation Wheel of Dubai: A Study of the Expected Impacts of Hosting Expo in Dubai

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Abstract
The purpose of the present study is to explore the impacts of hosting EXPO in Dubai on the effectiveness of speeding up the wheel of innovation within the city and taking it up to the best level. This study will be drawn upon semi-structured interviews with number of individuals from the public, some employees from different sectors, and multiple managerial actors at different entities; besides analysing all the gathered related information and self-observation of the current status of Dubai’s bid. The results of the study reveal that there will be numerous of impacts on different fields in the modern life of the city that will assure the revolution expected to take place in its innovation. However, the study discovered two obstacles might slow down the innovation wheel and suggests alternative paths to limit and manage any expected effects from these obstacles. The paper also highlights the great planning ability of Dubai, which will has its hand on diminishing the obstacles. Consequently, the study is mainly shedding light on the impacts that will contribute in having the innovation in Dubai and UAE as a whole going in the right way of reaching unsurpassed levels at least in the region.

Keywords: Expo, Dubai, UAE, Innovation, Impacts.

Introduction
Over decades, regional cooperation and open dialogue have been seen as contributors or drivers of countries’ growth and stability; not only in the political aspects, but also in almost all the aspects and sectors affecting countries and their people lives, such as economic, education and environment sectors (Clark, 2013). When the two words growth and sustainability are heard, and especially in talking about living standards, the first thing comes up to the mind is innovation. As a report carried out by Gail McGovern (2011) about what elements should be taken in consideration during the pursuit of growth; he simply summed up them by saying “we must be innovative”. For this reason, it became commonly believable that innovation is the other face of country’s growth and its quality of life. Thus, countries and their cities started to recognize the importance of innovation in building a better tomorrow; as innovation can assure the cities’ growth for generations to come (The Economic and Social Council, 2013).

Expo, the world’s biggest fair (ExpoMuseum, 2013), has been often seen as a guaranteed passage towards innovation (Fraga, 2006), since it became “a unique platform for international dialogue and cooperation” (Official Site of the Bureau International des Expositions, n.d.); this explains the reason behind the competition used to take place between the cities of the world in each of its rounds to win the right of hosting it. Cities at this stage, sure realized the link between the three loops of the chain, which are Expo, innovation, and growth. Fraga (2006) in her article, proved
this statement by saying that, Expo is the bridge that makes the delivery of the desired developed future of the cities really possible.

According to what mentioned above and besides what is going on around us in Dubai recently, this common controversial topic has been chosen to be discussed in this research paper. However, one of the popular opinions about almost anything occur in life is that, it is most probably has both positive and negative sides; and this is the case with Dubai since it is on the thresholds of hosting Expo. Meaning that, a question will remain ‘is it definite that Expo will impact positively on Dubai in particular and the United Arab Emirates (UAE) in general?’

The purpose of the present study is to explore and analyse the expected impacts of hosting Expo in Dubai and how it will contribute in revolutionizing the innovation within the city. Moreover, this research would facilitate in highlighting the strong points Dubai should keep following in order to make the expected negative impacts insignificant and not into account. In doing so, and even before analysing the problem, compiling several findings from previous literature was mandatory to explore more into the issue and not just stick to the surface information. In addition, the information gained from the previous studies of similar situations in other countries have been applied into a current local case study, which is the preparation taking place in Dubai for the sake of hosting Expo of the year 2020.

The objectives of this paper are as follows:

1. To define what does Expo mean and identify the purposes behind it.
2. To expose different impacts of hosting previous Expos in some other cities.
3. To analyse the expected impacts of hosting Expo in Dubai, and in particular the positive impacts.
4. To find out the innovative opportunities will be found as a result of these impacts;
5. To make recommendations on how Dubai and other hosting cities to be can assure revolutionizing their cities in almost all the aspects of life.

The present study made an attempt to gather the most recent information about Expo and the innovation status in Dubai, along with presenting the empirical insights of the subject. In view of the above research objectives, the paper has been divided into sections that will help in covering the basic and necessary parts of a full research paper, to be able to come up with the desired key findings and the best recommendations at the end.

The second section of the paper reviews in some more detail the idea behind Expo and the persistent impacts some previous hosting cities obtained. The theoretical and empirical literature of the link between innovation and growth will be presented in the context of Expo. The third section explains the research methodology and procedures for the present investigation and data elaboration. In the fourth section, attention is focused on the findings of the study. The paper concludes with a fifth section, which includes a summary, main conclusions of the present study, and suggestions for practice, as well as a direction for future studies.

**Literature Review**

Through instinct, people minds regardless the range of age one belongs to, used to link between the word Expo and exhibitions, it can be said that this is a common thought locally in the UAE because of the Expo Center Sharjah established in 1977 (Expo Center Sharjah, 2011) that most generations of the young country subsisted with, but when thinking about the whole world; the linkage between Expo and exhibitions might be as a result of what the real previous Expos changed.

The word Expo is an abbreviation used for the word exposition, which originally came from the Classical Latin word “expositio”
that means to display; Expo has been often used to refer to the biggest international fair or exhibition (Longman, 2000)(Agnes, 2010). An international agreement signed in the year 1928 in Paris aimed to create an intergovernmental organization under the title of The Bureau International des Expositions (BIE) ‘English: International Expositions Bureau’, to give it a full responsibility of ensuring the quality and well organizing of the Expos starting from A to Z, from the selection of the hosting city to the closing of a remarkable Expo as indicated in the official website of BIE (n.d.).

Expo, the “registered universal scale exposition” (EXPOcheck Report, 2012) considered as the first of its kind, because it is open for all the nations of the globe and it reaches all the different angles of human lives, and this is actually the idea behind it as stated via BIE official electronic portal (n.d.); based on that it can be defined as the exposition of no limitations. This idea came as a result of the raised awareness on the importance of education and innovation in promoting well-being and growth. However, these are not the only reasons behind the decision of having the international registered Expos ‘registered through BIE’ held every five years in a regular basis (EXPOcheck Report, 2012); since most of the reasons have been practiced and highlighted after the first world Expo held in the United Kingdom in 1851 (Chappell, 2011), where the inception of an international expo has evolved as claimed by Walvis (2004, April).

According to the Encyclopedia of World’s Fairs and Expositions (2008), the Great Exhibition of the year 1951 in London, as it is often called, influenced the development of many aspects of human life. This influence “inspired millions of people around the world” by letting them out of their daily life boxes; people became open to other cultures, aware of the improvements taking place around them, and also they started to appreciate the aspirations and innovations more (Chappell, 2011). Ever since the first Expo in London, the aims of such huge events became more clear. This perspective was agreed by Chappell (2011), the official Expo blog writer, who claimed that after the first world exposition, the aims of Expos continue reflecting the commercial and human growth. However, the official website of BIE (n.d.) has abridged the full idea of ‘why an Expo?’ from the time the journey of world Expos has started, where it can be noticed that Expos always uphold the importance of learning and exchanging in enhancing the way of living.

The noticeable change of the chosen themes in the past thirteen registered universal Expos, in a way, is showing the constant shift in the focus and concerns of these expositions, that became wider and their themes became much applicable onto the whole world (Official Site of the Bureau International des Expositions, n.d.) (Woodman, 2012). While going through the list of themes of all the universal Expos, it can be noticed that the focus moved onto three stages as argued by Tjaco Walvis (2004, April). He pointed out that, the period from the first Expo that came under the title of “Great Exhibition of the Works of Industry of All Nations” according to BIE website (n.d.) to the nearby the seventh Expo, themes and agendas reflected the attention of that era on the ‘industrial’ inventions, which considered as the first stage (Walvis, 2004, April) of shaping the platform of Expos with all the benefits it has. While diving into the history timeline of all the Expos provided in BIE official website (n.d.), the move toward more technological potentials to ensure modernizing and assisting the quality of life, can be noted on the themes from the seventh Expo until the ones took place during late twentieth century, which considered as the second stage that given the term ‘cultural exchange’ by Walvis (2004, April). During the third stage that Walvis (2003) gave the name of ‘nation branding’, the importance of exchanging and having open dialogues
between countries resulted from the previous stage has been more emphasized. Walvis (2003) added that countries started to recognize this importance, whereas as more as they promote and enhance their images on a global context, as more as they ensure the country’s growth in almost all the aspects of the modern life.

The movement among the three stages or eras of worldwide Expos explained above shows how nations are becoming more and more aware of the importance of sharing ideas and innovations for the sake of pushing up the level of life. This leads back to what stated previously in the introduction section about the three loops, these are innovation, Expo, and growth. Sood and Gerard (2009) in their report presented that innovation has become the power of growth by building new world class markets and enhancing the competitiveness between the nations. Moreover, the reasons why innovation is important for nations can be summarized into two main points: firstly that, innovation helps in enhancing prosperity through providing new and more job opportunities; secondly that, it is considered as a driver of economic growth (Mobbs, 2010, December) (Solow, 1957).

Due to the fact that, the world started to understand how innovation is contributing towards countries growth; the link between Expo and innovation became more obvious. However, the official website of BIE (n.d.) proved that link by indicating that Expos provide “lasting cultural and urban legacy”, which in another word is general growth of the city or the country as a whole in all the fields. A study carried out by London East Research Institute (2007, May) refers both the local economy and continues economic growth together to the term ‘legacy’ in the scope of economy. In addition, a direct link explained by UNICEF (2012) says that, the more urban a city or a nation in general, the more likely it is to increase its growth rate.

Barners, Hall, and Jackson (2009) in their study claimed that, countries during the third stage -Nation Branding- of world Expos life ‘based on the division provided by Walvis (2003)’ began to go in the direction of promoting innovation to enhance the reputation of the country, while at the same time the quality of life will be much higher. This is because, countries believe that being wealthy will help in offering more to their citizens, in line with confirming healthier and safer environment status (Christensen and Raynor, 2003). The lasting life growth promised by Expos could be clear when going through the sustainable impacts some of the previous hosting cities obtained. As this paper is mainly casting light on the expected impacts of an upcoming Expo, reviewing some latest impacts attained by other hosting cities will be much reasonable. Hence, the fact that the similarities of the timing, factors affecting the lifestyle, environment, and the level of technology or development of the dynamic world will help in giving much accurate simulation (Gillitzer and Kearns, 2007).

Across the journey of Expos, there are many successful cases worth to be reviewed. For instance, Hannover Expo 2000 entitled “Man, Nature, Technology”, the first Germany’s registered and recognized exhibition (ExpoMuseum, 2013). Donough and his partners (1992) claimed that, the message behind Expo 2000 was to support the innovative ambitions of humans to make difference. Supporting this claim, the history page of BIE website (n.d.) highlighted that the effects of this Expo can still be seen in Germany, as the expansions and construction boosts took place during the preparation period for hosting Expo can be experienced in different facilities, such as the varied transportation solutions and the environmentally friendly huge pavilions, which left a symbolic trend and approach that still followed and adapted by others. Besides the noticeable regional economic impact, the importance of sustainable growth in line with using innovative technologies and smartly enhancing the country’s infrastructure highlighted more among the different countries of the world as a result of Hannover Expo, as well as the
need of knowledge sharing for the continuous development (Donough and Partners, 1992).

Another case worth mentioning is Shanghai Expo 2010. In a recent analysis carried out by both Wang and Sun (2012, February), it was reported that Shanghai Expo in 2010 has left significant impacts in China’s economy and helped in redrawing the landform of the country’s identity and image; same authors further explained that, the impacts were reflected in the repositioning of China’s status in between the other counties of the world by considering it as one of the “major emerging players”, and also in the improvement of its international relations. In addition, Yao and Zhang (2011, March) argued that, the impacts of Expo on China can be reflected on the rapid economic growth that placed China as the second “largest economy” of the world. Thus, the contribution made by Shanghai’s Expo to the country as a whole clearly reveals the main mission of hosting it. As mentioned in the official website of Shanghai Expo (2010), that it aimed to take advantage of the inter-cultural communication to revive the spirit of innovation in the whole country. Shanghai Expo 2010 that came under the title of “Better City, Better Life” (Windle, 2008) was such a one chance of life, which Chappell (2011) concluded his article about it by saying that, it was a “one-of-a-kind” experience that makes Expos “worthwhile and necessary”.

Going through previous literature helps in creating a solid base for the research problem to be built on and helps in providing useful prescriptions that are meaningful for the context, the scope of the study, and the outcomes. The present study, on the other hand, addresses Dubai Expo 2020 in a specific context, and since it is the first world’s Expo in the region and in particular in the Middle East (The World’s Fair Bid Tracker, 2013), some lack in empirical comparative analysis may noticed when talking about the location. For this reason, differences will be taken in consideration while revealing the ideas and analyzing the data. In light of the above, the following sections will guide the lens towards the main problem of the paper.

**Methodology**

This study has been carried out in the same place where originally the problem of the paper is taking place. It has been assumed that, this fact will help in building an accurate representative paper. Therefore, the core approach of this study was the use of a qualitative research method for the sake of developing an intensive paper that concentrates on opinions and observations to describe reality and reflect a real situation (Grim et al., 2006). This approach has been drawn upon semi-structured interviews with number of individuals from the public, some employees from different sectors, and multiple managerial actors from different levels and different entities. These interviews have been conducted randomly and during different stages of Dubai’s Expo bid. It is worth mentioning here, that the interviewees’ names and exact job positions have been dealt with confidentially, since the scope of the study has been designed to reflect the wider image of the issue, where these details are not into account. However, having different groups of interviewees purposed to vary the samples the data will be collected from to bring out a complete rich study.

Accordingly, this research administrated collecting the needed information from different sources of data (both primary and secondary), in order to mitigate bias in the collected data and to derive worthwhile results at the end. Besides the primary source of data mentioned above (semi-structured interviews), the secondary data used to fulfil the purposes of the paper has been gathered from different sources such as global official reports and journals from databases, academic articles and books.

From the base created as a result of going through previous literature about the topic,
as well as the collected information analysed; the research found out the following.

**Data Analysis**

**Backstory**

“Boom turns to gloom” (Atkins, 2008, November 21) cannot be considered as a transient headline that decorated almost all the newspapers of the world. Near the end of year 2008, Dubai and UAE in general woke up one morning with a crisis that started to bite the most prominent aspects of the country’s growth (Atkins, 2008, November 21). It was a situation of either do or die, but from the fact that, late Sheikh Zayed Bin Sultan Al Nahayan, the founding father of UAE used to ingrain wisdom in the nature of his people; it was the time of harvesting his effort by looking at the problem insightfully and being optimistic (Sheikh Zayed Grand Mosque Centre, 2012). This exactly what happened! UAE recognized that, the time of a bigger action had come; a comprehensive effort was needed to work in consolidating and gathering the parts that already have fallen in order to get the country on the track again; and as many politicians, economic experts, and analysts assumed at the beginning of the problem that “the result, in the end, may be the sustainable growth model” (Atkins, 2008, November 21) the country seeks to establish from the beginning.

According to a study published one year before the economic crisis of Dubai that, the rapid growth of the UAE came from the wide vision of its government by not only focusing on oil to bring wealth to its citizens but also other sectors such as tourism (Quilter, 2007). In the same study, Quilter (2007) added a fact saying that continuity cannot be promised for any situation, which is a reality recognized by UAE government, which reacted instantly by announcing different “commitments” for the sake of sustaining the level of growth the country has reached. Quilter (2007) and the group of thinkers involved in carrying out the study had drawn three different scenarios for the UAE’s future and summed up them by claiming that, the country is already working in shaping its path towards its desired future by the open door provided in almost all the fields for both external and internal actors in line with the flexibility in trade; on the other hand the scenarios underlined one fear that might threaten the movement, which is the possibility of having a “negative cycle of conflict and economic decline”. Despite the fact that, this fear or expectation actually happened, Dubai or UAE in general did not give up nor negatively reacted. It was only a matter of having a deep breath to return back on the track and continue moving, because for Dubai that did not mean it should get rid of its dream and change its target. What the young country has is not an idea of being a model, but an inspiration which has an expiry date as argued by Fried and Hansson (2010), so it is either now or never and it is either to progress or to regress as H.H. Sheikh Mohammed Bin Rashid Al Maktoum (2012) stated in his book entitled ‘My Vision’ while talking about Nation Building.

United Arab Emirates as a whole and the emirate of Dubai in particular recognized the importance of having a long-term strategy that is based on knowledge way before the economic hit, in fact, since the beginning of the growth acceleration (Kursany, 2011), for this reason, one of the UAE’s vision 2021 pillars is “knowledge-based and highly productive economy”, which consists of number of drivers such as innovation, research, technology, competitiveness, international standards, and sustainability (Vision 2021, n.d.). The long-term strategy mentioned here emphasized how aware is the country of what is going around in the whole world and how mature it became in such a young age, by which it is working on adapting knowledge based innovation and at the same time is keeping an eye on the performance level to sustain it for a long-run
(Khaledabadi, 2008) (Langlinais and Merino, 2007). To this end, Dubai and the whole UAE can be seen as a knowledge-innovation nation according to a definition provided by Khaledabadi (2008), who stated that, Knowledge Innovation is the “evolution” that leads to the “success” and “vitality” of a “nation’s economy and advancement of society”, where the knowledge and innovation interact with each other to reach a competing and a high level of performance along with sustaining this level, as illustrated below in figure #1:

A further point deserves mentioning here is that, any specific sector strategy in the UAE, such as education and health sectors and even any of the seven emirates strategies, which Dubai’s Strategic Plan is one of them, in fact are working side by side to feed and serve back the vision of the whole country. This notable awareness towards the importance of development and excellence the UAE has, played a main role in remedying the sudden fall to go back stronger to the “race of excellence” (Al Maktoum, 2012) and to move forward with more confidence.

Based on the above, it can be argued that the bigger and richer vision designed as a result of the level of awareness, the valuable lessons learnt from the stumble during the shining scene, and the continues ambitions inherited from the early leaders of the juvenile country promised to have a better Dubai and a better UAE by providing a clear roadmap. The main aim now is having the UAE as the international centre for excellence (Al Maktoum, 2012). Excellence is an “integral concept” (Al Maktoum, 2012) that started to be pointed through combination of other terms, which most likely are innovation and growth as hinted from Prokesch’s article (2009). This takes us back to the three loops theory presented previously in the introduction section and supported by some arguments during the literature review section, which is the relation between Expo, innovation, and growth. The roadmap or plan to have a better Dubai or even a better if not the best UAE surely has drawn upon many drivers and ventures. In the latter, as the evidences will show, Expo considered as one of the most important ventures in the plan; and here where the story of Dubai Expo has started!

Interviews Relevant Outcomes & Other Background Information

To begin with, it is worth mentioning that this study has started before electing Dubai’s bid to host world Expo 2020. Right after the election by the BIE members states on November 27th, 2013, Dubai’s world Expo official Twitter account tweeted/wrote that this win “will help in unlocking the vast potential of the region” (Keller, 2013) since it is the first time to have such an event to be held in the Middle East. Unlocking here refers to the publicity and buzz will go around or already started to go around the country and even the region. This leads back to what pointed by Walvis (2003) that, the third era of the Expo’s life is the “nation branding”, which Dubai’s Expo selected to be one of its stations. In addition, serving the same idea of nation branding, Dubai Expo 2020 selected the theme “Connecting Minds, Creating the Future” to urge exchanging ideas, inspirations, and knowledge in order to enhance, innovate, grow, and sustain for generations to come (Dubai Expo 2020 Executive Bid Committee, n.d.).
In fact, the selection of the theme arises from the belief UAE has towards the importance of collaboration and sharing knowledge, as shared knowledge enriched and entrenched in relationships as argued by Cummings (2003); and this is especially that UAE is looking forward being the first or the most innovative country in the region, as well as occupying better place among all the countries of the world; as being innovator or “first in” needs a knowledge base to be motivated by (Homa, n.d.). However, as the evidences showed in the previous section that, the country has already started building this knowledge base to achieve significant stage of innovation, which has been done throughactivating the sources of innovation among the country, plus strengthening and linking between these different sources the same way explained by Schilling (2013) as can be seen below in figure #2:

Consequently, innovation level in the UAE is already achieving advanced stages! This can be assured by looking at the global ranking list of the most innovative countries provided by the Global Innovation Index (GII) for the year 2013 (see figure #3); as GII is placing UAE at thirty-eighth worldwide and it can be noticed that UAE is the first among Arab countries in the list (The Global Innovation Index, 2013).

Additionally, the level of UAE’s innovation can be assured too by looking at the the Global Competitiveness Index Report for 2013-2014 that ranked UAE as an innovation-driven economy at the place of nineteen globally and the second place among the countries of the region (see figure #4); the report also highlighted that, the level of competitiveness achieved by the UAE is mainly reflecting the massive technological transformation, the “high quality of its infrastructure” and the noticeable citizens confidence and loyalty for the leadership of the government (World Economic Forum, 2013).
However, the Global Competitiveness Index (GCI) is conducted based on number of pillars that generally reflect the ability of a country to drive economic growth through innovation; meanwhile the report stated that the terms “developed” and “developing” in talking about countries are almost like being replaced with the terms “rich innovation” and “poor innovation” countries (World Economic Forum, 2013) as a result of the great interest in this comprehensive concept.

To take this research forward, seven interviews were conducted during the period of October to December 2013 with different actors from different levels of employment and different sectors in the UAE. However, all the interviews enjoyed informality nature to give a sense of freedom for the interviewees while expressing their opinions, and also they have not been tape-recorded for the same reason.

One commonly heard opinion among all the interviewees about Dubai Expo 2020 is that, it will be a transformational experience for the country. One interviewee working as a section director in Dubai SME (Small and Medium Enterprises) said that “after the crisis we were longing for a relief which we are living now” and added that “Expo is one of the hands that will help in creating a better nation”. Another interviewee occupies a prestigious position in one of the federal entities said that “UAE started to show effective movements towards adopting latest technologies and innovation in all areas not only in this century, but even before”. Recently, UAE started to put much more effort and investment than before in order to be ranked as one of the best countries in the world. This is evident from the decision of the index compiler - Morgan Stanley Capital International (MSCI) to upgrade UAE market status from being a “Frontier Market” to an “Emerging Market”, and this was as a result of the increase in the gross returns, which in return increases the expected economic growth of the country (Monthly Economic Review, 2013); MSCI report also listed number of reasons behind this elevating, most attractive reason is the variety of paying methods available in the UAE market and it is not about the availability only, but also how effective and secure are these methods. In addition, the upgrading system followed by MSCI is based on specific criteria, in which the improvement of the UAE market can be measured by comparing between the two investment categories columns ‘emerging’ and ‘frontier’ as shown in the below figure #5 (Monthly Economic Review, 2013).

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<th>Score (n=7)</th>
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Figure 4: “GCI 2013-2014” (World Economic Forum, 2013)
Focusing on the last criteria that talks about the market accessibility, the sub-criteria come underneath it explain the massive shift in services delivery in the UAE during the last few years and even the new initiative of having the services available via smartphones, as a young Emirati newspaper columnist eagerly explained during an interview conducted one month ago that “m-Government initiative is an evolution of the e-Government, but not a replacement, it is aimed to make the services accessible anywhere and at any time”, he further explained that “banks, companies, ministries, authorities, everybody are competing to meet the deadline Sheikh Mohammed announced, which is May 2014, to completely assure the availability of the services through smartphones”. This competition between the different entities can be seen as a Steady Phase, considering that the Ready Phase has elapsed already during the last years and after the revival from the sudden drop down. It seems that the leadership of the UAE are preparing the whole country with its people for the Go Phase, but as one of the interviewees asserted this point said “this time our aim is to take-off safely by having our plane continuously flying in the sky of excellence without any pitfalls of pneumatic impede our journey”; so Dubai and the entire UAE are looking for a Go Phase without any retreating. By looking back at the figure above (figure #5), what missing for the UAE is the point of sustaining the development to be considered as one of the developed countries, whereas the countries categorized as so based on their ability to sustain the growth.

Self-Observation & Overall Findings

After passing through the above outcomes with their evidences, the time to direct the lens of the research to the main problem of the paper has come. It is obvious now that UAE has spent such a reasonable time to build a flexible and open base of innovation that could not be understated. The scenario of the innovation status reached by the UAE until now can be represented by an S-Curve theory in both Technological Improvement and Diffusion. A typical way of explaining the S-curve is that it has three stages: the beginning stage, where it shows a slow rate of improvement and adaption due to the unfamiliarity, then the sudden escalation stage came as a result of a better understanding of what has been initiated, and eventually the rate of progress started to level off since the anticipated limit has been reached during the third stage; as can be seen in the below illustrated figure #6 (Schilling, 2013).

![S-curve](Schilling, 2013, p. 47)

UAE is fully aware of the amount of effort has been put to promote the standard of living in all its facets, but it is not looking for a limit to reach and end up with either to stop at the same limit or going down. UAE is looking towards assuring the best living atmosphere that has no limitations. In other words, sustaining the growth with flexibility to change with the demanding nature of the dynamic world! So, the best illustration for the UAE’s S-curve could be with having the curve line ending up with another curve that start from the end point of the previous curve and move upward! This means, to have UAE’s S-curve able to plateau at the end towards sustainability, which is an idea supported by a study brought by Bain and Company (2011). In addition, to encourage the competition among all the different sectors and entities in the country to be able to achieve even better places in the competitiveness ranking of the globe, since competitiveness has been seen as a role motivator of sustainability and

At this point and especially with the increasing political turmoil can be seen in the region, Dubai and the whole UAE should start going out of the box that ties up the steps of the overall prosperity. However, to overcome the political challenges of the region and to optimum utilization of what has been achieved in the country so far to avoid loss, more emphasis should be given to the issues that made up the gaps and/or the deficiencies highlighted in almost all the global indices reports; these are environmental, health, and educational issues (World Economic Forum, 2013). Against expectations, going out of the box, for the UAE, does not mean go to others and learn from them as a usual practice the country experienced for a reasonable period of time; it is totally the opposite! It is about having Dubai-UAE as “a meeting point for the global community” (Dubai Expo 2020 Executive Bid Committee, n.d.) to connect, communicate, interact, share, exchange, and cooperate, to be able to gain the enough knowledge and experience that will help in reinforcing growth and driving continuous innovation through developing and empowering human capabilities as well as building solid foundations with all the requirements needed for a lasting growth (The Global Innovation Index, 2013)(Clark, 2013). So, unequivocally that was the reason behind the decision of bidding for Expo.

Observing the changes took and still taking place in the UAE would make it clear that the decision of hosting Expo has been working for years ago. UAE sure had looked at previous experiences of other countries in hosting Expo and what impacts it left behind, in order to have this decision that aimed to fulfil the gaps in any field for the sake of sustaining the future (Al Jaber, 2012). To meet this aim, which is “aligned with the far-reaching strategy and vision of the UAE” (Al Jaber, 2012) numerous projects have been initiated to assure the readiness of the floor to endure such a huge event. In addition, over the time, the country tried to show its ability in organizing and hosting international events that have many high-level delegates, such as the World Energy Forum held in 2012 (World Energy Forum, 2014), not only that but also having such an event plays a significant role in the fact that the country is working towards better environmental standards. The advancement in the environmental conditions within UAE can be emphasized by the announcement of the National Green Growth Strategy in 2013 (Global Green Growth Institute, 2013), which has been followed by number of supporting ventures such as Sheikh Mohammed Bin Rashid Al Maktoum Solar Park that expected to vastly reduce the carbon emissions of the country (Government of Dubai: DEWA, 2012), which will pay back for the benefits of the health level. Also, some policies that help in promoting innovation have been announced during the last three years (Emirates Competitiveness Council, 2011) to familiarize the world with the open door of investments and trade available, as this promised finding more opportunities for higher growth (Rolfe and White, 2009), which is an argument confirmed by a statement provided through current GII Report (2013), that such policies “can lay the foundation for future growth, improved productivity, and better jobs”. These are beside other significant initiatives such as ‘Smart Learning’ and the initiative mentioned in the previous section, which is the m-Government that meant to ease the delivery of services to reach the best level of customer satisfaction. All of these projects and initiatives and even more can be seen as a readiness phase for sustaining the movement of the innovation wheel, even before knowing about the intention to host Expo! If the readiness phase of Expo is witnessing this development and positive shift, the visualization of the coming impacts can assumed to be the same!

In contrast to the above, while investigating into the problem of the paper, one common
objection seems causing some concern about Expo in Dubai, which is the question of ‘is Dubai’s absorptive capacity will be able to embrace the expected number of visitors?’ This concern brings two obstacles might slow the wheel of the sustainable innovation looked for, these obstacles are the imbalance in the population structure that will deficit the provision of the services and needs, and the ability of the land to absorb the number of people. This concern becomes more possible if taking into consideration the unexpected problems occurred during the Shanghai Expo 2010, which Clark (2011) summarized by saying “too much tourism, not enough Internet”, although as Clark (2011) stated that it was the “most expensive” Expo ever with the highest number of visitors ever had. These unexpected problems pushed China government to look for alternatives to be able to skip them, but in case of Dubai and even if the whole UAE which is not even a quarter of China’s size; the equation differs since as found above that the preparation to host Expo started to take place way before the bidding and even as the UAE aware of the benefits of Expo, it is for sure aware of the problems might hinder the way. This is evident in the noticed expansion of the infrastructure capacity, in which more residential areas, shopping malls, hotels and much more have been established and some other are still under constructions. In addition to, the obvious huge investment in transportation, such as the Metro, Al Maktoum International Airport, and also the increase number of air navigation fleets of the different national airways companies, such as the leading Fly Emirates which has been awarded the highly coveted World’s Best Airline in 2013 (Dubai Airports, n.d.).

Generally, Expo can be seen as a role motivator and exhilarator of the innovation wheel of UAE in general and not only Dubai! In fact, with proper planning seems taking place among the country, the possibility of having problems can be vanished and reaching sustainable growth for future will be the very last lasting comprehensive impact, which most likely will benefit the surrounding countries and even across regions. Thus, UAE might end up being a role model as desired by its first leader who said that “we seek to establish a modern country which provides its citizens with all means of decent life and which becomes a model for other unions” (Collection of Quotes, n.d.).

Recommendations

There are a lot of recommendations can be given to better push the status of innovation towards sustainability in the UAE itself or the even other countries of the region. However, UAE is on the right road of sustaining its innovation, it is obvious from the very good ranking results gained in the different global evaluating reports that measured based on the basic assets that form the sustainable wheel of innovation, as well as from the wise decision of paving the humps in the road by Expo. This can be proved by knowing that the objectives of the World Expo are going parallel with the long-term strategy of the UAE that consists of factors going around the same idea of Expo theme, which is about connect to enhance for better future (Al Jaber, 2012). Moreover, the ideas will be proposed in this study will contribute not only in pushing innovation towards sustainability and suggesting more solutions to overcome the founded obstacles, but also it will contribute in providing baselines for conducting future extension studies of the same subject.

The recommendations of this paper are as follows:

- The crisis took place in 2008 showed how one hand cannot clap in the game of growth; what is going on in the UAE nowadays is what can be defined as uniting as the first word of the country’s name specified ‘united’, which means comprehensive action and more hands are much effective especially if they share the same vision. This is what should be always followed by the UAE government in order to transfer this
behaviour to the different entities and different people in the country to encourage teamwork and to increase productivity. H. H. Sheikh Mohammed Bin Rashid Al Maktoum is playing a key element in translating the need of uniting among all the sectors and all the emirates to keep growing wisely.

- The above is leading to an important suggestion, which is the fact that, maintain stability and keep cautiously growing are the best responds to the buzz going around and overstate any negative news and clutching any goofs in the way of success, especially with the current political situation in the region that makes the door quacking.

- Innovation is a very wide term that became an umbrella of all the areas and aspects of life, this emphasized the importance of seeding the very young generation with the concept and feeding them later on with the best research skills, ways to gain knowledge and facilitating to them a good quality of education, in order to ensure having the national capabilities that will keep pushing the innovation wheel to remain competitive among other nations; meaning, to sustain future growth.

- Ensuring that the job opportunities will be found as a result of both Expo and the advancement in innovation will be occupied by national qualified capabilities, so if there are any gaps in educating them based on the career market needs; the time to enhance the education and to offer the required majors has already came. However, UAE is doing a good job in that by tracking the ‘Emiratization’ percentages (number of national employees) in all the entities and specifying target percentages should be reached.

- Although, Dubai and UAE in general have shown great planning abilities in different areas, but some ideas can be proposed to ensure diminishing any possibility of having obstacles in hosting Expo successfully. These are, encouraging the hospitality sector and invest more into it in all the seven emirates to prepare for the visitors, to have pre-planned tours for the registered visitors that include visiting the other emirates not only Abu Dhabi and Dubai, which will help in having the visitors in the main Expo pavilion in batches and in a much organized way.

- Also, in thinking about eliminating the possibility of the obstacles in the point of ensuring serving people with the needed services 24/7 and in particular via the different platforms, such as smartphones. It is suggested to open the telecommunication market for one or two more companies, in order to increase the competition and thus the offers will be provided for the sake of ensuring the availability and coverage everywhere and at any time.

- Due to the time limit, it is recommended for any future extension research in the same topic to investigate more on the obstacles faced by previous hosting countries and simulating them to the current experience in the UAE, in order to highlight any points need to have rethink about and to take previous required actions towards them.

- Another recommendation for an extension research is to shed the light more into the weaknesses or gaps the global indices highlighted about the UAE, for the sake of finding ways to support UAE in its effort in closing them.

**Conclusion**

To sum up, the main lesson could be gained after going through the details of the problem and examining a related current practice taking place in Dubai is that, ideas should be dealt with the same way of innovation to ensure having them in the right place along with the proper plan and
with the needed ingredients and facilities; this may end up having the small idea as a big revolutionizing step that brings with lots of innovations and promises growth for the long-run. Langlinais and Merino (2007) supported this lesson by stating that, to assure sustaining future growth through innovation, opportunities should be taken wisely by identifying the “barriers” and “drivers” in the way of developing innovation and by having this innovation well directed to the anticipated place through “seeding, feeding and weeding process” to get rid of any impurities and obstacles. In addition to this lesson, the study pointed out number of condensed findings that came in line with the main justification of the paper.

In fact, this research paper aimed at providing valuable explorations for the expected impacts of Expo 2020 in Dubai in particular and UAE in general, and whether it will help in exhilarating the wheel of innovation towards better sustainable growth, or not! In order to not only fulfil this aim, but also to better assess the current experience of having the right to host Expo for the first time in the Middle East along with proposing to the decision-makers some ways to enhance this experience by highlighting the main areas should be improved. Also, this study tended to use the most recent information gathered based on the newly published global indices reports, interviews with important personnel, self-observation of the current status, and valuable relevant publications. This was for the sake of ensuring accuracy and relevance of the information circulated in the paper, in addition to demonstrate convincingly that the study will make a contribution to the proposed problem.

The analysis of the different resources elucidated that most of the findings are in common. However, the most important finding of the overall study is that Expo will form a link between the present and the future, as well as it will pave the way for a much glowing future with improved quality of life. Another finding summarized the expected Expo impacts in Dubai by emphasizing that it will reinforce mobility, increase opportunities, and will strongly urge sustainability, which the evidences proved that it is the root reason behind the desire of hosting Expo. The research proved too, innovation will revolutionize the whole UAE and maybe the nearby countries as well, since the publicity the area will enjoy might push the curiosity as human nature to explore the surroundings, which will impact positively on the tourism rate of those countries and the economic rate in return. In other words, Expo will not only foster innovation within the borders of UAE, but also it might for the whole region. In addition, the study showed how important is to spend a reasonable time researching and planning to create a stronger base for the action phase of the improvement ideas. The long-term plans proved to have better impacts mainly with remaining ambitious with no hesitation, which can promise positioning a country in a better place among other nations as happened with the UAE, which started planning for the ideas we are living their action phases now since the founding day of the country, 42 year ago.

Finally, it is hoped that the findings and recommendations of this study may help UAE government to identify and prioritize the scopes need to be more focused on, so that their issues can be resolved efficiently while retaining the focus on the other scopes to avoid a sudden drop down in their productivity. Likewise, it is hoped that this study will provide a valuable benchmark base for other governments to contribute in their development stories.
References


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Knowledge Management in Service Encounters & Impact on Customer Satisfaction

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Abstract

Introduction: There is considerable fact of the impact of KM practices in establishing concrete relationships with customers, and improving customer satisfaction. The paper presents analytical evaluation on how consumer behavior varies when Dubai Municipality as service provider employs one or the other form of knowledge at the service encounter point.

Purpose: This paper intends to incorporate the KM parameters to study the relationships between KM practices during a healthy supplement products’ services exchange and customers’ satisfaction.

Design/methodology/approach: Primary data was collected through the administering a questionnaire by simple random sampling to 500 customers of CPSS for the program of healthy supplement assessment, registration, and consignment release services at 4 different locations of the section. 222 customers responded yielding 44% response rate. As well, the researcher tested 3 hypotheses based on the variables. The data was analyzed by using SPSS. More, the total measurement score for the questionnaire results was used through Microsoft Excel tool.

Findings: Results demonstrate that tacit KM practices used by front-line employees of CPSS have a better impact on customer satisfaction. The mediating impacts of perceived control and fairness over the affiliation among KM practices and customer satisfaction are also noticed.

Research implications/limitations: This study broadens the research area in the field of KM, customer relationship management and customer satisfaction, and recommends potential hypothetical and practical research paths. Though the sample is representative of the population, no declaration is stated in order to generalize the results of this paper to larger population. The main limitation been faced with conducting this study was the time constraint.

Practical implications: The top and middle management should be aware of the importance of KM in service encounters and particularly should pay attention to the tacit knowledge of front-line employees.

Originality/value: The influence of deploying KM practices on customer satisfaction in the service encounter environment has received less consideration in research area. This paper highlights on the impact of 2 basic KM factors, namely tacit and explicit knowledge, on consumer satisfactions.

Keywords: Knowledge management; Customer satisfaction; Customer service management; Tacit knowledge; Explicit knowledge; Perceived control; Perceived fairness

1. Introduction

Juran (1995) stated that quality has supported the performance improvement long back to 11th century China. As well, the theory of knowledge management (KM) has emerged recently to maintain the performance enhancement within the field of business (McLeish & Mann 2010).
In fact, despite the increased direct relationship of deploying KM and improving performance, and the impact of KM practices in enhancing customer satisfaction (Marques & Simon 2006; Pathirage et al. 2007), there has been inadequate academic research carried out on the relationship of KM practices to quality in the service encounter environment in general and to customer satisfaction in particular. This paper focuses specifically on the KM concept in service exchange within Healthy Supplement (HS) products control programs offered by Dubai Municipality (DM).

Since the inception of the Consumer Products Safety Section (CPSS) at DM in 2008, numerous attempts on the section level have been performed to increase the compliance level of the HS products in the Emirate of Dubai. However; in the relentless journey of increasing compliance, customer satisfaction has decreased (CPSS 2011). This paper proposes a momentum in applying the types of KM classified as explicit and tacit knowledge and by doing so; it may perhaps make the CPSS to attain better results in the customer satisfaction. This paper presents analytical evaluation at foundational point to review how customer behavior varies when CPSS – the service provider - employ one or the other form of knowledge. In particular, this study looks at the impact of KM practices on customer satisfaction. This study specifically points at the service exchange parameter and other KM practices beyond these are not within the scope of this study.

1.1. Structure of the Paper

The organization of this study is as follows: first the paper provides an overview of the research subject including background, scope of the research, research questions and purpose of the study. Second, the paper provides literature on KM parameters, customer relationship management, and service quality to support the theoretical part of this study. The research questions are anticipated to tackle key gaps within literature. Next section illustrates the methodology and research design used in this paper to attain the objectives. This is followed by the findings of this research and the contribution to knowledge and discussion over the results. The limitations are specified, leading to suggestions for future research.

1.2. Statement of the Problem

Since its inception in 2008, CPSS has continued to look for ways to increase HS products compliance in the Emirate of Dubai; however, the customer satisfaction decreased (CPSS 2011). As international competition boosts, so will customers’ expectations. There is no available information on using knowledge tools by front line employees at the CPSS prior to initiating investigation on this paper or any relationship of this concept to increasing the customer satisfaction (CPSS 2013).

Moreover, customers review the CPSS for many reasons and most probably to know about updated information regarding banned / rejected HS products list which is only available at CPSS database. As well, there are many repeatable complains on the issue from public and customers. The latest customer satisfaction survey conducted by DM for CPSS customers showed a 75% satisfaction comparing to the average level of 86% as shown in figure 1.1 (CPSS 2013).

Figure 1.1: Public Health & Safety Customer Satisfaction Results (CPSS 2013)

1.3. Background of the Problem

After the inception of CPSS in 2008, many inspection and control programs were
planned at the section level to increase the compliance of the products in the market up to the recommended levels and adopted specifications set by DM. To facilitate the inspection program, the product assessment and registration was introduced in 2008 in which companies were called to register all their HS products at CPSS. This made all HS companies not to import, sell, display, or deal with any products unless it is registered. The registration process takes around 30 to 45 working days in which a detailed product assessment is performed and then in case of approval, the product is registered and registration certificate is issued for the customers. Within this process, customers have many transactions with CPSS through the online system as well as physical attendance to the section’s locations.

This study proposes that CPSS can benefit by focusing on improving the quality of the offered service through employing the KM elements to front line employees’ skills. As the concept of KM becomes more common in all the sectors, there is obviously a necessity to provide academic research on how this emerging field relates to quality and customer satisfaction. As CPSS keeps on searching ways to improve the quality of the interaction between their customers and front-line service employees, it could be beneficial to add the concept of KM to improve the customer satisfaction.

1.4. Research Questions

☐ Is there a relationship between customer satisfaction and tacit knowledge practices of frontline employees?

☐ Is there a significant relationship between customer satisfaction and explicit knowledge practices of frontline employees?

☐ Is there a significant relationship between perceived fairness and control and knowledge practices of frontline employees?

By responding to the above research questions, the researcher intended to contribute to the study of the relationship between customer satisfaction and tacit and explicit knowledge practices of frontline employees in order to confirm if actually customer satisfaction is related to the knowledge practices.

1.5. Purpose of the Study

This paper intends to incorporate the KM parameters to study the relationships between KM practices during a HS products service exchange and customer satisfaction.

2. Literature Review

2.1. CRM (Service Relationships)

As per Gutek et al. (1999), service relationships establish between the customers and service provider whenever there is frequent contact with each other. This service relationship represents occasions that service providers recognize the individual customers and there is a high chance of visiting the service provider in future (Gutek et al. 2002). The service relationships have unique characteristics including: mutual identification, expected prospect interaction, and a history of shared interaction between customers and service providers (Gutek et al. 2002). Within the process of service relationship, the customers and service provider will be familiar together and develop a history of joint interaction that is based on transaction’s completion (Gutek et al. 1999).

In this paper, this perception is adopted to propose that customers who return to service provider search for any indications of reciprocal identification and their history with the service firm. It is evident that when reciprocal identification and their history with the service firm are detectable, this will add confidence to the customers which will increase the customer satisfaction. In fact, the customers distinguish the mutual identification through the behavior of the front line service provider in which greeting the customer by his/her name reinforce the relationship and leads to greater satisfaction.
This reassures the fact that the service institute “mutually identifies” with the customer and that the service provider “knows about” the history of transactions of the customer with the organization (Guchait et al. 2010).

To manage the interaction within the service relationships, many organizations recognized the importance of KM and its processes. Sigala (2005) emphasizes on the significance of inter-incorporated information technology system with KM and relationship management principles to get the most out of a CRM process. More, KM concept examines collecting, storing, and disseminating of information and data within the firm (Guchait et al. 2010).

2.2. Service Product

Vargo and Lusch (2008) state that in recent years many areas in services marketing research has been shifted its conceptual focus from a goods-dominant (G-D) perception to a service-dominant (S-D) perception. As G-D represents the tangible output, the service represents the intangible good which improves the value of a good. This intangible good (service process) is performed through using one’s resources such as knowledge and skills in order to profit and help the beneficiary of the service, and is identified as the primary focus of a service oriented economic exchange (Vargo & Lusch 2008). That’s why Lusch and Vargo (2006) identified the service transaction focus as creation of value relatively to products. The value of the service evaluations by customers are distinctive and rely on customers’ particular needs. This service-centric and process-driven concept alters the value creation emphasis from service provider to an incorporated process of co-creation between customers and service providers (Vargo & Lusch 2008). This transfer in analysis from service delivery to value creation highlights more on the responsibilities of the frontline employees of service organization. Lusch et al. (2008) recommend that service provider competencies like knowledge and skills are vital to value creation.

In subsequent to the above conceptualization, this paper bonds the literatures on knowledge management to the concept of customer satisfaction of a service. As previously expressed, for value creation, knowledge and skills are vital competencies for service provider employees. This is because these elements are the intangible components of the service interaction. Namasivayam (2005) stated that the front line employee’s behavior plays important role in strengthening the relationship of the employee and customer within service interaction especially the knowledge of the customer’s preferences. Nonetheless, type of this knowledge, the way it is understood or demonstrated has great impact on customer evaluations. Therefore, the type of knowledge (tacit or explicit) the front-line employee at service organization is relying on affects customer satisfaction (Guchait et al. 2010).

2.3. Historical Overview of Knowledge Management

Despite the rare availability of KM concept before mid-1980s, this perception better emerged in 1997 onwards. By the time the significance of this concept becoming known, arguments regarding its management ways emerged (Wilson 2002). Moreover, Wilson (2002) declared that KM is considered as alternative terminology to “organizational learning”. Many other scholars such as Davenport and Prusak (2000) stated that KM would be directly associated with quality. For KM to survive in service-quality environment there is a necessity for strong leaders to establish atmospheres that maintain the creation of organizational knowledge with the involvement of front-line service employees (Nonaka & Takeuchi 1995). As well, for any organization to gain competitive advantage and be successful in the future, it is vital to nurture its ability to produce organizational knowledge (Nonaka & Takeuchi 1995). Moreover, Drucker (2009)
declared that to retain talented members of staff, firms must treat the staff as a resource and not as a liability.

2.3.1. Explicit and Tacit Knowledge

In fact, knowledge based on field of implementation has several classifications including personal or shared and public, practical or theoretical, hard or soft, internal or external, and foreground or background. But, most significantly used classification of knowledge is expressed as tacit or explicit (Meyer & Sugiyama 2007; Nonaka 1994; Polanyi 1958; Pathirage et al. 2007).

Scholars have agreed that knowledge is defined as a mixture of bounded experience, values, related information, and professional input that affords a structure for assessing recent experiences and information (Davenport & Prusak 2000, p. 5). Knowledge is categorized differently than data and information; nonetheless, data and information are vital elements to create knowledge within this paper (Davenport & Prusak 2000). Moreover, explicit knowledge is defined as the type of knowledge that can be documented and utilized as training materials to other employees or parties to improve quality and reduce costs (Nonaka & Takeuchi 1995). On the other hand, tacit knowledge is the type of knowledge that is complex to articulate and is usually identified by observing front-line service employees (Nonaka & Takeuchi 1995) and has a personal quality which makes it complicated to formalize and communicate (Nonaka 1994).

“Jasimuddin et al. (2005) differentiate tacit knowledge and explicit knowledge based on eight features. Explicit knowledge represents knowledge that can be:

- articulated (Nonaka and Takeuchi 1995);
- codified in a tangible form (Nonaka and Konno 1998);
- documented and transmitted, stored in the printed and the electronic media (Koh et al. 2005);
- stored in external databases (outside human mind);
- available in organizational repositories (e.g. organizational databases, documents, computers, organizational manuals, databases of corporate procedures, and best practices) (Grant 1996; Alter 2002);
- is easily available to anyone in the organization (Hansen et al. 1999);
- is transferred from the ‘‘giver’’ to the ‘‘receiver’’ indirectly through information technology (i.e. no direct face-to-face contact is required); and
- is not owned by individuals (Guchait et al. 2010).”

Herrgard (2000) implies that tacit knowledge is developed within individual experience and/or reflection and it is existed within the human being as individual gift. Brown and Duguid (1998) suggest that the above mentioned talents add value to the tacit knowledge but it gives it an inimitability characteristic which is not substitutable. Following this conceptualization, this paper proposes that whenever the front-line employee of the service organization uses his/her tacit knowledge in the value creation process, this will amplify the worth of the service to the customer. As a result, using tacit knowledge by the service provider will support customer evaluation on the quality of the relationship in a positive way.

On the other hand, using explicit knowledge such as documented materials decreases the interaction with the customer and when it is used within the value creation process; customers can easily distinguish the lower levels of relationship. This also will influence the customer satisfaction.

Gutek (1999) suggests that within high relationship service contexts, front-line employees acquire exclusive customer-provider knowledge based on previous transactions which is not related to the explicit knowledge offered by the organization. That is why the customer seeks certain specifications within
transaction when the service provider uses tacit knowledge management practices including more personal value, higher relationship value as stated by Namasivayam (2005) and more trust in service provider help in value creation chain that leads to higher satisfaction.

2.3.2. Knowledge Conversion

Nonaka and Takeuchi (1995) emphasized that knowledge can be generated during the interface communication of both tacit and explicit knowledge. In the course of this interaction, knowledge is converted via following four manners:

- Socialization: Tacit to Tacit
- Externalization: Tacit to Explicit
- Combination: Explicit to Explicit
- Internalization: Explicit to Tacit (Nonaka & Takeuchi 1995).

2.4. Mediation of Fairness and Control

Researchers have long back studied the impact of perceived control and perceived fairness on the customer satisfaction concept (Namasivayam 2004; Seiders & Berry 1998). This paper suggests that frontline employees’ knowledge management practices induce noteworthy force on control and fairness perspectives of customers. Moreover, the more customers perceive high control and fairness in the service transaction, the more likely to evaluate the service positively.

2.4.1. Control and KM

Proshansky et al. (1974) propose that high control in any environment has positive perception by the concerned people. Scholars suggest that with service exchange, any interpersonal trait that can improve the customer perceived control can confidently influence customer satisfaction (Namasivayam & Hinkin 2003; Dabholkar & Sheng 2009). Other scholars propose that service firms implement effective KM process to provide personalized service practices that complete customer’s exceptional needs (Sigala 2004) and increase customer’s perceptions of control of the service value creation process that lead to higher satisfaction.

Surprenant and Solomon (1987) suggest that there are two types of personalization named programmed personalization and customized personalization in which the first expresses the routine actions (i.e. explicit knowledge management practices) and the later utilizes personal and distinctive knowledge to help individual customer which will amplify the customer confidence that is translated as perceived control. This in turn will affect satisfaction evaluation in a positive way.

To be more specific, when the relationship within service exchange is relatively high and customer oriented and service provider incorporate knowledge of customer favorites based on historical transactions, the customer will perceive higher control of the value creation process. Higher perceptions of control lead to higher satisfaction.

2.5. Hypothesis

Based on section 2.1 and 2.2 and 2.3 the following hypothesis is proposed:

H1. Tacit knowledge management practices will have a stronger impact on customer satisfaction than explicit knowledge management.

Based on section 2.4 the following hypotheses are proposed:

H2a. Perceived control will mediate the relationship between knowledge management practices and satisfaction.

H2b. Tacit knowledge management practices will have a stronger impact on perceived control than explicit knowledge management practices.

3. Methodology

3.1. Overview of Dubai Municipality (DM)

DM was established in the 1940s with total staff strength of three persons. The municipality kept up its continuous growth and shifted to a great business institute with
more than 10,000 members of staff working in over 34 departments as shown in the organizational chart in figure 3.1.

3.2. Consumer Products Safety Section (CPSS)

Consumer products safety section at Dubai Municipality (DM) is responsible for registration of consumer products such as healthy supplement, cosmetics and detergents in the Emirate of Dubai. The section has set guidelines for the safety of such products that represent essential step in the right track by implementing the regulation of registration of such products before any public health crisis forces it to do so (CPSS 2013).

3.3. Consumer Products Safety Section (CPSS) Services

Regarding the services, the CPSS operates from six different locations and external centers including Al-Tawar DM Center, Al-Manara DM Center, Abu-Hail DM Center, Jabal-Ali Free Zone Office, Al-Maktoom Airport Office, and Cargo Village Office. The followings are the services performed by the section:

- Cosmetic, personal care, perfumes, detergents, disinfectants, and healthy (dietary) supplement products’ consignment release request for the purpose of re-export
- Cosmetic, personal care, perfumes, detergents, disinfectants, and healthy supplement products’ consignment release request for the purpose of use in local market
- Registration request for cosmetic, personal care, perfumes, detergents, disinfectants, and healthy supplement products
- Product assessment request for cosmetic, personal care, perfumes,
detergents, disinfectants, and healthy supplement products

- Issuance of No Objection Certificate (NOC) request for cosmetic, personal care, perfumes, detergents, disinfectants, and healthy supplement products related activities
- Request for consumer products Free Sale Certificate verification
- Issuance of No Objection Certificate (NOC) request for cosmetic, personal care, perfumes, detergents, disinfectants, and healthy supplement products advertising activities
- Issuance of No Objection Certificate (NOC) request for cosmetic, personal care, perfumes, detergents, disinfectants, and healthy supplement products label modification activities (DM 2013).

3.4. Data Collection

The data was attained by the “Knowledge Management in Service Encounters: Impact on Customers’ Satisfaction Evaluations Questionnaire” distributed to the customers of CPSS for the program of HS assessment, registration, and consignment release services at four different locations of the section including Al-Tawar center, Al-Manara center, Cargo Village center and Jabal-Ali center. The questionnaire was distributed to 500 customers from 17 to 31 December 2013. The customers were provided with a hard copy of the questionnaire at the time of their visit to the service counters of CPSS. They were encouraged to complete it by the secretary of the section and head of units at each location of the service counter. The researcher contacted the head of units personally and explained the questions and sent a reminder to them on daily basis to encourage the customers to participate. Participants were given 15 minutes to complete the questionnaire after they were done with their transactions with DM face to face. Completed questionnaires were returned to the researcher.

By end of December, the researcher received 230 questionnaires in which 8 questionnaires were not fully completed and the rest 222 questionnaires contained full information yielding a 44% response rate that was considered proper number for the researcher to be used. Then, data entry and analysis were completed by the researcher.

3.4.1. Validity and Reliability of Questionnaire

The questionnaire was designed by the researcher to identify the measure of the customer satisfaction on the knowledge of the front-line employees working on HS products transactions for the concerned company in the Emirate of Dubai.

To improve the validity of this instrument, the researcher performed a pre-test study where the researcher asked the help of 6 experts in the field who also worked at the same section to identify any ambiguities within the questions been asked in the questionnaire. Through this process several possible responses were identified as they went through the questions and the questionnaire was amended respectively. For instance, one of the experts found out that within the key title of section D, the word “tacit” was twice mentioned instead of “explicit” word. Another remark was about the font size of the questionnaire which was font size 10 to fit 1 page and the recommendation of the experts was to modify it to font size 14 to make it easily readable by the customers and it was corrected accordingly.

Later, the researcher applied pilot test study on a group of 12 people that showed a Cronbach's Alpha greater than 0.7. Based on these three tests the questionnaire went through the validity criteria and data were collected from a reliable set.

3.4.2. Developing Survey Instrument

As discussed in the literature review and presented within objectives of the paper, the reason behind developing the questionnaire was to measure the consumers’ satisfaction levels on the knowledge of the front-line
employees working on HS products transactions.

The instrument was designed into main sections in which the first section included the demographic factors of the participants (customers) as section A. This included name of the participant as optional choice, his/her designation as optional choice, company name as optional choice, sex, age, and education information of the customer as compulsory areas. The second section contained mandatory fields of the service provider including name of the service provider, his/her sex, and location of the service transaction. Section C included two general questions that could yield information on the history of the customer with service provider on the length and frequency of the service usage.

The last sections, D, E, and F included 15 statements derived from the hypotheses. The technical statements where their design was based on Likert rating scale could yield ordinal responses of “strongly satisfied”, “satisfied”, “undecided/not applicable”, dissatisfied” or “strongly dissatisfied”. The technical statements 1, 3, and 4 from section D, statements 2, 3, and 4 from section E and statements 1, 2, and 4 from section F were derived from Guchait et al. (2010).

3.5. Sample Design

This part identified the population of the study, the sample size; sample type, the inclusion and exclusion criteria of the samples as follows:

3.5.1. Study Population and Sampling
3.5.1.1. Population

Regarding the questionnaire, the population was from CPSS customers. There were around 500 customers registered within CPSS database.

3.5.1.2. Target Sample

In terms of customer population, the samples were selected randomly from different customers who reviewed the service counters of CPSS from 17 to 31 December 2013. The target sample received a hard copy of the questionnaire at time of visit. As for the ages, it ranged within 4 categories, 18 to up to 25, from more than 25 to less than 30, from 30 to 50, and more than 50. This was distributed between males and females.

3.5.2. Sample Size

Cochran (1963:75) developed the following equation for determining the sample size:

\[ n_0 = \frac{z^2 \cdot p \cdot (1-p)}{e^2} \]

\[ n_0 = \text{required sample size} \]

\[ z = \text{confidence level at 95% (standard value of 1.96)} \]

\[ p = \text{p is the estimated proportion of an attribute that is present in the population. In fact, this value is predicted by the researcher on what percentage the researcher expects to get the response. In this thesis, a 50% of respondent was expected that yielded a value of 0.50 as proportion.} \]

\[ e = \text{is the desired level of precision or the margin of error at 5% (standard value of 0.05)} \]

Sample size required for the customers = \( n_0 \)

\[ = 1.96 \times 1.96 \times 0.50 \times 0.05 \times 0.05 = 384 \]

Correction for finite population is as per the following formula (Israel, 2009):

\[ \text{New } n = n' \]

\[ n' = \frac{n}{1 + \frac{n-1}{\text{population}}} \]

Therefore, the new sample size (n’) for the customers who participated in the questionnaire was as follows: New sample size (employees) = \( \frac{384}{(1+383/500)} = \frac{384}{(1+0.766)} = 384/1.766 = 217 \) participants

3.5.3. Sample Type

The sample type was the simple random sampling. For the descriptive analysis, the sample type was the random samples of the customers reviewed CPSS at DM.

3.5.3.1. Sample inclusion criteria

- All customers of CPSS that were in age range of 18 years old and above
This paper identified the different variables and their measures. Within the questionnaire, the variable gender was measured upon a nominal-level scale where variable male was identified as 0 and variable female was identified as 1 for the statistical analysis in SPSS. The variable age was measured upon ordinal scale where the participant was asked to indicate his/her age upon the following scale: 18-25, 25>30, 30-50, and 50+. For statistical analysis, age 18-25 was coded as 0, age more than 25 to less than 30 was coded as 1, age 30-50 was coded as 2, and age more than 50 was coded as 3 within SPSS.

As well, the scale measure used in SPSS software was used to measure the responses of the customers in many variations like strongly satisfied, satisfied, undecided or not applicable, dissatisfied and strongly dissatisfied (Berman 2007).

More, the total measure of satisfaction was measured using Microsoft Excel 2007 in which the average of each statement related to satisfaction within the questionnaire was measured and at last the total measure of satisfaction was considered on the following scale:

- 90% and above = excellent customer satisfaction level
- 80% to less than 90% = very good customer satisfaction level
- 70% to less than 80% = good customer satisfaction level
- 60% to less than 70% = moderate customer satisfaction level
- Less than 60% = very poor customer satisfaction level

A between subject analysis of variance (ANOVA) design in SPSS 20 was used to test the hypotheses. The dependent variable was the satisfaction and the mediating variable was perceived fairness and control.

3.7. KM Operation Check Item

The success of the KM operation was calculated through two scales of measuring tacit and explicit KM. Check points were indicated for each scale based on Yi (2009).
proposed parameters. ANOVA was used to evaluate each item (Hinkin and Tracey 1999) and the results showed that 6 of 8 explicit KM elements had considerably higher mean score on explicit KM construct than tacit KM construct. These 6 items were saved. Correspondingly, 6 items out of 8 were retained for the tacit KM construct. Cronbach’s alpha for perceived tacit KM scale was 0.90. A sample item is, “The service provider helped me using knowledge off the top of his/her head.” Cronbach’s alpha for perceived explicit KM scale was 0.88 representing enough reliability. A sample item is, “The service provider uses external sources (e.g. computers; manuals) to retrieve information, in order to help me.”

3.8. Analysis

Statistical software for the social science “SPSS” version number 20 was used to analyze the data. As the paper contained data on customer satisfaction level, descriptive analysis for nominal data analysis was used (Trochim 2000). To control for gender effects, both male and female front-side employees were used in the study. The dependent variable measured was satisfaction, and the mediating variables were perceived fairness and control. ANOVA was used to test the impact of KM practices on customer satisfaction and perceived control and fairness.

3.9. Research Implications

This study broadens the research area in the field of KM, customer relationship management and customer satisfaction, and recommends potential hypothetical and practical research paths. Though the sample is representative of the population, no declaration is stated in order to generalize the results of this paper to larger population.

4. Results

This section presents the descriptive analysis of the primary data of the questionnaire. This section addressed the objective statements that focused on determining the impact of two fundamental KM elements namely tacit and explicit knowledge on customer satisfaction.

4.1. Usefulness of KM Operation

To observe the usefulness of the KM operation, customers filled the perceived tacit and explicit KM scales built for this study. The results express that participants within tacit KM condition identified higher tacit KM with a mean of 4.52 than explicit KM situation recorded at a mean of 4.5 and vice versa with respondents in the explicit KM condition of a mean of 4.6 comparing to 4.5. These results support the concept of usefulness of the KM operation.

Figure 4.1 shows significant correlations between KM practices and perceived control and fairness and satisfaction. This indicates that the customers expressed more perceptions of satisfaction, control and fairness in the tacit KM condition in comparison with explicit KM.

![Figure 4.1: Correlation of Variables: Satisfaction, Perceived Control & Fairness](image)
4.2. Test of Hypothesis

□ H1. Tacit knowledge management practices will have a higher impact on customer satisfaction than explicit knowledge management.

Customer satisfaction as a dependent variable was evaluated through ANOVA to compare the tacit and explicit KM parameters. The outcome of KM on customer satisfaction with the service transaction is expressed significantly. As the results demonstrate highly significance in which tacit KM has a higher impact on customer satisfaction in comparison to explicit KM and therefore the hypothesis is strongly supported as shown in figure 4.2.

□ H2a. Perceived fairness and control will mediate the relationship between knowledge management practices and satisfaction.

□ H2b. Tacit knowledge management practices will have a stronger impact on perceived fairness and control than explicit knowledge management practices.

H2a suggests the intervening outcome of perceived fairness and control on the relationship between KM practices and customer satisfaction. Moreover, the second part of the hypothesis suggests that KM induces constructive consequence on perceived fairness and control. For example, the tacit KM will have a higher impact on perceived fairness and control than explicit KM. To test this hypothesis, Baron and Kenny (1986) offer certain ways to do so.

The first step is to identify a significant relationship between dependent and independent variables. As per this study, between satisfaction and KM, this has already been supported in first hypothesis. The next step includes testing the significant effect of independent variable, KM, on the mediator which is the perceived fairness and control. As the p-value is recorded as 0.00 for fairness and 0.002 for control, this is highly significant as well. Therefore, H2b is supported as well. Third, the ANOVA was performed with perceived fairness and control and the results indicate the significance as p-value of 0.001. Therefore, H2a is supported.

4.3. Questionnaire Results

The questionnaire was distributed to 500 customers of CPSS who visited the service counters. 230 respondents filled the questionnaires in which 8 of them were not completed and 222 participants returned back the fully completed questionnaire yielding a 44% of response rate. As per the distribution of ages of the participants in the study (table 4.1), it is revealed that the main category fell between the ages of 30 to 50 comprising 53.2%. The second rate included the participants who aged more than 25 years old and did 64 participants comprise 28.8% of the whole participants. 23 people out of the 222 sample size participants were within the category of more than 18 years old till 25 yielding 10.4%. The last category was the participants who aged more than 50 that yield only 7.7%.

Table 4.1: Descriptive Statistics on Demographic Data - Age of Participants

<table>
<thead>
<tr>
<th>Age Category</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 to 25 more than</td>
<td>23</td>
<td>10.4</td>
<td>10.4</td>
<td>10.4</td>
</tr>
<tr>
<td>25 to less than 30</td>
<td>64</td>
<td>28.8</td>
<td>28.8</td>
<td>39.2</td>
</tr>
<tr>
<td>30 to 50 more than</td>
<td>118</td>
<td>53.2</td>
<td>53.2</td>
<td>92.3</td>
</tr>
<tr>
<td>50</td>
<td>17</td>
<td>7.7</td>
<td>7.7</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>222</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

The second factor of the demographic data is the gender of the participants. It is vital to state the percentage of each category that participated in the study revealing their
views and opinions of the questions. Table 4.2 shows that 89.6% of the participants were male and 10.4% of the participants were females.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>199</td>
<td>89.6</td>
<td>89.6</td>
<td>89.6</td>
</tr>
<tr>
<td>Female</td>
<td>23</td>
<td>10.4</td>
<td>10.4</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>222</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Another parameter of the demographic data is the education level of the participants. Table 4.3 shows that the most of the participants fell under “graduate” category comprising 57.2%. This is followed by participants who have higher education level as “post graduate” representing 18.5% of the whole participants with slight difference of undergraduate category of 17.1%. The last category was the participants who have less than high school degree yielding 6.8%.

<table>
<thead>
<tr>
<th>Branch</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Al-Tawar branch</td>
<td>38</td>
<td>17.1</td>
<td>17.1</td>
<td>17.1</td>
</tr>
<tr>
<td>Al-Manara branch</td>
<td>47</td>
<td>21.2</td>
<td>21.2</td>
<td>38.3</td>
</tr>
<tr>
<td>Cargo village branch</td>
<td>39</td>
<td>17.6</td>
<td>17.6</td>
<td>55.9</td>
</tr>
<tr>
<td>Jabal-Ali branch</td>
<td>98</td>
<td>44.1</td>
<td>44.1</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>222</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Another factor of the demographic data is the gender of the service provider. In fact, as the percentage of female is very small (0.9%), there is no difference in the knowledge of the gender and therefore it will not be discussed in this paper. Table 4.4 shows that 99.1% of the service provider was male.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>220</td>
<td>99.1</td>
<td>99.1</td>
<td>99.1</td>
</tr>
<tr>
<td>Female</td>
<td>2</td>
<td>0.9</td>
<td>0.9</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>222</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Another factor of the demographic data is the location of the service exchange. Table 4.5 shows that almost half of the service load is performed through Jabal-Ali branch yielding 44.1% of the total service exchange rate. This is followed by Al-Manara branch with a service exchange rate of 21.2%. The other 2 branches, Cargo village branch and Al-Tawar branch yielded 17.6% and 17.1% respectively.

<table>
<thead>
<tr>
<th>Branch</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than 1 month</td>
<td>16</td>
<td>7.2</td>
<td>7.2</td>
<td>7.2</td>
</tr>
<tr>
<td>1 to 6 months</td>
<td>65</td>
<td>29.3</td>
<td>29.3</td>
<td>36.5</td>
</tr>
<tr>
<td>6 months to a year</td>
<td>131</td>
<td>59.0</td>
<td>59.0</td>
<td>95.5</td>
</tr>
<tr>
<td>first time</td>
<td>10</td>
<td>4.5</td>
<td>4.5</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>222</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>
Moreover, the questionnaire disclosed the frequency of the participants that used with dietary supplement services. The below table 4.7 indicates how often the participants used the service. Most of the participants used the service for at least once a week yielding 41% followed by 33.3% of the participants that were using the service on daily basis. Around 19.8% of the participants used the service only once a year. The rest 0.9% could not decide if the front line employee helped the customer using tacit knowledge or not. The rest 0.9% thought that the front line employee did not use knowledge off the top of his/her head.

The average score on this question was 4.56 out of 5 measurement scales as shown in table 4.23.

The following section shows the results for the particular questions within the survey that are responsive to certain components of the objectives of the research. As per section D of the questionnaire in technical statement 1, the researcher asked the participants regarding their satisfaction on level of help the service provider offered them using knowledge off the top of his/her head.

Table 4.8 shows the result of this question that revealed the majority of the participants around 58.6% strongly agreed on the fact that the service provider helped the customer by using knowledge off the top of his/her head. The other 88 participants agreed on this matter yielding 39.6%. Moreover, 0.9% could not decide if the front line employee helped the customer using tacit knowledge or not. The rest 0.9% thought that the front line employee did not use knowledge off the top of his/her head.

The average score on this question was 4.56 out of 5 measurement scales as shown in table 4.23.

The following question shows the results for the particular questions of satisfaction on mutual identification that translates the relationship to the hypothesis. Table 4.9 reveals that 94.1% of total participant agreed and strongly agreed that the service provider can identify him/her within service exchange area. A small rate of 5.1% could not decide on the response to this question. The average score on this question was 4.41 out of 5 measurement scales as shown in table 4.23.

The next question presents the results for a specific question on the explicit knowledge of the service provider and the satisfaction on using external sources such as computers and manuals to retrieve information in order to help the customer. Table 4.10 presents that 96.8% of total participants agreed and strongly agreed that the service provider uses external resources to retrieve information. A small rate of 3.2% could not decide on the response to this question.

The average score on this question was 4.5 out of 5 measurement scales as shown in table 4.23.
Table 4.10: Participants’ Responses to the Satisfaction on Service Provider Usage of External Sources in Helping Customers

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly satisfied</td>
<td>118</td>
<td>53.2</td>
<td>53.2</td>
<td>53.2</td>
</tr>
<tr>
<td>Satisfied</td>
<td>97</td>
<td>43.7</td>
<td>43.7</td>
<td>96.8</td>
</tr>
<tr>
<td>NA</td>
<td>7</td>
<td>3.2</td>
<td>3.2</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>222</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The next question presents the results for a specific question on the shared history field in service exchange that related to the literature review. Table 4.11 presents that 96.4% of total participants agreed and strongly agreed that they do business with CPSS at DM because of their shared history with the organization. A small rate of 3.6% could not decide on the response to this question. The average score on this question was 4.47 out of 5 measurement scales as shown in table 4.23.

Table 4.11: Participants’ Responses on Satisfaction to do Business with DM for Shared History

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly satisfied</td>
<td>112</td>
<td>50.5</td>
<td>50.5</td>
<td>50.5</td>
</tr>
<tr>
<td>Satisfied</td>
<td>102</td>
<td>45.9</td>
<td>45.9</td>
<td>96.4</td>
</tr>
<tr>
<td>NA</td>
<td>8</td>
<td>3.6</td>
<td>3.6</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>222</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The following question indicates the results for the satisfaction on the trustworthiness of front-line employees. Table 4.13 shows that 72.1% of total participants strongly satisfied with trustworthy of the front-line employees. Another 27% were satisfied only 0.9% could not decide on the response to this question. The average score on this question was 4.71 out of 5 measurement scales as shown in table 4.23.

Table 4.13: Participants’ Responses on Satisfaction to Trustworthy of Front-Line Employees

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly satisfied</td>
<td>160</td>
<td>72.1</td>
<td>72.1</td>
<td>72.1</td>
</tr>
<tr>
<td>Satisfied</td>
<td>60</td>
<td>27.0</td>
<td>27.0</td>
<td>99.1</td>
</tr>
<tr>
<td>NA</td>
<td>2</td>
<td>.9</td>
<td>.9</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>222</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The next table presents the results for the satisfaction on the service encounter capability of having everything essential for the service needed by the customers. Table 4.14 shows that 51.4% of total participants satisfied with this skill of the employee and 46.4% expressed their strong satisfaction. Another 1.4% could not decide on any response and only 0.9% was dissatisfied. The average score on this question was 4.43 out of 5 measurement scales as shown in table 4.23.

Table 4.14: Participants’ Responses on Satisfaction to That Service Encounter Had Everything Essential for the Service

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly satisfied</td>
<td>103</td>
<td>46.4</td>
<td>46.4</td>
<td>46.4</td>
</tr>
<tr>
<td>Satisfied</td>
<td>114</td>
<td>51.4</td>
<td>51.4</td>
<td>97.7</td>
</tr>
<tr>
<td>NA</td>
<td>3</td>
<td>1.4</td>
<td>1.4</td>
<td>99.1</td>
</tr>
<tr>
<td>Dissatisfied</td>
<td>2</td>
<td>.9</td>
<td>.9</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>222</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The next table presents the results for the satisfaction on the trust in the service provider’s assistance in value creation resulting in positive evaluations of the service exchange. Table 4.15 shows that 51.8% of total participants strongly satisfied with this skill of the employee and 44.6% expressed their satisfaction. Another 3.6%
could not decide on any response. Average score on this question was 4.48 out of 5 measurement scales as shown in table 4.23.

Table 4.15: Participants’ Responses on Satisfaction to Trust the Service Provider’s Assistance in Value Creation

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly satisfied</td>
<td>115</td>
<td>51.8</td>
<td>51.8</td>
<td>51.8</td>
</tr>
<tr>
<td>Satisfied</td>
<td>99</td>
<td>44.6</td>
<td>44.6</td>
<td>96.4</td>
</tr>
<tr>
<td>NA</td>
<td>8</td>
<td>3.6</td>
<td>3.6</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>222</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

The next table presents the results for the satisfaction on the fairness of service process. Table 4.16 shows that 48.2% of total participants strongly satisfied and 49.1% expressed their satisfaction. Another 2.7% could not decide on any response. The average score on this question was 4.45 out of 5 measurement scales as shown in table 4.23.

Table 4.16: Participants’ Responses on Satisfaction on Fairness of Service Process

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly satisfied</td>
<td>107</td>
<td>48.2</td>
<td>48.2</td>
<td>48.2</td>
</tr>
<tr>
<td>Satisfied</td>
<td>109</td>
<td>49.1</td>
<td>49.1</td>
<td>97.3</td>
</tr>
<tr>
<td>NA</td>
<td>6</td>
<td>2.7</td>
<td>2.7</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>222</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

The next table presents the results for the satisfaction on the skill of service provider willingness to help in any way possible. Table 4.17 shows that 66.2% of total participants strongly satisfied and 32.4% expressed their satisfaction. Another 1.4% could not decide on any response. The average score on this question was 4.65 out of 5 measurement scales as shown in table 4.23.

Table 4.17: Participants’ Responses on Satisfaction on Service Provider Willingness to Help

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly satisfied</td>
<td>147</td>
<td>66.2</td>
<td>66.2</td>
<td>66.2</td>
</tr>
<tr>
<td>Satisfied</td>
<td>72</td>
<td>32.4</td>
<td>32.4</td>
<td>98.6</td>
</tr>
<tr>
<td>NA</td>
<td>3</td>
<td>1.4</td>
<td>1.4</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>222</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

The next table presents the results for the satisfaction on the sincere concern of front-line employee in solving problems without referring to any computer or information. Table 4.18 shows that 64.9% of total participants strongly satisfied and 31.5% expressed their satisfaction. Another 2.7% could not decide on any response. Only 1% expressed their dissatisfaction and strong dissatisfaction to this question. The average score on this question was 4.60 out of 5 measurement scales as shown in table 4.23.

Table 4.18: Participants’ Responses on Satisfaction of Front-Line Employee Concern in Solving Problems

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly satisfied</td>
<td>144</td>
<td>64.9</td>
<td>64.9</td>
<td>64.9</td>
</tr>
<tr>
<td>Satisfied</td>
<td>70</td>
<td>31.5</td>
<td>31.5</td>
<td>96.4</td>
</tr>
<tr>
<td>NA</td>
<td>6</td>
<td>2.7</td>
<td>2.7</td>
<td>99.1</td>
</tr>
<tr>
<td>Dissatisfied</td>
<td>1</td>
<td>.5</td>
<td>.5</td>
<td>100.0</td>
</tr>
<tr>
<td>Strongly Dissatisfied</td>
<td>1</td>
<td>.5</td>
<td>.5</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>222</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

The next table presents the results for the satisfaction on the employee rather than the computer. Table 4.19 shows that 57.7% of total participants strongly satisfied and 40.5% expressed their satisfaction. Another 1.8% could not decide on any response. The average score on this question was 4.56 out of 5 measurement scales as shown in table 4.23.

Table 4.19: Participants’ Responses on Satisfaction on the Employee Rather Than the Computer

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly satisfied</td>
<td>128</td>
<td>57.7</td>
<td>57.7</td>
<td>57.7</td>
</tr>
<tr>
<td>Satisfied</td>
<td>90</td>
<td>40.5</td>
<td>40.5</td>
<td>98.2</td>
</tr>
<tr>
<td>NA</td>
<td>4</td>
<td>1.8</td>
<td>1.8</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>222</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

The following table presents the results for the satisfaction on the clarity of the information provided by employee. Table 4.20 shows that 70.3% of total participants strongly satisfied and 20.1% expressed their satisfaction. Another 3.6% could not decide
on any response. The average score on this question was 4.67 out of 5 measurement scales as shown in table 4.23.

Table 4.20: Participants’ Responses on Satisfaction on the Clarity of the Information Provided By Employee

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly satisfied</td>
<td>156</td>
<td>70.3</td>
<td>70.3</td>
<td>70.3</td>
</tr>
<tr>
<td>Satisfied</td>
<td>58</td>
<td>26.1</td>
<td>26.1</td>
<td>96.4</td>
</tr>
<tr>
<td>NA</td>
<td>8</td>
<td>3.6</td>
<td>3.6</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>222</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

The following table presents the results for the satisfaction on the willingness of the customer in using the service again. Table 4.21 shows that 64.9% of total participants strongly satisfied and 32.4% expressed their satisfaction. Another 2.7% could not decide on any response. The average score on this question was 4.62 out of 5 measurement scales as shown in table 4.23.

Table 4.21: Participants’ Responses on Satisfaction on the Willingness of the Customer in Using the Service Again

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly satisfied</td>
<td>144</td>
<td>64.9</td>
<td>64.9</td>
<td>64.9</td>
</tr>
<tr>
<td>Satisfied</td>
<td>72</td>
<td>32.4</td>
<td>32.4</td>
<td>97.3</td>
</tr>
<tr>
<td>NA</td>
<td>6</td>
<td>2.7</td>
<td>2.7</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>222</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

The following table presents the results for the satisfaction on the knowledge of the employees. Table 4.22 shows that 74.8% of total participants strongly satisfied and 22.1% expressed their satisfaction. Another 3.2% could not decide on any response. The average score on this question was 4.72 out of 5 measurement scales as shown in table 4.23.

Table 4.22: Participants’ Responses on Satisfaction on the Knowledge of the Employees

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly satisfied</td>
<td>166</td>
<td>74.8</td>
<td>74.8</td>
<td>74.8</td>
</tr>
<tr>
<td>Satisfied</td>
<td>49</td>
<td>22.1</td>
<td>22.1</td>
<td>96.8</td>
</tr>
<tr>
<td>NA</td>
<td>7</td>
<td>3.2</td>
<td>3.2</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>222</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

The above table indicates very excellent customer satisfaction on the knowledge types of the front-line employees of DM as 91.4% in total.

5. Discussion

The results show that tacit KM induces higher impact on customer satisfaction in comparison with explicit KM at the stage of service exchange. This in turn indicates the magnitude of tacit KM in value creation particularly in type of service transactions where great relationship is required. In fact, if the customers recognize that the service provider within the service transaction period is utilizing the tacit knowledge, this will assure them that the knowledge used is

Table 4.23: Satisfaction Score and Percentage on Questionnaire Technical Statements

<table>
<thead>
<tr>
<th>Questionnaire Technical Statement No.</th>
<th>Measurement</th>
<th>Score</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical statement No. 1</td>
<td>Section D</td>
<td>4.56/5</td>
<td>91.2%</td>
</tr>
<tr>
<td>Technical statement No. 2</td>
<td>Section D</td>
<td>4.41/5</td>
<td>88.2%</td>
</tr>
<tr>
<td>Technical statement No. 3</td>
<td>Section D</td>
<td>4.50/5</td>
<td>90%</td>
</tr>
<tr>
<td>Technical statement No. 4</td>
<td>Section D</td>
<td>4.47/5</td>
<td>89.4%</td>
</tr>
<tr>
<td>Technical statement No. 5</td>
<td>Section D</td>
<td>4.66/5</td>
<td>93.2%</td>
</tr>
<tr>
<td>Technical statement No. 1</td>
<td>Section E</td>
<td>4.71/5</td>
<td>94.2%</td>
</tr>
<tr>
<td>Technical statement No. 2</td>
<td>Section E</td>
<td>4.43/5</td>
<td>88.6%</td>
</tr>
<tr>
<td>Technical statement No. 3</td>
<td>Section E</td>
<td>4.48/5</td>
<td>89.6%</td>
</tr>
<tr>
<td>Technical statement No. 4</td>
<td>Section E</td>
<td>4.45/5</td>
<td>89%</td>
</tr>
<tr>
<td>Technical statement No. 5</td>
<td>Section E</td>
<td>4.65/5</td>
<td>93%</td>
</tr>
<tr>
<td>Technical statement No. 1</td>
<td>Section F</td>
<td>4.60/5</td>
<td>92%</td>
</tr>
<tr>
<td>Technical statement No. 2</td>
<td>Section F</td>
<td>4.56/5</td>
<td>91.2%</td>
</tr>
<tr>
<td>Technical statement No. 3</td>
<td>Section F</td>
<td>4.67/5</td>
<td>93.4%</td>
</tr>
<tr>
<td>Technical statement No. 4</td>
<td>Section F</td>
<td>4.62/5</td>
<td>92.4%</td>
</tr>
<tr>
<td>Technical statement No. 5</td>
<td>Section F</td>
<td>4.72/5</td>
<td>94.4%</td>
</tr>
<tr>
<td>Total Score</td>
<td></td>
<td>4.57/5</td>
<td>91.4%</td>
</tr>
</tbody>
</table>
based on customer favorites. Moreover, the relationship between the service provider and the customer is empowered whenever the tacit knowledge is used. At this stage, the customer will have more faith in the assistance the front line employee provides to generate the value in the service exchange that affects their service measurement in a positive way. As well, the study reveals that there is a chance of mediation effect of perceived fairness and control on the association of KM practices and customer satisfaction. The results noticeably specify that once front line employees through the service transaction utilize the tacit knowledge, the customers are more likely to observe greater fairness and control in the value creation path in comparison to the front line employees who use explicit knowledge.

Applying tacit knowledge by front-line employees guarantee the clients that service providers have history of knowledge with the concerned customer and that he/she employs the knowledge based on the customer choices. Consequently, this shows the customers that the front line employee will grant the most suitable service elements in relation to the customers’ preferences so they can help them in achieving their most wanted service. This faith and assurance improves customer insights of fairness and control within service transaction stage as they are confident that they will provide the desired service. As a result, greater perceptions of fairness and control affect the service measurement and evaluations positively.

The correlation of the variables and the related means and standard deviations presents proofs of the association between KM and satisfaction in which the means for satisfaction are greater in tacit KM state in comparison to explicit KM state. Additionally, ANOVA measurement results noticeably specify that tacit knowledge has better impact on customer satisfaction than explicit knowledge.

6. Conclusions

This study broadens the research area in the field of KM, customer relationship management and customer satisfaction, and recommends potential hypothetical and practical research paths.

6.1 Research Implications

The management of DM must focus on the tacit knowledge particularly the ones that the front-line employees employ through service transactions. This is because these employees frequently come across with the customers in service exchange which in turn leads to the establishment of service relationships. Following certain transactions, the front line employees will gain experience on the customer preference which they will use the tacit knowledge for the upcoming service exchange conditions that in turn will empower the customer-employee relationship. Therefore, implementing strategies by the managers to establish, employ and enhance the tacit knowledge of the front line employees is essential.

As each customer has different preference or requirement and behaves differently, it is difficult for front line employees to stick to the explicit knowledge (Namasivayam 2005) and must approach to the customer individual needs in several ways. That is why the managers need to implements training session to enhance those employees’ skills. This paper does not indicate any preference on the use of any type of knowledge rather than another; however, it presents the results of the experiment in DM and it is up to the organization to decide which knowledge element best suits the service encounter.

6.2. Limitations

The main limitation been faced with conducting this study was the time constraint as the study was so detailed and the short period time specified for it was not sufficient. Second limitation was that certain respondents decided to return blank
questionnaires to the service counter which added insufficient data to the study. Moreover, though the sample is representative of the population, no declaration is stated in order to generalize the results of this paper to larger population.

6.3. Future Studies
As this study does not propose the generalization of the findings to larger population, future studies may improve the possibility to generalize the concept and findings. More, future studies must evaluate the impact of KM dimensions in both high relationship oriented service and low relationship oriented service (Gutek et al. 1999). In addition, further studies may investigate on other factors and variables that this study did not consider including service employee gender, customer gender, and knowledge practices interact.
7. References


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Total Company-Wide Management System (TCWMS): Comparisons with Other Systems

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Abstract

For any enterprise, management systems (MSs) are essential for success. MSs are structured approaches to manage the areas of business in an organisation. Traditionally, various MSs are implemented without being properly integrated together leading to waste of resources. Recently, MSs have gained attention as they form a critical infrastructure for improving and controlling the operation systems to achieve alignment. However, there is a gap in the form of a need, as indicated in the literature, for a comprehensive system that integrates them together. This integration constitutes the goal of the proposed system, which is ensuring the existence of an infrastructure for continuous improvement (CI) and the strategic alignment of all areas of a business and the people towards the objectives of comprehensive business excellence. The proposed system is called the total company-wide management system (TCWMS). TCWMS’s five main components are strategic, project, operation, process and performance MSs. This paper provides a comprehensive and precise study of these components in an attempt to add a new understanding for MSs to what is already known in the literature. A roadmap is provided for each of them, as well as a framework for the whole system and an auditing approach to clarify how it can be developed. The grouping and connection of these components is the novelty of the proposed TCWMS. In addition, there are different integrated systems proposed in the literature. Some deal with the integration of improvement methodologies with each other or with other MSs such as ISO 9000. However, TCWMS is believed to be more comprehensive, as it integrates all aspects of managing and improving a business. In this paper, a description of the different features of TCWMS and other MS models is provided. Also, TCWMS practices, which correspond to other MSs, such as the Malcolm Baldrige National Quality Award (MBNQA) dimensions, European Foundation for Quality Model (EFQM) and Deming’s 14-points for management, are discussed, and a comparison is provided of TCWMS and traditional MS practices. This paper also includes findings and discussion of some of the most common and traditional MS models. It explains how TCWMS compares to other QMS and MS models. It presents the different features and the main practices of TCWMS and other MS models.

Keywords: management system (MS); total company-wide management system (TCWMS); continuous improvement (CI); quality management system (QMS); Malcolm Baldrige National Quality Award (MBNQA); European Foundation for Quality Model (EFQM).
1. Introduction

Many industrial organizations are not realizing the full potential of what QM and CI methodologies, integrated together, along with a proper comprehensive management system (MS) can achieve for them. There are several cases of failure in implementing improvement projects and maintaining their benefits (Devane, 2004; Bhasin and Burcher, 2006). These failures result in the tremendous waste of energy, resources and in some cases, the closure of industrial facilities. Success is likely to be in the proper total integration of various MSs and CI methodologies. This will achieve the goal of aligned and optimal CI leading to optimal quality, productivity, efficiency, etc., which is expected to make a significant contribution to all stakeholders, including owners, workers, customers and society in general. Different researchers have indicated that there is a need for a comprehensive MS that will serve as a foundation to ensure proper alignment and optimization of all resources in an industry (Chapman and Hyland, 1997; Kaye and Anderson, 1999; Stankard, 2002; McAdam and Evans, 2004; Dahlgaard and Dahlgaard-Park, 2006). Only a few researchers have started looking into this topic and this work is an attempt to pave the way towards this integration. Recent studies on the integration of CI and MSs can be found in (Friday-Stroud and Sutterfield, 2007; Cheng, 2008). Also, recent studies on TCWMS can be found in (Salah et al., 2010a, Salah et al., 2010b, Salah et al., 2013). The TCWMS is a comprehensive MS that has a key goal for achieving alignment across the whole business, where every individual is empowered and accountable, through their actions, for what the customer and business requires. The next two sections, i.e., Section 1.1 and Section 1.2, include a general introduction to MSs and TCWMS.

There are different integrated systems proposed in the literature. Some deal with the integration of improvement methodologies with each other or with other MSs such as ISO 9000. However, TCWMS is believed to be more comprehensive, as it integrates all aspects of managing and improving a business. In what follows, a description of the different features of TCWMS and other MS models is provided. Also, TCWMS practices, which correspond to other MSs, such as the MBNQA dimensions and Deming’s 14-points for management, are discussed, and a comparison is provided of TCWMS and traditional MS practices. This paper includes findings and discussion of some of the most common and traditional MS models.

1.1. Management Systems (MSs)

A system can be defined as a network of interdependent components that assist each other and should be managed to achieve a unique aim (Deming, 1993). Management, on the other hand, is the integration of all resources into a total system to achieve an objective and has functions that mainly include planning, organisation, control and communication (Johnson et al., 1964). Also, the function of management is concerned with developing standards and procedures to achieve the outputs (Cunningham, 1979). Deming (1993) proposed a management theory called a system of profound knowledge that consisted of: the awareness of all connecting parts of a system and its variation, the awareness of the people as they form part of the system and the awareness of the fact that management is about prediction. The management theory regarding operating systems is still evolving (Arnheiter and Maleyeff, 2005) and management is considered immature when compared to other social sciences (Andersson et al., 2006).

An MS is simply a way, or a plan, of managing a business that can be considered formal when documented and communicated. In general, MSs are developed to meet the requirements of some or all of the following management disciplines: quality, health, safety, environment, security, financial
(Compliancehelp Consulting, 2007; Scipiono et al., 2001) and other management disciplines. MSs can also be defined as groups of processes, which work together in harmony and use different resources, to achieve management goals (Karapetrovic and Willborn, 1998). The development of MSs has been influenced by the evolution of the concept of quality (Scipiono et al., 2001). The expression ‘MS’ is often used to refer to quality systems, such as ISO 9001, and health and safety MSs. However, in the context of this paper, the expressions of MS, operating system and business system are interchangeable, as they are intended to encompass all aspects of managing and improving businesses and their quality.

1.2. Total Company-Wide Management System (TCWMS)

The traditional way of doing business is to have two (or more) separate entities: one is managing the business and the other is improving the business. However, there is great advantage in integrating these two entities with each other. In the TCWMS environment proposed here, a strong integration can be achieved where everyone becomes aligned with the CI objectives such that they find out how to improve the process as they work inside that process. The proposed TCWMS is a comprehensive system that encompasses many different aspects of the management disciplines. It mainly draws on five MSs which are grouped into strategic management, project management, daily management, process management (which incorporates total quality management (TQM) and CI methodologies) and performance management. These five MSs may be further detailed to include various MS sub-components such as financial, customer relations, culture, resources, communication, CI, documentation, etc.

In the 18-organization study of Kaye and Anderson (1999), some displayed weaknesses such as: CI activities were insufficiently integrated, time was wasted on blaming people instead of dealing with problems, a low-level of empowerment existed and people seemed to always be in crisis (trying to fight problems and their symptoms by quick fixes without paying proper attention to root causes). TCWMS promotes “effective asking and listening”; it focuses on achieving consensus among everyone in the team regarding the decision made. Everyone is guaranteed the right to express agreement or disagreement. This fosters the proper attitude, boosts morale for success in any change initiative and establishes a sense of ownership. Every individual becomes accountable, through their actions, for what the customer and business require. This leads to operational excellence. TCWMS can be considered as an organization governance system. It provides organizations the ability to align people and operations in the same strategic direction. This can be done through the integration of different MSs to achieve control in an “entrepreneurial and ethical way” (Hilb, 2006) in order to satisfy the desired targets. Also, TCWMS promotes participative management, which involves and empowers employees and builds a culture of total quality and cooperation. The proposed system’s name (TCWMS) was partially derived from the well-known Japanese company-wide quality control (CWQC) system to stress the importance of creating a comprehensive system that ensures optimum quality from the perspective of the whole society.

The TCWMS provides a solid structure and a foundation for all activities of a business, the core value chain and the value-enabling activities, to ensure their proper alignment which will result in the optimization of resources and enhancement of performance. Organizations running without a robust MS like TCWMS show symptoms such as: initiatives failure, lack of focus on processes and people, quick decisions which are not based on data, and people frustration (Kaye and Anderson, 1999).
TCWMS helps establish an infrastructure plus a CI supportive culture of learning, information sharing, and empowerment with accountability. It increases the rate of improvement, by faster implementation of more projects along with better selection of the proper teams and projects of highest impact. It also reduces risks and compensates for the weaknesses of an individual methodology or system.

1.2.1. Components of TCWMS

In the literature, different components of management are found under different names. These components have not necessarily been used together. The five components of TCWMS are within different sub-disciplines of management and the tools used, within these components, are generally acknowledged. However, the grouping and connection of these components with each other represents the novelty of the TCWMS. It is because of these groupings and connections that the TCWMS provides a solid infrastructure for running and improving processes. The five TCWMS components are strategic management, project management, operation management, process management and performance management. Following, is a short description of each of these components.

1.2.1.1. Strategic Management

Strategic management is a process for developing achievable strategic plans and deploying them, to be implemented at all levels, to ensure the proper alignment of the organization as a whole. The strategic management approach promoted by TCWMS is a participative approach, where management-by-objective is successful by adding a bottom-up approach to convey the actions or method of achievement. So, the focus is on the “how” and not only on the “who”, which can shift people from being demoralized to being encouraged to express, through transparent system thinking, their concerns and ideas. An important tool used within strategic management is the balanced score card (BSC), which is also a performance management tool used to enhance the application of QM tools, such as ISO, LSS, TQM and business excellence models (Andersen et al., 2004). A step-by-step approach to strategic management is explained as follows: Form a cross-functional team, benchmark against competitors, perform PEST (i.e., political, economic, social and technological) analysis, perform SWOT (strengths, weaknesses, opportunities and threats) analysis, use quality function deployment (QFD) to identify enabling strategies (based on customer and employee surveys, financial and operational reports), establish a vision, mission and strategic goals, link the strategic goals to the BSC using KPIs, identify obstacles preventing the organization from achieving its strategic goals, develop initiatives to overcome these obstacles using the Hoshin X-matrix and transform them into operations, assign initiatives to teams, and ensure alignment of the goals with operational tasks.

1.2.1.2. Initiative Management

Also referred to as project management or cross-functional management, initiative management is about managing the execution or deployment of the strategy. It depends on clear accountability (Kaplan and Norton, 2006). The key goal for strategic initiatives is to improve the business, in the right direction, which satisfies the strategic objectives. The evaluation of strategic initiatives includes continuous reviews of progress against plan, using feedback systems (Friday-Stroud and Sutterfield, 2007). Another key part of project management is the management of information flow across an organization. This is essential for the implementation and improvement of quality management systems (QMSs) (Zeng et al., 2007). A step-by-step approach to project management is explained as follows: Select initiatives and teams, involve and empower the team members, train and support teams, clarify roles and set-up clear measurable targets,
manage the execution of initiatives and monitor progress, focus on the technical and human aspects of change including culture, and develop a strategy to capture knowledge and transfer learning.

1.2.1.3. Daily Management

Daily or operations management is about following-up with the people who execute the assigned tasks (which are related to projects and operations plans) on a daily or regular basis, to ensure they are being done properly and on time. It ensures that people understand how their daily activities contribute to the satisfaction of the strategic goals and eventually the customers of the company. A lot of companies have incorporated TQM and other CI approaches into their daily management (Yang, 2004). Deming emphasized the importance of daily CI (Walton, 1990). The check-act part of the Deming cycle (i.e., Plan-Do-Check-Act or PDCA) is the focus of daily management, where the check part of the cycle is about evaluating the results and understanding the reasons for any deviations from expectations and the act part is about taking corrective actions. A step-by-step approach to daily management is explained as follows: follow-up with the people who execute tasks, ensure that all people understand how their work affects the strategic goals, set-up a communication plan and a real-time reporting system to support decision-making, set-up meetings at all levels of the organization including agendas, KPIs, actions and variances, incorporate CI approaches into daily activities, and implement a visual management approach.

1.2.1.4. Process Management

As known from the basic concepts of TQM, most activities done in business can be defined, or thought of, as processes connected together to form a system for work (Snee, 2004). These processes and their variations must be measured and understood before they can be controlled and improved. Also, processes should be looked at from the perspective of the customer and there should be equal attention given to the process and the results. Process management can be defined as a group of practices that provide better stewardship of business processes, through the use of process measures, tools and documentation (Motwani et al., 2004). Process Management is a method for managers to select, organize, and manage the design, standardization, stabilization, and improvement of processes. A step-by-step approach to process management is explained as follows: assign process owners, define operating polices and responsibilities, select prioritized processes to start improvement using CI methodologies such as LSS and process flow charts, and develop standardized procedures.

1.2.1.5. Performance Management

Performance management is concerned with defining what employees should be doing and the ongoing communication during the year that links the individual performance to the organizational needs (which lead to customer satisfaction) along with the evaluation and appraisal of performance. Basu (2004) included the selection and application of key performance indicators (KPIs) as part of performance management. The successful implementation of measures of performance, through cultural change, can lead to a management style that is more participative and consultative and can drive CI (Bititci et al., 2006). Incentives are a key part of performance management and improvement. The main purpose for incentives is to motivate employees. They should reward, in a balanced way, based on individual and team performance, to encourage improvements and team spirit. Out of different aspects of individual human resources management, Yang (2006) found that training, incentives and development had the greatest impact on TQM. Similarly, TCWMS heavily depends on the social aspect of human resources, as it strengthens human relations and facilitates cultural change. A step-by-step approach to performance management is explained as
follows: define employees’ job responsibilities and measurable objectives, define a performance-based incentive program, conduct interim performance review as well as a year-end review to build-up a development plan, and develop the organization’s human capabilities.

2. Comparisons

The principles of QM are universal. This is evident since there are numerous common items in the different awards and MSs. However, differences are still evident between them. For example, ISO has a lot in common with MBNQA, but it is not considered as a comprehensive business performance framework. It is criticized for focusing excessively on formal documentation and not enough on variability reduction (as in Six Sigma). Also, many of the third-party consultants or auditors are not well educated in technical quality tools. The return on investment of the billions of dollars spent on ISO certification world-wide is not clear (Montgomery, 2001). On the other hand, ISO is stronger than MBNQA in product and process control and is thus recommended as a good system for companies starting to implement a QMS (Evans and Lindsay, 2002). The EFQM lacks some key drivers such as mission, critical success factors and aims which are important to focus management commitment and attention to the right direction (Kaye and Anderson, 1999).

TCWMS integrates MSs, QMSs such as ISO 9000, quality award models and CI methodologies. TCWMS encourages the use of self-assessment audits based on quality awards, such as MBNQA and EFQM, as they help in achieving a comprehensive MS. These rewards aim at encouraging organizations to comprehensively implement quality improvement (QI) practices across their business systems. Table 1 shows the different features and demonstrates the main practices of TCWMS and other MS models. The five components of TCWMS encompass all aspects of managing and improving a business. This includes, in one holistic TCWMS, most of the practices of other MS models such as policies, leadership, customer focus, strategic planning, people, information, improvement, stakeholders, operations, benchmarking, measurements, human resources management (HRM), analysis, processes, systems, control, standardization, effects, quality, results, impacts, resources, suppliers, culture, training and facts.

There are many items within TCWMS that are not addressed in MBNQA, such as: team work, work attitude, communication, internal and external cooperation, public responsibility, supply chain management (SCM) practices, policy participation, responsiveness, CI and corporate quality culture. Tables 2 and 3 list TCWMS practices which correspond to MBNQA dimensions and Deming’s 14-points for management, respectively. It can be perceived that TCWMS practices are in alignment with Deming’s management philosophy and they are more comprehensive than MBNQA practices.

Evans and Lindsay (2002) presented differences, in the US businesses, between TQ and traditional management practices which are based on the Adam Smith principles of the 18th century and the Frederick Taylor work on management (see Keck, 1995). Evans and Lindsay (2002) indicated that the understanding of these differences is a way to establish a TQ culture (which is also part of TCWMS goals). Similarly, using some dimensions from Evans and Lindsay (2002) and other dimensions based on the literature review and the author’s own industrial experience, to establish TCWMS culture, it is important to understand the differences between TCWMS and traditional MS practices as shown in Table 4. The findings reveal that TCWMS practices are different from those of traditional MS in all dimensions discussed. TCWMS culture is a culture of cooperation, innovation, TQ, strategic alignment, BE and CI.
Table 1: The main practices of TCWMS and other quality and MS models as adapted from (Kaye and Anderson, 1999; Evans and Lindsay, 2002; Jitpaiboon and Rao, 2007; Soltani and Lai, 2007).

<table>
<thead>
<tr>
<th>Deming Prize criteria</th>
<th>MBNQA categories</th>
<th>EFQM or Business Excellence Model (BEM) categories</th>
<th>Australian Quality Award (AQA) or Australian Business Excellence Award (ABEA) categories</th>
<th>Canada Award for Excellence (CAE) by National Quality Institute (NQI) categories</th>
<th>ISO 9000: 2000 QM principles</th>
<th>Kaye and Anderson 1999 revised competitive CI model criteria</th>
<th>TQM practices</th>
<th>TCWMS component</th>
</tr>
</thead>
<tbody>
<tr>
<td>policies</td>
<td>leadership</td>
<td>leadership</td>
<td>leadership</td>
<td>customer focus</td>
<td>leadership</td>
<td>strategic quality planning</td>
<td>strategic quality management</td>
<td></td>
</tr>
<tr>
<td>organization and its operation</td>
<td>information and analysis</td>
<td>people management</td>
<td>policy and planning</td>
<td>customer focus</td>
<td>leadership</td>
<td>role of senior management</td>
<td>top management support</td>
<td>quality initiative management</td>
</tr>
<tr>
<td>education and dissemination</td>
<td>strategic quality planning</td>
<td>policy and strategy</td>
<td>information and analysis</td>
<td>planning for improvement</td>
<td>involvement of people</td>
<td>stakeholders focus</td>
<td>supplier quality</td>
<td>daily quality management</td>
</tr>
<tr>
<td>information gathering, communication and utilization</td>
<td>HRM and development</td>
<td>resources</td>
<td>people</td>
<td>people focus</td>
<td>process approach</td>
<td>measurement and feedback</td>
<td>Benchmarking</td>
<td>process management</td>
</tr>
<tr>
<td>analysis</td>
<td>management of process quality</td>
<td>processes</td>
<td>customer focus</td>
<td>process optimization</td>
<td>system approach to management</td>
<td>learning from CI results</td>
<td>employee involvement</td>
<td>quality performance management</td>
</tr>
<tr>
<td>Standardization</td>
<td>quality and operational results</td>
<td>people satisfaction</td>
<td>quality of process</td>
<td>supplier focus</td>
<td>continual improvement</td>
<td>culture for CI and innovation</td>
<td>employee training</td>
<td></td>
</tr>
<tr>
<td>control/ management</td>
<td>customer focus and satisfaction</td>
<td>customer satisfaction</td>
<td>customer satisfaction</td>
<td>factual approach to decision making</td>
<td>employee focus</td>
<td>customer focus/ orientation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>quality assurance</td>
<td>impact on society</td>
<td></td>
<td></td>
<td>mutually beneficial supplier relationship</td>
<td>critical processes focus</td>
<td>quality results</td>
<td></td>
<td></td>
</tr>
<tr>
<td>effects</td>
<td>business results</td>
<td></td>
<td></td>
<td></td>
<td>standardize best practices / QM system</td>
<td></td>
<td></td>
<td>leadership</td>
</tr>
<tr>
<td>future plans</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>integration of CI activities</td>
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</tr>
</tbody>
</table>
Table 2: Explanation of the TCWMS practices corresponding to MBNQA categories

<table>
<thead>
<tr>
<th>MBNQA</th>
<th>TCWMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leadership</td>
<td>Senior leaders are passionate and committed to changing for the better. They involve employees at all levels in establishing direction for the organization as well as measures of performance. They empower, train and encourage employees to innovate and be responsible toward customers and society.</td>
</tr>
<tr>
<td>Information and analysis</td>
<td>Communication is established through various means such as display screens, intranet networks and regular meetings. Information is readily available as needed. Data is collected and analyzed using best technologies and tools, such as those within LSS, and is used as a basis for decision making with the involvement of employees. Performance is measured and is visually communicated.</td>
</tr>
<tr>
<td>Strategic quality planning</td>
<td>Strategic goals are established through participative management, using tools such as Hoshin Planning, balanced scorecard (BSC) and strength-weakness-opportunity-threat (SWOT) analysis, where strategic initiatives are established, along with plans for deployment and progress monitoring. Other tools used are project charters, visual workplace and action plans.</td>
</tr>
<tr>
<td>HRM and development</td>
<td>The organization engages employees and empowers them through participation, performance-based incentives and decentralization. It develops them through regular performance evaluations, where opportunities are identified for training and growth to spread a winning culture of trust and motivation.</td>
</tr>
<tr>
<td>Management of process quality</td>
<td>The organization focuses on the CI of all processes within the supply chain (SC) and starts at key critical processes, so as to control, streamline, optimize, reengineer, document, audit and certify using tools such as the ones in LSS.</td>
</tr>
<tr>
<td>Quality and operational results</td>
<td>The organization continuously measures performance to ensure alignment of operations with strategic direction. Some of the tools used are BSC, regular meetings and benchmarking. Key performance indicators (KPIs) and units PI are visual and monitored to ensure targets are achieved and corrective plans are implemented as needed.</td>
</tr>
<tr>
<td>Customer focus and satisfaction</td>
<td>The organization uses quality function deployment (QFD), benchmarking and other tools, such as the ones within LSS, to establish customer requirements and preferences. A strong relationship is built with the customer, through aiming at loyalty and not only satisfaction.</td>
</tr>
</tbody>
</table>

Table 3: Explanation of the TCWMS practices corresponding to Deming’s 14-points

<table>
<thead>
<tr>
<th>Deming’s 14-points</th>
<th>TCWMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create a vision and demonstrate commitment</td>
<td>Develop a vision, mission, values and strategic deployment plan. Leadership commitment to improvement is addressed through acting on polices. The organization focuses on customers and employees (win-win)</td>
</tr>
<tr>
<td>Learn the new philosophy</td>
<td>The leadership communicates values and expectations. It engages and empowers employees. The organization is flexible and adapts with world changes and spreads a culture of cooperation, trust, winning and excellence.</td>
</tr>
<tr>
<td>Understand inspection</td>
<td>The organization measures performance and inspects the quality of products. Measurement systems are analyzed to ensure repeatability and reproducibility of measurements. Then, reliable data is analyzed (using LSS tools within process management) to assist in the improvement of products and processes. The organization also focuses on moving from inspection to building quality into the process and products upstream, by mistake proofing and quality awareness through trained employees. Blame is always placed on the process and not employees.</td>
</tr>
<tr>
<td>Stop making decisions purely based on cost</td>
<td>Decisions are based on cost, quality, data, performance, intangible factors (such as employee morale and customer good will), the benefit for the overall system of processes and stakeholders, and through the participation of employees.</td>
</tr>
<tr>
<td>Improve constantly and forever</td>
<td>Improve daily and continuously monitor improvements. Implement actions and corrective actions to ensure strategic initiatives are successful, using the tools available in LSS and process management. Institute a culture of CI, learning and innovation.</td>
</tr>
</tbody>
</table>
Institute training

Opportunities for employee development are identified in regular performance reviews and employees are also cross-trained to ensure they have proper knowledge to do and improve the tasks assigned to them.

Institute leadership

Identify future leaders and use performance reviews to develop and grow their knowledge and skills. Spread a culture of cooperation, trust and empowerment where employees are guided, engaged and encouraged.

Drive out fear

Innovation is encouraged and the culture is open for change and flexible for improvements. Processes are blamed for defects and not the employees. Employees are encouraged to improve. If positions are threatened to disappear, as a result of improvements, extra employees are deployed to do other needed jobs. For example, they are promoted to a process improvement leader job. Incentives are based on performance and they drive the right performance, which is aligned with the interest of the organization in large. Leading change is a key part of initiative management and implementation of improvements where the human element is studied when change plans are developed.

Optimize efforts of teams

Horizontal structure is established and cross functional teams are active. Incentives are structured in a way to encourage individual excellence, as well as team excellence. Encourage a culture of cooperation and involvement instead of competition. Focus on both internal and external customers along the value stream of products or services. Training is also used to encourage team work.

Eliminate exhortations posters

Align employees to strategic initiatives, train them to solve root causes, equip them with the right tools and train them to solve root causes. Motivate them through trust, guidance, empowerment and cooperation.

Eliminate numerical quotas and management by objective

Strategic management deals with management by facts, based on reliable data, and also the participation of employees when establishing targets and the means to achieve these targets. Strategic and process management encourage the understanding and improvement of processes. Employees participate in the planning of strategic initiatives and they are guided through the initiatives implementation. Their performance is continuously reviewed to ensure quality and success.

Remove barriers to pride in workmanship

Employees are treated as a participating partner in a win-win relationship, they are asked, instead of being told, and they are trained and empowered to excel in their jobs.

Encourage education and self improvement

Organizations recognize that for the employees to be motivated in their work, they need to be encouraged to improve themselves. This includes education and training to grow in more than just the one specific skill of the employee job.

Take action

TCWMS is about organization transformation into a culture of cooperation, innovation, total quality (TQ), strategic alignment, business excellence (BE) and CI.

### Table 4: A comparison between TCWMS and traditional MS practices

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Traditional MS</th>
<th>TCWMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leadership</td>
<td>is rigid about change or ideas of improvement, telling instead of facilitating</td>
<td>is passionate about and committed to improvement, engages and empowers employees to innovate and excel.</td>
</tr>
<tr>
<td></td>
<td>(Evans and Lindsay, 2002).</td>
<td></td>
</tr>
<tr>
<td>Quality</td>
<td>defined as conformance to specifications (Evans and Lindsay, 2002).</td>
<td>is about continuous innovation and exceeding expectations and it is everyone's motive while performing a job.</td>
</tr>
<tr>
<td>Customers</td>
<td>are only external and they are the responsibility of sales and marketing</td>
<td>are thought of as being external and internal. They are the focus and responsibility of all employees.</td>
</tr>
<tr>
<td></td>
<td>(Evans and Lindsay, 2002).</td>
<td></td>
</tr>
<tr>
<td>Dimension</td>
<td>Traditional MS</td>
<td>TCWMS</td>
</tr>
<tr>
<td>------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Employees</td>
<td>are viewed as an interchangeable commodity, passive contributors doing only what are told (Evans and Lindsay, 2002) and typically specialized in one skill.</td>
<td>are aligned with strategic direction, empowered, cross trained, participating partners who fix problem root causes and work in teams.</td>
</tr>
<tr>
<td>Reward system</td>
<td>it only recognizes individuals and hence team work is discouraged, by creating competition and conflict between departments (Evans and Lindsay, 2002).</td>
<td>is both a financial and spiritual system and it encourages correct behaviours in an aligned direction. It is both individual and team oriented.</td>
</tr>
<tr>
<td>Information</td>
<td>communication is not formal or well established (i.e., information is not always available and often covers a short period).</td>
<td>communication is continuously available where needed and information is ready through various means, such as visual management, live data systems and pre-established meetings.</td>
</tr>
<tr>
<td>Knowledge</td>
<td>focuses on knowledge related to manufacturing and engineering (Evans and Lindsay, 2002).</td>
<td>focuses on knowledge related to all disciplines, including safety and health.</td>
</tr>
<tr>
<td>Maintenance</td>
<td>is reactively done by a specialized employee and no established process is available.</td>
<td>is preventive and proactively done by a local operator and standardized procedures are implemented.</td>
</tr>
<tr>
<td>Organizational structure</td>
<td>vertical and composed of separate independent specialized processes (Evans and Lindsay, 2002).</td>
<td>vertical and horizontal (following the function) and composed of interdependent processes.</td>
</tr>
<tr>
<td>Goals</td>
<td>is about win-lose and competition (Evans and Lindsay, 2002).</td>
<td>is about win-win and cooperation</td>
</tr>
<tr>
<td>Strategic quality management</td>
<td>no clear understanding of where the company is today, where it is heading tomorrow or how to get there. Decisions are often taken based on feelings, not on data or facts (as in management by fact), and there is a lot of confusion, frustration, management by excuses and lack of alignment.</td>
<td>standard process is followed to establish a strategic plan and a list of strategic initiatives, with the participation of employees to achieve strategic alignment. Decisions are made based on facts and there is also a two way communication in the process (management by fact plus two-way communication)</td>
</tr>
<tr>
<td>Quality initiative management</td>
<td>a lot of actions and initiatives fall behind, due to failure in focusing on both processes and people and improperly identified initiatives are not necessarily the priority.</td>
<td>strategic initiatives are managed effectively and efficiently, through clear identification of goals, measures, resources, teams, responsibilities and monitoring of progress. Effective asking and listening, as the focus is on achieving consensus among team members and their right is guaranteed to express agreement or disagreement. This fosters the right attitude and boosts morale for success in any change initiative and establishes a sense of ownership.</td>
</tr>
<tr>
<td>Motivation</td>
<td>is driven through control by management and fear of making mistakes by employees (Evans and Lindsay, 2002).</td>
<td>is driven through pride in own work quality and through a culture of encouragement not blame.</td>
</tr>
<tr>
<td>Daily quality management</td>
<td>time is wasted on blaming people instead of dealing with problems; people seem to be always in crisis trying to fight problems and their symptoms by quick fixes without paying proper attention to root causes (Kaye and Anderson, 1999).</td>
<td>is based on good understanding of problems, good measurement of performance and engaged workforce, through communication, including documentation, reporting and corrective feedback.</td>
</tr>
<tr>
<td>Process management</td>
<td>improves processes or sub-processes not systems of processes. Process improvement activities are insufficiently integrated (Kaye and Anderson, 1999).</td>
<td>uses a standard approach to prioritize, measure, stabilize, control, streamline, improve, document and certify the different processes. Quality is built into processes upstream.</td>
</tr>
</tbody>
</table>
### Dimension | Traditional MS | TCWMS
--- | --- | ---
Control | is achieved through pre-established inflexible roles laid down to the people (Evans and Lindsay, 2002). | is achieved as a result of shared values and knowledge.
Quality performance management | low level of empowerment exists (Kaye and Anderson, 1999). No formal measures or reviews of individual or department performance are established. | is about empowerment, accountability, training, incentives, identification of polices and responsibilities, constructive evaluation of performance and a relationship built on trust.
Supplier relationships | suppliers are competing with each other (Evans and Lindsay, 2002). | focuses on partnership and improvement of best few suppliers.
Responsibility | managers direct employees, plan their work and inspect it (Evans and Lindsay, 2002). | managers empower employees to manage own work and facilitate the job for them.
Competition | is focused on individual performance. | is focused on what pleases the customers both by individuals and teams.

#### 3. Conclusions

The TCWMS presents a new QM evolution, which provides a solid foundation for all activities of a business, to ensure that proper alignment and communication exist. This leads to the optimization of the resources and enhances the performance of an organization. The TCWMS is a comprehensive MS, which includes aspects of business management and improvement, with the goal of business and people alignment and excellence. The use of such a well-structured system, that engages the entire organization into CI, is essential to survive and stay competitive. The TCWMS consists of five main MS groups: strategic management, project management, daily management, process management and performance management. TCWMS can be seen as an extension and expansion for TQM. Process management is the base component of TCWMS, as everything runs as a process and quality does encompass everything that happens in an organization. TCWMS achieves the integration of management principles, improvement methodologies, implementation practices and cultural change.

This paper explained how TCWMS compares to other QMS and MS models. It presented the different features and the main practices of TCWMS and other MS models. It was shown that TCWMS is more comprehensive and encompasses most aspects listed under different MS models. Also, TCWMS practices, which correspond to the MBNQA dimensions and Deming’s 14-points for management, were presented and a comparison was provided of TCWMS and traditional MS practices. TCWMS practices are in alignment with Deming’s management philosophy and they are more comprehensive than MBNQA practices. The findings also revealed that TCWMS practices are different from those of traditional MS in all dimensions discussed. The outcome of this paper provides valuable knowledge to the top management at any organization willing to embrace TCWMS. There is a link between TCWMS and other MS models where QM and CI methodologies such as LSS, QMSs, safety MS, MBNQA, TQM, etc., are all encompassed within TCWMS. Finally, the TCWMS requires further evolution in the future to be more robust and comprehensive to all aspects of business management and improvement. A new mathematical model needs to be developed to present the quantitative aspect of this integration that is aimed at achieving optimal CI. The model needs to address the problem of slow rates of CI, by integrating a total company-wide management structure to the CI structure, so that the rate of improvement is maximized, profit is maximized and cost of running an organization is minimized.
4. References


Sustainable Excellence Driven Collaborative Networks: A Strategy Towards Business Excellence Transformation

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Abstract

Business today is characterized by increasing complexity, varying demands of different stakeholders and many efforts for value creation due to the consideration of economic, ecological and social challenges. It is therefore crucial to recognize that sustainability trends are strongly transforming the business landscape and require organizations to adopt more agile business models characterized with quick response, flexibility and adaptability to the fast changing global economy (Cheese, et al., 2009). Thus the agile thinking drives organizations into forming collaborative networks to share skills, core competencies, knowledge and resources when a business opportunity occurs (Pankowska, 2008).

However, several challenges result in terms of value creation and decision making uncertainties (Simangunsong, et al., 2012). The aim of this theoretical paper is to provide insights into the interrelationship between excellence & sustainability concepts, collaborative networks and uncertainties which consequently raise questions of how we can manage sustainable excellence driven collaborative networks and lay the foundation for a suggested conceptual model leading to further interdisciplinary research to investigate the tools, techniques, and guidelines required to successfully create and manage sustainable excellence driven collaborative networks.

Keywords: Excellence, Sustainability, Agility, Collaborative Networks, Uncertainties,

Introduction

In the last decade, business excellence models were recognized as an overarching framework for quality management principles and a practical tool that can help organizations develop and deploy different approaches to achieving sustainable excellence. However, EFQM (2013) stress that there is no single solution to achieving excellence, but assessing the organizations’ strategies, business processes and approaches towards achieving the fundamental concepts of excellence outlined in figure 1 which are considered the basis to describe the attributes of excellent management practices in any organization and means of working towards performance improvements.

Figure 6: EFQM Fundamental Concepts of Excellence
Also in the last few years, sustainability has become an important factor in driving business performance excellence and has been considered a business key differentiator; (Aras & Crowther, 2010) regard true sustainability as one of the components necessary for the establishment of sustainable excellence and therefore competitive advantage.

With sustainability progressively becoming more of a global activity, (Accenture Sustainability Services, 2011) analyzed the performance data of more than 270 global FORTUNE 1000 companies, measuring the effects of sustainability initiatives on business success and found that the companies ranked highest in sustainability leadership also outperformed their peers in terms of both three-year and five-year shareholder returns. Meanwhile, companies that succeeded in developing an integrated approach to sustainability faster than their peers can achieve competitive advantage in a number of areas from increased revenue to cost savings to improved brand image and much more. (Hart & Milstein, 2003) introduced the sustainable value framework outlined in figure 2 as a diagnostic tool to help organizations assess the company’s activities and categorize them into four broad groupings to identify missed opportunities associated with sustainable development and connect them to dimensions of value creation of the organization. Hence, enable organizations to understand how sustainable practices are directly related to their core strategies. Yet, sustainable development is a multidimensional challenge and will only be implementable by thinking differently (Senge, et al., 2010).

Figure 7: The Sustainable Value Framework

Moreover, business leaders are starting nowadays to recognize that sustainability trends are strongly transforming the business landscape and acknowledge that in order to respond to such a hyper-competitive global environment they need to adopt sustainable and more agile business models to achieve and sustain outstanding levels of performance. (Loss & Crave, 2011) claim that business models approaches deployed are designed for a single organization with a linear value chain, thus are considered static business models and are no longer efficient. Organizations need to have real-time business structures in order to quickly
respond to turbulences associated with the globalized economy. Therefore, it is important to understand that such flexible and dynamic environment requires organizations to have networked configuration being called “Collaborative Networks”.

This paper is structured in six sections including: introduction on sustainability and excellence concepts; an overview of business excellence sustainability and agility; brief discussion of collaborative networks uncertainties and reviewing an illustrative collaborative networks example; finally introducing a conceptual model for sustainable excellence driven collaborative networks and concluding with some thoughts and remarks.

**Business Excellence Sustainability and Agility**

Various business excellence models have evolved during the late 1980s and early 1990s incorporating several criteria for measuring excellence and reflecting the trends of change in the quality movement. Yet, (Jonker & Foster, 2003) assume that sustainability is considered the “third generation” in the evolution of quality management. (Edgeman, 2000) claims that sustainable development and business excellence share similar objectives such as optimization of the use of resources both human and natural. This is reflected in adopting a multi-perspective and holistic approach to business excellence, as well as practices in addressing sustainability issues simultaneously.

Aligned with this point of view, (Garvare & Johansson, 2010) assert that organizational excellence can be defined in terms of promoting both organizational and global sustainability with the aim to satisfy or exceed the wants and expectations of its stakeholders without compromising the ability of other parties to meet their needs both present and future. Therefore, sustainability issues have been described as new perspective that reflects a change in the traditional conception of corporate purpose and the management practices. While, (Spohrer, et al., 2010) noted that the basis for excellence relies on four factors: “1) a dynamic configuration of resources; 2) a set of value co-creation mechanism between suitable entities; 3) an application of competencies skills- knowledge by any person(s) in job or stakeholder roles; 4) an adaptive internal organization responding to the dynamic external environment. Furthermore, emphasized that excellent organizations have all created and been able to renew their systems to deliver excellence as perceived by their stakeholders.

On the other hand, it is important to note that (Edgeman & Eskildsen, 2012-a) introduced the new term sustainable enterprise excellence (SEE) which was defined later by (Edgeman, 2013) that it has a wide focus on aspects within both business excellence and sustainability, stating that sustainable enterprise excellence integrates enterprise relevant and responsible governance (E3) including ethical, efficient and effective with triple top line strategies (3E) including equity, ecology and economy to produce the triple bottom line results (3P) people, planet and profit that are suggested as sources of competitive advantage to assure achieving organizational long term success. Thus, it is evident that the integrated view of business excellence and sustainability concepts can create value pathways that support business excellence transformation.

In order to compete in the fast changing markets, companies need to become more flexible and adaptable. “The new business environment will favor those companies able to execute strategy faster, with more flexibility and adaptability, and move their companies ahead briskly” (Cheese, et al., 2009). Therefore, organizations nowadays seek greater agility. (Browaeys & Fisser, 2012) highlight that the agility concept is the business wide capability of an organization to respond rapidly to variations.
in demand. Yet, agility embraces organizational structures, information systems, logistics processes and in particular, mindsets. Subsequently, agility within organizations becomes closely linked to the idea of "Collaborative Networks". "The concept of Collaborative Networks has become stronger in recent years within academic and industrial areas to modernize the concept of cooperation networks among companies. A collaborative network is constituted by a variety of entities (e.g. organizations and individuals) that are largely autonomous, geographically dispersed and heterogeneous in terms of their operating environment, culture, social capital and goals that come together to share skills or core competencies and resources in order to better respond to business opportunities and produce value-added services" (Pankowska, 2008). Furthermore, (Browaeys & Fisser, 2012) declare that agility can be seen as a method of improving the effectiveness and performance of organizations’ processes and may result in innovative organizational structures. Thus, organizations have to acknowledge that organizing in collaborative networks is a dynamic process requiring management with agility.

However, (Alberts, 2011) affirmed that "agility is not a way of reducing problem difficulty, but rather a way of dealing with the combined effects of the presence of complexity and uncertainty. Agility is the capability to successfully cope with changes and circumstances."

**Collaborative Network Uncertainties**

Organizations more and more realize the effective role of collaborative networks to compete in the global market. (Rice & Hoppe, 2001) proclaim that the nature of competition in the future will not be between companies, but rather between networks. It has been argued that effective management of the collaborative network is significant in value creation. Thus managing the relationship between the network’s participants has direct influence in creating value in the network (Kähkönen & Lintukangas, 2012).

Drawing on the literature, (Thoben & Jagdev, 2001) described the participants in the collaborative networks as "Actors", the relationships between these nodes as "Edges". (Karlsson, 2003) further explains that actors have knowledge and control of their resources as well as knowledge of their activities. Therefore declare that actors, resources and activities and their relationships constitute a network. (Figure 3)

![Figure 8: Network Mechanism](image)

Figure 8: Network Mechanism

Nowadays, most organizations are dependent on various actors in their business networks. (Bititci, et al., 2012) state that "today thinking has moved from
simple collaborative organizations involving few partners into complex collaborative network of organizations working together to deliver innovative value propositions for markets and customers.”

Depending on the combination of these nodes the configuration and value creation of the collaborative networks can be defined (Baig, 2006).

Managing a single organization is different from managing collaborative networks, which is a new form of structure that has emerged of inter-organizational relations. According to (Alfaro-Saiz, et al., 2011) collaborative networks are “a typology of organizational structure that is used currently to deal with the competitive requirements of global market”. Yet, (Neumann, et al., 2011) state that “although different benefits have been associated with inter-organizational collaboration, but high failure rates are commonly recognized in practice which suggests that the understanding of collaborative relationships is still incomplete.” Furthermore assert that organizations experience relationships with other organizations as special source of contingency in two different ways: (1) when external relations are perceived as resources, in that case contingency is identified as dependency. (2) When external relations are perceived as information, then contingency is recognized as uncertainty. Therefore, both uncertainty and dependency become risks that derive from the organization’s decision to collaborate with other organizations and affect its capability to secure future needs.

(Eschenbächer & Graser, 2011) affirm that these collaborative networks become more dynamic and interactive and will lead to more professional services and innovations since they share knowledge and innovate together, collaborate to design new product/service, and integrate customers into the network with the aim to achieve co-value creation. Yet, complexity and dynamic behavior are key characteristics of collaborative networks.

The complexity of networks as well as the dynamic and changing relationships between network participants is considered major causes of network uncertainty (Bhatnagar & Sohal, 2005). Thus the response time, is essential to improve the performance of network with minimal uncertainty (da Silveira & Arkader, 2007; Iyer, et al., 2004; Salvador, et al., 2001). To be able to estimate the uncertainty of the entire network, it is crucial to evaluate each single actor response time, uncertainty, and the influence of each actor estimated uncertainties on the overall uncertainty level of the network. Based on the methodologies described in (Safaei, et al., 2014), the uncertainty of the network could be calculated. First, all the members must be identified and according to the relationships between them, the structure of collaborative network should be drawn. After determining the network structure, the mathematical model of the behavior of the members based on samples collected from the tangible parameters (like delivery time…etc.) must be found separately using the “probability density function.” Finally, according to the “probability density function” of each member, critical actors who have the highest impact on the network uncertainty will be identified. The identification of critical actors allows us to spend less time to calculate the uncertainty that can be transferred from participants in the network in order to identify those parts of the network which have the highest potential for improving the network total response time. Consequently, the value added knowledge about the level of uncertainties which is created form the collaborative networks’ members will provide insights for managers to estimate the expected value of each of the decisions taken and the number of courses of action.

**Illustrative Collaborative Networks’ Example**

The society is faced with a number of developments’ challenges that require breakthrough innovations. Nowadays, the
electric mobility is a needed solution for several social issues such as pollution and costs; also it is technologically possible because of the increasing availability of alternative energy sources. In USA, Japan, Europe, China and India, new forms of collaborative networks resulted in new models of electric vehicles (EVs) entering the market. In Germany, nine new EV models entered the automotive market in 2013. (Trigg & Telleen, 2013).

The first German OEM manufacturing EVs is Daimler AG; thus in this section an illustrative and ongoing example of electric vehicles (EVs) life cycle development in Daimler AG is discussed (Daimler AG., 2010). In 2009 the company started selling a fully electric 2-person car, the new smart fortwo electric drive was developed using the experience from various electro-mobility projects. The smart fortwo sales from January to March 2013 totaled 26,400 units (SCHWARZER, 2013). Yet with reference to the (Federal Ministry of Education and Research, 2013), it was found that there are still major EVs development challenges to be overcome including:

- **Technical issues**: particularly limitation of range to up to 200km per load and missing charging infrastructure.
- **Financial issues**: high development costs, particularly for the battery; and lacking knowledge of the OEM on battery development.
- **Transparency issues**: Customers don’t know about the electric drive and its capabilities; advantages remain unclear.
- **Partnerships**: New business partners need to be found – old manufacturing networks have to be reshaped.

Therefore innovation needs has derived organizations to collaborate in order to tackle the electric mobility challenges with interdisciplinary solutions that go beyond the scope of their current activities. Figure 4 demonstrates the diversity of relationships established by Daimler AG to cover an electric vehicle lifecycle.

As depicted, Daimler’s collaborative network targets both technical and financial challenges of electric vehicles mentioned earlier. Since development of the EVs drive train, energy storage is not one of traditional OEM core competencies; hence collaboration with strong partners from electrical and chemical engineering is needed. Also due to probable shifts in value generation with the battery being the most expensive component of the electric car, Daimler AG tries to ensure knowledge transfer and participation in new revenues by its subsidiary Accumotive GmbH. Not only by investing in early development of new technological skills within collaborative networks internally, but also by gradually expending the overall concept of production.

In its environmental report, Daimler stresses the efforts of sustainability incorporated by “design for environment” of the smart fortwo electric drive (Daimler AG., 2010). For instance, its manufacturing plant in Hambach, which was build according to latest environmental standards, allows suppliers to deliver goods directly to the assembly line therefore integrating them closely and minimizing transportation’s waste.

By developing new financial as well as service models, Daimler proofs agile collaboration both in financial and service domain. For instance, customers can select a monthly lease of the battery instead of purchase, therefore spreading expenditures for the EV over the entire use phase. Daimler’s offer is not limited to a particular annual range and furthermore includes regular checks of the battery at its service centers to minimize technical risks for the customer.
Yet, new companies offering electric mobility service enter the market, such as mobility consultancies, designing highly individualized solutions to the customer (i.e. by assessing mobility patterns and customer behavior). OEM’s are aware of these new competitors and adapt their own collaborative networks accordingly. Daimler AG is for instance cooperating with electricity providers and has even started producing electricity from wind to be fed into the grid to compensate for the consumption of the electric cars sold.
According to (Daimler AG., 2010) further activities comprise:
- Foundation of the car sharing company “car2go” as free-floating car sharing offer, customers can return the cars everywhere within a particular area of the city. Payment is per time of usage and therefore very flexible.
- Production of an own e-bike under the brand of smart.
- Mobility platform and steering opportunities of the electric car via apps.
- Sales and care service, which offers particular maintenance service and a mobility guarantee to the driver of an electric car

A trend “from car manufacturer to mobility provider” is observable. Arthur D. Little (2009) distinguishes two trends: (1) one from product focus to service focus; and (2) another one from focusing on one single product (the car) towards focusing on a variety of products enabling mobility.

Daimler AG is totally aware that in order to provide an integrated solution to electric transportation, there is a need to develop electric cars as well as long-lasting batteries, charge spots, battery switch stations, driver services, additional electricity generation and transmission or communication systems need to be designed (Bergema, et al., 2010). Therefore, a complex network of stakeholders is needed including not only a car manufacturer, a battery developer, but also an operator for battery charge stations and local government support. All members of the network need to work together; while collaborating, knowledge is shared and integrated and new knowledge is created.

Daimler AG is elaborating solutions targeting the mentioned barriers towards market penetration of electric cars as follows:
- **Technical issues**: development of next generation batteries “in-house” with Evonics.
- **Excessive costs**: share of knowledge and facilities with partners reduces cost and failure risk.
- **Customers**: use of business models and experience from partners such as IT tools and services; ability to use EV in car sharing without immediate purchase.
- **Partnerships**: alongside product lifecycle of an EV to overcome technical, financial and general service matters.

The establishment and management of collaborative networks are considered a complex task. However, identifying the excellence drivers of sustainable collaborative networks set a clear roadmap for assessing the collaborative networks’ end results. The next section introduces a suggestion of an excellence driven collaborative networks conceptual model.

**Excellence Driven Collaborative Networks Conceptual Model**

In 2000 an interview with Peter Drucker was conducted and he stated that “corporation as we know is unlikely to survive the next 25 years; legally and financially – yes, but not structurally and economically.” And, due to the quick pace of globalization in many business sectors today his prediction come true; the focus on single organization is being replaced by a focus on collaborative networks as a catalyst to accelerate business excellence transformation.

Traditionally, organizations focused on point-to-point relationships primarily with its specific partners using terms such as alliance; partnership; and Joint venture. But, in collaborative networks many forms of relationships exist apart from strategic alliances and all relationships that make up a network must be appropriately managed. Collaborative networks manifest in large variety of forms including virtual organizations, virtual enterprises, dynamic supply chains, professional virtual communities, collaborative virtual laboratories…etc. (Camarinha-Mathos & Afsarmanesh, 2005)

(Provan and Kenis, 2005) have defined three basic forms of network governance,
each of these three forms and their key characteristics are illustrated in table 1 and confirm that choosing one of these forms depends on the network needs and conditions. There is no generic model of collaborative networks that apply in all situations; rather it is fit-for-purpose structures that evolve to fulfill established objectives. Such networks encompass a set of relationships both horizontal and vertical including relationships across industries and countries. These relationships are source of both opportunities and constraints. Therefore it is crucial to differentiate between (1) management of the networks, and (2) management in the networks. In order to manage the networks, it is very important to set aspects of collaborative networks regarded as key enablers to drive results and activate collaborative networks excellent performance.

### Table 4: Forms of Network Governance

<table>
<thead>
<tr>
<th>Design Characteristics</th>
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<td><strong>Self-Governance</strong></td>
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| • **Structure**: no administrative entity, all members participation in network management  
  • **No. of Members**: few  
  • **Decision Making**: decentralized  
  • **Advantages**: participation, commitment by members, ease of forming  
  • **Disadvantages**: inefficient, frequent meetings, difficulty reaching consensus |
| **Lead Organization** |
| • **Structure**: administrative entity, major network member  
  • **No. of Members**: many  
  • **Decision Making**: centralized  
  • **Advantages**: efficiency, clear network direction  
  • **Disadvantages**: domination by lead organization, lack of commitment by members |
Network Administrative Organization

- **Structure**: distinct administrative entity set up to manage the network
- **No. of Members**: many
- **Decision Making**: mixed
- **Advantages**: efficiency of day to day management, strategic involvement by key members, sustainable
- **Disadvantages**: hierarchy perception, cost of operation, complex administration

(Tidd & Bessant, 2009) assert that outperforming organizations’ success derive from innovation. Yet, the starting point comes from technological advances; changing customers and needs; intensified competition and changing business environment that create the need for innovation. Organizations managing innovation can mobilize knowledge, technological skills and experience to create novelty in their offerings (product/service) and the ways in which they create and deliver those offerings (i.e. like Daimler AG example). In line with this thinking, it is argued that innovation is the driving force for managing the collaborative networks. It will guide decisions with retrospect to the design, governance, strategic intent, new services/products and processes criteria; consequently knowledge will be outcome of these enablers and moderator variable affecting the 3P results. Although the proposed model introduced in figure 4 is based upon the EFQM Model structure comprising enablers and results as well as the underlying excellence concepts; but the embedded constructs proposed are derived from themes consistently highlighted in the literature review. It is suggested that establishing, developing and implementing these criteria at the macro-level will facilitate management [Plan-Do-Check-Act] of sustainable excellence collaborative networks and can be used as an assessment tool for collaborative networks performance excellence.

In the context of this paper, the authors’ aim overcoming the single company idea and bringing into light a different perspective for collaborative networks perceived as the new structure of the 21st century and recognized by its complexity and dynamic behavior. This paper assumes that the proposed theoretical model can be an effective tool for creating sustainable excellence driven collaborative networks through examining sustainable excellence dimensions driving these networks and leading to business excellence transformation in an attempt to identify the macro level enablers and results that constitute the management of collaborative networks. Taking into consideration that the aim of this paper is to give insights for further academic and empirical research generating detailed sub-criteria required for each criterion, a methodology for scoring enablers and results, and investigating the application of this model in real life collaborative environment with evidence from diverse industry sectors.
Conclusion

It has been shown that the excellence models lead to the development of enhanced management practices. It is clear however, from the research undertaken in collaborative networks that it is catalyst for business agility. Yet the overlapping relationships, complexities and dynamic behavior which are key characteristics of these networks and are causing uncertainties, need to be analyzed, prioritized and understood in order to successfully manage the collaborative networks. The introduced model in section 5 is providing a framework that embodies the suggested elements upon which depends sustainable excellence collaborative networks. Significantly there are two central themes in driving excellence:

- The need for innovation which is defined by OECD as “all those scientific, technical, commercial and financial steps necessary for the successful development and marketing of new or improved products, the commercial use of new or improved processes or equipment or the introduction of a new approach to a social service. R&D is only one of these steps.” This indicates that innovation is multidimensional and can apply to product/service; processes; business models to enable sustainable competitive advantage thus can be the driving enabler for sustainable excellence networks.
- The need for knowledge. In the era of knowledge economy, various types of knowledge assets become essential in the formation of collaborative networks. Effective knowledge management is needed to capture, share, reuse and apply knowledge relevant to the various stages of collaboration lifecycle. (de Pablos Heredero & Lopez, 2012) state that an innovative cluster can be measured, furthermore, stress that the effective exchange of knowledge between organizations is vital. Therefore argue that innovations come from existing knowledge and knowledge capacities are one essential component of organization’s innovation capabilities, thus the two factors are considered...
crucial in managing collaborative networks.

In summary, collaborative networks have emerged during the last years as a result of the challenges faced by both the business and scientific worlds; the involvement in a collaborative network is valuable to the involved entities as it enable their capabilities survival in turbulence time. Despite an extended list of research in collaborative networks has evolved in the past years providing a theoretical foundation concerning collaborative networks concepts, but still there is room for research and many issues to be further explored (Loss & Crave, 2011).

(Camarinha-Mathos & Afsarmanesh, 2005) reveal that Collaborative networks represent an active research for more than 15 years, many research projects have been launched which indicates that this is a major area of research continuously growing; yet a large number of open issues and challenges indicate that this an enormous field of research where many research questions become more precise and detailed, thus requires a subdivision into a number of research areas involving: ICT infrastructures (technology independent reference models, multi-agent technology, internet and web technologies, wireless communications and pervasive computing); non-technological areas (socio-economic, organizational and ethical); theoretical foundation (theories and models developed in different disciplines).
References


Creating a Competency Assessment for Cost Estimators & Quantity Surveyors

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Abstract
This paper describes a work in progress, having started in Q1 2011. It represents the work completed over the past 18 months to develop a competency based assessment instrument against which to assess professional cost estimators. The need for building competency derives from the growing problems producing valid, credible and reliable cost estimates. In this paper, the author explores other global competency based assessment models and using those as a template, and mapping published work by the US Government Accountability Office (GAO) and credible academic research on measuring output competency, he has produced a partially complete competency assessment. The paper concludes by seeking other interested professionals to join in this open source effort and makes several recommendations as to what individuals and those professional associations, who purport to represent us, can do to further raise the professional standing of cost estimating as an honorable and respected career path objective. Specifically, this paper is calling on organizations such as AACE to modify their Codes of Professional Conduct to enable professionals to “push back” when clients or management want us to produce cost estimates we know are faulty or unsubstantiated.

Introduction
Cost estimating, especially at the early phases of a project, when business decisions are being made and project funding is being allocated, requires accurate and reliable cost estimates being essential to enable decision makers to determine which projects are viable and which are not. Unfortunately, the credibility of capital cost estimating has become a farce. (Butts, 2009, 2010, FMI, 2006) And with the USA, both Federal and many states, along with many European countries on the verge of bankruptcy, the farce has the potential to become a financial tragedy. There are many reasons for this, some within our control as professional practitioners, some outside, but the fact remains, the practice of cost estimating has a serious credibility and image problem and unless we take action to remedy this, we will continue to generate estimates which border on being a misfeasance at best, possibly a nonfeasance under many circumstances and under a worst case scenario, a malfeasance, bordering on fraud.

The Problem
Glenn Butts, in scathing condemnation of estimating practices at NASA in 2009, which he expanded to other public and private sector projects in 2010, identified 8 "root cause" problems as to why projects are so grossly underestimated, not only in the USA, but globally. These include:
1) Omitting or “forgetting” probable scope;
2) Failing to account for all possible risk events
3) Unrealistic or overly optimistic assumptions or scenarios
4) Using low or unrealistic escalation factors
5) Issuing estimates in base year as opposed to “real” or inflation adjusted dollars
6) Estimates not prepared by COMPETENT cost estimators
7) Rewarding those who lie or manipulate numbers to satisfy management or clients while punishing those willing to stand up and tell the truth
8) Not enough time to prepare credible estimates- good estimates take time and attention to details and both management and clients alike want fast answers.

In this paper, we will explore potential solutions to root causes #6 and #7, with the hopes that in fixing those two problems we can at least mitigate, if not eliminate, the remaining 6.

Based on his extensive and hard hitting assessment of cost estimating, not only by NASA, but other public and private sector organizations, Butts outlined not only the problem but several proposed solutions, (Butts, 2009) For the purposes of this paper, the two which are most relevant to AACE and the ones which are most under our own control as professional practitioners are these two recommendations, together which frame the subject and focus of this paper-

1) Project estimates should ONLY be done by “real” (professional, qualified, COMPETENT) estimators and;
2) Project Managers (Cost Estimators?) need to be held professionally accountable for their estimates, the same as engineers are professionally and legally accountable for their designs.

What this means is we can no longer assume that everyone can estimate or even worse, that just because someone is able to pass multiple choice exams, no matter how challenging, is sufficient to infer that one is competent and capable of producing not only cost estimates, but CPM schedules or risk analysis or even successful projects. The only thing passing multiple choice exams attests to is the ability of the exam taker to pass an exam. It does not stand as evidence that he/she actually implements the skills or knowledge covered by the exam or that he/she has the behavioral attributes (“EQ” or Emotional Intelligence) to be able function in the work environment. This

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includes not only the technical skills, which are relatively easy to measure, but the much more important “soft” skills- leadership, conflict resolution, team building, mentoring, stakeholder communications and expectation management and making things happen when you have little or no formal authority over those contributing to your estimate.

In this paper, we will explore a practical approach in how to create, measure and assess COMPETENCY in cost estimators, based to as great an extent as possible on sound academic research.

“COMPETENCY” Defined

Looking to the standard Merriam Webster dictionary as our starting point, we find that “COMPETENCY” is defined as “the quality or state of being functionally adequate, characterized by marked or sufficient aptitude + attitude + skills + strength + knowledge” (Merriam Webster Dictionary, restated)

This is consistent with Spencer and Spencer (1993) who defined competency to be “...an underlying characteristic of an individual that is causally related to criterion-referenced effective and/or superior performance in a job or situation” and also with Kessler and Strasburg (2005) who posited competency to be “a collection of related knowledge, attitudes and skills that affect the performance of one’s job, that can be measured against well-accepted standards and which can be improved with training and development”. What is clear from all these definitions that competency is something we do.

For the purposes of this paper, what is more important is not what competency is, but what it is NOT. Unfortunately, in large part due to the popularity of the Project Management Institute’s “Project Management Professional” (PMP) credential, large numbers of people around the world have come to believe that IF they study books of sample questions for 35 hours and are able to pass multiple choice exams, that alone stands as evidence of their competency. The fallacy underlying this belief (and with the AACE credentials as well) lies in the fact that the work experience, which is a pre-requisite to taking either the PMI or AACE exams, is not validated. Nor are the work outputs measured to see whether the person being evaluated or assessed actually puts what he/she knows to work under real life conditions. Sufficient evidence exists to suggest this this not happening- people are passing tests but are NOT implementing what the tests supposedly validated.

How Can We Infer or Measure “Competency”

Professor Lynn Crawford, Bond University, in her standard GAPPS presentation, has summarized the three fundamental ways that competency can be measured or is inferred:

1) Input Competencies- what we know
2) Personal Competencies- what kind of people we are (what is our emotional intelligence)
3) Output Competencies- what it is we actually do

As can be seen, the “as is” or “current” certification practice common to PMI, AACE et al, is to take a look at a person’s Curriculum Vitae (CV or resume) and based on some combination of academic degrees and number of years’ experience, followed by taking a written exam (most often computer based and consisting primarily of multiple choice questions) and assuming that because they have and hold a job or position that they are in fact “competent”. Clearly the weakness of this approach is or should be patently obvious, if for no other reason, by an unacceptably high failure rate of projects. (“project failure” for the purposes of this paper is defined to be some unacceptable combination of late delivery, over budget, poor quality and/or failure to
substantially deliver on what the project was undertaken to deliver when funded and authorized) Supposing the project manager or estimator or scheduler or any other project related position had never worked on a project that “succeeded”, finishing within budget, on time in substantial conformance to the technical specifications and substantially delivering the benefit for which it was undertaken in the first place? How do we know what contribution the individual made? And even if he/she made a positive contribution, was his/her input over-ridden or modified by others in management with less technical skills and knowledge?

The reliance on input competencies alone to infer competence for project management or project control practitioners has proven to be an abysmal failure, as evidenced by research from Gartner, FMI, Butts and a host of other researchers, or just by reading the headlines in your daily paper.

So how much longer are we willing to tolerate a system of developing talent which is clearly not working?

Looking to the established professions for guidance, we can see that whether it is medicine, engineering, commercial aircraft piloting or even the construction trades, all are characterized by:

1) Formal training over an extended period of time, (measured in years, not hours) often combined with on the job training;
2) A clear career path development program, with periodic reviews and acceptance criteria
3) An apprenticeship, internship or practicum usually consisting of 2-7 years, working directly under the supervision and guidance of a master practitioner/mentor.

Figure 2: Ways to Infer Competency. Adapted from Crawford, L.
4) Some sort of licensing or credentialing program which requires:
   a. Continuing education
   b. Periodic peer reviews or evaluations of work outputs
   c. Rehabilitation/removal of those who are not suited to the work for whatever reason

This is the essence of what are known as the OUTPUT COMPETENCIES- not only does the person know what they are supposed to do, but they have the emotional intelligence and behavioral aptitude to be able to do the work, evidenced by consistently and appropriately applying their aptitude + attitude + skills + strength + knowledge in a way that demonstrates through evidence provided from their day to day working environment, to meet or exceed legal “professional standards of care”.

What is a “Professional Standard of Care”?

Professional practitioners in any field have a legal duty or obligation to those who use their services or consume products produced by the professional. Failure to fulfill this duty is known as “professional negligence” and is grounds for legal action known as “malpractice”.

To help us define “standard of care” we can paraphrase the jury instructions for professional malpractice actions which provides an excellent definition for the “standard of care” required of all professionals, regardless of their profession, trade or craft.

In performing professional services for a client, the professional practitioners has the duty to have that degree of learning and skill ordinarily possessed by reputable professionals practicing in the same or a similar locality and under similar circumstances.

It is his or her further duty to use the care and skill ordinarily used in like cases by reputable members of his or her profession practicing in the same or a similar locality under similar circumstances, and to use reasonable diligence and his or her best judgment in the exercise of his or her professional skill and in the application of his or her learning, in an effort to accomplish the purpose for which he or she was employed.

A failure to fulfill any such duty is negligence.”

Why is the “Professional Standard of Care” so Important to Competency Development?

If we are to raise the professional image of those who practice the art and science of cost estimating (or scheduling or project management) to a level consistent with other professions, following Butt’s recommendations (Butts, 2009 page 31) it is essential that the cost estimating professional be held accountable for his/her cost estimates and the flip side of that responsibility, to have the independence to exercise professional judgment and not have it over-ruled or modified by either managers or client.

And to raise the level of the practice of cost estimating (or scheduling or project management) it is further essential that we move beyond inferring competency based on taking multiple choice exams and following other established professions, develop a formal career path development plan which includes not only exams to test knowledge (i.e. Engineer in Training or EIT) but also a robust internship/mentoring program concluded with an assessment by one’s peers based on a portfolio of work produced by the fledgling practitioner under the watchful eyes of his/her mentors.

The importance of the concept of independence in making decisions is exemplified in the Code of Ethics from the Society of Corporate Compliance and Ethics (SCCE) which is the professional organization representing those who practice corporate governance and social
responsibility issues. In paragraph R 1.4 the SCCE Code of Ethics states

“If, in the course of their work, CEPs become aware of any decision by their employing organization which, if implemented, would constitute misconduct, the professional shall:

a) refuse to consent to the decision;
b) escalate the matter, including to the highest governing body, as appropriate;
c) if serious issues remain unresolved after exercising “a” and “b”, consider resignation; and
d) report the decision to public officials when required by law”

Essentially what this is saying is that IF management over-rides or fails to follow the advice proffered by competent professionals, then the professional has the fiduciary obligation (and perhaps under Sarbanes Oxley, a legal obligation?) to report this up through the chain of command through whatever channels are set up for whistle blowers and if management still doesn’t accept sound professional advice, to resign or at least recuse yourself from further work on that project.

One of the recommendations this paper concludes with is that professional organizations such as AACE, would be wise to incorporate similar wording in our Canon of Ethics, to help professionals push back to management and clients who overrule, ignore or modify our work.

After all, can the owner modify the engineers design drawings and still have the engineers stamp be valid? Can the patient tell the doctor what medications he/she wants or what procedure to use? And can the passengers enter the flight deck and tell the pilot in command how to fly the plane? The absurdity of this is obvious, yet how often is the professional opinion of cost estimators, schedulers and other project management/project control professionals over-ruled or modified by clients or management?

What Does a Competency Assessment Model Look Like?

Having defined what competency is, the various ways to infer competency and having established a legal baseline for why competency is important, we need to explore what a competency model looks like.

The best analogy is the process of obtaining ones driver’s license. Normally, (at least in North America) one attends some number of hours of required, formal classroom training, covering fundamentals of driving a car as well as the rules of the road, traffic laws and courtesies. Successfully passing of what is usually some sort of multiple choice exam earns the potential driver a learners permit, which qualifies that person to actually drive a vehicle on public roads, provided they are accompanied by a licensed adult. The potential licensee practices against a checklist of applied skills (i.e. making 3 point turn, parallel parking or starting on a hill) for a period of time, until their instructor believes the student is sufficiently competent at performing this set of tasks that the probability of them passing is sufficiently high that they can schedule in a test ride with the Department of Motor Vehicles representative. This DMV officer provides a series of challenges that the student driver must complete to some minimum acceptable standard, and if the student does so to the satisfaction of the DMV officer, the license to drive is awarded.

The process to perform a competency assessment for project managers or cost estimators or schedulers or any other function within the field of “project management” or “project controls” is essentially no different.

Worth noting here is that competency assessments are NOT prescriptive. That is, they don’t tell you exactly HOW to do something. There may be more than one “right” or “acceptable” way to get
something done, and going back to our legal definition of “Standard of Care” being a “duty to use the care and skill ordinarily used in like cases by reputable members of his or her profession practicing in the same or a similar locality under similar circumstances, and to use reasonable diligence and his or her best judgment in the exercise of his or her professional skill and in the application of his or her learning, in an effort to accomplish the purpose for which he or she was employed”.

We can see that as long as the professional practitioner works within an acceptable range of options, which “tool and technique” or approach he/she applies in any given situation is of relatively little importance, so long as the outcome meets whatever minimum standards which have been set. This is important to understand not only when writing competency standards, but also in assessing others against those standards. Provided the outcome is satisfactory, the assessor should not, in retrospect judge the tool/technique chosen by the practitioner.

Figure 3: Over-view of the GAPPS Competency Standards (available at no cost http://www.globalpmstandards.org/main/page_project_manager_standard.html)

Figure 2 is taken from the Global Alliance for Project Performance Standards (GAPPS) open source competency standards. This standard, which is based on the Australian and UK competency standards, was created to serve as a source of competency standards which are INDEPENDENT of any specific body of knowledge, methodology or organization. Furthermore, these standards have been put in the public domain under “open source” or “creative commons” license to be used by anyone at no cost or obligation. Here you can see that the competencies are organized around
Units, and the units are further divided into Elements and lastly, the elements are decomposed into discrete tasks, each of which can readily be measured and documented.

Having established the structure, we then need to provide some explanation, clarification or guidance to those doing the competency assessment to help them measure or evaluate the competency of the individual against each set of criteria. For this, we create the RANGE STATEMENTS, which describe what evidence is acceptable in order to adequately measure or assess whether the individual is or is not competent.

How Do We Score An Assessment Against This Model?

The scoring model is quite similar to the one we are all familiar with from the Olympics and other many other competitive sports, such as boxing.

The judges are experienced professionals, meeting the same criteria defined by our “Legal Standard of Care” - experienced, reputable professionals, from the same general geographic area; with academic or education backgrounds in that specialty and experience on that type of project. (i.e it would be inappropriate for an IT cost estimator to evaluate or assess a construction cost estimator)

Like Olympic judges, cost estimator competency assessors (“judges”) also need to be trained in how to score a candidate, trying as best as possible to end up with as little variation between the scores as possible, and if there are variations, to reconcile them with the team of judges.
Normally, assessment teams consist of three people, with one being selected by the individual being assessed and the other being appointed by the professional organization or government agency issuing the credential or license, with those two selecting a third assessor to be the chair or lead assessor.

Figure 5 offers a simple explanation showing how the process of professional assessment is closely analogous to the same process applied in many Olympic sporting events.

The actual scoring models vary, but the one being proposed for cost estimators is based on two well established and credible education psychologists, David Krathwohl and Benjamin Bloom.

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**Figure 5:** Illustration explaining the way competency assessments are scored

**Figure 6:** Multi-Dimensional Scoring Model Based on Krathwohl and Bloom

[http://www.celt.iastate.edu/teaching/RevisedBlooms1.html](http://www.celt.iastate.edu/teaching/RevisedBlooms1.html)
Krathwohl identified 4 different types of knowledge:

1) Metacognitive or the ability to think critically. To be able to “think outside the box” to solve problems;
2) Procedural or the ability to know and understand what steps should be taken and in what order, to accomplish a goal or objective or to produce a deliverable
3) Conceptual is knowing the underlying theory behind why something is or should be done
4) Factual is the ability to remember or recall specific facts, i.e. remembering a formula

On the other axis, we have Bloom’s Taxonomy. From Bloom we can measure the appropriate role and responsibility the individual did or should play and measure it against the role predetermined to be appropriate to be competent. Bloom’s Cognitive Processes range from being able to remember something, to actually understanding it, applying, analyzing, evaluating and eventually, synthesizing or being able to adapt it for new or different applications.

To quickly demonstrate the application, looking at the lowest box, clearly, the ability to REMEMBER (Bloom) FACTUAL INFORMATION (Krathwohl) alone is not an adequate attribute to be considered a “competent” practitioner. Moving up, the MINIMUM level of a competent practitioner would be the demonstrated ability of the applicant to be able to APPLY (Bloom) FACTUAL KNOWLEDGE (Krathwohl), which indicates that the individual not only has factual knowledge, but he/she actually applies it to some minimum standard. And ideally, to be considered a “Master” or “Subject Matter Expert”, requires some demonstrated ability to combine the top two Blooms attributes (the ability to evaluate the work of others and/or create new knowledge or applications, combined with the top two Krathwohl attributes of Procedural knowledge combined with Metacognitive knowledge. Taking this approach, we can provide a robust assessment based upon sound academic research from the field of education and learning.

As we can see in Figure 6, the minimum acceptable standard to join the practice as an apprentice or intern, would be to pass an exam which measures the ability to remember basic concepts and terminology, and perhaps a few formula. Essentially, what the PMP requires. From that point onwards, the individual, working under the guidance of a mentor, would develop his/her Cognitive Skills (Bloom) as well as his/her Knowledge Dimension (Krathwohl) to the point where they would be deemed qualified to sit for another exam and present their work for peer review and assessment.

**How Do We Use All This to Create a Competency Based Assessment for Cost Estimators?**

Following the advice of Stephen Covey to “begin with the end in mind”, to quickly recap, we have a definition of competency; we have a framework for assessing competency; we know the importance of professional standard of care and we know what a competency assessment looks like. We just explored credible ways to score the individual to see if he/she is competent.

So how do we start to create a competency assessment for Cost Estimators?

First, whether it be project management, cost estimating, scheduling or any of the other project control functions, it is all process based. So where better to start than with the process of cost estimating. And to ensure we have the “end to end process” we cannot just look at cost estimating from the contractor’s perspective, but from to look at it from the OWNERS perspective, as being the broader, more complete perspective.
To ensure that we have covered all the performance criteria, we are proposing that the 12 steps of the GAO Cost Estimating Process (Life Span) becomes the UNITS for our competency model. Thus, we would have 12 Units corresponding to each of the above boxes.

Consistent with the GAPPS Competency Standards, the next step would be to create the ELEMENTS.

Here again, a good part of that job has already been done by the GAO.

As we can see from Figure 8, the GAO has further decomposed the 12 Steps (Units in the GAPPS Model) into “Associated Tasks” (Elements in the GAPPS Model)

Where does that leave us today?
fulfilled the Performance Criteria. We also have to establish the scoring model based on Krathwohl and Bloom, or some other credible way to measure not only skills and knowledge but the ability to apply that knowledge effectively in a real working environment.

As this is a “work in progress” in order to further develop a competency assessment instrument for Cost Estimators, we need to build on the initial work by the GAO further refining their 12 Step Process, as well as validating their Associated Activities. Once that is completed, we then need to develop the Performance Criteria (answering the question what should a competent practitioner be able to do demonstrate his/her competency for that activity) and then develop the Range Statements, providing the applicant as well as those judges doing the assessment, with what evidence is acceptable or appropriate for the applicant to provide showing how he/she delivered what is expected from the activity.

Conclusion

It is clear that given the global financial crisis, all organizations, be they private sector or public sector, governmental, quasi-governmental or non-governmental, State, Federal or global, MUST start to produce more accurate, reliable and valid estimates. We also know that to achieve this, the key is to move beyond merely producing “professionals” able to pass multiple choice exams, and looking to what other established professions have done and are doing to produce more COMPETENT, professional estimators. Estimators who are not punching their card on the way to another promotion in line or functional management, but true professionals for whom cost estimating is a career path objective- what they want to be when they grow up.

We also know that to achieve this level of professionalism, not only does the career professional estimator need to have the autonomy to render professional opinions in terms of cost related items, but he/she also needs to be held professionally accountable for those numbers, just as a professional engineer is held professionally accountable for his/her design or a pilot of a plane is held professionally accountable for the safety of his passengers and the integrity of the plane.

And lastly we know that academically sound research has been done globally on creating competency based standards and competency based assessments, so the
question is, are we willing and able to move beyond “the not invented here” syndrome?

So now the challenge is up to us, as professionals. Is this something you too believe in? If yes, then join other professionals in completing what has been started by the GAO and the scores of professionals who volunteered our time in contributing to the GAO document by completing the unfinished work-

1) Validating the Unit (Steps) and Element (Supporting Activities) of the GAO Model
2) Creating the Performance Criteria
3) Creating the Range Statements
4) Creating the Scoring Card

Lastly, to those professional organizations representing or purporting to represent those who are or wish to become professional cost estimators, you need to follow the lead of the Society for Corporate Compliance professionals and build into the Code of Ethics/Code of Conduct, a clause or clauses which enable us to “push back” against clients or managers who expect us to manipulate or adjust numbers based not on sound professional assessment, but on politics.
References


Ibid


Moor, R. (2009) Iowa State University, Center for Excellence in Learning and Teaching http://www.celt.iastate.edu/teaching/RevisedBloom31.html last accessed 1/28/12


Introduction

All quality gurus agree on the importance of management commitment to the success of TQM. Deming and Crosby agree that it is the first step of quality improvement. Top management is responsible for encouraging employees to participate in the continuous improvement process, motivating them to present an excellent work environment, appreciating their performance and presenting an ethical example to maintain a fully committed workforce (Goh, 2000).

In this research, we highlight on top management commitment in a public health care hospital in UAE. This report includes an overview on the relevant literature review followed by research methodology, data analysis, discussion and conclusions, and ending with the team recommendations.

Literature Review

The implementation of TQM with its confronted barriers have unlimited views throughout several years ago. This literature review will focus on TQM implementation and its barriers predominantly in Healthcare Sector.

(Whalen & Rahim, 1994) stated that top management commitment plus encouraging effective teamwork towards quality improvement and customer satisfaction are the principal keys for TQM implementation. Besides, (Mosadeghрад, 2013) on his study on obstacles to TQM success in health care systems concludes that inflexible organizational structure, strains between managers and specialists, lack of reliable commitment to TQM implementation between managers and employees, poor leadership, and insufficient training are primary causes of unsuccessful TQM implementations. Additionally, Juran observed that many managers have extensive experience in business and finance but not in quality improvement. Accordingly management’s enthusiasm on continuous TQM improvements will decrease, consequently that will give a strong message to the staff highlighting the importance of quality (Goffin & Szwejczewski, 1996).

The above and further journal readings helped us in extracting the factors which will be used as the main indicators in our methodology study to measure top management TQM commitment in AAH.

Objectives

The main objective of this research is to explore top management commitment to the implementation of TQM in a public health care Hospital by identifying the current commitment level and analyzing its influence on the staff TQM implementation.

Key Questions

How far is this hospital top management committed?

How does this commitment affect the staff TQM implementation?
Methodology

In order to measure top management commitment impact on implementing TQM in this hospital, two interviews have been conducted with an executive manager and a middle manager. Additionally, a survey based on Five-Level Likert scale has been distributed among administrative, clinical and medical staff. Moreover, we used useful journals and online materials to enhance our understanding of the selected topic. As a result, we have based our survey on assessing top management commitment based on this hospital employee’s input in the following factors:

- Work environment and training.
- Performance and motivation.
- Job satisfaction.
- Participation towards continuous improvement.
- Top management approach perception.

The Hospital Overview

A public healthcare organization, UAE was built on 1968 and it’s a major public acute care and emergency hospital in UAE. It has 402 beds and more than 35 medical departments and divisions as well as an educational center. Besides, it is accredited by Joint Commission International Accreditation (JCIA) since July 2010. Recently, it won Sheikh Khalifa Excellence Award (SKEA) gold prize (SKEA, 2013).

Data Analysis

The survey was distributed among 100 employees; yet, we received only 60 feedbacks. The tables and figures below show the survey findings:

<table>
<thead>
<tr>
<th>Occupation Level</th>
<th>Responses</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Middle Manager</td>
<td>16</td>
<td>27%</td>
</tr>
<tr>
<td>Supervisor</td>
<td>10</td>
<td>17%</td>
</tr>
<tr>
<td>Officer</td>
<td>28</td>
<td>47%</td>
</tr>
<tr>
<td>Other</td>
<td>6</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Table-1: Responses Based on Occupation Level</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table-1 and Table-2 show that most responses got from officers; this is important as they represent quality execution. Besides, most of respondents served 5 to 10 years at this hospital which means they have enough time to understand management’s approach.

<table>
<thead>
<tr>
<th>Years of Experience at AAH</th>
<th>Responses</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;5 years</td>
<td>6</td>
<td>10%</td>
</tr>
<tr>
<td>5-10 years</td>
<td>38</td>
<td>63%</td>
</tr>
<tr>
<td>&gt;10 years</td>
<td>16</td>
<td>27%</td>
</tr>
<tr>
<td><strong>Table-2: Responses Based on Years of Experience</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The figures below show the results of this hospital employees’ satisfaction levels from different aspects.

Figure-1 shows that almost half of the employees are satisfied with work environment, which means training, working hours, compensation, relationships, and stability are identified. Yet 32% of employees are unsure about that which makes us question if these sub-factors are addressed properly by top management.

![Work Environment](image)

![Performance](image)
Figure-2 shows that 52% of employees are satisfied with the overall performance related issue; like: being clear about their responsibilities, quality goals, performance standards and evaluation. However, 20% of employees are dissatisfied and 28% are neutral about it. Additionally most of employees agreed that salary increment is not based on how well they do their jobs.

With regard to Job Satisfaction Figure-3 shows that 54% of employees are satisfied with cooperation, delegation of tasks, work recognition, skills utilization, respect, and trust. Besides, 31% of employees are neutral and 15% are dissatisfied. That means this hospital top management needs to increase the satisfaction of its employees in order to fully commit to TQM.

Figure-4 shows that 53% of employees are satisfied with the motivation they receive from top management and the recognition of their participation towards the organization success. Moreover, 32% of employees are neutral and 16% are dissatisfied particularly with regard to promotion opportunities.

Regarding the overall perception to the management approach, Figure-5 shows that 43% the higher rate of employees is neutral, 42% of employees are satisfied 15% are dissatisfied. We believe that these rates don’t reveal a total commitment from top management, which is reflected in the implantation of TQM.

Figure-6 shows the overall satisfaction rates, which gives us a clear view that most of the respondents are satisfied. Yet, there is a high rate of neutral responses. And the dissatisfaction rates are not very small compared to the number of respondents. For more details, please refer to Appendix-A for the survey questions and Appendix-B for Responses Details.
Additionally, from the responses to the survey comments question and from the interviews conducted with this hospital Business Operations Manager and Quality Manager we found that this hospital has implemented lots of initiatives towards TQM and consequently they have been prized with SEKA gold award and JCIA. However, as Quality Manager admitted, not all employees were aware about SKEA Award preparation, they were happy to get it, but didn’t know how this hospital achieved that! Also, we have found that staff retention is one of the issues top management didn’t address properly. Besides, career development pathway for middle managers is not well planned. More importantly, a change culture is still not absorbed well.

Overall, we believe that this hospital top management is not fully committed to TQM implementation; yet, they are already on the process.

**Discussion and Conclusions**

In brief, we conclude that this hospital top management is not fully involved in the quality journey due to:

- Insignificant knowledge and experience on quality, their enthusiasm in quality improvement is less compared to business administration. As Bothe (1988) pointed out, “Although CEO doesn’t have to be a quality expert, program fail when CEO doesn’t recognize contributing these techniques towards profitability and customer satisfaction”.

- Top management doesn’t spend enough time and effort on strategic plans and setting clear goals on how to implement TQM, and if these plans are understood by employees.

- Lack of clear decisions, clear quality goals and clear plans like employees and middle managers development pathways make the journey of TQM tough on the management and other employees as well.

- Neglecting important periodic measures such as retention rates that may affect decisions made in the organization.

- The realization of employee satisfaction as one of TQM principal factors; this hospital top management didn’t show significant attention on employees’ empowerment and appreciation.

In conclusion, TQM should be a long-term lifestyle philosophy that all organization members, management and employees should live it, feel it and work towards achieving it.

**Recommendations**

Below are some recommendations for this hospital management on how to increase their commitment in quality:

- Top management need to well identify work environment factors like training, working hours, compensation, relationships, and stability to all organization employees.

- Top Management must encourage employees motivation, recognition and promotion opportunities. They can create an internal rewarding system.

- Top management approach towards quality should be clear to all employees from all levels. Strategic plans, quality goals, performance standards and evaluation need to be more clarified to all employees. Starting quarterly all staff meetings is recommended to increase organization transparency.

- Top management should set a plan that encourages a quality related change culture that will aim TQM implementation. They should create consistency of purpose toward improvement of services provided.
References


The Mediating Role of Total Quality Management Between the Entrepreneurial Orientation and the Organizational Performance

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Abstract
One of the primary goals of this study was to examine the joint effect of entrepreneurial orientation and Total Quality Management on the organizational performance. In addition, this study aimed to examine the ability of TQM to transmit the effect of entrepreneurial orientation on the organizational performance. To examine the hypothesized model of the study, the survey questionnaire research design was employed. The data were collected from Dubai police departments. The total number of questionnaires distributed was 320 out of which only 111 usable questionnaires were returned. The Structural Equation Modelling partial least squares approach was used. The statistical results confirmed the effect of entrepreneurial orientation and TQM on the organizational performance. In addition, TQM was found to partially mediate the effect of EO on organizational performance. Further details and valuable implications of this study were discussed throughout the study. The results of this study have many practical implications. The results will help managers to take the proper decision when deciding to implement TQM in their organizations. The TQM can help managers with strong EO to achieve the maximum performance in organizations and to remain competitive in the market. This study is considered one of the very few empirical studies that examine the effect of EO on TQM and the mediating effect of TQM on the EO-performance relationship.

Keywords Entrepreneurial Orientation (EO), Total Quality Management (TQM), Organizational Performance (OP), Dubai Police (DP)

Paper type: Research Paper

Introduction
In the current global competitive environment, the awareness of the importance of quality has been increased. Nowadays, customers’ demands for better quality and due to the fierce competition, companies come to realize that they have to provide products and services with high quality in order to compete and gain successfullness in the marketplace (Demirbag, Tatoglu, Tekinkus, & Zaim, 2006). For this purpose, organizations need to have and implement an advanced management philosophy that can help them to achieve competitive advantages over rivals (Douglas & Judge, 2001; Powel, 1995). Total Quality Management (TQM) is considered as one of the most important management tool that helps organizations to face challenges and achieve high rate of performance. TQM is a holistic approach and a continuous improvement in all operations in the organization for the sake to produce and deliver in high quality products and services and satisfy customers’ needs (Demirbag et al., 2006).

In both scholarly literature and the outstanding press, many writers of entrepreneurship extolled the entrepreneurial traits and activities and their positive effect on performance outcomes (Lumpkin & Dess, 2001). Entrepreneurial as a process that explains the content of
entrepreneurship, is the demonstration of the organization’s innovativeness, risk-taking and proactiveness (Covin & Slevin, 1989; Miller, 1983). In addition to these three dimensions Lumpkin and Dess (1996) had added autonomy and competitive aggressiveness. The relationship between entrepreneurial orientation and organizational performance has been studied by many writers, where some found that EO can affect performance positively (Jogaratnam & Tse, 2006; Lee, Lim, & Pathak, 2011). However, others did not find this effect (Li, Zhang, & Chan, 2005; Smart & Conant, 1994). This inclusiveness in the literature regarding the relationship between EO and organizational performance calls for more research in this area to investigate more and examine new mechanism that can explain in better effect the EO-performance relationship.

Due to the importance of TQM, it has been suggested in this study to explain the effect of EO to enhance an overall organizational performance. The mediating effect of TQM has been examined by many writers to explain the relationship between different strategies and organizational performance, for example, Prajogo and Sohal (2004) found that TQM has a significant and positive effect in the relationship between organization strategy and organizational performance.

This study examined the relationship between EO and organizational performance with the intervention of TQM as an intervening variable to explain the mechanism of the impact of EO on organizational performance. The relationships between variables will be tested through a questionnaire survey that will be conducted in Dubai Police as a field of study.

**Related Literature and Research Hypotheses**

According to the resource-based view theory of the firm, the resources of the firm either tangible or intangible can lead the organizations to achieve competitive advantages and enhance their performance (Collis, 1994; Wernerfelt, 1984). According to many researchers, TQM and EO are among the most important resources for any organizations to achieve competitive advantages. Therefore, this study will highlight the importance and role of TQM and EO in achieving high performance as significant resources that any organization should have them. In addition, the intervening role of TQM will be investigated and examined whether can explain the relationship between EO and organizational performance. In other words, TQM in this study will be considered as a mechanism that empowers the organization to fulfill the desired performance through practicing entrepreneurial activities.

**Entrepreneurial Orientation**

Nowadays, entrepreneurial activities have been considered as significant for organizations, however, in today’s changing business environment, entrepreneurship get more significance because of its positive effect on organizational performance and sustain competitive advantages (Wiklund & Shepherd, 2003; Zahra, 1986). As a process that place entrepreneurship into practice, entrepreneurial orientation (EO) has been examined through a large stream of research in the literature (Rauch, Wiklund, Lumpkin, & Frese, 2009). In addition, they pointed out that EO has been considered as a central concept that has a substantial amount of empirical and theoretical focus. Moreover, EO refers to the processes of strategy-making that support the organizations’ entrepreneurial actions and decisions (Wiklund & Shepherd, 2003).

In the literature, there are many definitions for EO. Miller (1983) defined EO as a set of related process and activities that can be consisted of three dimensions- risk taking, innovativeness, and proactiveness. However Lumpkin and Dess (1996) suggested two more dimensions, they are autonomy and competitive aggressiveness. Most of
previous studies followed Miller’s (1983) and measurements suggested by Covin and Slevin (1989). Therefore, this study will follow the same stream of research by examining the effect of EO through measuring innovativeness, risk-taking, and proactiveness.

Innovativeness represents the willing and tendency of the organization to achieve aimed innovation in terms of strategies, processes, behaviors, and activities (Entebang, Harrison, & de Run, 2010). Therefore, the effect of organizational innovativeness on organizational performance depends on persuasion of the innovation’s degree that has been achieved. According to Wiklund (1999) innovativeness increases profitability that accomplishes advantages of the first mover.

Risk-taking is the organization’s tendency to take an action which may lead to ambiguous results that contains high risk of failure or unbelievable success. Therefore, risk-taking is associated with EO that may lead to a high rate of failure and related to greater variance of outcomes (Rauch et al., 2009). Accordingly, risk-taking can be critical step that can be done by organization, but it might be a chance to have a jump into success.

Proactiveness in the entrepreneurship context is the related to the first mover advantage in terms of getting the best opportunity, shaping environment and creating change, and acting in expectation of the future demand (Lumkin & Dess, 2001). In other words, it refers to the desire in the organization to participate in the development earlier than other organization to achieve the advantages of the first mover rather than imitate and react. According to that, the proactive organization will be a leader not a follower (Sharma & Dave, 2011).

Entrepreneurial Orientation (EO) and Organizational Performance (OP)

In the literature of entrepreneurship, there are many studies that focused on the relationship between EO and organizational performance. In other words, the impact of EO on organizational performance whether positive, negative, or no effect. As discussed earlier, most of researchers examined the effect of only three dimensions of EO, innovativeness, risk-taking, and proactiveness. Other researchers such as Lumpkin and Dess (1996) added more two dimensions, autonomy and competitive aggressiveness. The relationship between EO and organizational performance has been examined through different types of research such as meta-analysis approach, empirical, conceptual, or literature review. As example of empirical studies, Jogaratnam and Tse (2006) examined this relationship in Asian hotel context by using data collected from 187 hotels. They found that entrepreneurial strategic posture positively related to performance. Moreover, Wiklund and Shepherd (2005) found the importance role of EO when combined with configuration approach. The inclusiveness findings in literature call for more studies about the relationship between EO and organizational performance. Therefore, the following hypothesis is proposed to be tested:

H1: Entrepreneurial Orientation has a positive and significant effect on the organizational performance.

Total Quality Management

Quality has been considered as a most significant driver in the era of global competition (Demirbag et al., 2006). In order to compete in this competition and meet the customers’ demands, organizations need to implement and practice an advanced management strategies. Total quality management (TQM) has been defined as a holistic approach and a management philosophy that seeking at continuous improvement in all organizations’ functions and operations to produce and deliver services and products that meet the customers’ requirements and needs by cheaper, safer, better, faster, and easier
processing than rivals with the involvement of all employees with their leadership (Demirbag et al., 2006).

In today’s business environment, TQM’s role in improving performance and productivity of organizations is very important. It has been acknowledged by many writers that TQM is a source of competitive advantages (Douglas & Judge, 2001; Powel, 1995). There are many definitions in the literature for TQM such as the definitions of the TQM’ gurus like Juran, Deming, Crosby, Feigenbaum, and Ishikawa. Juran defined quality as a fitness for use and focus on quality control, quality improvement, and quality planning (Mitra, 1987). Crosby (1996) defined quality as conformance to specifications and requirements that satisfy the customers’ needs. For the sake of identifying quality management principles, Deming identified fourteen steps that help to achieve a zero defect and enhance performance (Deming, 1986).

As a management philosophy, TQM’s critical success factors were identified and explained in many studies differ according to their study context and environment. For example, Black and Porter (1996) identified ten critical success factors, they are, strategic quality management, people and customer management, external interface management, teamwork structure, communication of improvement information, corporate quality culture, quality improvement measurement, operation quality planning, supplier partnerships, and customer satisfaction orientation. In addition, Yusof and Aspinwell (2000) discussed CSF in SMEs such as leadership, continuous improvement system, system and processes, education and training, measurement and feedback, improvement tools and techniques, human resource development, supplier quality assurance, and work team and culture.

In quality management literature, there is a bulk of researches that conducted TQM practices and its effect on organizational performance (Corredor & Goni, 2011). TQM can result a positive impact on financial or non financial performance. Demirbag et al. (2006) found that TQM has a strong effect on non-financial performance of SMEs and only a weak effect on financial performance. In addition, Easton and Jarrel (1998) pointed out that there is a significant relationship between TQM implementation and stock price performance.

Moreover, Samson and Terziovski (1999) found a relationship between TQM and some non financial measure such as market share growth, cost of quality, export growth, and growth of innovation.

The relationship between TQM and organizational performance has been examined by Hassan and Kerr (2003). They found that top management support, commitment, and customer support focus are among the most significant factors that impact performance. In their contribution to the same field, Chong and Rundun (2004) investigated the effects of TQM and market competition on organizational performance based on data collected from 89 production and operation managers in manufacturing Australian firms. They found TQM has a positive relationship with organizational performance due to the high competition in the market. However, the majority of the literature supports the positive and significant relationship between TQM and organizational performance, other studies found adverse results (Dooyoung, Kalinowski, & El-Enein, 1998). Due to this inclusiveness in the literature, this study will attempt to examine this relationship through different context and sampling. For fulfilling this purpose, the following hypothesis placed to be examined:

**H2:** Total Quality Management has a positive and significant effect on Organizational Performance.
Entrepreneurial Orientation (EO) and Total Quality Management (TQM)

Total quality management and entrepreneurial orientation are considered among the most important strategies and practices for achieving competitive advantages. Therefore, these two variables have been underpinned by RBV. According to many researchers TQM and EO are sources for any organization to attain competitive advantages (Reed et al., 2000; Weerawardena & Coote, 2001). However, the importance of EO in any practices or strategy implementation such as TQM to enhance organizational performance and achieve competitive advantages, there is a lack of studies of this effect. Therefore, this study is as an attempt to fill this gap in the literature by investigating the impact of EO on TQM. For this purpose, the following hypothesis determined to examine this effect:

\[ H_3: \text{Entrepreneurial Orientation has a positive and significant effect on Total Quality Management.} \]

The Mediating Effect Total Quality Management on the Relationship between Entrepreneurial Orientation and Organizational Performance

Lumpkin and Dess (1996) argued out that EO is the practices, processes, and decision making activities for driving new business establishment. Based on this argument, EO can lead to several advantages and added value if implemented in the organization in a proper way with the support of other strategic management practices. The problem of not achieving the desired performance through EO is due to the lack of other strategies and practices. These strategies and practices are playing very important role to support and complement EO to have a strong environment to do with. For example, the entrepreneurial vision, capabilities, and activities will not be enough in the organization to achieve success, unless there is a management philosophy in the organization. TQM is defined as a philosophical management practice that can develop the management and enhance performance. Therefore, in this study TQM is used as a mechanism that can explain the relationship between EO and organizational performance. In addition, it can help an organization to achieve the optimal and aimed goals and objectives. For this end, TQM has been proposed to mediate the relationship between EO and organizational performance and the following hypothesis proposed to be tested:

\[ H_4: \text{Total Quality Management mediates the relationship between Entrepreneurial Orientation and Organizational Performance.} \]

Methodology

For the purpose of examining the relationships between the different variables of this study, the quantitative methodology approach was employed. Therefore, questionnaire survey has been used to gather the primary data from respondents. Dubai Police departments were selected as the source of the data. Section of Dubai Police whether in departments and police station have been targeted as a unit of analysis. Three hundred and twenty questionnaires were distributed and hundred and eleven were returned completely which represent 35% response rate. Measurements of variables have been employed from the previous literature. Organizational performance measurements have been adopted from Kaplan and Norton (1992; 2000) based on balanced scorecard with 5-point Likert scale. EO measurements have been adapted from Covin and Slevin (1989) that contains three dimensions: innovativeness, proactiveness, and risk-taking. TQM measurements have been adapted from different sources such as Brah, Wong, and Rao (2000), Terziowski & Samson (1999), Anderson and Sohal (1999), and Rao (2006). Likert-Scale with 7-point scale was used to measure the responses. Structural Equation Modelling (SEM) has been used to analyze the data and test the
The purpose of this study was to examine the hypotheses and models.

The purpose of this study was to examine the proposed model that hypothesizes the joint effect of entrepreneurial orientation (EO) and total quality management (TQM) on the organizational performance. Therefore, the two-step approach suggested by Chain (1998) was followed.

Figure 1: The Research Framework

The Measurement, Outer Model
The following sections discussed the construct validity and reliability. Specifically, the construct validity and reliability were examined through the content validity, convergent validity, and discriminant validity as illustrated in the following sections.

The Content Validity
The content validity, as defined in the multivariate analysis literature, as the case when the construct’s items used to measure and display high loadings on their construct more than other constructs in the model. Therefore, based on the suggestion of Chin (1998) and Hair et al. (2010) the factor loadings used to examine the content validity. If items loaded higher on other constructs than their loadings, they will be deleted. As illustrated in Table 1 and Table 2, all constructs are loaded significantly on their respective constructs more than other constructs. Thus, this result confirmed the content validity of the measurement model.

Table 1: Factor Analysis Results

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<th>EOP</th>
<th>EOR</th>
<th>HRI</th>
<th>IA</th>
<th>ML</th>
<th>OPC</th>
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postulated hypothesis through Smart-PLS statistical package.
Construct

Information
and
Analysis

Management
Leadership

Customer

Financial

Internal
Process

Learning and
Growth

Service
Design

Strategic
Planning

Items

B

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HRI

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ML

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OPC5

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OPC6

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0.56

0.58

0.70

0.55

0.32

0.45

0.52

0.62

0.89

SP4

0.60

0.63

0.52

0.40

0.45

0.55

0.63

0.64

0.39

0.44

0.42

0.41

0.59

0.85

Table 2: Factor Loadings Significance
Construct

Items

Loadings

Standard Error

T Value

P Value

Benchmarking

B1
B2
B3
CI1
CI2
CI3
CI4
EOI1
EOI2

0.877
0.920
0.913
0.901
0.925
0.868
0.876
0.875
0.894

0.014
0.010
0.012
0.012
0.007
0.020
0.015
0.017
0.012

61.164
94.854
76.369
78.128
126.031
43.018
58.694
52.232
76.116

0.000
0.000
0.000
0.000
0.000
0.000
0.000
0.000
0.000

Continuous Improvement

Innovativeness

308


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The Convergent Validity

According to Hair et al. (2010), the convergent validity is the degree to which a set of items converges to measure a specific construct. In SEM literature, it can be examined by loadings, the composite reliability, and the average variance extracted (AVE). That is, the loading should be highly loaded and statistically significant in measuring variables with at least 0.7 of factor loadings, at least 0.5 of AVE for each construct, and at least 0.7 of the composite reliability. In Table 3, the results show above the recommended valued mentioned before, and thus confirm the convergent validity of the model (Bagozzi & Yi, 1988).

Table 3: The Convergent Validity Analysis

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<th>Construct</th>
<th>Items</th>
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<th>Cronbach's Alpha</th>
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a: CR = (Σ factor loading) $^2$ / {Σ (factor loading) $^2$ + Σ (variance of error)}
b: AVE = Σ (factor loading) $^2$ / (Σ (factor loading) $^2$ + Σ (variance of error)}

**The Discriminant Validity**

The discriminant validity is defined in the literature of SEM as the degree of set of items can differentiate a variable from other variable in the model. That is, the construct’s items should have variances between them more than the variance shared with other constructs. Fornell and Larcker (1981) were suggested a criterion to test the discriminant validity. The below Table 4 has a diagonal line of elements represent the square roots of AVE with the correlation of the constructs below that. Therefore, the comparison can be taken place between that diagonal and off diagonal lines. The diagonal line values are greater the other in the rows and columns values and the discriminant validity can be confirmed.

**Table 4: Correlations of Discriminant Validity**

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<th>EOR</th>
<th>HRI</th>
<th>IA</th>
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<td>CI</td>
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<td>0.449</td>
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<td>0.467</td>
<td>0.835</td>
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<td>0.411</td>
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<td>0.372</td>
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<td>0.510</td>
<td>0.413</td>
<td>0.554</td>
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<td>0.492</td>
<td>0.490</td>
<td>0.791</td>
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</table>
The Structural Model (Inner Model) and Hypotheses Testing

When the construct validity and reliability have been tested and established, the next stage was to examine the proposed hypotheses by running SmartPLS’s Algorithm and Bootstrapping. Below in Table 5 and Figure 2 the results have been reported.

As depicted in Figure 2 and Table 5, EO has a positive and significant effect on organizational performance at the 0.001 level of significance (β=0.474, t=10.128, p<0.001). TQM has a positive and significant effect on organizational performance at the 0.001 level of significance (β=0.298, t=4.712, p<0.001). Similarly, the effect of EO on TQM also was found to be a positive and significant at the 0.001 level of significance (β=0.669, t=20.807, p<0.001).

Therefore, the results supported the proposed hypotheses H1, H2, and H3 as developed in this study.

Testing the Mediating Role of TQM

The PLS was applied to test the mediation role of TQM between EO and organizational performance. The results in the Table 6 below shows the results that EO indirectly impacts significantly organizational performance at the level 0.001 of significance (β=0.199, t=4.37, p<0.001).

However, when the effect of TQM was not taken into consideration, EO still has a positive and significant effect on organizational performance at 0.001 level of significance (β=0.683, t=22.630, p<0.001).

According to the Variance Accounted For (VAF), 30% of the variance of the influence of EO on organizational performance, and therefore, concluded the partial mediating role of TQM on the relationship between EO and organizational performance. That is, the mediating role of TQM was confirmed and the hypothesis H4 was supported.

<table>
<thead>
<tr>
<th>Construct</th>
<th>B</th>
<th>CI</th>
<th>EOI</th>
<th>EOP</th>
<th>EOR</th>
<th>HRI</th>
<th>IA</th>
<th>ML</th>
<th>OPC</th>
<th>OPF</th>
<th>OPI</th>
<th>OPL</th>
<th>SD</th>
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<td>0.494</td>
<td>0.548</td>
<td>0.508</td>
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<td>0.492</td>
<td>0.470</td>
<td>0.704</td>
<td>0.529</td>
<td>0.655</td>
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<td>SD</td>
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<td>0.552</td>
<td>0.338</td>
<td>0.389</td>
<td>0.797</td>
<td>0.878</td>
<td>0.576</td>
<td>0.342</td>
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<td>0.478</td>
<td>0.529</td>
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<td>SP</td>
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<td>0.476</td>
<td>0.326</td>
<td>0.458</td>
<td>0.589</td>
<td>0.658</td>
<td>0.793</td>
<td>0.496</td>
<td>0.445</td>
<td>0.477</td>
<td>0.511</td>
<td>0.676</td>
<td>0.867</td>
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</table>

Table 5: Hypotheses Testing Results

<table>
<thead>
<tr>
<th>No</th>
<th>Hypothesis</th>
<th>Path Coefficient</th>
<th>Standard Error</th>
<th>T Value</th>
<th>P Value</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>EO -&gt; Performance</td>
<td>0.474***</td>
<td>0.047</td>
<td>10.128</td>
<td>0.000</td>
<td>Supported</td>
</tr>
<tr>
<td>2</td>
<td>TQM -&gt; Performance</td>
<td>0.298***</td>
<td>0.063</td>
<td>4.712</td>
<td>0.000</td>
<td>Supported</td>
</tr>
<tr>
<td>3</td>
<td>EO -&gt; TQM</td>
<td>0.669***</td>
<td>0.032</td>
<td>20.807</td>
<td>0.000</td>
<td>Supported</td>
</tr>
</tbody>
</table>

***: p<0.001; **: p<0.01; *: p<0.05

Figure 2: Hypotheses Testing Results
### Predictive Relevance of the Model

The predictive power of the model was examined by utilizing R square, Cross-Validated Redundancy, and Cross-Validated Communality. R square refers to the variance of the endogenous constructs that is explained by exogenous constructs. In the Table 7 below, the results show that 45% of the TQM is explained by EO and 50% of organizational performance was accounted by the TQM and EO. According to Cohen (1988), value of R square substantial with 0.26, moderate with 0.13, and weak with 0.02. The previous results are considered as substantial and therefore the power of the constructs contained in this model in explaining the organizational performance.

The values of Cross-Validated Redundancy and Cross-Validated Communality were utilized to assess the quality of the model. Their values were generated by running the Blindfolding method in SmartPLS. The technique of Blindfolding based on removing some data values and later estimates them as missing values. After generation the values, a comparison will be applied to test how close the real result from the implied results. The predictive quality of the model is assessed based on the result of the cross-redundancy values to be more than zero. If not, the predictive quality of the model will not be confirmed.

In Table 7, the cross-validated redundancy values were 0.23 for TQM and 0.21 for organizational performance. These values confirmed that the model has an adequate prediction quality.

### Goodness of Fit (GoF) of the Model

According to Tenenhaus et al. (2005), the goodness of fit has only one measure in PLS-SEM. Therefore, the average R Square and the geometric mean of AVE for the endogenous constructs in the following formula:

\[
Gof = \sqrt{(R^2 \times AVE)}
\]

According to Wetzels et al. (2009), the baseline values are (0.36=large, 0.25=medium, 0.1=small). The GoF, of this study, according to Table 8 was 0.72 which is considered as large which in turn refers to the adequacy of the model validity.

### Discussions and Conclusion

The main purpose of this study was to examine the effect of TQM as a mediator between entrepreneurial orientation and organizational performance. TQM intervened in this relationship to investigate
more about the inconsistency in the previous studies of the relationship between EO and organizational performance. Therefore, the mechanism of TQM was examined through empirical investigation. The results of this study confirmed the partial mediating role of TQM on the EO-performance relationship. The data of this study have been collected from Dubai Police departments and police stations and employed PLS-SEM to test the proposed model and the hypotheses. The statistical findings showed that the whole four hypotheses were supported. The hypothesis H1 has proposed a significant relationship between EO and organizational performance. It has been found a significant and positive relationship between EO and organizational performance at the 0.001 level of significance ($\beta=0.474$, $t=10.128$, $p<0.001$) in line with other previous studies that confirmed these results (Jogaratnam & Tse, 2006; Lumpkin & Dess, 1996). The other hypothesis H2 investigated the effect of EO on TQM. However, this relationship not studied yet in the previous literature, has a significant and positive relationship at the 0.001 level of significance ($\beta=0.669$, $t=20.807$, $p<0.001$). Similarly, the impact of TQM on organizational performance was tested where it was found a significant and positive at the 0.001 level of significance ($\beta=0.298$, $t=4.712$, $p<0.001$) inconsistent with other studies of Chong and Rundun (2004) and Hassan and Kerr (2003).

For the purpose of examining the mediating effect of TQM on the relationship between EO and organizational performance, the PLS was employed. The results showed that TQM has a mediating effect on the 0.001 levels of significance ($\beta=0.199$, $t=4.37$, $p<0.001$). In addition, the VAF also showed that 30% of the variance of the influence of EO on organizational performance through TQM, which indicated that TQM has a partial mediating effect on this relationship.

In this study, there are many theoretical contributions that can be taken into consideration. The investigation of the effect of EO on TQM is one of these contributions which not considered before which has been supported and be the guide for other studies to explore more this relationship. In addition, the mediating role of TQM as a mechanism that can explain the relationship between EO and organizational performance is also considered a contribution to the existing body of knowledge and contribute theoretically in the field of strategic management.

Furthermore, there are many practical implications as a result of this study. The results can help practitioners, managers, and decision makers to enhance their organizational performance through implementing TQM practices in the existing of entrepreneurial traits and activities to develop and increase this business and organizational performance.
References


Jogaratnam, G., & Tse, E. C. 2006. ‘Entrepreneurial orientation and the structuring of organizations: Performance evidence from the Asian hotel industry’,


The Fusion of CMMI-DEV 1.3 with ISO/IEC 20000 at TCA Abu Dhabi

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Al Hassani Nawal R.
Al Dhaheri Mohammed K.
TCA Abu Dhabi, UAE

Abstract

Government Entities in the Gulf Corporation Council (GCC) Countries are motivated to promote the quality of their online services. The adaptation of a firm IT Services Management (ITSM) increases the chances of successful e-Government implementation. ISO/IEC 20000 is one of the most adopted ITSM standards being known for managing and governing the operational side of the ITSM Portfolio (Services Management). The ITSM portfolio spans several management areas including project management and service management. The implementation of ISO/IEC 20000 will only serve the operational side of the IT Management Portfolio. The integration of both ISO/IEC 20000 and CMMI-DEV would produce a more comprehensive reference model for ITSM Portfolio. This case study introduces TCA Abu Dhabi’s approach to implementing ISO/IEC 20000 and will discuss the accruing benefits. ISO/IEC 20000’s contribution to simplifying CMMI-DEV adaptation and to promoting ITSM quality will be presented and addressed. This case study will demonstrate how ISO/IEC 20000 has led to efficient incidents management while CMMI-DEV has reduced incidents numbers.

Keywords: e-Government, IT Management, Processes Management, Project Management, Software Engineering;

Introduction

Government entities world-wide had invested billions of dollars in an effort to promote the e-Government initiative. These initiatives did not satisfy the minimum expected results (Heeks, 2003). The lack of a firm IT Services Management and Governance framework is a key cause of failure (Emam et al, 2008). Recently it has been observed that GCC government entities have adopted ISO/IEC 20000 to promote the ITSM. ISO/IEC 20000 is the first international standard for IT service management being developed in 2005, by ISO/IEC and revised in 2011 (ISO/IEC 2011). The Abu Dhabi e-Government Strategy has mandated all Government Entities to adopt this standard.

ISO/IEC 20000 standard is a good practice for the governance of ITSM. It focuses on the ITSM’s strategic and operational areas. It does not focus on the Software Engineering Project Management area. The Capability Maturity Model Integration for Development (CMMI-DEV 1.3) is a good tool for governing software project management. It is a process improvement appraisal program. Carnegie Mellon University suggests that CMMI-DEV can be used to guide process improvement for software project management. Under CMMI-DEV methodology, processes are rated according to their maturity levels, which are defined as: Initial, Repeatable, Defined, Quantitatively Managed, and Optimizing. This model provides a comprehensive integrated set of guidelines.
for developing products and services (SEI, 2010).

Despite the popular implementation and attention on the ISO/IEC 20000, there are no feasible implementations of the CMMI-DEV 1.3 at the Government entities in the GCC. Even though a considerable proportion of their IT budget is spent on software development/acquisition projects. The implementation of ISO/IEC 20000 alone does not provide the full picture of the ITSM Portfolio. Complementing ISO/IEC 20000 implementation with other reference models such as CMMI-DEV 1.3 will provide a more comprehensive IT Management and Governance Model.

In this case study the integration of ISO/IEC 20000 and CMMI-DEV 1.3 will be presented. TCA Abu Dhabi implemented ISO/IEC 20000 by the third quarter of 2009. Three years Later the authority implemented CMMI-DEV 1.3 for Software Engineering Project Management. The integration of both models has enabled the IT Management & Governance (ITMG) team to better gauge and monitor IT products development and services support. ISO/IEC 20000 has contributed in managing incidents efficiently with CMMI-DEV reducing incidents numbers.

**Organization Background**

Abu Dhabi Tourism and Culture Authority (TCA Abu Dhabi) is a Government Entity established on February 2012. The authority results from the merger of three Entities – Abu Dhabi Tourism Authority (ADTA), Abu Dhabi Authority for Culture and Heritage (ADACH), and the Culture Sector of the Tourism Development & Investment Company (TDIC). TCA Abu Dhabi operates locally and internationally being head quarter in Abu Dhabi with overseas offices in London, Berlin, New York, Paris, Beijing, Sydney, Milan, Moscow, Mumbai, and Jidda. The authority is mandated to promote the Abu Dhabi Emirate as world class tourism destination while preserving its heritage and culture. It is also responsible for regulating the tourism industry and assisting the development of tourism products. TCA Abu Dhabi organizes and sponsors international events such as World Rally Championship (WRC), HSBC Golf Championship, and the Abu Dhabi International Triathlon. The Authority oversees the development of the Saadiyat Island Culture District that will host the world’s premiere single collection of world-class institutions including the Louvre Abu Dhabi Museum, Guggenheim Museum and Zayed National Museum.

**Literature Review**

According to Telecomeworldwire (2004), billions of dollars are spent on the e-Government initiatives globally. Despite these investments, the failure rate of these initiatives is high. According to the United Nations Department for Economic and Social Affairs-UNDESA (2003) the percentage of failure amongst e-Government projects worldwide varies from 60% to 80%. Heeks (2003) has concluded that 85% of e-Government initiatives are total or partial failures. Several other scholars have investigated the reasons behind these failures. El Emam et al (2008) have concluded that a lack of software project management framework was a key reason for failure of the software project management practices. Jones (2004) and Christiane et al. (2010) have concluded that the resulting set of Unified Best Practices will help the effective and efficient implementation and assessment of project management processes. Mariam et al. (2012) claimed that online service quality is among the significant variables which influence citizens’ intention to adopt e-Government services.

Winniford et al. (2009) claimed that around 50% of US companies are either using or planning an ITSM. The IT Governance Institute (2008); estimates that ITSM framework has the highest adaptation rate. The IT Infrastructure Library (ITIL) with 24% followed by Control Objectives for
Information and related Technology (COBIT) with an adoption rate of 14%. Mauricio et al (2011) highlighted the gained benefits of ITSM framework. They have shown that increasing the maturity level of the ITIL implementation would lead to: 1) better alignment between Business and IT, 2) promote the realized benefits of IT, 3) increase the acknowledgement of IT, and 4) better IT Management. They claimed that ITIL provides various operational level benefits and contributes to the strategic position. This is accomplished through the Business-IT alignment.

Hochstein et al. (2005), Potgieter et al. (2005) have claimed that ITIL implementation would lead to promote the quality of ITSM. Marrone et al. (2010) has concluded that beside the increase of the IT services quality and customers’ satisfaction, return on investments has been realized – a position with which Cater-Steel et al. (2008) concurred. They also concluded that ITIL implementation helped to reduce service down time, delivered better financial contribution, and increased first call resolution rate. Cervone (2008) has emphasized that ITIL provides a greater financial control of the IT operations as well as to the promotion of service quality.

Rachid et al. (2010) has indicated that ITSM is process-focused and has similar interests with other process improvement frameworks and models (e.g., TQM, Six Sigma, Business Process Management, CMMI). They claimed that ITIL discipline is not concerned with the details of how to use a particular vendor's product nor that it’s specific with the technical details of the systems under management. This best practice focuses on establishing a structured IT management framework. It provides a set of defined processes for managing the IT and business relation. ITIL is aimed at providing services that facilitate the achievement of corporate objectives and business goals in a timely and cost effective manner. Simona et al (2011) suggests that integrating more than one reference model in a Unified Model would lead to increasingly effective and efficient results, “the smarter the Integrated Concept Model (ICM) will become”. They have also emphasized that organizations need a systematic approach to select and efficiently implement reference models.

The Problem

During the first two years of the former ADTA, short and aggressive deadline were given to execute the e-Government initiative. Consequently, more focus was placed on product delivery than processes management. Since the former ADTA was relatively small and its online presence limited, the adaptations of ad-hoc practice were sufficient. However, with the increase in the scope of work, a firm process management became mandatory. At the time of the ISO/IEC 20000 implementation there were no ITMS best practices in place, nor proper incident tracking system or asset registry tracking. It was extremely difficult to accurately measure the performance of the technical support team. The IT requirements had been planned on ad-hoc bases without having a concrete knowledge about the IT Infrastructure. Because of these issues, the IT Technical Team was loosely managed. Furthermore, user requests were not appropriately categorized or classified. The management of the other departments did not have a picture about the IT workload. Their requests were not managed through Service Level Management Process. Customers’ perception of the IT support services was not captured.

Post the ISO/IEC 20000 implementation, the full picture of the ITSM portfolio is not fully captured. The software project management were not fully monitored or controlled. The ISO/IEC 20000 had improved the efficiency of incidents management but did not control project delivery. A disciplined software engineering model was needed to complement the ISO/IEC 20000 implementation.
ISO/IEC 20000 Implementation

To better manage and govern the IT Services Management at TCA Abu Dhabi (formerly ADTA), ISO/IEC 20000 was adopted. Thirteen processes have been developed to manage the IT Services and a dedicated Service Desk has been established. The implementation of ISO/IEC 20000 processes has been deployed through two phases. The first phase has included the Service Support Domain. The Second phase has covered the implementation of the Service Delivery related processes. Within each phase, the processes have been released in two waves to accommodate users’ acceptance and maintain smoother implementation.

Phase I – Wave I: the implementation covered Service Desk Function as well as the Incident Management, Problem Management and Configuration Management Processes.

Phase I – Wave II: Change Management and Release Management Processes have been designed, tested and deployed.

The processes have been automated to ease adaptation. This approach has provided management a better picture about the capability of the IT to handle and comply with these processes. Furthermore, end-users have not been overwhelmed with a major change in the work environment. The integration and interdependency among these processes have been maintained and continually reviewed.

In Phase two, the approach has been further modified. All the Service Delivery Domain processes have been released in a big-bang approach. The Interdependency between the Service Support and Service Delivery Domains has been reviewed. To ensure the integration between the processes, a dedicated section in the process definition has been created. The Service Delivery covered the design and the implementation of the Service Catalog, Service Level Management, Capacity Management, Availability Management, IT Continuity Management, Financial Management, Supplier Relation Management and Security Management.

In an effort to solidify the Security Management Processes, TCA Abu Dhabi complemented this process by adopting the ISO27001. This standard is more comprehensive and covers more of the Security Management detail, which is part of the ISO/IEC 20000. In addition, the Management System Process has been developed to satisfy ISO/IEC 20000 requirements. It defines how ITSM processes are reviewed and updated. It also defined the mechanisms of the Auditing Process to ensure consistency and compliancy with the standard. Furthermore, the ITMG framework has been addressed in this process.

ISO/IEC 20000 Implementation Challenges

At the time of the ISO/IEC 20000 implementation, the IT Team was relatively small. Adopting these processes required more human capital because the practice implementation would require the adaptation of thirteen management processes. To ensure that each process is fully deployed and reviewed regularly, a process owner has been assigned. The IT team has been trained and participated in the process design. Conflict of interest has been considered during assignment process. Ownership and commitment has been also reflected within the employee appraisal. This has further ensured the IT team’s commitment to adopt the processes.

The other challenge facing this project, was the willingness of people to accept the new practice. As mentioned earlier, the IT services support was not complex. The authority did not exceed 200 employees. The technical team and user’s relationships were close. People know each other. Neither users nor technical team realized the importance of implementing disciplined processes to manage the IT support services. The ITMG team realized that the growth of
the organization will expand dramatically. They had to convince both the technical team and users of the importance of adopting best practices. Furthermore, to ensure buy-in and compliancy, several channels were created to receive requests and incidents. Users were able to log their incidents, through the phone, email, face-to-face. ITMG had to make sure that there were no major differences between the old and the new practices from users’ perspective. They made sure that there would not be a major shift in the organizational culture.

CMMI-DEV 1.3 Implementation

As mentioned previously the implementation of ISO/IEC 20000 does not provide the full ITSM picture. The standard contributes more towards the efficiency of the structured operational management including Incident Management. The ITMG wanted to introduce a model to further reduce the Incidents number. CMMI-DEV has been chosen to complement the implementation of the ISO/IEC 20000. The CMMI-DEV implementation started on 2011. By August 2012, TCA Abu Dhabi achieved the level 3 certification. The Implementation of ISO/IEC 20000 simplified adaptation of CMMI-DEV. The model has categorized its Generic Goals (GG), Generic Practices (GP), Specific Goals (SG) and Specific Practices (SP) under four Processes Areas. These processes are Engineering Management, Support Management, Project Management, and Organization Management. The ITMG team has developed tailored project management processes and governance processes management to accommodate the processes areas, in a bid to minimize the number of the new processes. All the referenced GG, GP, SG and SP have been incorporated under these two main processes. Any redundant requirements of the CMMI-DEV have been fulfilled by ISO/IEC 20000. This has helped in reducing the number of processes that governs the IT Management Operations. The project management processes have been designed to be concluded over four phases, (Mobilization & Authorization, Planning, Execution, Monitor & Control, and Closure). Figure 1 demonstrates the processes of the ITMG and Project management building blocks. The following table summarizes each phase activity:

<table>
<thead>
<tr>
<th>Phase</th>
<th>Processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authorization &amp; Mobilization</td>
<td>The project’s value is determined at this phase. The business owner sends a predefined form which describes the product that needs to be developed. A dedicated team from both the business owner and the IT conducts a Feasibility Study under which they evaluates three scenarios for the development (outsource, Managed Services or in-house Development). Furthermore the technology that will be adopted is determined in this study. Also an initial effort and cost estimation is determined at this stage. This study is authorized and approved by the ITMG Team. The Project Manager and members are assigned at this stage.</td>
</tr>
<tr>
<td>Planning</td>
<td>The Integrated Project Plan (IPP) is developed in this phase. However, the Business Requirements Specification (BRS), Systems Requirements Specification (SRS) and Test Plans (TP) are developed first. These are used as inputs to the IPP. The project team also determines the work breakdown structure as well as the Effort Estimation. Then the Project schedule is created. The team also develops an Initial Risk Registry (RR) and the software development cycle is identified. The Agility approach is discussed at this phase. The Quality Management Criteria is defined and all the interdependency highlighted. At this phase a Change Request as part of the ISO/IEC 20000 is raised.</td>
</tr>
</tbody>
</table>
| Execution           | Work on developing the product starts at this stage. The High Level Design (HLD) and the Technical Design Documents (TSD) are produced and the Integration Strategy Document (ISD) is developed. These documents are produced before starting coding or configuration by the project manager and team members. Peer-Reviews are conducted between the team members and the Technical Architecture Team (TAT). The TAT is not part of the project but plays a role to ensure alignment, consistency and security. The TAT members are the
Phase | Processes
--- | ---
Application, Data, Security architects and Web Graphic Designer. Both Teams (TAT & Project team members) agree on the HLD, TLD and the ISD. These documents form the guidelines for testing and users’ acceptance of the product. Project Manager uses the Defect Tracking Report (DTR) as a tool for managing the project’s progress and to determine the project team’s efficiency. The Project Manager is also equipped with a change request process as part of the ISO/IEC 20000 to monitor and govern the changes to the product. Release Management of ISO/IEC 20000 is executed at this phase.

Closure | Lessons learned are the key part of this phase. Project Manager and Team members are requested to fill-in a report listing all lessons learned which are then shared through workshops. It is worth mentioning that Project Managers are requested to document the lessons learned at the end of each phase. Furthermore, the project manager updates the project management database repository with all relevant documents. The resources are released at this stage. The SLA criteria for the product are fully finalized, as part of the ISO/IEC 20000. Before the project closure is concluded, the SLA takes over.

Monitor & Control | The aim of this phase is to monitor the project’s performance. Performance monitoring is conducted by both the Project Manager as well as the Quality Management Team. The Project Manager uses the Issue Logs (IL), RR, Requirement Traceability Matrix (RTM) and Enhancement Requests (ER) as tools to monitor the project scope. The Quality Management team and on a regular basis uses the Metrics Collection and Analysis (MCA) report to determine the project performance. The MCA report includes Client Satisfaction Index, Requirement Stability Index, Defect Severity Distribution, Test Effectiveness, Cost Variance and Effort Variance. CMMI-DEV and ISO/IEC 20000 processes are governed by the same committee. The performance of their related processes are jointly reviewed in the ITMG.

Figure 1: Presents the project Management Methodology as well as the ITMG activities

Analysis and Discussion
Upon ISO/IEC 20000 implementation, customer satisfaction has shown a positive trend. As shown in Figure 2, customer satisfaction increased by 2% upon ISO/IEC 20000 roll-out. After CMMI-DEV implementation, customer satisfaction further increased by 7%. This demonstrates that CMMI-DEV further contributes to customer satisfaction. Incidents resolution has also become more effective with...
services level breaches declining. Figure 3 demonstrates the increase in the percentage of the incidents resolved within SLA timeframes. The number jumped from 62% in 2010 to 90.5% in 2013. Figure 4 shows that the percentage of incidents reported in 2011 has increased by 106% compared to the year 2010. By 2013, the reported incidents decreased by 83% compared to 2010. This finding supports the argument that CMMI-DEV implementation would reduce number of incidents. As demonstrated in Figure 5, upon ISO/IEC 20000 implementation, change requests increased by 163% in 2011 compared to 2010. This number has dramatically decreased upon the implementation of CMMI-DEV. In 2012 and 2013 the percentage of change requests dropped to 92% and 53% respectively, compared to 2010. Furthermore, CMMI-DEV implementation increased the Business Requirements Stability. The stability of the requirements contributes largely to the commitment of project delivery deadlines. The more stable the business requirements, the more projects are delivered on-time. Figure 6 shows the increase in the stability of the business requirements index. In 2011 the stability requirements index was 17% and this fell to 2% by 2013. The stability index measures changes to the business requirements throughout the project development.

The ISO/IEC 20000 Implementation has helped the ITMG team to efficiently and effectively manage IT operations post product development and deployment. Incidents, Problems, Changes, Availability, Capacity, and Security are monitored and reviewed regularly. The Services Level governed by SLAs. Business Managers briefed and updated on a quarterly basis. ISO/IEC 20000 has provided a good tool for managing the IT infrastructure and the services that are hosted on the production environment. The CMMI-DEV has complemented this by providing the ITMG team with a tool to control the quality of the product prior to moving it to the operation environment. The ITMG goal is to manage the incidents efficiently and reduce them, thereby providing a higher quality product. To achieve this, the product life-cycle needs to be governed. The Fusion of CMMI-DEV with ISO/IEC 20000 provides this comprehensiveness. This allows the ITMG team to control the product full cycle. Both models combined also contribute to the stability of the IT Infrastructure. Figure 7 demonstrates the high availability of the IT infrastructure.

In addition to the above referenced benefits, the implementation of ISO/IEC 20000 has provided both the IT and the users the benefit of having efficient processes in place. This has helped greatly in accepting the CMMI-DEV model for software engineering project management. The resistance was less and the implementation has been smoother. The ISO/IEC 20000 had created a process and customer oriented culture within the organization. Furthermore, a number of the GG, GP, SG, and SP have been already implemented through the ISO/IEC 20000. Change Management, Release Management, Management System, Service Level Management, Configuration Management are among the processes that adopted most of the CMMI-DEV practices and goals. The CMMI-DEV has also added new areas that had not been fully addressed by ISO/IEC 20000. Organization Management processes such as training and lessons learned management has been addressed in more detail. In addition, Software Engineering practices have been addressed in more detail in the CMMI-DEV.

The adaptation of both practices also helped the ITMG control and align the budget. These practices have been an influential driver for promoting the strategic performance of the IT Organization. TCA Abu Dhabi IT Organization has achieved the highest level of maturity level among the government entities in Abu Dhabi as per the Abu Dhabi Government Enterprise Maturity Assessment Report.
Figure 2: presents the customers satisfaction level

Figure 3: demonstrates the % of incidents closed within the Service Level Agreements

Figure 4: shows the trends of the reported incidents

Figure 5: presents the % of changes requested

Figure 6: shows the increase the stability of the systems requirements over the project development

Figure 7: presents the availability level of the IT infrastructure

**Recommendations**

The authors encourage other government entities to observe the benefits of integrating ISO/IEC 20000 and CMMI-DEV to solidify the findings in this case study. Furthermore, the enhancements observed on the service support and delivery are influenced by other factors for instance leadership engagement, IT team skills and organization culture. The contribution of the reference model compared to those influential factors needs further investigation.

The CMMI-DEV implementation at the authority can be further modified to accommodate none software projects such as building New Data Center or/and procurement, setup, and configuration of IT infrastructure. Integration of Project Management Institute PMI Processes or Prince2 with CMMI-DEV is worth investigating.
Other reference models and standards can be integrated to further enhance the quality of the IT Management. The Balanced Scorecard can be integrated for IT Strategy Management. ISO 27001 and COBIT can be integrated in the reference model for more effective and efficient Governance and Security Management.

**Conclusion**

The implementation of ISO/IEC 20000 alone does not provide the full IT portfolio management picture. The implementation of this standard should be supported by other referenced models. The integration of both CMMI-DEV and ISO/IEC 20000 would yield better results. This has supported the management and the governance of both the product development and services support. Upon the implementation of ISO/IEC 20000 customer satisfaction has increased. The CMMI-DEV has further supported this result. The ISO/IEC 20000 has promoted the incidents management efficiency whereas CMMI-DEV has led to reduction in incident numbers.

ISO/IEC 20000 implementation contributed to the smooth adaptation of CMMI-DEV. A number of Generic and Specific Goals and Practices of the CMMI-DEV were already incorporated in the ISO/IEC 20000 processes. It also helped to minimize the risks of accepting the new model. ISO/IEC 20000 implementation contributed to changing the organization culture the IT organization becomes more process and customer oriented. This has helped greatly in accepting the CMMI-DEV.

The findings presented in this paper are initial as number of projects is relatively small. These findings need to be monitored over a longer period with bigger number of software projects. Furthermore, the contribution to services enhancement are not solely due to the implementation of these models. Leadership engagement, IT team skills and organization culture also contributed to these enhancements.

As a future research opportunity, other reference model could be integrated with these models. The Balanced Scorecard for strategy management, the ISO270001 for security management and COBIT for governance might be also integrated.
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Introduction

Governments around the world are challenged to deliver a growing set of quality services to its customers. At the same time, customers’ expectations are rising. Nowadays, customers perceive “next-day service” as "too slow", and in some environments, completely "unacceptable" (Moerkens & Pollock, 2004). With such expectations, and with resources that often are scarce, governments are no longer expected to follow the same level of thinking they used to pursue. Addressing such expectations mandates governments to save cost through resources optimization and efficiency enhancement which in turn require them to integrate the delivery of public service (Tiberghien & Bayulgen, 2010).

Full understanding of the pros and cons of service delivery integration is essential, it seems that the public sector no longer has a choice but to revise its approach of executing services. As part of its role to promote policies that improve social well-being of people around the world, Organization for Economic Co-operation and Development (OECD), suggests that an open debate between the governments tackling the concept of service integration and discussing what it takes to deliver exceptional integrated services will be useful. Such discussion would be valuable to policymakers who would recognize areas for efficiency in service delivery (Richardson & Patana, 2012).

Furthermore, many studies over the past 15 years have spotted the importance of streamlining public service delivery in order to improve the efficiency and effectiveness of services. Those service delivery programs are now suggesting that Service Integration (SI) is key to maximize customers’ value while recognizing efficiency. Not only integrated public service delivery is proven to positively impact a country’s competitiveness and quality of life but also it has a positive impact on customers’ trust and eventually customers’ satisfaction. (Tiberghien & Bayulgen, 2010, Richardson & Patana, 2012).

Purpose and Importance of the Study

In this report, we aim to investigate the different critical success factors that will enable governments worldwide, and particularly in the UAE to go for public service integration. The study will cover customer satisfaction as a major objective for the government that is believed to be impacted by introducing service integration concept. The scope of this study is aligned with the UAE government vision to adopt smart government system that provides its integrated public services through smart phones.

There is a lack of research in the area of defining Critical Success Factors (CSF) for public service integration. This research will be of a value to the government of UAE as it will define what CSFs that needs to be considered for the successful implementation of such project. The research is expected to enable policy makers and public service processors (public departments) to make proper decisions with regards to public service integration. Further, it is expected that it will enable government bodies to focus on their core
functional / strategic areas and hence achieve greater value for money.

**Literature Review**

Public sector reforms that target improving service delivery have received a great deal of attention in the past decade. Many Global trends factors have resulted in transformational thinking and paradigms shifts of governments around the world. Those factors include high customer expectations, financial limitations, and global competition for investment (PricewaterhouseCoopers, 2008). While the area of service integration has been explored in the past as a subject of joint and separated debates, the term service integration, however, still means different things to different people (Waddington, 2008). Hence, it is essential to be aware about what the terms means and how it has been used.

**Service Integration**

The term Service Integration (SI) in its simplest form refers to joining up the public services provided by the governments in a way that it help and benefit the service users or providers (Richardson & Patana, 2012). It is about the organization of various tasks and processes which need to be performed in order to provide customer with good quality services (Waddington, 2008). A similar definition was provided by Ragan (2003) who viewed service integration as a simplification and reformation of customer access to a wider range of services and benefits. An overall working definition of integrated service delivery in the health care system has been introduced by the World Health Organization as “The management and delivery of health services so that clients receive a continuum of preventive and curative services, according to their needs over time and across different levels of the health system.” (Waddington, 2008).

In addition, the terms collocation, collaboration, and cooperation are very much attached to the concept of service integration, as each of them defines service integration at different levels. Collocation refers to grouping all agencies / departments in one location. Such departments may include legal services, health services, safety and security and social services. Combining many departments in one location makes it easier for customer to commute between them. This results in savings in both time and money and hence results in improving customers’ satisfaction. In addition, collocation improves accessibility between different public departments which helps endorsing collaboration between different groups of service providers (Richardson & Patana, 2012). The below figure adopted from (OECD, 2012) shows an example of collocation of healthcare services:

![Service Collocation](image)

The second level of service integration is collaboration which requires a higher level of integration than collocation. It refers to agencies and departments working together by creating a network of agencies and through sharing information, knowledge and activities in a way that improves service user experience (Richardson & Patana, 2012).

The third level of integration is attained through cooperation. This is the highest stage that requires professionals to
communicate and work on a service user’s case through effective cooperation and clear communication. This cooperation result on lowering cost, and avoiding redundancies and fast and accurate responsiveness to customers’ needs and requirements (Richardson & Patana, 2012).

Service integration literatures discuss two types of integration between agencies: vertical and horizontal integration. According to England & Lester (2005), vertical integration is about achieving interconnection between two levels in the organization, for one or more than one job. On the other hand, horizontal integration refers to the linkage of a number of functions within a single organization or linking a particular function (or set of functions) between more than one organizations in the public sector.

An example of vertical integration in public sector could be the use of a standardized system for financial planning by the central and local governments. For instance, Dubai Government requires that all the public departments in Dubai to use its Government Resource Planning (GRP) System for all operations related to the finance and human recourses. Furthermore, in health care sector, vertical integration could mean integrating the hospital, clinical and community-based health services to ensure the continuity of care (Richardson & Patana, 2012). A common example of a horizontal integration is feeding a database through the central and local governments as well as by the private sector, and other groups in the community.

In addition, integration can be achieved both horizontally and vertically at the same time - that is, between the various organizations and on more than one level within each organization. The integration can take many forms ranging from gathering in one place to share information across multiple sites. It can also include the integration of the functions of the back office while retaining various channels to provide service for the front office. Also, this could be achieved through providing all services through a single contact point. It is expected that the complexities inherent in achieving back office integration rise with increasing the number of functions and organizations concerned.

Georgescu & GEORGESCU (2008) in their paper titled “Do We Need a Powerful E-Government?” results suggest three levels of public service delivery approaches. The first level starts from the traditional government that provides traditional modes of service delivery. This level evolved to the mode of e-government where the focus is about providing e-services through service automation. The model concludes with connected government that emphasis on providing values of services (Georgescu & GEORGESCU, 2008).

![Figure 2: Evolving approach to Public Service Delivery](image)

While information in the traditional bureaucratic model where information move usually in one way – mostly vertically-, and seldom between departments, the e-government provides connection between new technology with legacy systems internally. It also connects government information infrastructures externally with everything automated.
The following table, adopted from (Wayne, Yining, & Wang, 2006), shows the main differences between traditional and e-government organizations:

**Table 1: Main differences between traditional and e-government organizations**

<table>
<thead>
<tr>
<th>Traditional Government</th>
<th>E-Government</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bureaucratic controls, clear authority hierarchy</td>
<td>Client service and community empowerment, leveled/blurred hierarchy</td>
</tr>
<tr>
<td>Process centrity</td>
<td>Customer centrity</td>
</tr>
<tr>
<td>Isolated administrative functions and data collections</td>
<td>Integrated resource service and knowledge focus</td>
</tr>
<tr>
<td>Functional specialization of units or geographic bias</td>
<td>Breakdown of unit barrier, government integration</td>
</tr>
<tr>
<td>Decision based on uniform rules and awkward reporting approvals</td>
<td>Decision based on negotiation and implicit controls and approvals</td>
</tr>
<tr>
<td>Isolated administrative functions</td>
<td>Integrated resource services</td>
</tr>
<tr>
<td>Disjoined information technologies</td>
<td>Integrated network solutions</td>
</tr>
<tr>
<td>Time consuming process</td>
<td>Rapid streamlined responses</td>
</tr>
</tbody>
</table>

While discussing the evolution of the concept of public service integration, we cannot ignore the concept of connected – also known as networked – government. This concept was conceptualized from the whole-of-government method which provides a focus on technology as a strategic tool and as an enabler for public service productivity and growth (Georgescu & GEORGESCU, 2008). Furthermore, Atkinson (2003) viewed the concept of connected governance as the collective actions of a government that engage the efforts of the whole society and advance.

What distinguishes the whole-of-government is that the different government departments share the same goals despite their organizational differences. This includes the development and application of a wide range of policies, programs and services that go beyond the limits of a single department. Thus, the concept of whole-of-government is a comprehensive approach paves the way towards governance in the public sector, which is developed from the empowerment provided by information and communication technologies. In the essence of the concept of whole-of-government, the focus has shifted for the second generation of e-government from providing services to the use of information and communication technologies to increase the value added from services. Thus, with time, the methods of public sector service delivery changed from the traditional mode, which provides the traditional services in traditional ways, to give more of a focus on e-government and e-services, and from there to the integrated approach that brings more value of services provided to customers (Georgescu & GEORGESCU, 2008).

While the concept of customer satisfaction had progressively attracted much attention in recent years, organizations should continue to innovate new ways of delivering exceptional services that will result in customers’ satisfaction. It is true that with limited budgets comparing to the increasing numbers of customer, the formula seems to be unequal. It is believed that service integration can result in resource utilization, optimized processes and a better customer experience.

In the past couple of decades, the concept of customer satisfaction has been given good attention by both public and private sectors. Furthermore, many scholars (e.g. Al-alak & Alnawas, 2010; Kelly and Turley, 2001; Rust and Oliver, 1994; Mull et al; 2005) proposed that a key factor that is very essential to the success of service organizations is very much attached with revealing customer perceptions of service experiences.

Customers’ satisfaction refers to the situations where customers or buyers are being sufficiently rewarded for the sacrifice he or she has made (Al-alak B. A., 2009). In addition, in his book titled: Satisfaction: A Behavioral Perspective on the Consumer, Richard L. Oliver provided a widely accepted definition of customer satisfaction: “Satisfaction is the consumer’s fulfillment response. It is a judgment that a product or service feature, or the product of service
itself, provided (or is providing) a pleasurable level of consumption-related fulfillment, including levels of under- or over-fulfillment…” (Oliver, 1997). This definition of Customers’ satisfaction was adopted and enhanced by Zeithaml and Bitner (2003) to mean that “satisfaction is the customer’s evaluation of a product or service in terms of whether that product or service has met their needs and expectations” (Zeithaml & Bitner, 2003). Furthermore, the literature of customer satisfaction indicates that the most direct factor of satisfaction is customers’ expectation (Kim, 2005). There are many psychological and physical variables that customers’ satisfaction does depend on including personal beliefs, attitudes and evaluations (Ajzen & Fishbein, 1980).

The definition of public service integration in this paper refers to the process of delivering seamless and easy accessed governmental services in a way that satisfy the needs of end customers and adds value to their experience. For this purpose for instance, providing integrated services require a unique governmental database that connect all government departments and provide privileged accesses in a way that better serve customers’ needs.

Critical Success Factors

Critical Success Factors (CSF) was first introduced in the 1960s by D. Ronald Daniel in the 1960s and was then built on and popularized a decade later by John F. Rockart (University of Washington). Rockart defined CSF as “the limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organization, they are the few key areas where things must go right for the business to flourish. If results in these areas are not adequate, the organization’s efforts for the period will be less than desired” (Rockart, 1979). He also believed that CSF is an area that should receive continuous and careful consideration from management” (Rockart, 1979).

Furthermore, Rockart identified five types of CSFs according to the role they play in the achievement of the mission. Those types include; Industry CSFs which refer to the structure of the particular industry, Strategy CSFs which refer to competitive strategy, industry position, and geographical location, Environmental CSFs which refer to the macro environment, Temporal CSFs which reflect problems or challenges to the organization and Management CSFs that cover the management perspective (Rockart, 1979).

Critical success factors and goals hold many similarities and hence there could be some confusion about them. While goals are usually high-level broad objectives that assist the achievement of the mission, CSF represent things that enable the success of the accomplishment of a mission. In the same context, CSFs are usually looked with an eye to organizational success rather than achievability of goals (Gates, 2010).

While it is very difficult to define a generic research method for CSF, researchers used different methods including a priority list of critical success factors based on literature sources, analysis of related organizational activities, mailed questionnaires, interviews, and a combination of interviews and subsequent questionnaires (Auruškevičienė, Šalciūviene, & Trifanovas, 2006).

Because of the lack of research in the area of defining CSF for public service integration, this study uses a conceptual approach through a literature review to come up with a set of critical success factors that are in common in all researches. Considering the similarities and different levels of granularity of integrated service delivery related CSFs in these seven papers (ICCS, 2003; Moerkens & Pollock, 2004; Panner, 2010; Tiberghien & Bayulgen, 2010; UN, 2004; Kaczorowski, 2004; PricewaterhouseCoopers, 2008), we harmonized them logically. This harmonization resulted in 27 CSFs (Table 2).

Refer to Appendix 1 for the full list of CSF’s colored according to their similarities.
### Identified CSFs

After cross mapping the 27 CSFs that were extracted from the seven studies mentioned above, only those CSF’s that were repeated in at least three studies were kept. Others were eliminated. This process resulted in a short list of six critical success factors that are believed to enable the success of the implementation of service integration in the public sector. The list includes the following success factors:

1) Leadership / Gaining top management support
2) Governance and Accountability / Clear Vision and Strategy
3) Citizen-centered / Customer-Focused
4) Process Alignment and Standardization
5) Front and Back-office reorganization
6) Technology / Trends
**Discussion**

The identified six CSFs for public service integration represent the most common and agreed CSFs in the literatures reviewed in this study. With the lack of studies in this area, identifying them was not an easy process. Needless to say, there is for sure a longer list of other CSF’s that were not considered in this list as it didn’t fulfill the condition that was set for the purpose of this study.

1) **Leadership/Gaining Top Management Support**

Leadership and obtaining top management support are very essential for ensuring successful implementation of service integration in public sector as it maximize success and return on investment. Both are needed at the political and administrative levels. Leaders are expected to motivate other, set expectations and secure funding. Also, the executive responsibilities of a leader as well as the operational influences play important roles in all stages of implantation. Not only the top management is covered by the word “leader” but this could also refer to senior executives who play the role of champions and are willing to make the ISD partnership a priority at the working level.

In addition, visible leadership brings the efforts of the organization to a proper level, provides clear direction throughout the project and created enthusiastic champions at all levels of the organization. While implementing a project of service integration Ontario Rental Housing Tribunal, Leadership was a proven success factor of the project (ICCS, 2003).

2) **Governance and Accountability / Clear Vision and Strategy**

In order to ensure the success of service integration project, well defined and clearly articulated and understood strategy, governance and accountability mechanisms are essential. Clear vision and strategy provide a practical environment for decision makers to be on the same page with a common end result in mind.

Also smart and successful partnership is a fundamental component of service integration initiatives. Not only defining the roles of the partners as well as the government is important, but it is very important to create a culture of accountability within the project boundaries. According to the Institute for Citizen-Centered Service report (2003) the following activities must be incorporated in order to enhance accountability in the organization: a) measuring and reporting customer satisfaction; b) conducting reviews and reporting the results, ; c) and ensuring that ministries are made accountable for ISD initiatives (ICCS, 2003).

The senior management should ensure a successful partnership discussion regarding governance and accountability by focusing at many topics during the initial meetings, including: steering committees; decision-making protocols; information sharing protocols; timelines for securing approvals; and authorities. (ICCS, 2003).

3) **Citizen-centered / Customer-Focused**

Customer-focus is an essential part of service integration projects. “A citizen-centric model of government is about making the trends and expectations of citizens the pre-eminent design principle in all government programmers, solutions and initiatives” (Kaczorowski, 2004). Understanding that the ultimate objective is to provide set of high quality services to the customers, make it so logical to pay a great attention to meeting their expectations and satisfying their needs. This could be done by providing ongoing customers consultation mechanisms and tools including surveys and focus groups. Engaging customers and other key stakeholders makes it obligatory to the organization to consider their comments and requirements.

In addition, it is not enough that only the organization focuses on its customers. This focus must include all partners who work on
the project. It is really vital that all of them are committed to the same definition of customer service and the same common aspiration to promote customer service.

In public sector, customers’ experience often interfaces with several different public sector agencies that must have the same consideration of customer centricity. As services have to be delivered on a wide scale, customers must not feel differences while dealing with different agencies. “One of the core requirements for any customer-centric strategy is customer insight. In-depth knowledge about the customer can be drawn from various sources of data - demographic, behavioral, needs-based and attitudinal” (PricewaterhouseCoopers, 2008).

Organization structure should reflect their focus on their customers. Having sales and services usually bring the first interaction with customers make it very essential to provide them with a set of technical and soft skills to deal with customer as this will determine the customers' perceptions of the organization as a whole.

4) Process Alignment and Standardization

Process alignment, although it is not an easy task, by the end of the day is very rewarding. It does not only save time, money and energy but it ultimately provide a smooth customer experience represented by easy implementation across departments and geographical locations. It is with no doubt that integrating service delivery brings to practice more of integrated chain of processes that are intertwined and interrelated. Ensuring that the business processes are appropriate, up-to-date and that they get the job done, can effectively deliver the products, services, and solutions that customers need (Moerkens & Pollock, 2004).

Considering the complexity of government structures and processes which evolved over the time with different uncoordinated legacy systems and many departments working in silos, the realization of the full integration of service delivery requires a tremendous effort in robust and consistent standardization (Kaczorowski, 2004). Standardization of ICT is somehow known in the private sector but in public sectors it requires huge attention. Therefore it is a critical component of every service integration strategy to confirm and agree on common set of service standards. Furthermore, setting, measuring and enforcing customer-centric service standards for public services and agencies can facilitate the assessment of the public sector on customer metrics which have not previously formed part of public sector Key Performance Indicators (PricewaterhouseCoopers, 2008).

5) Front and Back-office reorganization

Defining new ways to serve customers’ needs and delight them required an attention to be paid to the front office - including call centers, websites, physical counters etc. – as well as back office. Such attention is crucial to deliver more efficient government services. Restructuring and organizing front and back offices deals with breaking silos and channel cultures between internal department as well as other external organizations as a main success factor to implement public service integration. Furthermore, “managing all delivery channels through a single structure can helps to minimize channel silos and competitions and, over time, to foster channel rationalization and convergence” (UN, 2004).

PricewaterhouseCoopers’ Centre for Public Sector Research in their study titled “The road ahead for public service delivery” (2008) mentioned that focusing on improving front-end service delivery capabilities should take place before tackling back-end processes. This can have a detectable impact on the customer and can also support a faster realization of benefits (PricewaterhouseCoopers, 2008).

Back-office organizing is no less important. According to Cisco Systems’ European
study “Net Impact 2004”, the study suggests that a significant cost reduction can be achieved by governments when they organize their back-office processes before they bring services online (Cisco Systems, 2004).

6) Technology / Trends

Service integration project is not only about technology, however, choosing and implementing the right technology can ensure – with other CSFs - a successful ISD project. Technology has a great impact on improve business performance, as well as lowering the operational costs of the organization. Because automaton by its own is not a target, as the real target is serving customers in a better and effective way. Hence, in order to choose the right technology, customers must be consulted in advance.

The real challenge resides in choosing the right technology that optimize processes and provide real and quantifiable advancements with the overall organization performance. Technology alone cannot serve the purpose. Without real work on process optimization and standardization, companies will remain doing the same mistakes but in a sophisticated way. Because of this, organizations – particularly government agencies – must define clear requirements and expectations of the new technology. Such expectation must also consider the technology trend and the scalability and flexibility of current and future integration. Technology over all, must consider the technology trends. In order not to be obsolete and outdated, it must keep pace with customers’ demands and with changes (ICCS, 2003). Finally, IT departments should be clearly communicated that they are strategic partners in the effort to improve services delivery.

Conclusion Remarks and Future Research

This research work is based on conceptual work and literature review of Critical Success Factors (CSFs) of public service integration. The result of this analysis has revealed six Critical Success Factors that should be considered for integrating public services.

The identified CSFs were extracted from seven main studies including (ICCS, 2003; Moerkens & Pollock, 2004; Panner, 2010; Tiberghien & Bayulgen, 2010; UN, 2004; Kaczorowski, 2004; PricewaterhouseCoopers, 2008). The indentified CSFs are: leadership / gaining top management support; governance and Accountability / clear vision and strategy; citizen-centered / customer-focused; process alignment and standardization; front and back-office reorganization; and technology and IT trends. While the revealed CSFs did not include all CSFs from the seven studies, only those CSFs that were repeated in at least three studies were chosen.

The use of findings from this study has significant implications for research and practice. Specifically, it will enable governments worldwide, and particularly in the UAE to go for public service integration. This is very much aligned with the UAE government vision to adopt smart government system that provides its integrated public services through smart phones. The finding will allow governments to optimize their scarce resources and concentrate on CSFs that are most likely to have an impact on effective Integrated Service Deliver (ISD).

Furthermore, the results of this research work may perform an interesting opportunity for further research and investigation. This research work was exploratory in nature and due to lack of researches in the area of defining CSFs of public service integration; further research can be considered and will be based on a representative sample of public sector organizations in the UAE and will widely test the influence of these CSF findings on public service integration.
References


Bahrain Civil Service: A Learning Journey

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Abstract
The Kingdom of Bahrain has recently witnessed major transformations and key developments in numerous areas. These were prompted by the reforms launched by His Majesty King Hamad bin Isa Al Khalifa. All ministries and governmental agencies are taking part and keeping pace with forward-looking transformations by accelerating their upgrading and development processes in a way that allows them to achieve the purpose and objectives of the reforms for the sake of the entire nation.

In line with the Government’s objectives outlined in the Vision 2030 and the National Economic Plan 2008-2014 documents, and the instructions of the Civil Service Council (CSC), CSB has developed its own blueprint of initiatives to help translate the Vision of the Kingdom into reality.

Civil Service Bureau (CSB) has developed a program of initiatives aimed at transforming the human resources management (HRM) across all ministries and governmental agencies in the Kingdom of Bahrain, over the next 6 years, starting 2010. These will enable the Government of Bahrain to align its employees towards meeting the aspirations of the leadership and the citizens of the Kingdom through adopting world-class best practices covering a number of closely aligned initiatives in the areas of:

- Civil Service Legal Framework Reform
- Strategic Workforce Planning
- Civil Service Right-Sizing
- Career Development and Succession Management
- Salary Reform and Job Structure Redesign
- Performance Management
- Information and Communications Technology Strategy
- Shared Services and Business Process Re-engineering
- Human Resources Management Competency Development
- Senior Civil Service Development
- Organizational Performance

The implementation of the projects will be carried out by CSB in partnership with Government ministries and other governmental agencies and in synergy with the plans and projects of other organizations seeking to transform the role of government in the Kingdom of Bahrain, such as the Economic Development Board, the e-Government Authority, and the Bahrain Institute of Public Administration.

The approach that underpins the program involves the engagement of best in business specialist consulting firms to work closely with CSB project teams to assist with the planning and execution of each project, whilst at the same time developing, transferring the know-how and training the employees of CSB and other governmental agencies in order to achieve a sustainable model of human resources excellence in planning and project execution.

Keywords: Civil Service, Transformational Change, HR strategic initiatives; organizational performance, Quality.

Introduction:
The Bahrain Civil Service Bureau (CSB) is responsible for managing the human resources and other related activities for all the staff within the civil service in the Kingdom of Bahrain. Currently, there are approximately 46,000 civil servants in the
Bahrain Civil Service. There is growing recognition across Bahrain Government of the need for transformational change.

The CSB is embarking on an ambitious journey to transform the Bahrain civil service to be more effective and efficient in alignment with the Bahrain Vision 2030.

Essentially, the underlying intent is to foster a cultural change in the civil service by empowering all civil servants to embrace forthcoming change and strive for organizational performance on going improvements in their work. It is important to recognize that this pursuit of an “new” mindset is a journey with no finishing line. Hence, this transformational change is expected to evolve over the many years to come.

The primary objective is to prepare civil servants for the challenges in the new age and to create the organizational performance improvement culture within the governmental organizations. Introduce modern management tools and techniques and at the same time pay attention to civil servants’ morale and welfare. Also; to foster a culture where civil servants will readily embrace change and the challenges facing them in the years to come. This will pave the way for implementing all the strategic programmes and projects outlined in the Bahrain Vision 2030 and national strategy.

Public leaders and professionals commitments for directing and managing performance to get everyone focused on activities that really count. So a primary tool for them is a well-respected system of organisation performance management. In addition, the appreciation and understanding of the interrelated systems to enhance the overall civil service’s performance.

The objectives of this Cultural Change journey are to:

- create an efficient and adaptable civil service where management and staff are responsive to changes and challenges;
- empower civil servants as value adding members of the civil service through emphasis on engagement, recognition, welfare, learning and development;
- encourage civil servants to develop a meritocratic and excellence mindset and good service attitude;
- foster a conducive environment for transformation and innovation in civil service through active engagement of employees and the public;
- guide agencies in building a trim, efficient and quality public service by formulating various policies and frameworks, providing tools and resources to help them pursue the highest organisational performance standards.
- define a holistic and integrated approach to create positive attitudinal change in civil servants and agencies such that they evolve from being fearful of change to being open to change and seeing change as an opportunity.
- develop a sustainable framework and model to enable the Bahrain Civil Service to efficiently implement all government initiatives.

Therefor; CSB has carried a study to find the best way to start the transformational journey which revealed that some strategic initiatives and programmes launched and implemented by CSB in the past have encountered resistance from the agencies and the civil servants at large. This is detrimental to the success and the strategic intent of future strategic HR initiatives CSB is embarking upon.

CSB since 1998 started the internal processes changes by achieving the ISO 9000 certificates. Processes documentation and regular review and improvement were reflected clearly on the quality of services delivered to customers. This success widens the CSB’s role by taking the responsibility of introducing and implementing the Quality systems in the governmental organizations. The objective was to improve the overall organizations’ performance.
which highlighted to the CSB’s management the bigger picture that will lead to a solid improvement. I.e. starting the transformational journey will not be correctly positioned without the strategic initiatives briefed bellow to transform the Human Resources Management (HRM):

**Civil Service Legal Framework Reform**

This initiative aims to comprehensively reform the Bahrain Civil Service Law to facilitate the successful implementation of key civil service reform initiatives. Studies have found that the current Civil Service Law has inadvertently limited flexibility for the Bahrain civil service to operate in an efficient and progressive manner.

The Civil Service Law is overly detailed in its content. Its articles spell out not only civil service HR principles and authorities, but in many cases, indicate details about specific criteria or implementation details. This constrains CSB and all agencies from managing its workforce proactively and customising performance management to best suit its own needs. It also limits the ability of CSB to introduce progressive HR policies and make necessary changes as these changes would have to be passed into Law before they could be implemented.

Given that the Civil Service Law will have to be amended to facilitate implementation of all strategic HR initiatives, there is also a need to refine the legal framework to allow for greater flexibility in future to adjust and make further changes. There is scope for the streamlining of the current Civil Service Law and the Executive Regulations to be less prescriptive and detailed in its content. To facilitate this, a set of administrative orders under the charge of CSB could be established.

Under this framework, the Law would set out the basic civil service HR principles and authorities without going into details on specific criteria or process details. The Executive Regulations could then deal with detailed HR policies while the process and implementation details could be included as part of the new set of CSB administrative orders. This new framework would afford greater flexibility in allowing future changes and reforms given that the amendments to the Executive Regulations may be made by the Minister in charge of the Civil Service and need not be put through Parliament. Similarly, powers to amend the CSB administrative orders could be accorded to the President of the CSB. This would empower CSB sufficiently to be able to carry out its challenging role of reforming the entire Bahrain civil service.

**Strategic Workforce Planning**

Strategic workforce planning is the new approach to traditional human resource planning which will involve analysing and forecasting talent required by organisations to meet the objectives defined by their business strategies. It aims to help:

- assess talent needs;
- make informed business decisions such as whether it’s more cost effective to outsource an activity or add full-time employees;
- assess human-capital needs in relation to business needs; and
- control employee costs.

The introduction of mandatory strategic workforce planning across all agencies will be aimed at helping Bahrain Civil Service ensure they have the right people for the right job at the right time and at the right price.

Organisational restructuring, specifically, is one of the key elements in the reform process of strategic workforce planning to bring about improved efficiency in government operations. It will involve analysis, changes in structures and management processes, changes in competencies, communications upgrading and the like. The current guidelines and practices for assessing organisation structure change requests will also be re-assessed and
discussed in context of their prime importance in creating and directing national human resources to produce the desired results for the Bahrain Government.

Civil Service Right-Sizing
This initiative aims to develop Rightsizing strategic framework and programs and develop implementation plans. The strategies to be adopted must be aligned to the outcomes defined in the Strategic Workforce Planning exercise which must precede this initiative.

Selecting rightsizing approaches requires alignment to both current and future strategic needs of the civil service. This information is available from the outcomes of the Strategic Workforce Planning exercise which define the strategic areas of focus for the civil service as well as corresponding manpower requirements over the next few years.

It is expected that the proposed rightsizing strategies would be able to:
- achieve efficiency and effectiveness in government budget, such as through:
  - optimisation of manpower to achieve optimal number of manpower requirement
  - restructuring of government organisations to a more flat-type of organisations to create an efficient and responsive government
- better manage its manpower resources, leaving its staff to focus on areas of strategic impact hence improving quality of services delivery to citizens and businesses;
- harness private sector expertise and encourage innovation, e.g. outsourcing
- enhance transparency and accountability of agencies in budget spending especially relating to manpower budget.
- raise the professional image and competency level of government employees, e.g.:
  - re-deployment of staff
  - re-training of staff, etc.

Career Development and Succession Management
The initiative to enhance the career development of staff in the Bahrain Civil Service is intended to achieve the following objectives:
- To align staff competencies and career development needs to the overall/strategic requirements of the Bahrain civil service and specific requirements of the respective agencies.
- To encourage ownership and accountability of career progression among the staff.

Currently, career development of employees is not proactively managed within the Bahrain civil service (79% of agency representatives surveyed indicated that their agency do not help their staff define formal career paths). In addition, the design and management of opportunities and training for staff to progress and develop within the civil service is fairly unstructured. Career paths are not formalised (76% of agency representatives surveyed indicated that their agency do not formalise development plans for staff) and employees do not have formal career development plans, making it a challenge for agencies to motivate and develop their staff. In the long run, unmotivated staff may leave the civil service. It is evident that staff are also not encouraged to take responsibility in developing their own career and potential.

Salary Reform and Job Structure Redesign
Essentially, the strategic intent of this project is to reform and modernise the current pay and job system within the Bahrain civil service. The primary objectives of this project are namely:
- To rationalize and reform the pay practices
• To conceptualise and design a competitive salary and reward structure
• To provide a strategic salary and reward framework
• To rationalize and transform the job structure and classification system

This project, in conjunction with the Performance Management project, aims to develop a performance related pay system that will instil and sustain a merit-based culture and excellence mindset within the Bahrain Civil Service. The is central to achieving the strategic objectives for the Civil Service Bureau (CSB) and is the cornerstone in which transformation of the civil service is built upon.

**Performance Management**

The objective of this initiative is two-pronged: to enhance the performance management system in the Bahrain Civil Service; and to arrest the brain drain of talent in critical professions and positions. These objectives can be achieved by focusing on the three areas:

1) Strengthen the performance management and promotion system;
2) Strengthen the link between pay and performance.
3) Establish a performance review process.

PMS project aimed at developing a new Performance Management System (PMS) with the following core characteristics:

• A centrally designed system to drive strategic plans and objectives of civil service entities
• A common unified system to be implemented across all ministries and government agencies
• A system with adequate linkage to reward, employee development and other HR programs
• A solution that improves employee satisfaction, productivity and effectiveness

• A solution that minimizes attrition and maximizes attraction of high performing talent
• A system that leverages other deliverables under the HR transformation program

To reach the following benefits of strengthening the performance management system of the civil service:

1) Ensure that measurable objectives are set between supervisor and staff.
2) Make meaningful distinctions in performance and rewards:
3) Motivate and retain high achievers in the civil service:
4) Encourage performance culture.

**Information and Communications Technology Strategy**

The review of CSB’s information technology strategies is also necessary to examine the adequacy of its current IT infrastructure and systems to support CSB’s future plans. Given the rapid pace at which technology has changed, this consulting service seeks to take advantage of these technological advances to underpin, enable and propose new and enhanced services to CSB, agencies and their employees.

ICT activities and services are now ubiquitous across the civil service and a number of organisational units are focused on providing ICT services, the ICT Plan will focus on all major information communication technology planning and requirements for the whole of CSB. This plan will also identifies the strategic direction, conceptualisation, approach for implementation and management of ICT to support the many new strategic HR initiatives for the Bahrain Civil Service. While the plan is intended to provide a three to four years horizon of the CSB ICT strategy and approach, it should be reviewed and updated annually to reflect the changing needs of management and emerging technology.
Shared Services and Business Process Re-engineering

All routine HR administrative activities of participating agencies are outsourced to the SSC to achieve professionalism, economies of scale and efficiency in the civil service. This operating model, which is increasingly being adopted in both private and public sector organisations worldwide, aims to free up HR resources of agencies from performing administrative chores and enable them to focus most of their time on supporting the strategic initiatives of their respective agencies through the provision of higher value added HR services.

In short, the SSC is intended to achieve the following objectives:

1) Shorter service turnaround time in processing routine and common HR administrative requests of agencies
2) Substantial annual cost savings for agencies as a result of process redesign and harmonisation across agencies and centralisation of HR activities
3) Raised level of HR professionalism and improved status and image of HR as a professional career

Human Resources Management Competency Development

In order for HR practitioners to meet the challenges posed by this transformation and to be a strategic player in managing the civil service, this initiative aims to craft strategies in developing and strengthening the competencies of HR practitioners in the civil service.

The project aims to achieve these objectives:

- To develop a HR competency model;
- To develop a HR Competency Development Plan and roadmaps for all levels of HR practitioners;
- To ensure that HR practitioners understand their roles and responsibilities, and the competencies required to perform these roles and;
- To ensure that HR practitioners are aware of their competency gaps and their training requirements;

Senior Civil Service Development

This project aims to help the Government of Bahrain in establishing a SPS programme to develop current and groom future leaders and to enhance the quality of the senior management within the Bahrain public sector.

The objectives of establishing the SPS programme for Bahrain are:

- To provide leadership and management in improving all government agencies’ performance and driving public sector reform by establishing a professional elite cadre system of highly competent senior civil servants with leadership and managerial skills.
- To cultivate esprit de corps within a small selected group for better synergy by building cohesion and encouraging collaboration between government agencies
- To promote the adoption of a “whole of government” or government wide vision and perspective.
- To serve as a bridge between policy making and implementation and instil professionalism into the public sector.
- To introduce merit-based reward and recognition system for senior civil servants.

Organizational Performance

This programme is expected to evolve over the many years to come; and it aimed to:

- create an efficient and adaptable civil service where management and staff are responsive to changes and challenges;
- empower civil servants as value adding members of the civil service through emphasis on engagement, recognition,
welfare, learning and development;
• encourage civil servants to develop a meritocratic and excellence mindset and good service attitude;
• foster a conducive environment for transformation and innovation in civil service through active engagement of employees and the public;
• guide agencies in building a trim, efficient and excellent public service by formulating various policies and frameworks, providing tools and resources to help them pursue organisational excellence.
• define a holistic and integrated approach to create positive attitudinal change in civil servants and agencies such that they evolve from being fearful of change to being open to change and seeing change as an opportunity.
• develop a sustainable framework and model which will enable the Bahrain Civil Service to implement all initiatives under the PSE programmes.

Transformation Management
This project aims to help the CSB in developing a plan and strategy to successfully introduce, adopt, sustain, integrate and institutionalise the practice of change management across the entire Bahrain civil service. The key objectives of this project are:
• To develop competency in managing change both at the organisational and individual level across Bahrain civil service;
• To enable members of project or programme management teams at CSB and all agencies in ensuring a smooth transition when implementing new initiatives in a methodical manner;
• To enable the top management of Bahrain civil service to have a broad appreciation of the concepts and importance of change management;
• To equip key managers and staff across CSB and all agencies with change management competency and know-how;
• To facilitate constant and better communication and engagement between CSB and key stakeholders.
• To create a structure within the Bahrain civil service to facilitate and promote the practice of change management.

Research Methodology
A questionnaire surveys was conducted in 2008 and face to face interviews involving Human Resources Personnel. The survey tended to investigate about the HR areas that should be improved to reach the clients’ expectations and to upgrade the HR practices as per the international best practices.

Recommendations
IT automation alone is not sufficient to bring about breakthrough improvement in CSB processes. Therefore, a study that includes business processes assessment, together with ICT planning, is necessary to achieve a quantum leap, both strategically and operationally.

A key point raised by the agencies was their lack of authority to take disciplinary actions against underperforming employees. The process of disciplining an underperforming employee is so bureaucratic and tedious for agencies that many do not find it worthwhile to pursue this course of action. This was considered in the new Civil service law and executive regulation; yet more improvements are possible to close this gap. Given that this process is meant to be as it is to ensure employees’ rights are maintained and to avoid quick immature decisions with regards employees’ punishments.

Policies and guidelines have to be developed to govern the operations and management of the HR SSC. Service Level Agreements are developed with each agency to ensure the provision of quality HR
service delivery outcomes on the part of the SSC to its customer, i.e. agency.

The roadmap to achieve successful transformation of the civil service hinges on having competent people with deep HR domain knowledge and competencies, as well as having the ability to develop HR strategies that complement agencies’ business outcomes. Only by developing their capability and expanding their knowledge of the latest HRM trends and issues will HR practitioners then be able to effectively drive the transformation of the civil service and to ensure that they stay relevant to the organisations that they serve.

CSB will be embarking on numerous reform initiatives within CSB and across the civil service over the next few years. To ensure the successful implementation of these initiatives, it is critical and essential that for the implementation of each initiative, CSB is able to apply a well-conceived and methodical approach in formulating change management strategy and plan to:

- Manage the civil servants’ resistance to change
- Engage the civil servants through effective communication and training
- Establish a support infrastructure to empower and facilitate the civil servants in adopting the new concepts and practice, and embracing upcoming changes
- Develop right attitude and skill sets among the civil servants to support the new strategic objectives and directions

While there certainly is value to apply change management to a single project, the value is magnified when CSB and agencies begin consistently applying change management on each and every change - a key component of change management competency. The adoption and deployment of a common approach results in more consistent application by members of project or programme management teams across the civil service. This step of adopting a common approach includes a common model, framework, processes, tools and language throughout all levels and all projects. A structured studies and reviews shall take place after the all initiatives’ implementation to measure the impact on the Civil services’ performance and the steps forward to maintain the public sector at the highest excellence degree.

Conclusion

CSB has carried a study to find the best way to start the transformational journey which revealed that some strategic initiatives and programmes launched and implemented by CSB in the past have encountered resistance from the agencies and the civil servants at large. This is detrimental to the success and the strategic intent of future strategic HR initiatives CSB is embarking upon. One of the contributing factors for this situation is most likely due to the lack of a structured and pre-emptive approach in managing the employees’ resistance to the proposed changes. Institutionalization of change management requires a cultural shift and this requires the practice of change management to be a discipline and part of every transformational programmes and projects.

Transformation is inevitable for Bahrain Civil Service and managing transformation and change is one of the most challenging tasks for CSB and all agencies. Change management entails thoughtful planning and implementation, and above all, consultation with and involvement of the employees who will be affected by the changes. If changes are forced upon the employees, problems will normally arise. Change must be realistic, achievable and measurable.

The impact of not having an established program to manage the career development and progression of employees in the civil service will have a profound effect on:

- Agencies’ ability to attract the right staff for the right job;
- Agencies’ ability to motivate and retain talent in their organisation;
- Employees’ perception of the civil service as an unattractive career choice;
- Employees’ willingness to take ownership and accountability over their careers.

The SPS programme will be a key instrument for public service-wide management reform. It aims to attract and manage an elite cadre of civil servants in top level government positions, with a view to providing leadership and management of the Government’s effort to improve public organisations’ performance. This band of civil servants will be expected to work in policy-making in national government or lead major operating agencies. They will work closely with ministers and/or senior political leaders to provide strong and capable leadership and advice, and in so doing provide a bridge between policy making and implementation.

A McKinsey study published in 2002 looked at 40 major projects. The study focused on the expected ROI, the realized ROI and the effectiveness of change management. The results show that projects that effectively managed change realized well over 100% of the ROI that was expected, while projects that did not effectively manage change saw ROI at less than 50% of what was expected.

In essence, this initiative is intended to be a lasting and major cultural change programme for Bahrain Civil Service. To achieve this, extensive coordination and collaboration is required across the entire civil service. The impact of these initiatives are not yet measured till its totally implemented and the beneficiaries advised with their experience with the improved quality of the services.

In conclusions, this case study is to led the light on the learning journey the CSB has taken since started and the assertiveness to continue its learning journey taken in consideration the national environment, best practices and customers’ expectations and needs. Depending on qualified studies and research in crafting, improving and amendments strategies and policies.
Empirical Examination of TQM Implementation Barriers in Bahraini Industries

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Abstract
For proper TQM implementation, several researchers have recognized the critical role of TQM implementation barriers. In this research paper, author has derived a list of thirty two significant barriers from literature through a 3-step process and arranged these barriers in six constructs that fit into general taxonomy of the six TQM principles suggested by the Baldrige framework to ensure that the concepts of TQM implementation barriers remain consistent with established TQM theory. This study empirically examines the extent of presence of these significant TQM implementation barriers in Bahraini industries using primary data collected from 325 manufacturing and service industries of Bahrain, through a web-based survey. The respondents of the survey are asked to indicate the extent to which a barrier exists in their organization. The assessment of the measurement model is done using Principal Component Analysis (PCA) confirming the unidimensionality of constructs. Descriptive statistics and ANOVA in SPSS is used to analyse barrier profile. Based on the results, TQM implementation barriers related to top management, employees and customers have high score while barriers in information management, process management and planning have comparatively low score.

This study offers new insight to both theoretical and practical aspects of TQM implementation by developing and testing an empirically grounded model for identifying significant TQM implementation barriers. The findings based on this empirical research present a solution to the difficulties faced by the managers while implementing TQM effectively in their industries.

Key words – TQM, TQM implementation barriers, web survey, Principal Component Analysis, Bahraini industries

Introduction
The main purpose of this study is to develop a better understanding of TQM implementation through the empirical examination of the TQM implementation barriers. To date, there is no significant study that has investigated the impact of underlying dynamics of TQM implementation barriers. Understanding the nature and strength of these barriers will facilitate TQM implementation by developing the strategies that sustain TQM implementation and discarding the barrier characteristics that impede TQM implementation.

The increasing effects of globalization and cyclic nature of businesses has forced business managers and academic researchers to think how to increase the performance of the organizations to sustain the competitive advantage. After years of research, academic researchers and practitioners have found many performance improvement tools focusing on multifaceted aspects of an organization. These tools were mainly driven by controlling and improving a single activity rather than integrating all business activities. Therefore, quality practitioners were in search of an approach that has the potential to integrate all the improvement tools in one solution. Overly discussed and well researched tool among them is TQM which can be defined as...
synthesis of the organizational, technical and cultural components of any company (Vorley and Tickle, 2005). TQM has emerged as a management model which helps transforming the organization to meet consumer needs, their intangible expectations by continuous improvement of quality of goods, services and integrated business processes across the firm (Prajogo and McDermott, 2005). TQM is not just an organizational management programme or management initiative package, but a complete change in an organization’s culture and the way people behave at work (Ali et al., 2008). These features of TQM can facilitate the organizational improvement in terms of growth, delighting customers and being ahead of competitors (Irani et al., 2004).

TQM history is rich with success stories but some TQM interventions failed in many organizations. Unfortunately, such failures give a false impression that TQM does not deliver according to its promise and any investment in TQM program would be useless. Therefore it is very critical to assess the reasons why some initiatives still fail (Cândido and Santos, 2011). In this context, previous studies on TQM implementation reveal two-pronged findings. First, that TQM is often not implemented properly and second, when properly implemented, TQM undeniably improves performance (Zeitz et al., 1997). Most researchers agree that TQM is a useful philosophy for management if properly planned and implemented (Black and Porter, 1996; Flynn and Saladin, 2006). If TQM is used properly and fully integrated into a business, the approach will help any organization deliver its goals, targets and strategy (Oakland, 2001).

Since TQM approach is being successfully used by many world class companies to achieve organizational excellence (Oakland, 2001), the researchers have attributed TQM failures to implementation, not to TQM theory and method (Huq, 2005). Therefore main issue is proper implementation of TQM. In this context, several researchers have recognized the critical role of TQM implementation barriers. Among several other factors, which have been attributed as key determinants of TQM failure, TQM implementation barriers are also considered as the prime cause of failure of TQM. According to Taylor and Wright, (2003), TQM programs fail because of TQM implementation barriers such as lack of senior management commitment, lack of resources, lack of understanding of TQM, and lack of involvement of employees in TQM practices. TQM literature is rich in studies on TQM implementation barriers (Salegna and Fazel, 2000; Amaral and Sousa 2009; Bhat and Raj, 2009; Angell and Corbett, 2009; Rad, 2004; Huq, 2005; Sebastianelli and Tamimi, 2003; Oakland, 2004; Kotey and Slade, 2005; Thomas et al., 2004). Main focus of these studies is to identify significant barriers to TQM implementation.

One of the inherent problems with TQM is that it takes considerable time to establish itself and gain maturity by bringing in the results. Therefore, any TQM implementation barriers not identified before implementation will be discovered after a wastage of considerable amount of resources with all the negative implications already occurred. Therefore, lasting and promising results of TQM implementation can only be achieved by proper planning and removing the barriers before TQM implementation process initiates. Masters, (1996) emphasizes the importance of understanding and avoiding these barriers both before and during TQM implementation. Therefore, the primary focus of this paper is on identifying barriers that contribute to the TQM failure.

These observations lead to a critical gap in the TQM literature in relation to TQM implementation in Bahraini industries. Thus, there is a need to examine these barriers in order to devise strategies for successful TQM implementation. This theoretical gap calls for developing an understanding of
TQM implementation barriers and prompts the following research question:

**What are the significant TQM implementation barriers prevalent in the industries of Bahrain?**

Accordingly, the aim of the study presented in this paper is to identify most commonly cited barriers from literature and then perform an empirical investigation whether these barriers do exist in Bahraini industries or not. This empirical examination will provide evidence on the presence and impact of TQM implementation barriers to better understand their influence towards the successful TQM implementation. The setting for the study is Bahrain, and the key objectives of the study are to:

- identify most commonly cited barriers from literature
- identify significant TQM implementation barriers that exist in Bahraini industries

**Literature Review**

The literature review starts with discussing critical review of the factors hampering the TQM implementation program that leads to finding the major barriers in TQM implementation and the role of these barriers in the implementation process of TQM. Main emphasis of this section is to theoretically relate the impact of TQM implementation barriers to better understand their influence towards the successful TQM implementation.

**TQM implementation barriers**

Based on assumption that TQM principles are valid, TQM failures can be associated with TQM implementation barriers that won’t allow effective implementation of TQM. Shin et al., (1998) observed that although the principles of quality management appear obvious, many organizations have found them difficult to execute because the implementation is cumbersome, time consuming, and frequently lacking in focus. This statement is supported by Oakland (2004) when he states, “although the TQM points appear obvious and common sense, they are in reality difficult to execute and very time consuming”.

One of these difficulties is the barriers to TQM implementation. These barriers need to be identified through a systematic research of potential barriers that inhibit the process of TQM development. This paper uses a three step process to identify most commonly cited barriers from literature and then performs an empirical investigation whether these barriers do exist in Bahraini industries or not. This 3-step process is illustrated in figure 4.

For **step 1** of the process, the author identified literature on barriers from good quality academic journals. Based on this criteria, a total number of 15 studies related to potential barriers that inhibit the process of TQM development were identified (Ngai and Cheng, 1997; Sebastianelli and Tamimi, 2003; Rad, 2005; Huq, 2006; Salegna and Fazel, 2000; Adebanjo and Kehoe, 1998; Jones, 2008; Masters, 1996; Bhat and Raj, 2009; Amaral and Sousa, 2009; Zeng et al., 2007; Jun et al., 2004; Ali et al., 2008; Rad, 2006; Amar and Zain, 2002). These studies were selected for detailed review as the most likely candidates to profile TQM implementation barriers. Through a literature process of comparison across the studies, 55 commonly cited barriers (barriers that appeared in at least three studies) were extracted.

**Step 2** of the process consisted of profiling a subset of empirically based studies on TQM implementation barriers, studies exhibiting precision of modelling, adequate population, appropriate sample size, robust
data collection methodologies and precise analytical methods. Five studies (Ngai and Cheng, 1997; Sebastianelli and Tamimi, 2003; Salegna and Fazel, 2000; Bhat and Raj, 2009; Jun et al., 2004) were selected from the 15 original studies based on the stricter aforementioned criteria. In this process, all the barriers reported in these 5 empirical studies were extracted. The author then compared the first set of 55 common barriers with the barriers identified in these five empirical studies and only those barriers from the first set of 55 common barriers were retained that appeared in at least three of the five selected empirical studies also. This set constituted a more robust set of common/significant barriers as filtered through more stringent criteria. Step 1 and step 2 of the process provided the author with a list of 32 common barriers found to be significant in five empirical studies and also reported in a wider set of 15 studies. Hence, the final barrier list derived from the studies considered to be those that are from high quality journals and also exhibit the most focused and robust methodological approach.

Each of the final 32 items represented a TQM barrier indicator. In step 3 of the process the barriers were organised into a systemic typology of barrier constructs. Organising them into TQM barrier constructs involved an iterative process of logically grouping the barriers according to their nature and area of influence within the broad TQM framework. This helped to ensure that the implementation barrier constructs remained consistent with established TQM theory. This was further guided by those studies that had previously attempted to put forward higher level barrier constructs, namely the study by Ngai and Cheng (1997) which identified four barrier categories. The result of these iterative processes was the derivation of six TQM implementation barrier constructs: top management barriers; employee barriers; customer barriers; planning barriers; process management barriers; and information management barriers. The objective of this categorization was that the resulting barrier constructs should closely mirror a generally accepted taxonomy of TQM principles identified in the Baldrige framework because the wide adoption of Baldrige criteria in many countries around the world strongly suggests that the Baldrige criteria have comprehensively captured the major dimensions of TQM practices. The categorization of TQM implementation barriers guided by an established taxonomy of main TQM principles has both theoretical and practical significance.

Literature suggests that potential TQM implementation barriers specific to organizations do exist in all types of organizations everywhere. Bahraini industries are no exception. These barriers need to be identified and addressed to introduce high-performance management practices in Bahraini industries. Therefore, these TQM implementation barriers need to be further investigated and empirically examined in target population in order to derive most significant barriers. That would help build strategies for overcoming these barriers.

As discussed in section one, one of the possible flaws in TQM implementation plans is that implementers of TQM haven’t considered the impact of underlying TQM implementation barriers during the implementation cycle and consequently remedial strategies to overcome such barriers are not introduced. In order to encapsulate how literature has addressed these elements, we revisit the two core elements of TQM implementation given in section one.

1. The TQM philosophy that comprises a set of TQM practices – we assume that organizations have a valid set of significant TQM practices for implementation

2. TQM implementation barriers – we have identified prevalent TQM implementation barriers from extant literature

Knowledge of these barriers helps to develop a model for TQM implementation
that extends present knowledge by integrating prevalent barriers with successful TQM implementation.

Research Methodology

Many factors can influence TQM and its successful implementation but major effects to be tested here are TQM implementation barriers. Therefore, based on analysis of literature and drawing from earlier research in the field of TQM implementation barriers, study proposes a research methodology that will empirically investigate the presence of TQM implementation barriers and present a solution to the difficulties faced by the managers while implementing TQM effectively in their industries. This would help in facilitating the program of TQM implementation as it would reveal the scale of TQM implementation barriers. The methodology, broadly, comprises of the following four elements:

- Selection of research approach and its major elements
- Deriving a sample, designing a data collection instrument, in this case a primary data through questionnaires and secondary data
- Reliability and validity of the designed research instrument and collected data
- Selecting data analyses methods

The primary research uses a quantitative research method to collect empirical data from respondents in manufacturing and service industries of Bahrain. This kind of research can be defined as a deductive research approach with a positivism stance. It takes the proposed theoretical concept from theory building to testing the theory using primary and secondary data (Saunders et al., 2007). Data is collected from a sample of service and manufacturing industries of Bahrain ensuring that the sample represents population and provides enough primary data for analyses of the phenomena under inquiry and represent the targeted population so that generalisation of the findings can be established. Author has used non-probability sampling based on the judgment, experience and convenience for both types of data collection through questionnaires and structured interviews. According to the nature of this research non-probability samples are particularly relevant and suitable.

A total number of 540 respondents are selected from sample population. The criteria for selecting the respondents from target population in this survey are based on relevance, qualification and experience. Managers, directors, quality managers, operation managers who are decision makers, policy designers, policy implementers and policy receivers are the target respondents. The survey instrument (questionnaire) has been developed based on extensive literature review. The variables identified have been used to construct appropriate measures. The respondents of the survey are asked to indicate the perceived level of agreement, or the extent to which a barrier type applies to their organization, using Likert scales 1 to 5 (strongly disagree to strongly agree) for each set of measures. The assessment of the measurement model includes the determination of construct unidimensionality, convergent validity and discriminant validity.

The external validity of the questionnaire has been ensured through pilot testing conducting structured interviews with twelve selected prominent quality practitioners and academics. Thus, feedback on survey questionnaire has been obtained from field experts, quality professionals, TQM managers and TQM employees who are similar to target population (Flink & Kosecoff, 1998; Nunnally & Bernstein, 1994). They were asked to comment on the clarity, structure and validity of the content. Using their feedback, the instrument was revised and further refined, adding 5 more barriers consistent with the environment of
Bahrain industries and thus extending the list of barriers to 37. The survey is administered and data is collected online from 325 respondents with a response rate of 60%.

Data validity tests such as missing data, outlier examination, linearity test, normality of data, reliability analysis tests and descriptive statistics are performed using statistical package for social sciences (SPSS) 17.0 version for windows (Tabachnick and Fidell, 2007; Hair et al., 2010). Descriptive statistics and ANOVA in SPSS are used for analysing indices of TQM implementation barriers; and analysing various demographic statistics. However, Principal Component Analysis (PCA) was used to confirm the unidimensionality of constructs.

Data Analysis and Findings

The proposed measurement model is assessed on the basis of overall model fit and construct validity of six TQM implementation barrier constructs (top management barriers, employee barriers, customer barriers, planning barrier, information management barriers, and process management barriers).

The 37 items of barrier scale were subjected to Principal Component Analysis (PCA) using SPSS version 17.0. Prior to performing PCA, the suitability of data for factor analysis was assessed. The correlation matrix revealed the presence of many coefficients of 0.5 and above. Only 5 barriers had the coefficients of <0.5. These five barriers were dropped from the final list and PCA was performed again with following results.

In order to verify that the data is suitable for factor analysis, Kaiser-Meyer-Okin (KMO) measure of sampling adequacy and Barlett’s Test of Sphericity was used. The KMO value was 0.873, exceeding the recommended value of 0.6 (Kaiser, 1970, 1974) and Barlett’s Test of Sphericity (Barlett, 1954) reached statistical significance (p=.000) supporting the factorability of the correlation matrix.

In order to determine how many components to extract, we are only interested in components with eigenvalue greater than 1.0. Table 2 (Total Variance Explained) reveals the presence of 6 components with eigenvalue exceeding 1.0, explaining 29%, 16%, 11%, 8%, 6%, and 4% of the variance respectively. An eigenvalue represents the amount of variance in the original variables that is associated with a factor. Under this criterion, only factors with eigenvalues greater than 1.0 are retained and considered to be stable. The 6 component solution explained a total of 77% of the variance (29%, 45%, 57%, 66%, 72%, and 77%). To aid in interpretation of these 6 components, oblimin rotation was performed.

<table>
<thead>
<tr>
<th>Component</th>
<th>Total Variance Explained</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>29%</td>
</tr>
<tr>
<td>2</td>
<td>16%</td>
</tr>
<tr>
<td>3</td>
<td>11%</td>
</tr>
<tr>
<td>4</td>
<td>8%</td>
</tr>
<tr>
<td>5</td>
<td>6%</td>
</tr>
<tr>
<td>6</td>
<td>4%</td>
</tr>
</tbody>
</table>

Table 1. KMO and Bartlett’s Test

<table>
<thead>
<tr>
<th>Component</th>
<th>KMO Value</th>
<th>Bartlett’s Test of Sphericity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.873</td>
<td>13821.43</td>
</tr>
</tbody>
</table>

In order to verify that the data is suitable for factor analysis, Kaiser-Meyer-Okin (KMO) measure of sampling adequacy and Barlett’s Test of Sphericity (Barlett, 1954) reached statistical significance (p=.000) supporting the factorability of the correlation matrix.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.
Based on the data, the scree plot generated by SPSS in figure 1 shows a change (elbow) at the component 6. This means that only the components above this point should be retained. In the figure 1, there is quite a clear break at 6th and 7th component. Therefore components 1-6 capture much more variance than the remaining components. The scree plot recommends retain (extract) only 6 components.

Table 3 (component Matrix) shows rotated loading of each of the item on 6 components. SPSS uses KMO criterion (retain all components with eigenvalue greater than 1.0) as the default. This table shows that most of items load quite strongly (above 0.5). The rotated 6-factor solution shows item loading on the 6-factor with 11 items above 0.5 on component 1, 7 items above 0.5 on component 2, 6 items above 0.5 on component 3, 4 items above 0.5 on component 4, 3 items above 0.5 on component 5, and 4 items above 0.5 on component 6. Ideally 3 or more than 3 item loading on each component is acceptable. The rotated solution presents a simple structure with 6 components showing strong loading. So this solution is optimal, further supporting our decision to retain 6 components. The detail of the item loading is given in table 3 (Component Matrix).

Finally table 4 lists modified communalities table generated by PCA. It is listing each barrier variable in its corresponding category, and its extraction (loading value). Output in this table gives very clean result. Each of barrier variables is loading strongly on only one component and each component is represented by a number of strongly loading variables. The results of this PCA support the use of barrier factor formation based on TQM constructs.
Table 5 illustrates ranking, rating, overall mean, Std. Deviation, reliability, N items in construct and sample N of TQM barrier constructs.

Based on the results, TQM implementation barriers related to top management, employees and customers have high score while barriers in information management, process management and planning have comparatively low score.

Graph given in figure 2 above is drawn from table 5 with error bars showing deviation lines from the mean score which reveals some important trends in TQM implementation barriers.

**Conclusion**

In this paper demonstrate their use multivariate statistical techniques PCA, on a real survey dataset of existing TQM implementation barriers in Bahraini industries. PCA has produced six dimensions to potential barriers to TQM implementation. These six dimensions have shown a strong statistical fit of these barriers into a general classification of six TQM principles used in Baldrige Framework. This evidence warrants that the concepts of TQM implementation barriers remain consistent with established TQM theory. Therefore, the implementation of each TQM principal can be facilitated by addressing the barriers related to that principal. Therefore, the TQM implementer team can gain a deeper insight and acquire a fuller understanding of the implementation strategies by interpreting the barrier data and making inferences from a more informed perspective. This unique categorization of TQM implementation barriers guided by an established taxonomy of TQM principles has both theoretical and practical significance.

Stance of author in this study is based upon the argument that TQM implementation barriers are one of the prime causes of
failure of TQM and these barriers can be addressed by developing appropriate remedial strategies. Largely, the findings in this study show a unique outcome that seems to be new in TQM implementation research. This unique outcome prescribes that barrier constructs having more human involvement (i.e. leaders, employees and customers) have high barrier score while those with less human involvement (i.e. information, process and planning) have comparatively low score. Therefore, the results of this study also substantiate the importance of human dimension in quality management, highlighting the need for a strong drive for the education and training of managers and employees in quality management.

Contribution of this research

This research is expected to contribute significantly in both academic and practical dimensions. The available evidence suggests that if TQM is not introduced and implemented effectively, the objective of performance excellence won’t be realized. This study seeks to synthesize and extend the TQM knowledge base by developing and testing a more holistic TQM implementation framework. This would not only generate further knowledge on TQM implementation and offer new insight to both theoretical and practical aspects of TQM implementation but will also develop an empirically grounded conceptual model for TQM implementation based on the significant elements of TQM implementation through improved evidence, concept and theory. This study demonstrates how empirical work can provide new insights into TQM implementation strategies by offering a simple, reliable and valid methodology for scientifically examining variables of TQM implementation barriers. It will extend the previous studies of TQM by including more significant elements of TQM implementation and TQM implementation barriers; and provide a much needed impetus for further research on TQM implementation. Particularly, the systematic methodology adopted in this study for deriving the commonly cited significant TQM implementation barriers from literature and categorizing these barriers into a convenient taxonomy of TQM principles.

This research will help organizations of Bahrain to identify the appropriate emphasis on TQM implementation based on identified barriers for successful implementations of TQM. Research will benefit organizations who have not been able to implement TQM successfully, or who are in the process of planning the introduction of the TQM approach. It is envisaged that this study will help to enhance the success rate of TQM implementation. More specifically, the development of a deeper understanding of TQM implementation would meet the long term objectives of Bahrain centre of excellence and the Vision 2030 program of government of Bahrain. Hence, the author anticipates significant multi-dimensional contributions from this research study.

Limitations of study

This research is investigative in nature and has a few methodological limitations:

One is the possibility of self-reporting bias because data is collected from managers about their own organizations, and specifically about managerial issues with which they are closely associated. In order to reduce this bias, multiple responses from each organization are required. However, using the perceptions of only one respondent in profiling barriers can be justified because individual characteristics such as management level and seniority of multiple respondents may reflect only position related biases of the respondents instead of reflecting organizational parameters that researcher wanted to measure.

Author tried to maintain a reasonable length of survey questionnaire but due to complex nature of the questions on TQM implementations barriers profile questions,
the length of survey questionnaire was undesirably large. This was also because author tried to avoid questions having multiple views (double-barreled questions). Therefore, a kind of judgmental tradeoffs was must. However, online administration of survey had the option to save the answers and do the rest later. This would compensate the strenuous effect of long questionnaire on respondent.

Alreck (1995) states that “when personal preferences, opinions, or behavior deviate from what’s socially prescribed, respondents are very prone to report what’s socially acceptable, rather than the true answers.” Barrier questions had this potential weakness and were prone to such bias. However, each question was a constituent of the large construct that was to be aggregated in the analysis and thus specific response on single question was not used to draw any inferences, therefore, potential problem of “social desirability” was moderated.

Although, the results of this study are useful points of departure for other organizations globally, yet these results can’t be generalized to fit in those industries because barriers are unpredictable and vary from place to place. The set of TQM implementation barriers found in survey population can’t be replicated in other places/regions. Therefore, an empirical investigation is required to identify barriers existing in other industries where study would take place. However, the validated and empirically tested framework along with survey instrument may be used anywhere conveniently.

Although these limitations can deteriorate the significance of the conclusions drawn from this study, yet the quality, value, or importance of research effort is not compromised.

Future Research

In this study, the data on barrier profile is collected only at the organizational level, but in case of large organizations each department/division or function may have different barriers which are more homogenous within the department/division but heterogeneous with respect to overall organization because of varied nature of their function. Similarly, TQM implementation barriers may also vary by specific tasks of each department/division. Future research may investigate this phenomenon at root level.

References


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