Innovation KPIs in the UAE

مؤشرات أداء الابتكار الرئيسية في الإمارات العربية المتحدة

By

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Mohammed Yousif Ebrahim

Date: 19 September 2011

Abstract

Organizations have always searched for approaches that will bring them with benefits and will give them competitive advantages over their market opponents. Recently, organizations recognized the importance of innovation to their success. Consequently, innovation became one of the success factors to be considered and embedded in strategies. Measuring, monitoring and controlling innovation have always been a challenge. To address this issue, researches recommend using Key Performance Indicators (KPIs) to measure organizations' progress towards their innovation strategies.

This research will examine the concept of innovation KPIs in the UAE. It will investigate the level of innovation acknowledgement, innovation triggers and current innovation practices. Furthermore, the research will identify the major factors for innovation KPIs implementation to be considered by organizations seeking to rely on innovation.

The literature review will provide detailed understanding on both innovation and KPIs topics. It will explore the benefits and components of innovation. Furthermore, innovation theories, models, practices, and triggers will be studied. Similarly, KPIs benefits, principles, selection criteria and implementation practices will be presented. In addition, the literature review will examine the weaknesses, reasons for KPIs implementation failures and KPIs impact on individual and team effectiveness. At last, the developed model for using KPIs to control and measure innovation will be explained.

Three case studies were conducted on organizations representing private and semi-government sectors to investigate the use of innovation KPIs. In addition, the Chief Executive Officer (CEO) of an innovation institute was interviewed to explore more viewpoints. In general, organizations took substantial steps towards implementing innovation and controlling it by using KPIs; however, the levels of maturity vary from an organization to another.

The three organizations had well understanding of innovation and its KPIs; however, their implementation motives and approaches differed. Mostly, organizations specify their innovation goals in their strategy which is controlled by Balanced Score Card KPI implementation

methodology. The research showed that this implementation model has positive impacts on individuals and teams, while the negative impacts were limited.

The information gathered from the case studies was discussed, analyzed, and compared. Consequently, recommendations and suggestions were provided for the interviewed organizations to improve innovation KPIs practices. The main recommendation provided was to define innovation clearly to standardize its expectation between employees. Similarly, organizations should incorporate innovation in their strategies from which the KPIs are drilled and cascaded to organizational functions. In addition each organization has its specific areas of improvement to be considered to have a comprehensive approach of innovation KPIs implementation.

الخلاصة:

أن المنظمات في بحث مستمر عن سبل تمنحهم فوائد و مزايا تنافسية ليتفوقوا على منافسيهم. في الآونة الأخيرة أدركت المنظمات أهمية الابتكار في نجاحها. بالتالي أصبح الابتكار جزءاً لا يتجزأ من استراتيجيات المنظمات. يعد قياس و رصد و متابعة الانشطة الابتكارية من تحديات تطبيق الابتكار في المنظمات. لمعامجة هذا التحدي يوصي الباحثون باستخدام مؤشرات الأداء الرئيسية لقياس التقدم الذي تحرزه المنظمات تجاه استراتيجياتها الابتكارية.

وهذا البحث سيكشف مدى وعي المنظمات بمفهوم مؤشرات أداء الابتكار الرئيسية في الإمارات العربية المتحدة. إضافة لذلك يهدف هذا البحث لتحديد أهمية الابتكار للمنظمات و عوامل تنشيط الابتكار و الممارسات الحالية تجاه تطبيق مؤشرات أداء الابتكار الرئيسية. كما سيتم تحديد العوامل الرئيسية في عملية تطبيق هذه المؤشرات ليتم فهمها من قبل المنظمات التي تسعى إلى الاعتماد على الابتكار.

المراجعة الأدبية سوف توفر فهم مفصل لمفهوم الابتكار و مفهوم مؤشرات الأداء الرئيسية. ستكشف المراجعة مزايا و عناصر الابتكار. علاوة على ذلك ستتم دراسة نظريات و نماذج و ممارسات و عوامل تنشيط الابتكار. كما سيتم عرض فوائد و مبادئ استخدام المؤشرات و معايير اختيارها و الممارسات المتبعة لتطبيقها. و سوف يتم دراسة نقاط ضعف استخدام مؤشرات الأداء و اسباب فشل تطبيقها و تاثيرها على فعالية انتاج الافراد و الجماعات. أخيرا سيتم عرض النموذج المطور لاستخدام مؤشرات الأداء الرئيسية للتحكم في نشاطات المنظمات الابتكارية.

أجريت ثلاث دراسات لحالات منظمات تمثل القطاعين الخاص و شبه الحكومي للتحقيق في استخدامهم لمؤشرات أداء الابتكار الرئيسية. كما تمت مقابلة رئيس تنفيذي لمعهد متخصص فالابتكار لاكتشاف المزيد من وجهات النظر. بشكل عام ، أخذت المنظمات خطوات كبيرة نحو تطبيق الابتكار والسيطرة على نشاطاته باستخدام مؤشرات الأداء الرئيسية ، إلا أن مستويات النضج في التطبيق تختلف من مؤسسة إلى أخرى.

كانت للمنظمات الثلاث فهم جيد لمفهوم الابتكار و مؤشرات أدائه الرئيسية ، و مع ذلك اختلفت دوافع تطبيقها ومنهجيتها. في الغالب تقوم المنظمات بتحديد أهداف الابتكار في استراتيجيتها التي تسيطر عليها عن طريق استخدام وثيقة التقييم المتوازنة لمؤشرات الأداء الرئيسية. وأظهرت الأبحاث أن تنفيذ هذا النموذج له آثار إيجابية على الأفراد والفرق ، في حين كانت الآثار السلبية محدودة.

وقد نوقشت المعلومات التي تم جمعها من دراسة حالات المنظمات وتحليلها ومقارنتها. وبالتالي تم تقديم توصيات واقتراحات لتحسين ممارسات الابتكار و مؤشرات أدائه في المنظمات. كانت التوصية الرئيسية هي ايجاد تعريف واضح لتوحيد مفهوم الابتكار و تحديد واجبات الموظفين الابتكارية. كما ينبغي للمنظمات أن تتبنى الابتكار في استراتيجياتها التي يتم منها استخراج

مؤشرات الأداء الرئيسية لجميع انشطة المنظمات. بالإضافة لذلك توجد مجالات تحسين خاصة لكل منظمة لتوفير نهج شامل لمؤشرات أداء الابتكار فيها.

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1.1 Overview

Many would argue that the United States has one of the most advanced economies in the world. It has historical experience in all fields including health, food, automobiles, telecommunications, astronomies, and etc. In 2009, the president of the United States, Barack Obama, identified innovation as the mean to enable the US to lead, economically, the world. He also referred to using innovation to improve life quality of the current and future generations (Office of Science and Technology Policy in US, 2009).

Innovation is a term coupled with excellence and lead. President of the United States, Barack Obama, said on August 5, 2009:

> "History should be our guide. The United States led the world's economies in the 20th century because we led the world in innovation. Today, the competition is keener; the challenge is tougher; and that is why innovation is more important than ever. It is the key to good, new jobs for the 21st century. That's how we will ensure a high quality of life for this generation and future generations. With these investments, we're planting the seeds of progress for our country, and good-paying, private-sector jobs for the American people."
> (Office of Science and Technology Policy in US, 2009, p.1)

The benefits of innovation are both to the national economy and to firms. The quotation above indicates the importance of the innovation and how beneficial innovation is for a country by using innovation as a main driver for growth and development. Innovation also contributes to the economy because "[i]nnovative, growing firms generate economic growth and employment, which, in turn, greatly improves people's lives" (Ahlstrom, 2010, p.11). Innovation is one of the major parameter in the knowledge based economies. Likewise, firms rely on innovation to get competitive advantages and to provide better customer services with lower costs (Budros, 2000). This research will concentrate on addressing innovation in the context of organizations.

Innovation is also used to explain a unique value resulted from non–routine thinking. This is a very generic explanation of innovation. In the business world, innovation has different and specific definition. Organizations appreciate innovation when ideas are used to produce or enhance products, services, processes, and markets (Tidd &

Bessant, 2009; Baregheh, Rowley & Sambrook, 2009; Westland, 2008). For such organizations to benefit from innovation, they have to manage innovation by implementing a solid performance management methodology. Key performance indicator (KPI) is one of the strongest performance management concepts used by firms recently. Managing innovation using KPIs will enable organizations to monitor and improve innovation initiatives.

1.2 Innovation in the UAE

The United Arab Emirates is a young country with an equally young economy. However, the UAE has recognized the importance of innovation to the economy if it will be able to compete internationally. Consequently, one of the country's strategic plans as set to "Promote and enhance innovation, research and development by promoting intellectual property (IP) development and protecting IP rights, enhancing research and developing talent ..., providing incentives and encouraging cooperation with the private sector and international institutions in innovation and applied research, exploring new channels of funding for research, and building and disseminating a database of research conducted within the UAE" (UAE Cabinet, p.13). Therefore, the government is taking distinguished steps towards spreading the innovation culture in the country. For example, Dubai Government has established a number of innovation conferences to increase the awareness on innovation (The Media Office of H.H. Sheikh Mohammed Bin Rashid Al Maktoum, 2007; The Media Office of H.H. Sheikh Mohammed Bin Rashid Al Maktoum, 2009; The Media Office of H.H. Sheikh Mohammed Bin Rashid Al Maktoum, 2010). Also Abu Dhabi's government is taking initiatives to increase the reliance on innovation by providing innovation trainings to Abu Dhabi leaders (The International Organisation for Knowledge Economy and Enterprise Development (IKED), 2010; General Secretariat of the Executive Council Abu Dhabi, 2008; Abu Dhabi University, 2009). Thus, the country incorporated innovation in its 2011-2013 strategy to compete with other knowledge based economies (UAE Cabinet).

There are two perspectives through which innovation can be explored. The first perspective is concerned with how innovation is tackled by organizations. The second perspective is how the government established the needed foundation for organizations to innovate. Unfortunately, information on UAE organizational innovation was not found. Therefore, we will study the foundation of the innovation available in UAE.

1.2.1. Innovation Events and Initiatives

UAE government has sensed the need for innovation in strengthening the economics and nations. In 2007, His Highness Sheikh Mohammed Bin Rashid Al Maktoum, UAE Vice President, Prime Minister and Ruler of Dubai, introduced an innovation award as an initiative towards enhancing global economics and conditions. The award, named Mohammed bin Rashid Al Maktoum Award for Innovation, will appreciate and encourage the development of solutions for global issues (The Media Office of H.H. Sheikh Mohammed Bin Rashid Al Maktoum, 2007).

In 2007, Dubai hosted the Arab Innovation Summit. The goal of the event was to address the innovation program in the Middle East. The summit allowed CEOs and top executives to share experiences and success stories on how innovation was utilized in organizations (Ameinfo 2007).

In 2009, a memorandum of understanding (MoU) was signed between the Charles Edison Fund and Mohammed Bin Rashid Al Maktoum Foundation. The result of the MoU is to launch an innovation center in Dubai to raise innovation and promote education (The Media Office of H.H. Sheikh Mohammed Bin Rashid Al Maktoum 2009).

In 2009, Khalifa Fund for Enterprise Development and Abu Dhabi University jointly announced the organization of Abu Dhabi Innovation Forum. The role of the forum is to stimulate innovation in the UAE by initiating communication channels between leaders and to provide innovation training programs to executives (Abu Dhabi University 2009).

In 2010, Sheikh Mohammed released the UAE National Charter 2021. One of the key objectives of the charter is to enhance the competitiveness of the UAE's economy by concentrating on innovation and knowledge (The Media Office of H.H. Sheikh Mohammed Bin Rashid Al Maktoum 2010).

In 2010, General Secretariat of the Executive Council of Abu Dhabi completed a project on studying innovation in Abu Dhabi. The project examined the current state of Abu Dhabi's economy and how to embark on innovation using knowledge (The

International Organisation for Knowledge Economy and Enterprise Development (IKED) 2010).

In 2011, the UAE University is organizing Innovations'11 Forum to be held in UAE. The event is focusing on innovations pertaining to information technology field. Thinkers, academic associates, and engineers were invited to present their research papers in this event (It-Innovation.ae 2011).

1.2.2. UAE Innovation Enablers in Numbers

The UAE lacks information about the expenditure on R&D which is considered one of the most important drivers for innovation. Apart from that, the number of patents granted by United States Patent and Trademark Office for UAE per million people is below 1.5 compared to less than 2.5 in Kuwait, below 1 in Saudi Arabia, and above 160 for Finland and Sweden. Therefore, UAE and regional countries are way behind the world's most advanced economies in patent registrations. In similar rations, the number of scientific and journal articles published per million people for UAE is above 50 compared to less than 100 in Kuwait, above 20 in Saudi Arabia, above 800 in Finland, and above 1,000 in Sweden (The International Organisation for Knowledge Economy and Enterprise Development (IKED) 2010).

Additionally, there are interesting information access indicators which are shown in Table 1 below. In 2005, 260 computers existed per 1,000 person in the UAE compared to 240 in Kuwait, 140 in Saudi Arabia, 500 in Finland, and 840 in Sweden. In 2006, another comparison took place to compare the number of internet users per 1,000 people. The results of that study indicated 400 users in UAE, 310 in Kuwait, 200 in Saudi Arabia, 560 in Finland, and 870 in Norway. In 2007, another study compared the number of mobile phones against 1,000 people. The report showed 1740 mobile phones in UAE, 1042 in Kuwait, 1173 in Saudi Arabia, 1150 in Finland, and 1058 in Sweden (The International Organisation for Knowledge Economy and Enterprise Development (IKED), 2010).

Unfortunately, these studies are outdated. Therefore, conclusions based on this information might not be relevant currently. However, we still can conclude that the UAE has to improve substantially in terms of access to knowledge. In spite that the UAE has significantly out run Finland, Sweden, and Kuwait in the number of mobile phones per 1000 people in 2007, the country is still way behind the number of patents generated by those companies as indicated earlier. We can also conclude that the consumption culture has strong roots in the country, which needs to invest hugely to shift the mentalities towards innovation and idea generation.

Table 1 Access to knowledge and capacity (The International Organisation for Knowledge Economy and Enterprise Development (IKED), 2010)

Computers per 1,000 People, 2005		Internet Users per 1000 People, 2006		Mobile phones per 1000 People, 2007	
Canada	880	Norway	870	UAE	1740
Sweden	840	Sweden	770	HongKong	1523
Singapore	680	Canada	680	Qatar	1512
HongKong	610	Finland	560	Bahrain	1482
Norway	590	HongKong	550	Singapore	1225
Finland	500	UAE	400	SaudiArabia	1173
UAE	260	Singapore	380	Finland	1150
Kuwait	240	Qatar	350	Norway	1102
Bahrain	180	Kuwait	310	Sweden	1058
Qatar	180	Bahrain	210	Kuwait	1042
SaudiArabia	140	SaudiArabia	200	Canada	574

World Bank identified five indicators to measure world's economies based on strengths and weaknesses. The same indicators can be used by countries to compare themselves with their competitors. The World Bank claims that a country's progress towards being knowledge based economy is summarized on the indicators. Those indicators are knowledge economy, economic incentive and institutional regime, innovation, education, and information and communication technology (ICT) (The World Bank Institute, 2008). The UAE is ranked 42 out of 134 listed economies. Table 2 provides the numeric representation of the indicators by comparing UAE with best five economies. The table also identifies that UAE is competing with advanced economies in terms of ICT. Also, UAE has to make substantial improvements in knowledge economy, economic incentive, and innovation. Furthermore, UAE is having a poor education system compared to others (General Secretariat of the Executive Council Abu Dhabi, 2008).

Table 2 The four major drivers for knowledge based economy (General Secretariat of the Executive Council Abu Dhabi, 2008)

Raking	Country	Knowledge Economy Index: Top 5 countries & UAE	Economic Incentive and Institutional Regime	Innovation	Education	ICT
1	Denmark	9.6	9.7	9.6	9.8	9.3
2	Sweden	9.5	9.2	9.8	9.4	9.7
3	Finland	9.4	9.5	9.7	9.8	9.6
4	Netherlands	9.3	9.2	9.5	9.3	9.4
5	Norway	9.3	9.3	9.1	9.6	9.2
42	UAE	6.7	7	6.7	4.8	8.2

out of 134

In 2007, the Institute for Innovation & Information Productivity (IIIP) conducted a survey study to come up with innovation confidence index indicator across 25,000 individuals in 25 countries. The purpose of the indicator is to perceive willingness of people and nations to accommodate innovation. UAE ranked the first with a score of 76 compared to 44 in Finland, 68 in Brazil, 60 in China, 58 in US, and 55 in UK. The report supported this result by indicating that the innovation confidence is high in UAE because it is a growing country (Levie, 2008). This result contradicts the previous conclusion on changing mentalities in this region. The difference between the two studies is almost three years, which is a short period to get the culture changed. Although the UAE ranked as the most confident, the production rate is much less than the consumption rate in the country.

1.3 Problem Statement

Innovation has been identified as a main factor for success and sustainability. Therefore, governments, organizations, and firms have understood the importance of innovation and have made progress in implementing it. However, measuring innovation has always been a challenge and research on using KPIs in measuring innovation is very limited in the UAE context.

1.4 Aim of Study

My aim is to spread innovation awareness in firms working within UAE by revealing the impact of innovation on economies and companies. Furthermore, the aim is to enable the effective use of KPI to enhance business performance. This aim will be achieved by reaching the following objectives:

- Investigate the usage of KPIs in organisations and their effectiveness in enhancing performance through influencing behaviour.

- Examine the use of KPIs in managing innovation

- Investigate how innovation KPI can influence innovation in UAE.

1.5 Research Questions

The following questions are raised to address the topics of the dissertation and to understand the objectives better:

- What is the impact of KPIs implementations on team and individual performance?
- What are the frameworks and practices used by UAE firms aiming to implement innovation KPIs?
- What are the critical success factors and challenges which require attention while implementing innovation KPIs framework in UAE organizations?

1.6 The Value of the Dissertation

The study will provide a more comprehensive understanding of KPIs and innovation. It will also examine the utilization of KPIs in managing and measuring innovation. The outcome of this study can encourage some UAE organizations to incorporate innovation in their strategies by providing a smooth KPI methodology to handle and control innovation.

1.7 Dissertation Structure

The dissertation is structured based on the research questions. Therefore, the study is divided into the following chapters:

Chapter 2: Innovation

The third chapter will present the various definitions of innovation. It will also explore the direct and indirect advantages organizations will gain by implementing innovation. Further, it will examine the components, theories, models, and sources of innovation. The internal and external triggers for innovation and its lifecycle will also be discussed. In addition, the chapter will investigate the incorporation of innovation in organizations and the resulted challenges. Moreover, we will review the use of innovation measurement techniques. At last, innovation in the UAE will be discussed.

Chapter 3: Key Performance Indicator (KPI)

This chapter will introduce the KPI topic and its organizational benefits. It will explain the principles of performance measurement and the selection criteria. Moreover, performance measurement implementation and its frameworks and approaches will be reviewed. Later, KPIs weaknesses, challenges, and reasons of failures will also be explored. Finally, the chapter will examine the effect of KPIs on team and individual effectiveness.

Chapter 4: Innovation KPIs Methodology

This chapter is meant to provide a summery and holistic understanding of using KPIs to measure innovation. Therefore, we will discuss the role of strategy in incorporating innovation. The chapter will also study the most appropriate innovation framework to utilize. Furthermore, the linkage between innovation and organizational internal factors will be studied and information on building innovation measurement model will be provided.

Chapter 5: Research Methodology

The research framework and methodology will be discussed in this chapter. Research objectives, questions, and approach will be analysed. In addition, interview protocols and the use of semi-structured interviews will be discussed. Also, interview questions will be listed. Moreover, the selection methodology for the cases is examined. Furthermore, briefs about the interviewees and their organizations will be presented.

Chapter 6: Case Study Analysis

This chapter provides information on the cases studied with regards to innovation KPIs. The information will be grouped and categorized based on the objectives and questions presented in Chapter 5. Also, the outcomes will be compared across organizations to present better analysis. Furthermore, the outcomes will be discussed with an expert who has deep understanding of innovation and KPIs to have a different view on the findings.

Chapter 7: Conclusions and Recommendations

This chapter reveals the findings reached from the case study analysis. Additionally, the conclusion and recommendation of this research will be stated. The conclusion will be organized to meat research objectives. The recommendation will present suggestion for the case studies to improve their innovation KPIs methodologies and it will present advices to improve innovation in UAE in general. At last, the chapter will explore limitations faced this research and potential future work that can be performed.

2.1 Definition

Innovation has many definitions. According to The Oxford American Thesaurus of Current English (1999), innovation means “new method/device/measure, introduction, modernism, modernization, novelty, change, alteration, variation, transformation, metamorphosis, renovation, restyling, recasting, remodelling, coining, neology, neologism.” Also, Webster’s Third New International Dictionary (1993) defines innovation as “the introduction of something new” and as “something that deviates from established doctrine or practice : something that differs from existing forms.” Similarly, Oxford describes innovation as “the alteration of what is established by the introduction of new elements or forms.”

The above definitions agree on that innovation has to introduce new idea, product, service, or process. At the meanwhile, the newness can be generated by altering the existing understanding, use, or practice. The academic definitions can be applied generally on all aspect of life. Since this study is focused on innovation from the business perspective, we will explore the business definitions of innovation.

Innovation has a more precise definition in business concepts. Tidd & John Bessant (2009) describe innovation as gaining value or worth by bringing imagined ideas into existence. Similarly, Baregheh, Rowley and Sambrook (2009) identified innovation as developing or improving items that can be sold in markets using multiple organizational routines with the purpose of striving and gaining competitive advantages in the markets. Correspondingly, Westland (2008) stated that innovation can be realised by grouping and/or developing features to come up with unique products and services or to create new needs and market segments.

The above three definitions explains that the end result is the key behind business innovation. Companies have to realize values out of innovation that is aligned with firms’ strategy. There are many forms through which organizations can benefit from innovation. For example, new products or services, improved products or services, and new markets or consumers are innovative results organizations look for. In the next section, we will explain in details the advantages of business innovation.

Another research has looked at innovation from three angles. The first angel looks at processes which produce the same results or outputs with reduced resources or inputs to lower the cost. The second angle is concerned with product innovation by producing new or enhancing the available products and services. The development of new management models is considered as the third organizational innovation angel (Sartorius, 2006).

2.2 Organizational Benefits from Innovation

Innovation can affect any aspect and area in organizations. Therefore, the benefit organizations can gain from implementing innovation is vast. In this section, the direct and indirect benefits of innovation will be explored.

2.2.1 Direct Benefits

One of the main benefits companies can acquire from innovation is competitive advantage. Bowonder et al. (2010) and Aghion et al. (2001) explain that companies like IBM depend on innovation to outperform their competitors. There are four strategies identified by Bowonder et al. (2010) that can be used by companies to do better than competitors. The first strategy through which innovation can position a firm ahead of competitors is technology leveraging. FedEx used this strategy by implementing Radio-Frequency Identification (RFID) solutions to track their deliveries. FedEx minimized the lost and misplaced packages by being the first to implement this technology in logistics field. Another innovation strategy that can make companies lead the market is future proofing by eliminating any future uncertainty. For example, there are current views that future energy will depend on sources other than oil. For that reason, Toyota is producing engines with different fuel systems like patrol, diesel, hybrid, and electricity. The third strategy is tightly coupled with lean development to cut cost, reduce waste, and optimize resources via innovative techniques. Adobe depends on this strategy by using a software development lifecycle named 'Agile', which enabled the company to introduce new products and enhancement in shorter time with better quality (Bowonder et al., 2010, p. 26). The last strategy is by partnering with other firms to come up with innovative results. For example, DuPont partnered with Genencor to produce corn based fibre in order to compete in the fibre industry. Other companies like Pixar and Disney used partnering strategy to compete in the market by sharing information, risks, and assets.

Moreover, innovation leads to growth. During the period of 2000 to 2007, innovation was responsible of 66% productivity growth of UK private sector (Westlake et al., 2009). Based on the business definition for innovation explained in section 2.1, innovation is strongly linked to introducing new products or opening new markets for existing products. Consequently, product development leads to firms' growth and profitability as indicated by Ahlstrom (2010). For example, Apple reported 78% increase in the profit for the third quarter of 2010 compared to 2009. The firm's revenue jumped to $15.7 billion because of the increasing demand for iPhone and iPad products (Waters, 2010). iPad, the newly introduced product of Apple in 2010, contributed to the quarter's revenue by 52% (Ashford, 2010). Also, Adobe Systems Incorporation has registered profit of $148.6 million in the second quarter of 2010, which is 18% higher than the 2009's respective quarter. The rise is connected to the introduction of Creative Suite 5 product developed by Adobe as reported by Kell (2010).

Furthermore, researches indicate that R&D, patents, and trademarks have direct effect on the financial value of the firms in the market. That is because investors appreciate not only the tangible assets of the companies, but also their intangible resources; especially in the industrial fields (Sandner, 2009).

2.2.2 Indirect Benefits

Bowonder et al. (2010) indicate customer satisfaction as one of the benefits that could result from innovation. Taking into account the different needs and, therefore, customize the products accordingly will improve consumers' fulfilment. For example, Toyota uses a common car skeleton to produce couples of customized cars to suite different cultures like Africa, America, Asia, and Europe.

Another important factor that imposes innovation on companies is to decrease the cycle time to enter the market as identified by Bowonder et al. (2010). Quad-core processors were introduced initially by AMD. However, Intel innovatively reduced the cycle time to produce such kind of processors; consequently, Intel quad-core processors were being sold in the market six months earlier than AMD.

Currently, environmental friendly or green is one of the mega trends in the world. This concept considers reducing energy consumption, reducing environmental pollution, and reducing natural resources waste. Innovation is being vastly injected into projects to deliver green centric products and solutions. For example, Sweden has started promoting ethanol cars to reduce car pollutions. By 2000, only 2% of Sweden cars were using this green fuel while 15% of the cars were using ethanol by 2009 (Leavy 2009).

2.3 Components of Innovation

To implement innovation strategies, organizations have to identify the different components of innovation. These components facilitate the innovative activities in firms.

2.3.1 Research and Development (R&D)

R&D is considered one of the main parts of firms' innovation. That is because the role of R&D is to perform researches in specific fields that will develop companies further. Therefore, R&D is considered ideas generator for each organization. Blank (2010) clarifies that there is a relation between R&D and innovation. She also predicts that R&D spending results in innovative initiatives. Also, research by Kim and Park (2010, citing Fabrizio 2009) identified that a firm's internal and external R&D are used in evaluating its innovation maturity. In addition, innovative improvement and growth have positive correlation with R&D efforts (Aghion et al., 2001). R&D efforts are very important for nations that UK is encouraging R&D spending by presenting R&D tax credits. On the other hand, only 11% of the total spending on innovation is allocated for R&D in UK organizations (Westlake et al., 2009).

2.3.2 Patents

In 1899, Charles H. Duell, a commissioner of the United States Patent and Trademark Office, said "everything that can be invented has been invented" (Hambrecht, 2008, p. 74). The commissioner had extremely short vision to think the way he did. Is there an end to innovation?

Office of Science and Technology Policy in US (2009, p. 15) states that "Intellectual property is to the digital age what physical goods were to the industrial age." The office is responsible of setting rules and policies to protect the disclosure of such properties and, therefore, promote intellectual innovation. Also, based on Gallini (2002), the US patent system has been set and reformed to encourage more innovations. On the other hand, Gallini identified that such system prevents utilizing the invention fully by the nation until the patent lifetime is over.

Governments are treating patents exactly like any other belonging because they realize how important patents are for their economics and nations. Therefore, those governments are setting rules, procedures, and systems to protect patents not only locally, but also internationally. On the other hand, the patents lifetimes have to be balanced to appreciate the patents and the people behind them, and to make sure that patents are being fully used for the benefits of nations. Over decreasing the lifetime will depreciate the patents while over increasing the lifetime will reduce nations' benefits out of the patents.

Although the number of patents have positive indication, this number is not as important as the number of value gained, implemented patents (Sandner, 2009). The real benefit comes after implementing those patents; especially if the implementations are success.

2.3.3 Organizational Environment

Organizational environment is defined as "the pattern of shared values, norms, and practices that distinguish one organization from another" (Higgins & McALLASTER, 2002, p.76). The environment provides employees with priorities and directions towards reaching objectives. Innovative organizational environment will cause employees to accept innovation as a value and it will cause employees to offer commitments towards this value (Naranjo-Valencia, Jimenez & Sanz-Valle, 2010). So, there is no doubt that innovation is strongly influenced by the culture.

In order for employees to be innovative, they must be provided with the right tools and skills. Once they have the competencies and means, they need to be motivated to use their knowledge and tools to come up with innovations. Research emphasised on using HR systems to create innovation encouraging climates (Lau & Ngo, 2004).

According to Anderson and M. A. West (1998) Innovative climate can be encouraged by 1) building a shared vision for group(s) of employees to provide them with clear objectives and directions to follow. 2) Allowing employees to participate in decision making will construct a secured-job environment which encourages employees to work on long term goals. 3) Clear performance measures, performance appraisals, teamwork, and interactions are essential factors to emphasis on task orientation characteristic of innovative environment. 4) Teams require different types of support throughout their executions. The first type defines innovation performance through KPIs, written guidelines, and verbal instructions like exampling, using figures of speech, and symbolizing (Anderson & West, 1998; Higgins & McALLASTER, 2002). The second type of support is providing the teams with the required resources, tools, and trainings to enable the employees to perform (Lau & Ngo, 2004; Anderson & West, 1998).

2.3.4 Creativity

Creativity is defined as having novel ideas. Creative ideas are the roots of innovation. Normally innovation is built and developed upon ideas. Therefore, creativity is generating original ideas while innovation is the realization of creativity. To facilitate implementations, ideas have to be supported with initial study on its implementation methodology, for example, cost, project timeframe, and revenues. To implement creative thoughts, there must be a system within organizations to manage and accomplish tasks easily. Such system consists of discipline, processes, and rules to regulate and control the activities (Levitt, 2002; Prajogo & Ahmed, 2006).

On the other hand, people, who just bring up ideas without taking responsibilities of implementing them, are considered irresponsible and are trying to attract management attention rather than benefiting organizations (Levitt, 2002).

2.3.5 Leadership and Risk Taking

Risk is always associated with implementing innovation. Firms always doubt the market expectations towards a certain product or service. Therefore, taking risk by implementing an innovation is the only way to find the real attraction of that product in the market. In addition, people are encouraged to take risks when they are presented with genuine justifications and forecasts regarding the implementation (Kanchan & Gupta, 2009).

2.3.6 Knowledge Management

Knowledge is considered one of the inputs to the innovation. As we will explain in the Innovation Theories Section 2.4, sustaining innovation is strongly coupled with gradual improvement. Also, ideas generation is one of the most important stages in innovation. Companies must maintain the results of this phase for future exploration. Therefore, organizations have to pay attention to their knowledge management in order to acquire new information, keep the existing knowledge, analyze and evaluate the findings, communicate information between employees, and store such knowledge in systems to be easily retrieved (Adams, Bessant & Phelps, 2006; Prajogo & Ahmed, 2006).

2.4 Innovation Theories

There are different theories and concepts to implement innovation. These theories concerned with the sources and implications of innovation in organizations.

2.4.1 Closed Innovation

Closed innovation refers to the process used by organization to seek innovations. This theory is linked with firms controlling the whole process of innovation like R&D, design, production, and marketing. Companies used to follow this philosophy because they believed that intelligent brains have to work in the company to generate innovations sparks. This philosophy also supports the opinion that firms have to discover the inventions themselves to gain the market. In addition, firms followed this opinion used to hide their ideas to prevent their competitors from using the ideas for profit (Chesbrough 2006).

2.4.2 Open innovation

Rather than having full control over the ideas and their applications, open innovation promotes using both internal and external ideas to innovate. This philosophy also endorses using internal and external tools and paths to commercialize innovations. Using this theory, firms can use ideas generated internally or from external R&D labs to start innovating. Additionally, the right exploitation of internal and external elements is the key to market gain; rather than generating ideas as the case of closed innovation (Chesbrough, 2006; Chesbrough, Vanhaverbeke & West, 2006). This theory promotes generating profits either from using others' ideas or from selling internally developed ideas to others.

2.4.3 Sustaining and Disruptive Innovation

Sustaining innovation refers to the use of innovation to maintain growth rates and leadership in established markets. Organizations would mainly concentrate on enhancing their current services and products (Kohlbacher & Hang, n.d.; Georgantzas & Katsamakas, 2009; Hurmelinna-Laukkanen, Sainio & Jauhiainen, 2008).

Disruptive innovation is linked with the introduction of new service or product in the existing market place including features that are not valued initially. However, the innovation grows fast because of its simplicity and easiness. Competitors, in such cases, feel disrupted with the innovation since it continues dominating the market (Kohlbacher & Hang, n.d.; Georgantzas & Katsamakas, 2009; Hurmelinna-Laukkanen, Sainio & Jauhiainen, 2008). Blackberry devices and services are an example of a disruptive innovation. Initially, Blackberry were very unpopular and attracted little attention compared to other smart phones because all smart phones had web browsing capabilities to view emails and use chat applications. However, blackberry provided very user friendly devices and applications which allowed more communication to take place. Therefore, the Blackberry devices dominated the current market very quickly.

2.5 Innovation Models

There are different approaches to implement innovation. Organizations can select the approach that best suit their strategies. In this section, both Linear and Chain-Linked Models will be explored.

2.5.1 Linear Model

The Linear Model is very famously used in organizations since it involves using the foundation steps towards innovation. The model consists of four stages that are research, development, production, and marketing. This model is preliminary and it is focused on product development. Also, this model lacks the feedback mechanism. This will cause barriers with clients and customers for not embedding their views in product development (Kline & Rosenberg, 1986). Another issue with this model is that research does not always take you to development. Simply, science does not lead you to product design (Edquist & Hommen, 1999).

2.5.2 Chain-Linked Model

Instead of focusing on research, Chain-Linked Model is centralized on design; however, it incorporated other innovation processes like feedback. Kline & Rosenberg (1986) identified different elements and paths using which innovation can be realized. Figure 1 presents the model and the routs. The main route to innovation as claimed is by having a design in mind which is developed and tested to be produced for the market. This route is marked as route C in the figure. To overcome the Linear Model weaknesses, the authors also incorporated feedback between and across those elements. In other words, the feedback can bring the invention from the production stage back to the development or design stage depending on the need. The feedback routes have been identified as f and F in the figure. The model also implies that research results can be registered as knowledge, which will be used in different elements of the C route. Also, research outcomes can directly affect the design and invention. Moreover, the result of innovation can be used as feedback to refine or to provide different perspectives of the researches previously conducted (Kline & Rosenberg, 1986).

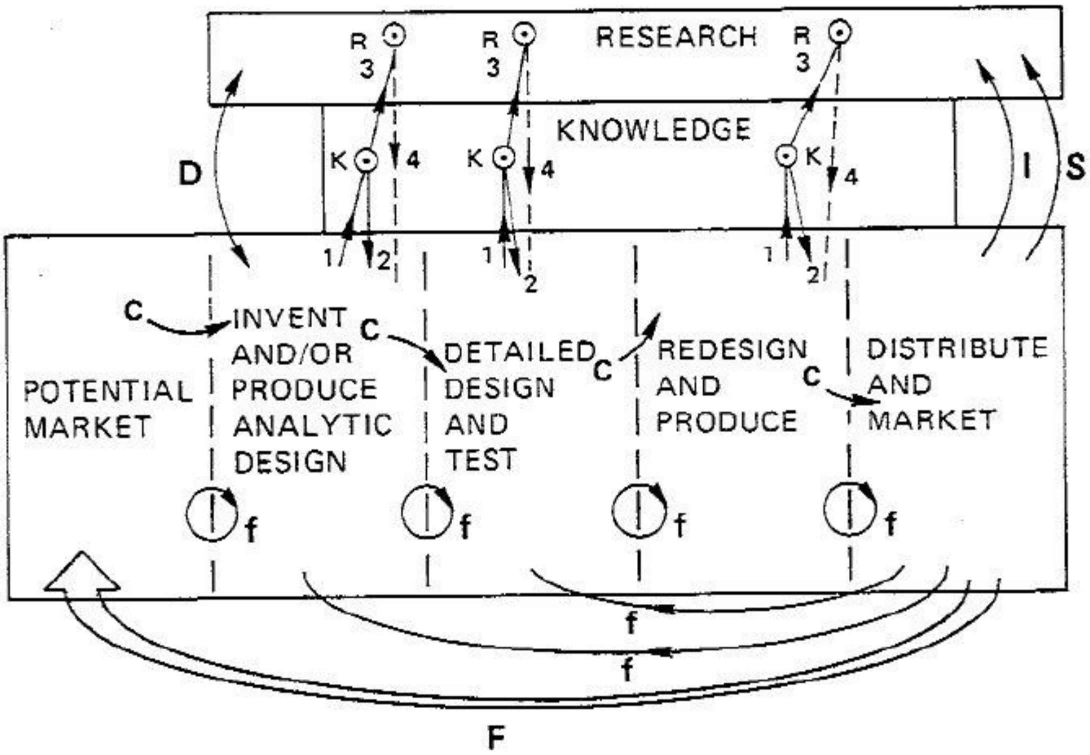

Figure 1 Chain-Linked Model (Kline & Rosenberg, 1986, p.290)

2.6 Sources of Innovation

R&D is one of the main sources of innovation as described in Research and Development (R&D) Section 2.3.1. Based on the open innovation theory, internal and external R&D results can be used to innovate. Moreover, end users and customers are good sources for innovation. Understanding the needs and solving clients problems with innovative means are one way of discovering innovation (Filippetti, 2011; Morden, 1993; Reichstein, Salter & Gann, 2008). Similarly, suppliers stimulate innovative products and processes if they are given means of communications (Filippetti, 2011; Santamaría, Nieto & Barge-Gil, 2009; Reichstein, Salter & Gann, 2008). Also, research centres like universities contain huge knowledge and information that can be used to innovate (Filippetti, 2011).

Apart from human sources, innovation can be resulted from other factors (Drucker, 2002). Unexpected occurrences can help firms innovate. For example, IBM manufactured a computer machine targeting banking sector. While banks did not invest in computers, libraries acquired such machines. It was unexpected that libraries will drive IBM's machine to innovation. Also, disagreement between outcomes and expectations could be a source of innovation. The shipment industry for instance was almost dead at some point of history. All expectations were negative towards that industry and towards sea freighting business. Innovation came in place to use containerized shipments, which boosted up the business. Moreover, process needs can stimulate innovation. An example of that would be using highway reflectors in Japanese highways to smoothen the traffics. In addition, market and industry changes can bring innovation. For example, in 1969, the financial market started changing which stimulated three graduates to start the first brokerage business. Their move brought huge success for them. Furthermore, paying attention to demographic changes is another way to be innovative. The Japanese understood that the number of workers in manufacturing will decrease and therefore they started innovating in robotics. Currently, Japanese are very well known for their robotics advancements. Likewise, innovators can exploit the change in perceptions between people to bring profits for them. The current perception about health and diets is creating big opportunities for magazines, weight clinics, and organic food processors to gain market shares (Drucker, 2002).

2.7 Internal and External Innovation Triggers

Innovation can be sparked by either internal or external triggers. These triggers should be analysed and addressed carefully to get better results.

2.7.1 Recession

Studies conducted by Roberts (2003) and Assalama (2009) proved that market recession is one of the triggers to innovation. The studies explained that the next phase of the recession is growth. Therefore, innovations came up during the recessions have good changes to grow once the recessions are over. A good example of this case is First Direct Service offered by Midland Bank in UK in 1998 (Roberts, 2003). This service lunched during a recession to offer customers with telephonic banking services 24 hours a day. Once the recession is over, the services received subscription of 12,500 clients a month.

2.7.2 Imitation

Organizations tend to form a network consisting of firms which share cultures. Such networks lead to continuous references and comparisons between members. As a result, if one member innovated, the rest will have to follow in order to keep up with the network (Budros, 2000; Assalama, 2009). For example, the innovation of LCD TVs was mimicked by all TV manufacturers in order to compete along and to not loose market shares.

2.7.3 Market Demands

Demands to innovate can be created by end users and by market expectations. For example, the UK government initiated a project to provide innovative services with better quality and efficiency. Government rules and regulations are also considered a demand for innovation to update and align organizations' processes with the new governmental rules (Assalama, 2009; Deppe et al., 2002; Dunleavy et al., 2006; Drucker, 2002).

2.7.4 Globalized Competition

Globalization led to international competition between organizations (Gorodnichenko, Svejnar & Terrell, 2008). As a result, firms with high competition pressure are more stimulated to innovation to overcome quality and high cost issues. Also, new requirements and new chances are faced when firms are globalized (Helfer, 2006). Such globalization results will encourage innovation as a tool to address the new challenges and opportunities.

2.7.5 Unpredicted Incidences

Co incidents may lead to innovations. We have already explained in Sources of Innovation Section 2.6 that some inventions succeeded out of luck. Furthermore, unpredicted failures trigger innovation. Ford Edsel brought a big failure for Ford; however, it stimulated Ford to make product lines based on lifestyle marketing segmentation rather than income (Drucker, 2002).

2.7.6 Management Decisions

Management structure and decisions are keys to innovation implementations. Sometimes, innovation decisions are made by senior managers because they found benefits in implementing the innovation (Klein & Sorra, 1996). Also, the model of having organizations with headquarters and mother companies encouraged mimicking an innovation to corporate business units (Assalama, 2009).

2.8 Innovation Lifecycle

Hargadon & Sutton (2001, pp. 158-159) have explained the lifecycle of innovation in their famous article named Building an Innovation Factory. They argue that ideas are the foundation of any innovation. Therefore, they have identified four stages of ideas processing which will lead to innovation.

- 'Capturing Good Ideas': old ideas are the sources of the new ideas. Therefore, people have to register ideas that are encouraging. Also, in this stage, those ideas have to be analyzed and developed to see what potentials they can produce.
- 'Keeping Ideas Alive': ideas have to be remembered to be used in future. People use different ways to remember ideas. For example, individuals might collect items that stimulate ideas. Others might talk about some ideas or they might stick photographs and images on walls to remember them.
- 'Imagining New Uses for Old Ideas': once ideas are captured and kept alive, people have to use them to stimulate new functions and applications.
- 'Putting Promising Concepts to the Test': ideas are appreciated only when they can be accomplished and tested. If ideas pass the tests, they have to be integrated into companies' processes and products.

Hammer (2006), president of Strategic Business Innovation, identified five stages for innovation that are brainstorming, concept development, business and technical evaluation, commercialization, and improvement.

On the other hand, linking innovation to strategy is missing during the innovation lifecycle. Instead, innovation is used indirectly to achieve strategic objectives like obtaining competitive advantage.

2.9 Injecting Innovation in Organizations

Firms should understand that innovation is very important for organizations to sustain growth and to gain competitive advantage. Therefore, firms need to incorporate innovation to succeed. Innovation can be injected in organizations by focusing on the following points (Kanchan & Gupta, 2009; Phillips, 2007).

- Incorporating innovation in the vision. Since all business drivers come from vision, innovation has to be stated and conditioned in the vision to influence the importance of this subject to the organization's success (Kanchan & Gupta, 2009; Phillips, 2007; Siguaw, Simpson & Enz, 2006; Anderson & West, 1998). Additionally, this vision and innovation as a value have to be reinforced periodically to keep the innovation perception intact between employees (Phillips, 2007).
- Communicating. Employees have to know that innovation is counted. They should have channels through which ideas and viewpoints are communicated. Also, using systems to register and discuss ideas could be a very nice communication channel (Phillips, 2007; Kanchan & Gupta, 2009). Management has to communicate realistic expectations and targets to employees (Phillips, 2007).
- Providing the needed tools and trainings. Firms have to provide test labs, infrastructure, machineries, spaces, and etc. to enable employees to innovate. Furthermore, the physical surroundings should stimulate creativity (Phillips, 2007; Kanchan & Gupta, 2009; Siguaw, Simpson & Enz, 2006; Anderson & West, 1998). Moreover, trainings will teach employees about policies, processes, and techniques to produce and implement creativity and innovation (Phillips, 2007).
- Building the innovative culture. Management support and guidance are required to show commitments towards innovation. Also, introducing the norm of risk taking is also encouraged (Anderson & West, 1998; Kanchan & Gupta, 2009; Phillips, 2007).
- Compensating. Creativity and innovation have to be compensated to motivate employees towards innovation. Compensations will also emphasis the value of innovative outcomes to the management (Kanchan & Gupta, 2009; Phillips, 2007; Klein & Sorra, 1996).
- Measuring. Metrics mediate visions and objectives to compensations. It will also provide employees with more elaboration on management expectations. Also, it will support objectives and goals since those measures have to be

collected and calculated periodically (Crossan & Apaydin, 2010; Phillips, 2007).

2.10 Innovation Challenges

There are internal and external factors that hinder organizations from pursuing innovation as examined by Robson and Kenchatt (2010). Understanding those factors will help firms to decide and understand how to innovate. Based on the results of innovation survey performed by the UK Department of Enterprise, Trade, and Innovation, the following are the barriers to innovation identified by Robson and Kenchatt (2010):

- Innovation is too expensive.
- Risk of innovation is high.
- Cost and availability of investment.
- Shortage of skilled experts.
- Inadequate knowledge on market and technology.
- Ambiguous demand on innovative products.
- Existing companies control the market.
- Rules and regulations towards innovation.

We have described the advantages behind adapting innovative strategies in Organizational Benefits from Innovation Section 2.2. In contrast, innovation can have negative impacts. Innovating without correctly positioning the organization in the competitive market will result in under planned profits (Millier & Palmer, 2001). Thus, firms have to adopt market orientation techniques by linking innovation to clients, market requirements, and competitors' capabilities (Millier & Palmer, 2001; Han, Namwoon Kim & Srivastava, 1998). Market-oriented innovation reduces the behavioural adoption effect of innovation newness on targeted clients. In other words, clients will have less new usage techniques to adopt so that he/she can use the newly innovated product or service. As a result, the innovation has a better success opportunity (Atuahene-Gima, 1996). However, market orientation may hinder new products development and, rather, encourages firms to focus on products enhancements. Aaker (1988, cited in Atuahene-Gima 1996)) argues that firms are challenged to produce market-oriented innovations that are within the context of their internal capabilities and within the context of gaining competitive advantages. Day and Wensley (1988, cited in Atuahene-Gima 1996)) also support the same argument.

In addition, innovation is linked with high error frequencies. Therefore, it involves high costs (Russo, Cardillio & Perito, 2003). To recover the cost, the market has to have regulations that support innovations; otherwise, firms which incorporate imitation strategies will extract the majority of innovations profits (Teece, 1986). An example of such regulations is patents, which we have already discussed in Patents Section 2.3.2. Moreover, innovations have to be delivered to market in accordance to strategic plans because any delay in delivery could reduce the company's profit margin from the innovations (Russo, Cardillio & Perito, 2003). We already mentioned the competition between AMD and Intel on their Quad-Core processors in section 2.2.2. When AMD took very long time to market their processor, Intel benefited from that by marketing their product six months earlier than AMD and, therefore, Intel already gained market shares when AMD's product was introduced.

2.11 **Innovation Measurement**

Organizations need to control and monitor their innovative activities. Therefore, they need a mechanism to measure the progress of the innovation projects to achieve their innovation strategy. In this section, we will explore the innovation metrics and measurement frameworks.

2.11.1 Evolution of Innovation Metrics

The way innovation has been measured improved over time as the Table 3 displays (Milbergs, 2006; Rothwell, 1994). The first generation of indicators were driven from the Linear Model (section 2.5.1) and from the closed innovation theory (section 2.4.1). Therefore, the indicators were more focused on measuring the inputs to the innovation processes such as the cost of research and development and the cost of employees' trainings (Milbergs, 2006; Rothwell, 1994). The second generation KPIs available in Table 3 shifted from using linear to nonlinear models of innovation like Chain-Linked Model, which is covered in section 2.5.2. Consequently, the indicators of this generation considered the outputs of the scientific and technological activities and the outputs of the middle processes. Examples of middle processes indicators are the number of innovated processes and products, the number of gained patents, and the number of scientific articles published. The further improvement on indicators implied having surveys and indexes that evaluate innovation more broadly by including external factors such as market demands as explained in section 2.7.3. This implication resulted from the adoption of open innovation theories (section 2.4.2). The third generation of indicators allowed nations to be evaluated and ranked based on innovation indexes. The fourth generation of indicators accommodates the current understanding of innovation components, which is examined in section 2.3, such as knowledge management, risk taking, and organizational environment. Therefore, it counts for intangible assets, human capital gain, organizational network gains, and risks. This is referred to as 4^{th} generation process indicators as found in Table 3.

Table 3 Evolution of innovation metrics (Milbergs, 2006)

1^{st} Generation **Input Indicators** **(1950s-60s)**	**2^{nd} Generation** **Output indicators** **(1970s-80s)**	**3^{rd} Generation** **Innovation Indicators** **(1990s)**	**4^{th} Generation** **Process Indicators** **(2000 + emerging focus)**
• R&D expenditures • S&T Personnel • Capital • Tech intensity •	• Patents • Publications • Products • Quality Change • •	• Innovation surveys • Indexing • Benchmarking innovation capacity •	• Knowledge • Intangibles • Networks • Demand • Clusters • Management techniques • Risk/Return • System Dynamics •

2.11.2 Innovation Measurement Frameworks

Adams, Bessant and Phelps (2006) carried out a comprehensive review of the different aspects of innovation management measurement, and constructed a framework to address the dimensions of innovation to be measured. In the framework, the authors provided seven categories used to study innovation in organizations. Correspondingly, sub dimensions were listed to identify the areas of quantification. Those categories and sub-categories can be considered as KPIs because they are aligned with SMART KPI selection criteria found in section 3.4.1. Also, based on accurate measurement principle examined in section 3.3.3, processes information and metadata can be derived from those KPIs to calculate their numeric representations. The following are the KPIs identified by Adams, Bessant & Phelps (2006, pp. 26–38):

- ‘Inputs management’: it involves the resources which enable innovations to initialize and start.

- ‘Knowledge management’: it is concerned with how explicit or implicit knowledge is captured, analyzed, communicated, and stored in organizations.
- ‘Innovation strategy’: innovation has to be part of the strategy so that plans and actions are set to meet goals pertaining to innovation.
- ‘Organization and culture’: this category is about the grouping of employees and the grouping cultures within which employees work.
- ‘Portfolio management’: it is the way organizations prioritize their projects and resources allocation to ensure that the best projects are selected and the most resources utilizations plans are placed.
- ‘Project management’: project management is required to transition the inputs into outputs.
- ‘Commercialization’: this category is considered the implementation of the innovation either by marketing the products or implementing a set of techniques.

Table 4 summarizes the dimensions and sub-dimensions identified by the researchers to measure innovation in organizations.

Table 4 Dimensions and sub-dimensions of innovation measurement (Adams, Bessant & Phelps, 2006, pp. 26–38)

Dimension	Sub-dimension
Inputs management	○ People or human resources. ○ Physical and financial resources. ○ Tools.
Knowledge management	○ Idea generation. ○ Knowledge repository. ○ Information flows.
Innovation strategy	○ Strategic orientation. ○ Strategic leadership.
Organization and culture	○ Culture. ○ Structure.
Portfolio management	○ Risk and return balance. ○ Optimization tools.
Project management	○ Project efficiency. ○ Tools. ○ Communications.

	○ Collaborations.
Commercialization	○ Market research. ○ Market testing. ○ Marketing and sales.

Those identified KPIs will have different impact and priority towards realizing organizations' objectives. Therefore, there is a need to identify their ranking and impact weight. (Adams, Bessant & Phelps, 2006, pp. 26–38) used AHP method (which is further explained in section 3.4.4) in conducting their study to examine the KPIs used in technologically advanced firms. AHP method enabled them to come up with a hierarchy representing groups of innovation dimensions and their KPIs as demonstrated in the Figure 2 below.

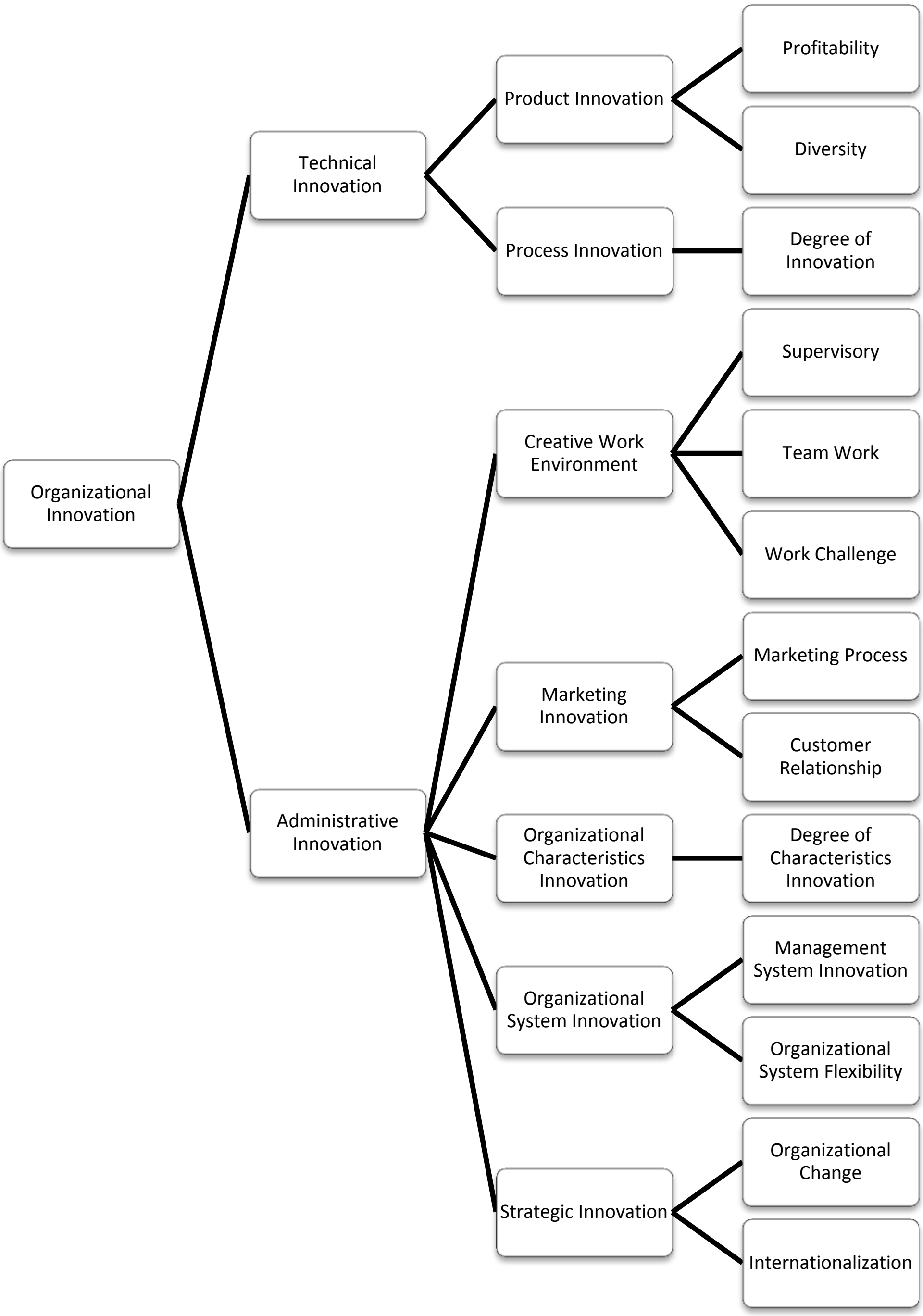

Figure 2 AHP and KPIs (Tsai, Chuang & Hsieh, 2008)

Each node will have a weight and a rank based on its importance to realize the firm's strategy and vision. The weight will determine the affect of the area to the organizational innovation. The rank will identify the most important areas to the innovation. After that, a formula has to be established to calculate the overall Organizational Innovation (OI) figure based on the weights and ranks. Initially, the OI will be calculated and set as a benchmark for further evaluations. On future calculations, it will be possible to determine the performance of organizational innovation by comparing against the previous figures and by comparing against the established goals.

Apart from AHP, the KPIs identified by Adams, Bessant and Phelps (2006), and Tsai, Chuang and Hsieh (2008) can also be managed using Balanced ScoreCard Method explained in section 3.6.4. However, this method is used to evaluate overall firms' performance towards their objectives (Flores, Al-Ashaab & Magyar, 2009). As a result, the method has four fixed areas of importance like finance which is not strongly related to innovation. Therefore, Flores, Al-Ashaab and Magyar (2009) came up with Innovation Balanced Scorecard (IBS) to customize the framework for innovation performance management.

The IBS has to be divided into dimensions reflecting the firms' innovation strategy. Based on those dimensions, KPIs has to be established. One of the strategies to build IBS is to have two innovation dimensions that are processes and enablers (Rebernik & Mulej, 2002). Innovation processes were identified as idea generation, idea evaluation, project selection, project management, and implementation. The enablers are culture and values, methods and techniques, information support, internal communication, innovation steering committee, and etc. Based on those two perspectives of the IBS, KPIs and targets have to be established. Since processes are graphed cycles, measurement like cycle time could be used. On the other hand, the enablers are mostly intangible. So, surveys and interviews could be used as methods of evaluation and improvement feedback gathering.

Another strategy for building the IBS is by depending on two perspectives that are outputs and inputs measures for innovation processes (Rogers, 1998). The outputs measures can be related to the number of introduced or improved products or processes, percentage of sales from new or improved products or processes, and the number of intellectual properties acquired. Similarly, the inputs measures of innovation processes can be R&D expenditures, intellectual properties, technological purchases, marketing expenditures for new products, and expenditures related to training to use new products or processes.

Apart from IBS, a more simplistic measurement of innovation is to compare the number of successfully implemented patents over the total number of patent applications. This method is named the patent success ratio (McAleer & Slottje, 2005). There are also other measures which are focusing on developing new products

(Shapiro, 2006). Those measures will tackle the percentage of revenue generated from new products to quantify innovation.

Innovation has different aspects and dimensions as explored in this chapter. Organizations implementing innovation should have a systematic approach to manage these dimensions. In the next chapter, Key Performance Indicator (KPI) methodology will be explored and linked to innovation management.

3.1 Introduction

Stakeholders invest their capitals into organizations to gain profits. That makes investors cautiously choose the organizations in which they will put their capitals. Also, investors monitor those organizations comprehensively to make sure that their investment is producing the desired profits. Business leaders totally understand these concerns. To gain the trust of the investors and, therefore, to gain more investment in organizations, business leaders make sure that the organizations' performance is clearly provided to the investors.

Performance management is an emerging methodology used by organizations to measure their performances. The concept of performance measurement is based on that "you get what you measure, and you cannot manage a system unless you measure it"(Franceschini, Galetto & Maisano, 2007, p.109). The US accounting office defined performance measurement as "the ongoing monitoring and reporting of program accomplishments, particularly progress towards pre-established goals. It is typically conducted by program or agency management. Performance measures may address the type or level of program activities conducted (process), the direct products and services delivered by a program (outputs), and/or the results of those products and services (outcomes). A "program" may be any activity, project, function, or policy that has an identifiable purpose or set of objectives"(Franceschini, Galetto & Maisano, 2007, p.109).

Marr, Bernard, Chief Executive and Director of Research at the Advanced Performance Institute, describes Key Performance Indicator (KPI) as a modern methodology used to monitor the performance of the organization (Marr, 2010). KPIs measure the performance of an organization's key projects which links to the organization's objectives. Those objectives are set by the internal and external stakeholders to focus the organization's resources on specific goals and particular projects that provide competitive advantages. Also, the KPI has to measure any performance that is controlled by the organization. For example, political blockade on countries is out of companies' control and thus KPI measurement cannot be implemented in such contexts. In addition, KPIs have to provide future intimation on how successful an organization can become.

To measure organization's performance and to provide future indications, performance management techniques are used to convert tasks and activities executions into meaningful figures. That is performed by collecting information and data about processes and workflows either automatically or manually. A lot of companies have systemized their processes nowadays. As a result, information about processes execution is stored in databases. Stored information can be automatically gathered. On the other hand, the information of non-computerized processes has to be manually collected and converted (Kronz, 2006).

3.2 The Benefits of KPIs

Kronz (2006) examined what an organisation would gain from implementing KPIs in general and identified three such benefits. The first benefit from implementing KPI system is controlling process oriented deliverables in organizations. Processes will be continuously monitored to ensure that targets are achieved. In addition, such control will impose other practices over the processes like quality, discipline, and documentation; which will provide more transparency to stakeholders (Kronz, 2006).

The second advantage is the usage of KPIs system as a tool to assist and improve firms' performances constantly. It allows the management to monitor the state of the organization by translating the executions into meaningful numbers or quantitative indicators. It presents the health of an organization by providing the degree of satisfaction over a company's performance, once those indicators are compared against the planned targets. Consequently, underperforming processes will be subjects for improvements. Since performances are evaluated periodically against intended objectives, KPI system will also help management to detect failures or inadequacies ahead of schedule (Kronz, 2006; Sanchez & Robert, 2010). For example, if a company measures the time needed to issue an employment letter, it will be very easy to examine the effect of systematic implementation on this process.

The third gain as identified by Kronz (2006) is that indicators will lead to better decisions. Accurate and up to date figures will result in processes optimizations and efficiencies. To help in decision making, indicators have to be updated very often. Also, they have to be clearly and strongly connected to the original processes. The stronger the connection between KPI and process is, the more accurate the figure is, and the better decisions are made. The weaker the connection is, the more meaningless the KPI is; therefore, decisions will be based on unreliable factors.

3.3 Performance Measurement Principles

Organizations have to be aware of the foundation of performance measurements. The foundation determines how strong and comprehensive the performance measurement system is. The basis of such system will be examined in this section.

3.3.1 Clear Definition

Performance has to be described unambiguously. Performance has to measure processes against agreed targets. This will enable the outcome to be fairly evaluated. It will also raise the certainty about the progress and performance achievement. Performance measurement has to be set and agreed between the workers and their managers. Such agreement is considered a contract without which, employees will have different expectations even for the same task. On the other hand, a pre-specified performance will drive employees to behave inflexibly. Employees will follow the rules instead of looking for the right solution which could differ based on situations (Neely et al., 2002).

Additionally, Neely et al. (1997) concluded that performance measures have to be well documented. The performance measure record sheet has to provide holistic information about indicators. The author explains that such document has to have the title of the measure, purpose of the measure, relatedness to objective, targets, calculation formula, frequency of recording and reporting of the measure, the person responsible of measurement, source of data, the employee who acts on the provided data, and managerial actions based on measurement.

3.3.2 Performance Measurement System Design

Once the performance measurements are defined, the results can be categorized as individual and/or groups of indicators. Individual indicators have to be tactically allocated based on firms' strategy. Groups of indicators are the sets of measures that should work together to form an entity; which ultimately servers the organizational objectives. Therefore, a framework of performance measurement is selected and implemented (Neely, Gregory & Platts, 1995). Frameworks and approaches are covered in more details in section 3.6: KPIs Implementation Approaches and Frameworks.

3.3.3 Accurate Measurement

(Neely et al., 2002) Performance has to be measured correctly. Performance has to indicate the degree of what is achieved; therefore, measurement must be precise and accurate. Correct measures are also important because they are used as basis for decision making (Neely et al., 2002).

To measure performance, processes information and metadata are collected and classified as measurement points. Examples of the measurement points can be the execution duration and date of completion. The measurement points are used in calculation to come up with KPI figures that is strongly coupled with KPI definition (Kronz, 2006). These computations have to be documented for future verifications and references.

It is important to understand that KPIs have a limited lifetime after which the figures will be obsolete. Therefore KPIs have to be measured and updated periodically to reflect accurate information. Also, KPIs have life period depending on its definition. Operational KPIs exist as long as the operation tasks are performed. On the other hand, projects and portfolio KPIs are needed to ensure projects satisfaction during projects' timeframe. Once the project is over, its associated KPIs are not relevant anymore. Moreover, the KPI must be changed and modified depending on the vision of the management. For example, granting system access for end users is often linked to KPIs. Managers tend to tighten the KPI to provide faster attendance to business request and, therefore, increase customer satisfaction. In this case, KPIs are modified to reflect the new vision and management targets (Sanchez & Robert, 2010).

3.3.4 Regular Analysis

KPI interpretation is concluded from analyzing the KPI figures. This evaluation should draw how processes are aligned with targets and plans like delivery periods and sales targets (Sanchez & Robert, 2010). Hence, there must be processes and procedures to have regular meetings to discuss the indicators and, therefore, set actions based on the feedback. Such meetings have to be attended by managers and directors who monitor processes' performance and implement the agreed improvement actions (Bourne et al., 2000).

Furthermore, the effects of the performance measurement on internal and external environments have to be considered (Neely, Gregory & Platts, 1995). For example, employee satisfaction and profits can provide information on how performance measurement system affected the internal environment. Another example would be to perform customers and shareholders surveys to examine the effectiveness of the performance measurement on the external environment.

3.3.5 Linkage to Compensation

Neely et al. (2002) argue that performance has to be linked to compensations. However, they explained that employers have to be very careful in defining the link as it could have negative effects; especially, if the compensation is perceived as unfairness by the employees. Similar to the previous argument, wrong information might be provided to gain the compensation unfairly. Rather than extrinsic rewords, intrinsic means can have positive effect on employees. On the other hand, punishment can be used as a mean to force employees honour the compensation and performance system.

3.4 KPI Selection Criteria

The process of defining KPIs can result in huge number of indicators to be used. Therefore, there is a need to have a methodology of filtering and selecting them.

3.4.1 SMART

Researchers suggest using SMART criteria as a basis to develop KPIs. Based on SMART, researchers (Sanchez & Robert, 2010, p.67; Shahin & Mahbod, 2007, pp.228–229; Franceschini, Galetto & Maisano, 2007, p.168) have identified that the criteria should be followed in developing effective KPIs:

- ‘Specific’: eliminating ambiguousness and uncertainty makes KPIs more understandable and, therefore, more clear to implement and monitor.
- ‘Measurable’: once the goals are specific, they should be measurable either by quantity or quality depending on the standard or performance.
- ‘Attainable’: goals and objectives must be achievable and within reach. However, they should also be balanced between achievability and challenging.
- ‘Realistic’: objectives should have end results that are reasonable and convincing.
- ‘Timeframe’: targets should be planned with end dates or dates of deliveries

3.4.2 The “Three Criteria”

Franceschini, Galetto and Maisano (2007, p. 169) identified another KPIs selection methodology named ‘Three Criteria’ which requires each KPI to have three attributes.

Firstly, KPIs have to be 'strategic'. That means indicators have to drive the actions and projects toward achieving the strategic goals. Secondly, KPIs need to be 'quantitative' to provide information regarding accomplishment and outstanding contribution to reaching goals. KPIs have to draw the state of the objectives. Thirdly, 'qualitative' attribute should exist in KPIs to offer great value to the concerned people.

3.4.3 Treasury Department Criteria

The 'Treasury Department Criteria' is a further approach towards systemizing the KPIs filtering. This method recommends that the data collected for KPIs must exist, must be correct, must be frequently collected, must be unrestricted, and must be gathered with low cost. The method also suggests that an indicator has to provide valid interpretation, it has to offer unique indication over the rest of the KPIs, and it has to present valuable information to be used in goal evaluation. In addition, this approach urges that the 'measurement system' has to balance between different dimensions, it has to cover the strategic objectives, and it has to be beneficial like providing impact analysis (Franceschini, Galetto & Maisano, 2007, pp. 169–170).

3.4.4 SMART and Analytical Hierarchy Process (AHP) Integration

A research prepared by Shahin and Mahbod (2007) suggests using an integrated framework between SMART characteristics and Analytical Hierarchy Process (AHP) as a tool to select the most critical KPIs. AHP is used to facilitate dealing with complex decisions in three steps that are

1. Setting up a hierarchal structure with three levels. The first level represents the goal. The second level is the selection criteria which affects the decision of choosing the desired result. The third level is the alternatives or choices available to suit the goal.

2. Analyzing the nodes of the structure by providing the weight of each node. The goal node would represent 100% or 1. The criteria nodes will share the 100% based on weighted value as indicated by decision maker. The sum of the criteria nodes percentage should be 100%.

3. Evaluating the alternative nodes against the criteria nodes. As a result, the alternative nodes will share the percentage of each criteria node. After that, the sum of each percentage given from the criteria nodes for an alternative node

will represent the final percentage of the node. The same has to be applied for the rest of the alternative nodes. The sum of the alternative nodes percentage should be 100%. The higher the percentage of the alternative node, the more important the alternative or choice is to accomplish the goal (first level node).

Shahin & Mahbod (2007) claim that the integration between the SMART and AHP will result in a powerful framework for KPI selection. The SMART characteristics will be injected as the criteria level in the AHP model for selecting KPIs. Therefore, the more SMART-compatible the KPI is, the more influence it will have on the objective. The proposed framework should also consider the different SMART weights according to the goal. There might be goals which highly weighted with time; while other goals weights measurable higher.

3.4.5 Benchmarking

Benchmarking is a widely practiced instrument used to compare a firm's performance against another well known firm, which has established best practices. In case of performance measurement, benchmarking can be used to understand how a firm can setup its performance measurement system by understanding other companies' implementations of such systems. This methodology can also be used to evaluate current measurement system against well known, established systems. Benchmarking can take place between internal entities, it can occur between a firm and another in the same field, and it can take place between a firm and unrelated industry. Benchmarking involves several stages that are 1) a firm has to understand the needs for benchmarking and it has to understand its own processes, 2) select a firm to benchmark against, 3) examine the benchmarking partner's processes, 4) prepare a gap analysis between the processes of the two firms and recommend improvements and, 5) execute improvement actions derived from the findings (Enoma & Allen, 2007; Neely et al., 2002).

3.4.6 The "Critical Few"

A research examined fifteen case studies to identify the most important factors necessary for a well-designed measurement system (Sinclair & Zairi, 1995). Eight of the cases recognized that determining the critical few KPIs is one of the important factors. That is the reason why top managers select Critical Few as a model to develop KPIs. This model limits the number of indicators to the minimum. That results in a more focused monitoring and improvement goal for the organization's performance (Franceschini, Galetto & Maisano, 2007). Similarly, Six Sigma, a well-known business strategy developed by Motorola in the late 1990, relies on vital few measures to control and improve business operations (Siong Lin Ho, 2006; Woods, 2001). However, the selection must not compromise other KPIs. Instead, the selection has to maintain equilibrium of focused KPIs on financial against nonfinancial in addition to internal against external indicators (Franceschini, Galetto & Maisano, 2007).

3.5 KPIs Implementation

Many researches recommend that the performance measure should be implemented vertically and horizontally in an organization (Franceschini, Galetto & Maisano, 2007; Klein & Sorra, 1996). Vertical implementation considers looking at organization levels. Therefore, KPIs should be identified for each individual from different management levels to ensure employees concentration on meeting the objectives. In contrast, the horizontal implementation happens across functional departments' processes and sub-processes to guarantee strong implementation.

Bourne et al. (2000) separated the KPI system implementation into three phases. Depending on complexity, phases are divided into stages. The first phase is concerned with designing performance indicators through distinguishing the key strategic goals and designing indicators on the selected key objectives. The second phase seeks to implement performance indicators by applying processes, initiatives, and computerized systems to capture and present the required information on regular basis. The third phase recommends using performance indicators to evaluate the successfulness of objectives executions using the indicators and their interpretations.

Based on Bourne et al. (2000), those phases can intersect. That happens when measures are implemented independently. For example, the sales KPIs could be in the implementation phase while the customer service KPIs are still in the designing phase. Also, the authors indicate that this system has to be designed and evaluated by members from different organizational levels depending on the needs. Such evaluation should be based on processes to indicate how frequently the system needs to review its models and established aims. Moreover, the review processes should develop, eliminate, and/or modify measures if conditions or facts change. Furthermore, the reassessment should take place regularly to test the strategy and to align the performance measurement system with changed strategic goals or competitive situations.

Franceschini, Galetto and Maisano (2007) recommend high level guidelines toward implementing performance measurement system. They advise organizations to set up a group of people who will actively be involved in the implementation and to establish a uniformed set of expressions to eliminate deviated understandings. They also encourage firms to agree on KPI criteria to be followed, to select the KPI filtering methodology that will be adhered to, and to challenge KPIs against the agreed criteria.

3.6 KPIs Implementation Approaches and Frameworks

There are different approaches and frameworks that can be used to implement a KPI system. Organizations have to choose the right approach and framework depending on needs and circumstances.

3.6.1 The Auditor General of Canada approach

The approach of Auditor General of Canada is based on linking the working unit activities and plans with the objectives. This approach is divided into two parts. The first part describes the link between programs' activities and the organizational strategic goals. The first phase is executed by following five steps (Franceschini, Galetto & Maisano, 2007; Office of the Auditor General of Canada, 2008). Firstly, it is important to determine how programs and activities contribute to the organization's objectives. Secondly, critical activities within programs that are linked to the goals must be indicated in order to allow employees pay more attention to them. Thirdly, an organization has to detect the affected stakeholders and impacts of KPI implementation. Fourthly, the long and short term affects of the activities on the strategic objectives must be defined. Fifthly, an organization must determine the tasks needed to be accomplished to reach the needed goals.

The second part forms the indicators by completing four steps (Franceschini, Galetto & Maisano, 2007; Office of the Auditor General of Canada, 2008). The first step is to identify the relevant indicators which form performance expectations. The second activity is to determine the availability of information and the firm's qualifications in gathering and evaluating the information. The third action is to consider the competences of the selected KPIs to suitably arrange the operations in the direction of achieving objectives. The fourth step is to assign resources to be responsible of implementing the system.

3.6.2 The DOE/NV (U.S. Department of Energy/Nevada) approach

The below steps are performed to implement a measurement system based on DEO/NV approach (Franceschini, Galetto & Maisano, 2007; Performance-Based Management Special Interest Group (PBM SIG), 2001; US Department of Energy, 1995):

1. Discovering each process's resources, results, inputs, and actions. Flowcharts are the more common tool used to draw those processes.
2. Determining the key process actions to be considered against goals.
3. Forming standards for each critical activity identified earlier.
4. Identifying performance indicators for the activities.
5. Assigning resources to be responsible of implementing the system.
6. Starting gathering data for measurement.
7. Evaluating and reporting the real execution of activities.
8. Analyzing the reported actual performance against the previously formed activities standards.
9. Providing rectification plan for performances deviated from the objectives and goals.

3.6.3 The Strategic Measurement Analysis and Reporting Technique (SMART)

This approach is based on a Performance Pyramid model developed to link strategy to operation through forming four main levels of strategic goals and measures (Cross & Lynch, 1988; Bourne et al., 2000; Rouse & Putterill, 2003). The top level consists of the board members who form the vision of the company. The second level is where business units are formed and their respective market and financial objectives are outlined. These objectives are mainly related to short term targets of financial capabilities and profits. The objectives have to consider the long term goals of growth and sustainability. The third level is a lower level of objectives to be outlined by each business unit against its operations. These objectives have to focus on flexibility, client satisfaction, and productivity. The fourth level cascades the objectives to each department. Operational measures have to be defined based on four principles which are quality, delivery, process time, and cost.

Cross and Lynch (1988) argue that this framework considers not only past measurement, but also future improvement by considering customer satisfaction as part of the framework. SMART approach makes sure that the objectives are reflected in different level of organizations. It also ensures that external and internal business units' goals are embedded in the performance measures (Neely et al., 2002; Neely et al., 2000).

3.6.4 Balanced ScoreCard (BSC)

This method focuses on four factors that are financial, customer, internal business process, and learning and growth. Each element is weighted depending on how strategically it is linked to organization's objectives. KPIs designed based on this model will be drawn from those factors (Franceschini, Galetto & Maisano, 2007; Bourne et al., 2000; Rouse & Putterill, 2003). This tool focuses on both strategic and operational levels within organizations (Roy et al., 2000). The strategic measures indicate the general performance of the company against business objectives. The operational measures will drive the operations towards the desired strategic outcomes. Also, these measures are used to monitor special issues within business unites.

According to Lipe and Salterio (2000), the implementation of this framework is done in four stages focusing on the four factors described earlier:

1. The vision, mission, and objectives have to be understood. A strategy has to be formed to achieve the objectives. Measures have to be set to monitor and control the strategy implementation. These measures will shape the firm's BSC.

2. Each business unit with the organization has to develop its own BSC based on its objectives and strategy linking to the organizational BSC.

3. Measures, targets, and budgets are established.

4. Departmental BSC is evaluated after receiving indicators. Accordingly, firm's BSC is evaluated based on linked departmental BSC.

The authors argue that this framework provides unique BSC per department. However, departments might share common measures. This study considers the common measure to be used as a comparative measure; especially in benchmarking. Thus, the common measures will have greater impact than unique ones. On the other hand, the article explains that the unique measures will have greater impact if each department is evaluated independently.

Other authors argue that this methodology does not consider some stakeholders' interest like employees and customers in organizations' performance. They also claim that the BSC does not include dimensions like competitiveness, customers, employees, and quality. So, BSC is also not flexible enough to include indicators for such dimensions (Neely et al., 2002).

3.6.5 Performance Measurement Matrix

This approach is using a mix of financial and non-financial factors in designing performance measures. It groups indicators into either cost/non-cost or external/internal. As a result, this framework can accommodate any indicator and it balances the measures around these factors (Neely et al., 2002; Rouse & Putterill, 2003). It is argued that this framework separates the dimensions of performance measures (Neely et al., 2000).

3.6.6 Performance Measurement System for Service Industries (PMSSI)

PMSSI has been developed after comprehensively studying the services industries. Performance indicators based on this model are divided into results related like financial and competiveness, and determinants of results like innovation, excellence, flexibility, and exploitation of resources (Neely et al., 2002). Determinants shape the processes and workflows to produce the desired results. Another study conducted by Hudson, Smart and Bourne (2001) argues that this model does not capture human resources and customers as dimensions and, therefore, it is not a complete framework.

3.6.7 Macro Process Model of the Organization

Processes are clearly divided into five stages that are input, process, output, outcome, and goal. This model indicates the effects of inputs on business processes to produce outputs. Those outputs are provided to stakeholders to come up with outcomes; which ultimately affect the strategic goals. As a result, indicators should be controlling the flow of the processes in the organization to maximize the positive effects on the desired goals (Neely et al., 2000).

3.6.8 European Foundation for Quality Management's (EFQM)

EFQM is a self assessment standard; however, it defines a set of enables and a set of results for each business. The results have been designed to be measurable. This case does not fully apply on the enablers. This model can be used as helper in the performance measurement rather than an approach of designing one (Neely et al., 2002; Neely et al., 2000).

3.6.9 The Performance Prism

Focusing on stakeholders is the way Performance Prism adopted. Also, this model considers powerful stakeholders with major impact on the organization like legal entities. The following five stages are the model's approach (Neely et al., 2002; Rouse & Putterill, 2003):

1. Identify the stakeholders and their requirements.
2. Establish stakeholders' strategies and implement performance measures that will communicate such strategies.
3. Select the critical processes that deliver the strategy and define the indicators to measure them.
4. Inspect the required capabilities to function and improve those critical processes.
5. Identify the stakeholders' involvement to sustain and to enhance the capabilities.

Since stakeholders are grouped according to different interests and impacts like board members, customers, employees, contractors, and legal entities, this framework is considered holistic. Therefore, this model should measure key processes focused on balanced factors that are internal, external, financial, non-financial, efficiency, and effectiveness.

3.7 KPIs Weak Points

It is essential to understand the weaknesses of measurement systems for better understanding and better decision making. Indicators will not provide you causes; instead, it will only display alerts to grab attentions. That does not necessarily mean there is execution inefficiency. For example, inappropriate KPI definition and implementation could result with a flag to be raised. Furthermore, performance indicators models approximate the actual situation. The accuracy of the approximation depends on how well the model was established. Moreover, KPIs cannot provide information on how laws and regulations were followed. Good performance indicators can occur because of braking rules; especially, if violating the laws will provide faster executions (Franceschini, Galetto & Maisano, 2007; Performance-Based Management Special Interest Group (PBM SIG), 2001).

3.8 Difficulties in Implementing Performance Management

Recognizing the difficulties that could be faced during the implementation phase will minimize the risks of failure execution. Franceschini, Galetto and Maisano (2007) and Performance-Based Management Special Interest Group (PBM SIG) (2001) have indicated a list of challenges that could rise during the implementation. The first roadblock is to use too many/little information. As a result, resources might get wasted or information might get neglected. The second issue is that the management start concentrating on short-period and stop thinking about long-period results. The third problem is to gather irrelevant and contradiction information. For example, measuring elimination of bonuses and measuring employees' satisfaction at the same time are two contradicting indicators. The fourth mistake people perform is to dissociate KPIs with strategic objectives. The fifth difficulty is to determine the needed frequently of information gathering. Measuring the performance irregularly or taking too frequent measurements will not provide the accurate figures.

Bourne et al. (2000a) identified further three difficulties after longitudinal study of performance systems implementations. They found that some senior managers resist such systems because they interpret performance systems as threatening tools, which will be used against them. The authors also indicates that it is not easy to observe employees' resistance; especially for experts who visit outside fields occasionally. Senior employees, who hold powerful positions in organizations, understand the implementation of performance system as a way to restructure the authority and control. Also, the research discovered that IT infrastructure, software flexibility, hardware limitations are forms of computer system issues that could affect the implementation of performance systems. If the IT environment is setup poorly, it will negatively affect the implementation. However, good IT environment can expedite the implementation. In addition, computer systems can increase or decrease the cost of data collection. For example, using available IT systems to collect information is cheaper than manual calculations; while using manual procedures is cheaper than implementing new systems solely to collect information. Additionally, more critical and higher prioritized events or projects can distract the commitments of the top management during performance measurement implementation. Such distraction can impact the implementation negatively.

3.9 Reasons for Performance Measurement Failures

Neely and Bourne (2000) and Performance-Based Management Special Interest Group (PBM SIG) (2001) studied the reasons behind performance measurement failure. One of the reasons why failures occur is selection of unsuitable design. This will lead to using measures that are not linked to strategic goals. Another implication is that meaningless indicators will be used. As a result, employees will make no sense of those indicators and, therefore, employees will disvalue the system. An additional reason why KPI system does not succeed is implementation failures. Politically, managers might feel threatened by imposing measurement system as it can be used as a stick against them. Consequently, people will focus on providing numbers rather than focusing on performance improvement. Also, unavailability of data collection infrastructure might break down the implementation. It is very expensive for an organization to collect the data needed for performance measurement; which could fail the implementation. Moreover, implementations can fail because efficiency and effectiveness are lacked. Measuring too many performance will lead to huge cost of resources, efforts, and time. In addition, managerial actions have to be performed based on the prepared performance measurement; otherwise, the performance measurement will not bring the desired results.

3.10 KPI Impact on Individual and Team Effectiveness

In the Performance Measurement Principles Section 3.3, the performance indicators were linked to the compensations systems to motivate the employees toward reaching targets. We have also stated that this link is very critical as it could have negative impacts if not linked properly. Thus, in this section the effect of setting KPIs on individuals and/or team performance will be examined. Also, we will examine how to link measurement system with compensation to motivation employees. Furthermore, we will understand how KPIs affect employees' behaviours.

3.10.1 Goals Settings and Performance

Employees' efforts and focuses will be aimed toward certain targets when goals are set for them. It is critical to know that high targets energize employees to produce more outcomes. So, employees tend to work faster and more persistent when they have deadlines to be met. Goals settings will stimulate using skills and knowledge to accomplish the tasks. Employees' commitments to those goals are the sources of the energetic behaviours. Such commitments can be found when employees participate in setting their own goals. Providing performance feedback toward goals makes this mechanism more effective because it realigns the efforts and attentions toward the goals (Locke & Latham, 2002; Dewi, n.d.; Haraldsen, 2009). Another research also agrees that annual performance agreements and appraisals improve employees' performance and increase productivity (Koonmee 2009). To obtain the most effective outcomes, goals have to have the following characteristics (Dewi, n.d.; Haraldsen, 2009):

- Goals have to be specific.
- Goals have to be hard but achievable.
- Setting goals for simple tasks is more effective than for complex tasks.

On the other hand, organizations and employees goals could conflict with each other. Similar situations can happen when the incentives are provided for team performance rather than achieving the strategic goals (Locke & Latham, 2002). Also, employees perceive performance agreements as being slightly irrelevant. The management refers such observation on the lack of complete picture which is kept confidential with the management. So, the management believes that both performance agreements and appraisals are balancing both employees and organizational interests (Koonmee, 2009; Haraldsen, 2009). We have also indicated in the Reasons for Performance Measurement Failures Section 3.10 that some employees and managers perceive using measurement systems as a way to control and punish them. Obviously, such opinion will reduce their motivation and productivity (Bourne et al., 2000).

Concentrating efforts in the direction of strategic goals and objectives will enhance the productivity to realize strategic objectives (Koonmee, 2009). KPI system is a common tool used by organizations to cascade organizational objectives to departmental and individual levels. However, it would be too late to find out that the performance is not as desired by the time those KPIs are calculated. Therefore, managers have to monitor the performance periodically (Dewi, n.d.).

3.10.2 Motivation Using Performance Measurement

Mainly, there are three motivation theories that addressed linking performance with rewards.

- Vroom's expectancy-value theory proposes that performances are motivated by valuing the reward obtained upon completion and by securing the reward. Setting high targets will reduce the possibility of gaining the reward and, therefore, will decrease the motivation (Franco-Santos & Bourne, 2008; Van Eerde & Thierry, 1996).

- Atkinson's achievement motivation theory suggests that the link between targets difficulty and motivation is graphed as an inverted U shape. The more difficult the target is, the more motivated employees become as long as they perceive the target achievability. At one point motivation decreases because the employees will feel that the targets are too complex or impractical (Franco-Santos & Bourne, 2008).

- Locke and Latham's goal-setting theory indicates that precise and complex targets will increase the motivation over vague and easy ones. Since people have different standards for acceptable performance, this theory emphasis on setting a unified foundation for identifying the needed performances and for determining the limit of involvement in those activities (Franco-Santos & Bourne, 2008).

In contrast, it is not very obvious how psychologically, mentally, or emotionally tasks complexity increases performance. To clear this ambiguity, one of the views in this matter suggests the availability of other factors affecting the relationship between job difficulty and performance like self-confidence and self-competency towards achieving the targets (Franco-Santos & Bourne, 2008). Some researchers argue that performance measures have to be linked to rewards to achieve the desired outcomes (Neely et al., 2002; Koonmee, 2009) because Incentives play very important role in raising the sense of commitment in employees (Locke & Latham, 2002).

3.10.3 Extrinsic and Intrinsic Incentives

Vroom's expectancy-value theory links between performance and incentives to achieve the desired results. However, Locke and Latham's goal-setting theory recommends standardizing the performance definition between employees. Since KPIs are numeric indicators, it can be used to unify the definition of the required performance, which will lead to rewards. For example, the management can set target KPIs for employees to achieve. These KPIs will direct the employees towards the required behaviours. The KPIs will also set the intense of the directed behaviours required from the employees. However, KPIs can be linked to two types of incentives that are tangibles and intangibles.

Money is used to motivate employees by allowing them to get desired goods and items. Therefore, money is used as extrinsic reward to motivation when linked to KPIs. Intrinsic motivation is another way to boost employees' performance. Such reward is provided when employees are recognized for their work and when their commitments are appreciated. Intrinsic rewords are provided by enhancing the relationships between internal employees, by raising the employees' self-esteem, and by improving work environment (Neely et al., 2002).

It is argued that the relying exclusively on intrinsic or extrinsic incentives is not the best model to motivate employees all the time (Neely et al., 2002). Based on Atkinson's achievement motivation theory, tasks complexity plays an important role in linking KPIs to incentives. Locke and Latham state that unclear and easy tasks are not motivating (Franco-Santos & Bourne, 2008). Therefore, simple jobs like routines can be easily rewarded with money. Moreover, tangible rewards can be used when employees have no intrinsic motivation to perform the tasks. Alternatively, intrinsic motivation is used with complex tasks and when employment contracts cannot completely define all the roles and responsibilities of the employees. Intrinsic rewards will help employees to focus on dimensions not covered by the contracts. Depending solely on one method is not recommended. Managers have to use both methods wisely to balance the motivation drivers with desired outcomes (Neely et al., 2002).

3.10.4 KPIs and Decision Makers

KPIs and targets also affect the behaviour of decision makers. There are two theories that implicitly discuss how targets affect making decisions. The first theory is Kahneman and Tversky's prospect theory which aims at understanding how performance perception changes decisions. The theory indicates that employees, who think that they are under performing, are willing to take more risks to achieve the targets. Contrary, risks are avoided by managers who perceive their performances are aligned with the targets (Franco-Santos & Bourne, 2008). The second theory is Greve's theory of learning from performance feedback. This hypothesis predicts that once decision makers perceive their performance as unsatisfactory, their search for solutions and their risk taking actions increase (Franco-Santos & Bourne, 2008). Latham (2004) also agrees with the above theories that an employee, who perceives that management will consider his/her work as unsatisfactory, he/she will be more willing to take risky decisions to meet targets.

3.10.5 Undesirable Behaviour Cased By Targets

Although targets settings have positive effects like stimulating taking risk, they also have negative effects. Most of the disadvantages are related to ethics and morals. When KPIs are linked to incentives, employees will focus on quantitative rather than qualitative performance (Franco-Santos & Bourne, 2008; Latham, 2004). Also, employees will prioritize tasks based on payoffs (Neely et al., 2002; Franco-Santos & Bourne, 2008). Consequently, the deliverables of the employees will be more towards short term achievements rather than creating long term values for the firms (Haraldsen, 2009). Furthermore, when targets are linked to rewards, selfish behaviours are apparent between employees as they focus on reaching targets rather than helping their colleagues (Franco-Santos & Bourne, 2008). Likewise, in the long period, teams and individuals will get exhausted from stretching their performance to the maximum limits (Franco-Santos & Bourne, 2008; Latham, 2004). Besides, in working environments where unfulfilled targets will lead to punishing workers, information might be manipulated to avoid the penalties (Franco-Santos & Bourne, 2008). KPIs manipulation will be covered comprehensively in the next section.

3.10.6 Manipulating Performance Measures

Manipulating KPIs is one of the negative impacts of implementing KPIs. This effect will cause inaccurate result of measurement to be provided, which violates the accuracy principle of KPIs as we discussed in section 3.3.3 named Accurate Measurement. Targets encourage employees to manipulate KPIs figures for different reasons (Neely et al., 2002; Baker, 1992; Haraldsen, 2009; Latham, 2004; Litzky, Eddleston & Kidder, 2006). Workers tend to do that to satisfy their psychological needs for the ability to meeting targets successfully (Litzky, Eddleston & Kidder, 2006; Haraldsen, 2009). Additionally, when incentives are linked to KPIs, employees will change the figures to ensure their qualifications to the rewards and/or to increase the reward volume (Baker, 1992; Haraldsen, 2009; Litzky, Eddleston & Kidder, 2006). Furthermore, uncertainty on what/how to perform to achieve targets also triggers KPIs manipulation (Litzky, Eddleston & Kidder, 2006). As well, employees change KPI figures to avoid punishment as we have indicated previously in section 3.11.5.

On the other hand, KPIs manipulation can take many forms as explained by Birnberg, Turopolec and Young (1983) and Haraldsen (2009). Neely et al. (2002, p. 126) and Birnberg, Turopolec and Young (1983, p. 120) identified six forms of KPIs manipulations. 'Smoothing' is one type of manipulation in which managers influence KPIs within the firm's activities plan. Such action happens intensively in quarterly set targets of sales, which managers shuffle between quarters to meet targets. A second form of manipulation is 'biasing' which is used by managers to provide the most positive KPIs from different data representations. Thirdly, 'focusing' is used by employees to manipulate KPIs. Some KPIs are given extra emphasis to attract management notice. Others may have reduced focus to repel management attention. 'Gaming' is identified as a fourth type of manipulation. By gaming, senior managers might accept manipulated KPIs figures from their subordinates to evade embarrassments and threats, which will be imposed by superior management for not achieving targets. As a result, subordinates will sense that such manipulation is acceptable and, therefore, they will continue manipulating future KPIs. 'Filtering' is the fifth KPIs manipulation method used to keep the good data and discard the rest. For example, if targets are set based on surveys, managers tend to exclude parties like dissatisfied customers or departments who will bring down the survey results (Neely et al., 2002). The sixth technique to alter the KPIs is by ‘illegal acts’. For instance, costs can be allocated to unrelated budgets when the original one is insufficient (Neely et al., 2002).

On the other hand, Neely et al. (2002) and Litzky, Eddleston and Kidder (2006) argue that senior managers should accept manipulated KPIs depending on the context from which KPIs were collected. For example, employees are expected to slightly manipulate KPI figures in uncertain working circumstances.

Throughout chapters 2 and 3, different aspects and dimensions of innovation and KPIs have been explored independently. Therefore, the focus of interest would be to examine how innovation is managed by KPIs. In the next chapter, both topics will be combined together to form an understanding of using KPIs to guide innovation in organizations.

The previous chapters had literature reviews on both performance management and innovation topics. This section will collect models and frameworks to present high level, an end to end innovation and KPI methodology that can be used in organizations based on the literature review.

4.1 Innovation and Strategy

The Most important factor in implementing innovation is strategy. Strategy ensures clear understanding of innovation. It will also guide the organization towards embedding innovation concepts. Apart from that, strategy will balance the use of innovation with different organizational functions to reach the desired results. Strategy is used to direct the organizational competencies towards innovative outcomes to positively affect the organization's performance in uncertain environments as illustrated in Figure 3 (Siguaw, Simpson & Enz, 2006). We will explore these aspects in the coming sections.

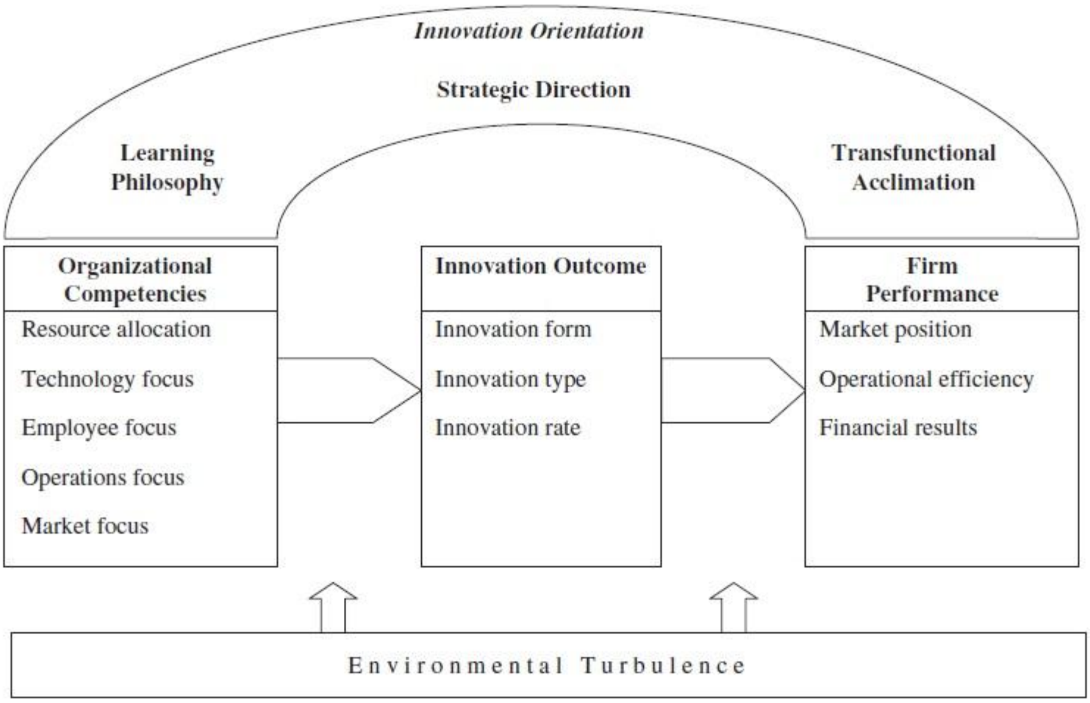

Figure 3 Strategical innovations (Siguaw, Simpson & Enz, 2006)

4.2 Multi Dimensional Innovation Framework

There are many dimensions involved in innovation that are sustaining versus disruptive (indicated as incremental versus radical in the following model), product versus process, and administration versus technology (Figure 4). The administration versus technology dimensions were not explored during the previous literature review. The technological innovation is related to the use of technology to enhance working environment; while administrative innovation is related to the change of organizations' culture to improve working atmosphere (Cooper, 1998). The bottom line is that there is no one way of looking at innovation. Organizations have to implement a multidimensional innovation framework that best fits their strategy and capabilities.

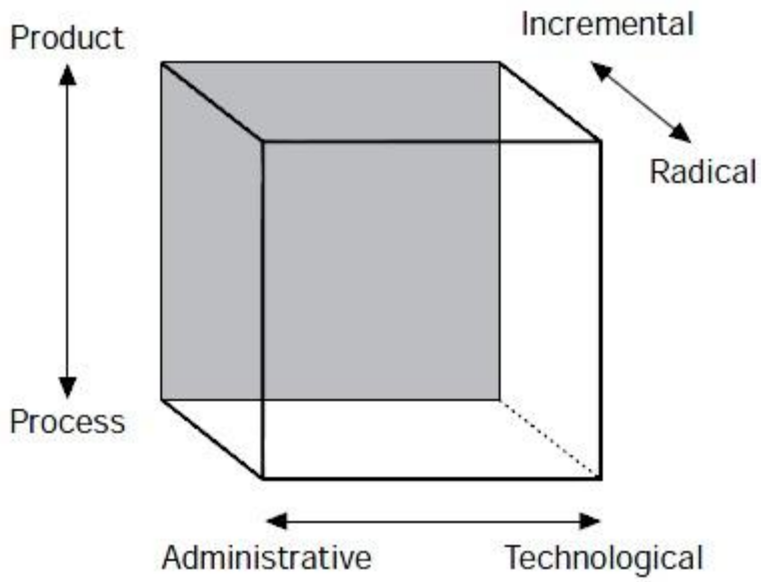

Figure 4 Multidimensional innovation framework (Cooper, 1998)

From Figure 5, implementing a multidimensional framework is supported by three organizational groups of factors that are 'leaders', 'organizational culture and structure', and 'business processes' (Crossan & Apaydin, 2010, pp. 1166–1174). Innovation leaders are represented by the board members and chief executives that have great influence on organizations. Organizational culture and structure is pertaining to the managerial levels and functional areas that translate strategy into reality. The business processes group represents the processes adopted by organizations to manage portfolios and projects. There are additional two groups of factors that address the nature of innovation in firms. The first group is 'innovation as a process', which determines the specific innovation processes followed in the organization. The second group is the 'innovation outcome', which defines the innovation end result.

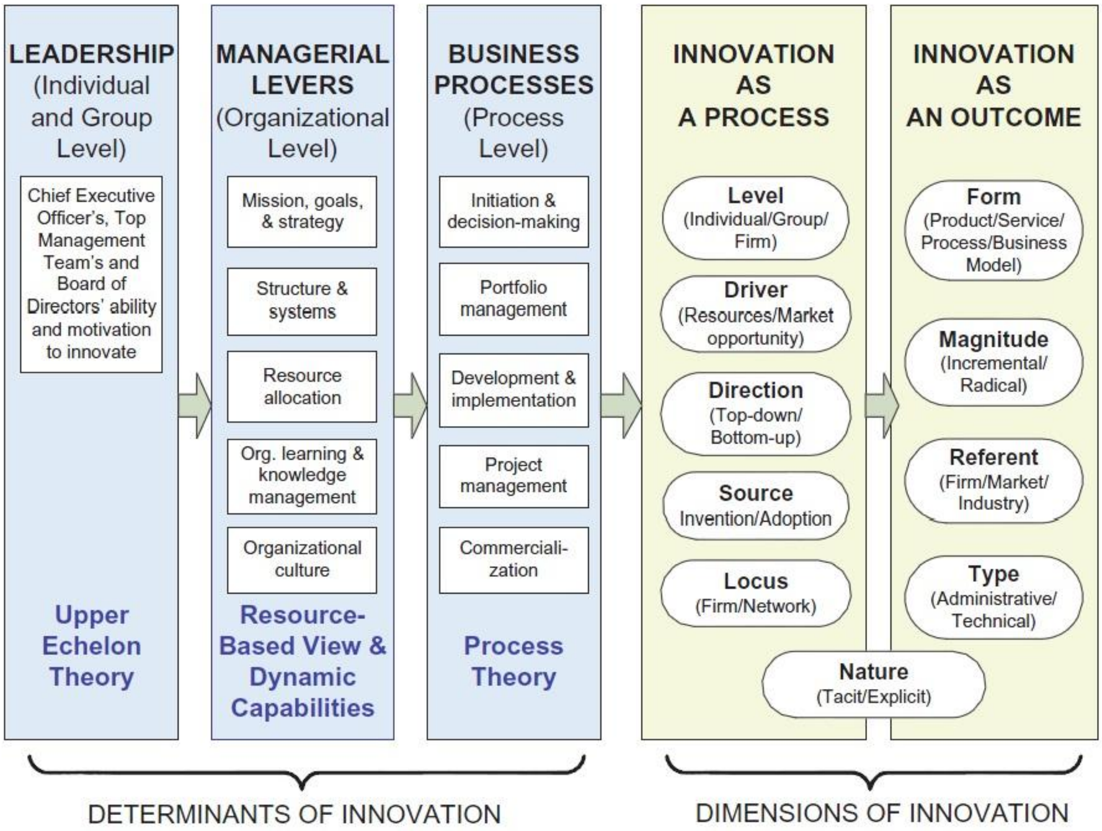

Figure 5 Factors of multidimensional innovation framework (Crossan & Apaydin, 2010)

4.3 Innovation and Organizational Internal Factors

Innovation is always affected by internal and external factors. Figure 6 includes organizational factors affecting innovation as identified by Prajogo and Ahmed (2006), and Klein and Sorra (1996). The internal factors enable the companies to pursue innovation. These internal factors are classified as 'stimulus' and as innovation 'capacity'. The stimulus class is related to management like leadership, people management, knowledge management, creativity, and incentives.

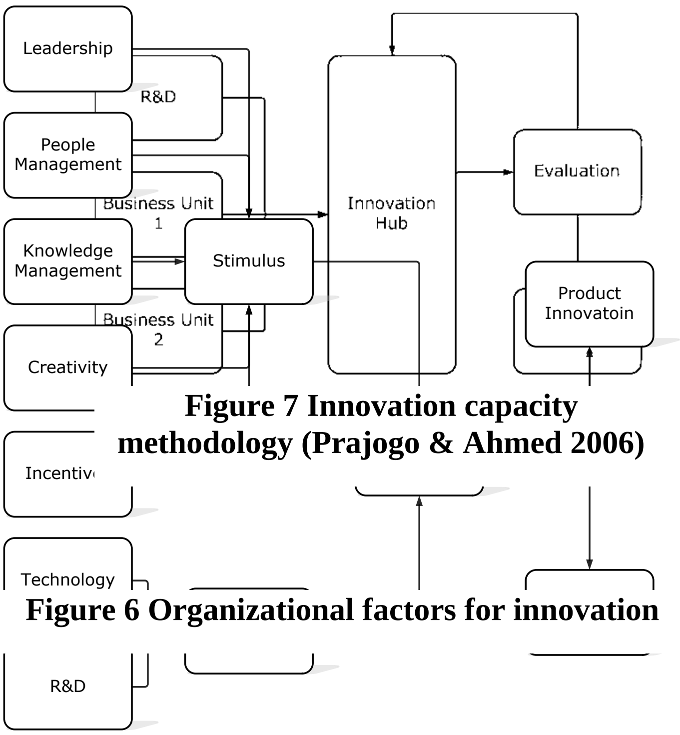

Figure 7 Innovation capacity methodology (Prajogo & Ahmed 2006)

Figure 6 Organizational factors for innovation

The capacity class is linked to technological factors which determine the strength of managing R&D and innovation practices (Figure 7). The explained stimulus and capacity will guide the organizational innovation performance to reach innovative products and services. As a consequence, organizational position in the market is strengthened.

4.4 Innovation Measurement Model

Just like any function within organizations, innovation has to be managed by monitoring, improving, and evaluations. Measuring innovation plays great role in identifying its strengths and impacts. That is made by focusing on measuring the components of innovation in firms. We have already discussed the identification of a suitable innovation framework in Multi Dimensional Innovation Framework Section 4.2. The measurement mode is driven from the same framework. Figure 8 is an example of areas of measurement on the determinants of innovation. The same model has to be established to measure dimensions of innovation in organizations.

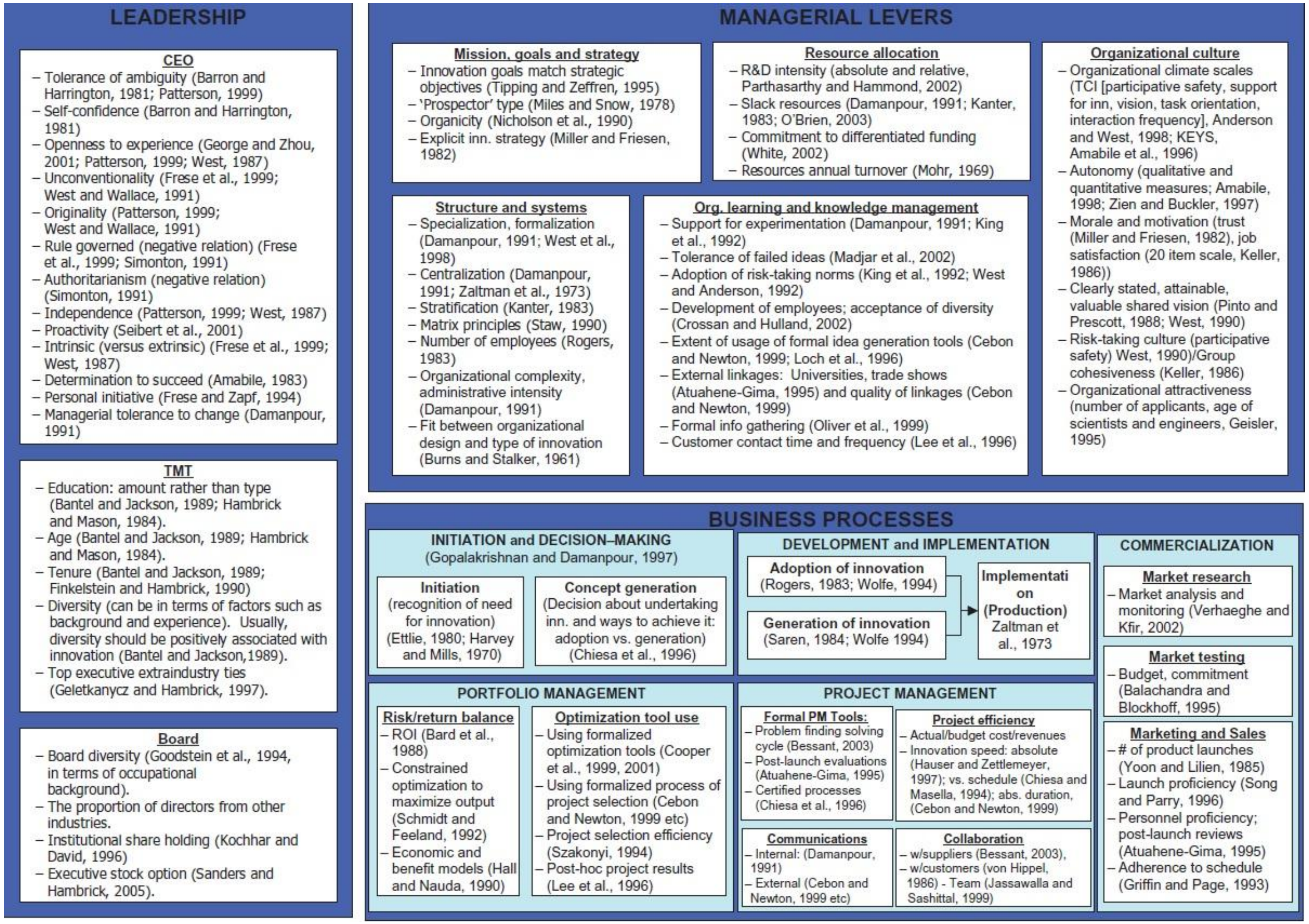

Figure 8 measurement model (Crossan & Apaydin, 2010)

4.5 Conclusion

The literature review chapters 2, 3, and 4 demonstrated that innovation is a mixture between organizational factors and methodologies. The factors consist of areas like environment, leadership, and creativity that need to be strengthened in organizations seeking innovative results. Similarly, the literature review presents that the organizations need to implement a set of methodologies like open innovation and chain linked innovation model to enforce innovation practices. The review also presented that innovation sources like employees must be improved. Innovation factors, models, and sources need to be monitored and improved periodically in organizations to ensure proper innovation progress and outcomes. As a result, the literature review recommends using KPIs methodology to measure and monitor the innovation progress in organizations. Generally, the KPIs implementation approaches are very similar because they share common principles as explored in section 3.3. However, KPIs implementation approaches differ according to the organization's strategy.

Theoretically, innovation KPIs requires a top down approach to be followed in implementation as demonstrate in Figure 9. That is because innovation has to be directed by strategy. Accordingly, management will have visibility on the organizational areas where innovation outcomes are expected. Once targets are aimed, firms' capabilities have to be guided towards obtaining the goals. Consequently, innovation KPIs will be used as a technique to measure how well firms are performing to reach the objectives. There are different approaches to be used in implementing innovation KPIs. Each approach has its own advantages and disadvantages as examined in the literature review earlier. The most widely approach used is the balanced scorecard. Once the approach is selected, innovation KPIs will have to be identified. In addition, innovation KPIs will have to follow certain criteria to ensure standardization. These KPIs might have positive and/or negative effects on employees. Furthermore, innovation has to be measured in the context of firms' success. Organizations have to know how much innovation contributed to their success against the overall activities performed by other functions (Rogers, 1998). Table 5 is a detailed representation of the components demonstrated in Figure 9.

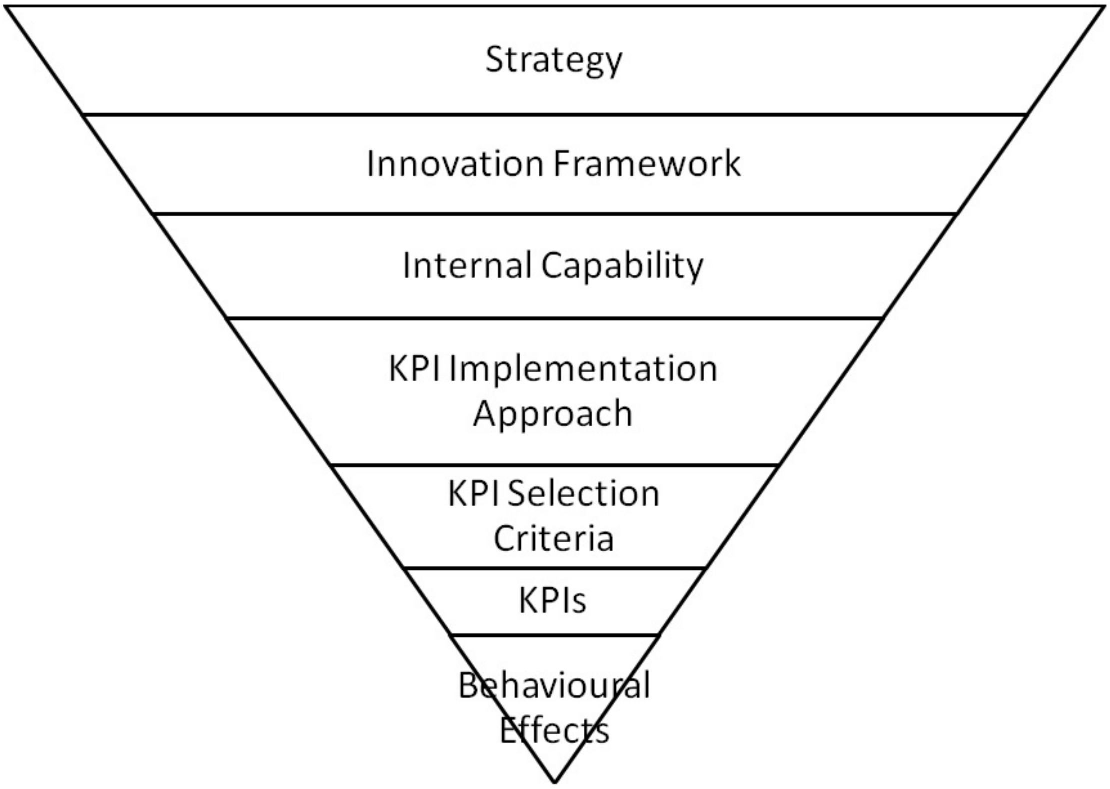

Figure 9 Theoretical model of innovation KPIs

Table 5 Theoretical model of innovation KPIs

Innovation Framework	Internal Capabilities	KPI Implementation Approach	KPI Selection Criteria	KPIs	Behavioural Effects
• **Product / Process** • **Incremental / Radical** • **Administrator / Technological** • **Multi Dimensional**	• Leadership • People Management • Knowledge Management • Creativity • Incentive Plans • Technology • R&D	• BSC • PMSSI • Macro Process • SMART • Performance Prism • Auditor General of Canada • Matrix • EFQM • DOE/NV	• Smart • Three Critical • SMART and AHP • Critical Few • Benchmarking Treasury Department Criteria	• Leadership • People • Knowledge • Creativity • Incentives • Technology • R&D • Profitability • Diversity • Degree of Innovation • Team Work • Work Challenge • Marketing Process • Customer Relationship • Degree of Characteristics	Motivation Commitment Manipulation Selfish Payoff Task Prioritization Exhausting

				Innovation • Management System Innovation • Internationalization • Organizational Change • Organizational System Flexibility	
Strategy					

5.1 **Overview**

The aim of this research is to increase innovation awareness in firms working within UAE by revealing the impact of innovation on team and individual behaviours. Furthermore, the developed knowledge should enable organizations to effectively use KPI to enhance innovation levels. Consequently, KPI and innovation topics have been explored and studied comprehensively in Chapters 2, 3, and 4. As a result, in-depth understanding has been formed towards incorporating innovation in organizations' strategies and using KPI to monitor and control the innovation activities. This will increase the ability to prepare better research methodology.

I will use the qualitative technique of the research methodology to reach the objectives and to address the research questions. Qualitative techniques provide in-depth understanding of research subjects. As a result, different viewpoints will be developed and analysed. That will occur by conducting case studies on three companies in Dubai that are known for their innovation. Two of these firms were selected because they were listed in the top twenty five innovative companies in the Arabian Gulf by a well known online magazine. The third firm was selected because of its implementation of a suggestion and reward program, which aims at stimulating ideas from within the organization. In addition, I will perform another interview with an expert in the innovation field who can provide us with a different view on innovation and its KPIs. The case studies will investigate the frameworks and approaches used by those companies in managing innovation using KPIs. In addition, the research will examine the effect of using KPIs to motivate and encourage employees' behaviours. Moreover, respective responsible staff in companies will be interviewed to collect comprehensive information and experimental facts about innovation KPIs.

5.2 **Research Objectives and Questions**

The case studies will have to provide information and data that are relevant to the objectives and questions of this research. The research will examine triggers for adopting KPIs, best KPI implementation practices, obstacles, advantages, and lessons learned. The following are the objectives of the research:

- Investigate the usage of KPIs in organisations and their effectiveness in enhancing performance through influencing behaviour.

- Examine the use of KPIs in managing innovation
- Investigate how innovation KPI can influence innovation in UAE.

From these objectives, my research questions were derived. As in Chapter 1, the following are the research questions:

RQ1. What are the methodologies used in implementing KPIs and how effective are they in influencing the levels of innovation?

RQ2. What are the frameworks and practices used by UAE firms tried to implement innovation KPIs?

RQ3. What are the critical success factors and challenges which require attention while implementing innovation KPIs framework in UAE organizations?

The research questions address the use of KPI as a performance measurement to stimulate and motivate employees to be more innovative. The first question is more focused on how to implement KPIs and how they affect the performance. The second question is investigating the best practices and best frameworks uses to direct KPIs over innovation. The last question will study successful and failed implementations of innovation KPIs to come up with recommendations for future considerations.

5.3 Research Approach

There are companies and government departments within UAE which applied KPIs as a methodology of measuring performance. For example, in 2009, Abu Dhabi Water and Electricity Authority (ADWEA) started using KPIs to measure the city's projects (ADWEA, 2009). However, UAE has just started concentrating on innovation as discussed in section 1.2. As a result, it is expected to have a limited number of organizations, especially in government sector, implementing innovation KPIs. Therefore, this research will use exploratory and qualitative, rather than quantitative, methods to extract in-depth information regarding the subject from the identified firms which use innovation KPIs.

'Deductive' and 'inductive' are two approaches of a research according to Saunders, Lewis and Thornhill (2007, p. 487). Scientific research, which involves building hypothesis from research questions and test those theories, uses deductive approach.

On the other hand, inductive research considers collecting and analyzing information to reach to conclusions and theories. Since I will use the qualitative method, the inductive approach will be very suitable. That is because I would like to gather and analyze information through literature reviews and interviews with field experts to develop theories and conclusions.

There are seven different research strategies that can be used to collect data (Saunders, Lewis & Thornhill, 2007). However, case study is the most suited research strategy for the inductive approach I chose to follow in this study. Using case studies, research is examining theories in real life contexts (Saunders, Lewis & Thornhill, 2007). Therefore, this strategy enables the developing of holistic understanding on research topics though empirical analysis of topic context and processes enacted. To ensure that the case studies are providing consistent results, semi-structured interviews will be used to gather information. Moreover, this research will be following cross-sectional study since it will study the innovation KPIs in the UAE at the current time, rather than over a period of time span.

5.4 Case Studies Sample Selection

The case studies have been targeting organizations implementing innovation KPIs. I have already mentioned that innovation is an emerging topic in the UAE; therefore the sample selection has been based on non-random techniques. The sample selection was based on the identification of the companies implementing innovation KPIs by searching for organizations which have been granted innovation awards in the UAE. The identified organizations have been asked for their participation in this research. Since cases with no response were expected, six companies have been asked to participate in this study. These companies ranged from private, semi-government, and government entities. After identifying the list of companies that will serve the study, I have communicated with the respective managers through phone calls and emails to get their agreements to participate in the research. Also, the Chief Executive Officer (CEO) of an innovation institute was asked to provide his experience in the topic. Three companies representing private and semi-government entities have accepted to participate in this study. Once they had confirmed the participation, I have scheduled meetings according to the managers' convenience. Three companies did not participate for various reasons like unavailability, inaccessibility, and assumption that the particular case will add no value to the research. Fortunately, the CEO was kind enough to share his knowledge.

The best person to be interviewed is the performance manager who is expected to have full visibility over the Innovation KPIs. However, not all companies had performance management department/section. That is due to the fact that such companies are small in size and does not require a full-fledged department. Another reason is that the performance management is viewed as a subset of technical/sales manager's responsibilities. As a result, one of the case studies was about interviewing a performance manager. I have requested to interview a supervisor or a leader to investigate how effective the performance system was from a different view point. Unfortunately, I did not get a reply. The second case was about interviewing both marketing and technical managers who were nominated by the general manager to conduct the interview. The third interview was with the director of Business Excellence Department of Organization C and chairman of a non-profit organization. The fourth interview was with KH, CEO of innovation specialised institute. Each interview took around one hour and fifteen minutes. To avoid legal consequences, interviewees requested to keep their identities and the organizations' identities private. Therefore, I will refer to these organizations and their interviewees by using aliases.

5.5 Interview Protocol

I have sent the interviewees emails including a brief scope and purpose of the meeting. I have also included in the emails a list of the main questions that will be discussed. Each interview with the respective manager has started by introducing me and by appreciating the time provided by the interviewee. After that, I have had to explain the objectives of this research which have been identified in Research Objectives and Questions Section in this Chapter. I have provided the interviewee with a copy of the objectives and questions that will be addressed by this dissertation. Next, I have asked the interviewee for permission to use a voice recorder to document the discussion, to efficiently use the meeting time, and to ease the interview analysis. The interview has taken a form of a discussion; however, I have derived the discussion towards answering and addressing the research questions and objectives. I have prepared for this face to face meeting by arranging a list of questions and ideas to be discussed. During each interview, questions and thoughts have been populated and discussed, since the semi-structured interviews have been followed. At the end of each interview, I have thanked the interviewee for his/her time and effort to participate in this research. I have also guaranteed the data privacy for the first and second interviewees.

5.6 Interview Questions

The interview questions have been derived from the research questions and objectives. The reason behind conducting interviews is to get holistic information against the objectives of this study. The following are the questions used as a guide in the interviews.

1. What is your role in the organization?
    a. What are your responsibilities in maintaining effective KPIs?
    b. Knowledge about KPI team size, team structure, and committees involved in the process.
2. Why did the organization choose KPIs as an innovation performance measurement technique?
    a. Are they linked to strategy?
    b. How did the link establish and monitor?
    c. How often are KPIs collected and examined over projects/operational processes?
    d. Do you believe KPIs are driving organization’s performance to success?
    e. What method used by the management to filter the needed KPIs from the rest?
    f. Which KPI framework is used by the firm?
3. To what extend is the management involved in KPIs?
    a. Are KPIs used as a performance monitoring?
    b. How often KPIs definitions and purposes are revised and re-evaluated? For example, were there any KPIs eliminated because they were not useful?
    c. What practices like KPIs selection and implementation approaches established by the management to implement the KPIs?
4. What are the impacts of KPIs over teams and individuals?
    a. Did KPIs improve the productivity?

    b. Are incentive plans linked to KPIs?

5. What challenges and difficulties faced during and after implementing performance indicators?
6. In the last couple of years, did the organization produce new products and/or processes? Why do you consider them new?
    a. How did the organization benefit from those new accomplishments?
    b. What do you think have helped the company in the accomplishments? What are the triggers and sources of the new introductions?
7. Those new accomplishments are considered innovations. Does the organization have measurement methods over innovation?
    a. What are the used framework and practices? Are you using KPIs to measure them?
    b. What determine the effects of innovation on organization's performance?
8. How do you evaluate the use of KPIs over new products/processes to improve the organization's performance?
9. In your opinion, what improvement areas that must be addressed to make innovation KPIs more effective in your company?

5.7 Case Study 1: Organization A

5.7.1 Organization Description

Organization A is a private IT solutions provider focusing on banking sector, financial houses, exchange houses, financial brokers, and private and government financial organizations. It is a multinational company spread across Middle East, Europe, and US. Its Head Quarter (HQ) is in Dubai. Recently, the organization won Financial-i Leaders Award in Innovation, which appreciates innovative, financial solutions.

Organization A has a very limited and small performance management section. It consists of one person whose position is performance manager. The section exists in the HQ while its role is extended to all branches.

5.7.2 Person Interviewed

The performance manager in the HQ has been interviewed. The interviewee spent more than five years in this organization. He/she used to work in the same company as process controller to look after internal communications, policies, processes, and manuals. Later, he/she took a bigger role of managing the organization’s performance. The role of the performance manager is to ensure company’s performance towards its objectives. That includes building KPIs for HQ and for the branches.

5.8 Case Study 2: Organization B

5.8.1 Organization Description

Organization B is a multinational US corporate. It focuses on technology innovation in six main sectors that are health, safety security, industrial technologies, telecom, display and graphics, and consumer and office. The company has products targeting individuals and organizations with forty five different technology platforms. Its HQ is in US, Minnesota. Its operation is spread across the Americas, Europe, Middle East, Africa, Asia, and Pacific. It has an innovation center in Dubai’s office. The company has been recognized as one of the most twenty five innovation companies in GCC in 2011.

Organization B has no performance management section in Dubai. Rather, management and office managers have annual performance plans and KPIs.

5.8.2 Person Interviewed

Both the marketing and technical managers of Dubai’s office have been interviewed as a group. Both of them had annual performance plans and KPIs. They were in charge of branding the company and improving its products in terms of sales and/or technology.

5.9 Case Study 3: Organization C

5.9.1 Organization Description

Organization C is a holding company managing huge portfolios of companies in different industries. It has companies focusing on the ports industry like DP World, Drydocks World, and Dubai Maritime City. It also has real estate companies like Istithmar World and Limitless. Moreover, it manages Economic Zones World which is concentrating in Freezones.

5.9.2 Person Interviewed

The Director of Group Internal Audit and Business Excellence of Organization C has been interviewed. He is also the Chairman of a non-profit organization concentrating on suggestions and rewards schemes. He has more than twenty four years of experience in business excellence programs and internal audit.

5.10 Expert Interview

5.10.1 Organization Description

The organization is specialized in innovation consultation and education. It works with companies from different industries. It helps companies build their strategy based on innovation. It also advises companies on governances and policies to implement that leads to innovation stimulation. In addition, the institute provides training courses that explain innovation in depth.

5.10.2 Person Interviewed

KH the CEO of the company has been interviewed. He spent most of his time in the US. He holds a bachelor degree in genetics engineering. He decided to do his MBA in a different field which is marketing. He had failed twice as an entrepreneur before he succeeded in Innovation 360 Institute. He has more than fourteen years of experience in the consulting business. He chose innovation consultancy because he believes the market is not saturated with consultants in this field.

Appendix A contains full transcripts of the conducted interviews.

6.1 Introduction

This chapter seeks to discuss and analyse the information gathered throughout the case studies. The detailed analysis will lead to findings and conclusions which will be linked to the research questions and objectives explained in the previous chapter.

In the beginning of Chapter 5, it has been stated that qualitative techniques of the research methodology will be used. Therefore, the discussion and analysis will be based on techniques identified for qualitative data. According to Saunders et al. (2007), the process of analysing qualitative data starts by grouping and categorizing the data according to similarities and differences, and according to the research objectives. After that, the data has to be unified and standardized. Later, the data has to be linked with other data from the same or different categories. At the end, the analysis should lead to logical conclusions.

Based on the research objectives and questions mentioned in Chapter 5, the following are the most suited categorization of the collected information:

C1. Current state of innovation.

C2. Impacts of innovation KPIs on individual and team's performance.

C3. Innovation KPIs framework and methodology.

C4. Prerequisites for efficient innovation KPIs implementation.

The above categorization and grouping will facilitate the understanding and the analysis of the data. It will also help in determining the links between data and between categories. Furthermore, the categories are derived from the conclusion of the literature review in section 4.5. Therefore, they will holistically present the current implementation of innovation KPIs in the selected case studies.

The way I will carry out the data analysis is by comparing the above mentioned categories with data gathered from Organization A, Organization B, and Organization C. After that, I will compare the innovation KPI practices and processes with KH's view on innovation. The reason why KH's information will be looked at differently than the categories is because his ideas do not exactly fit in the above list. The second reason is that the interview with KH was more about his view as an expert rather than a company practices and processes towards innovation.

6.2 Interviews' Indications

The interviewee from Organization A was very knowledgeable about the subject and about the organization's practices and processes. With regards to Organization B, the marketing manager set out to draw a perfect picture of the company. Therefore, the answers provided by the marketing manager were not necessarily applicable in Organization B. On the other hand, the technical manager provided direct answers to the questions. The third interview was with the director of Business Excellence who was keen on answering the questions from the perspective of the suggestion and reward program of Organization C. The last interview was with KH and it was very interesting because he presented a different view on innovation. Based on his experience, innovation is not a component to be linked with strategy; rather, it is used to innovate the whole strategy. The interview questions were clearly addressing innovation performance; therefore, the interviewees used the word performance to represent innovation performance. In general, the interviews contained a mix of different thoughts and implementation approaches yet, they shared a lot of understandings.

6.3 Category 1: Current State of Innovation

It is clear from Table 6 that all organizations did not have documented definition for innovation. However, each organization has its own degree of understanding innovation.

Organization A has claimed that employees' understanding of innovation is coupled with product development and introduction. The interviewee argued that the reason for this understanding was because products are the organization's core offering to customers. This assumption of understanding among employees seems to have no basis. Based on the common understanding, the firm uses innovation to create linear products improvements or breakthroughs, which will help the organization to compete in the market. Although the organization watches the market trends and competitions and although there is a team working in the Product Development Department, no proposals/guidelines have been provided on involving the customers in the innovation processes. Likewise, the firm has no systematic techniques for idea registrations.

The interviewees from Organization B had contradicting opinions about the meaning of innovation. The Marketing Manager tried to explain how innovation is used in the firm. The Marketing Manager also stated that "we definitely have a definition for innovation" (6 June 2011). The contradiction happened when the Technical Manager expressed that clear documented definition of innovation is missing in the firm. On the other hand, the organization is producing new products and is improving them. The innovation centre is used as a laboratory where workshops with clients will be conducted to use the products. Another way of customer engagement in the product development or improvement happens in the very beginning of the development by listening to customers' needs and interest. Likewise, customers' feedback is gathered once the solution is completed. Besides, Organization B has a system to capture ideas.

In Organization C, innovation is not defined and not documented as well. However, the company does refer to the Suggestion and Reward Program to demonstrate its understanding of innovation. To participate in the program, employees use a system to register their ideas. The same system is used to assign the appropriate tasks to the respective team or department. The program does not consider clients and other external factors. Therefore, it is following closed innovation theory. The program is used to improve products and services. Furthermore, the firm uses innovation as a way of marketing. It held a campaign to reward an employee for his suggestion with half a million AED. Also, Organization C has saved a lot of money using the ideas generated by its employees.

From the summary provided in the Table 6, it is clear that Organization A is focused in terms of innovation areas, although the firm has no documented definition of innovation. In addition, the Marketing Manager in Organization B tried to use innovation to improve the firm's image rather than innovating the firm's offerings to customers. Organization B is international and it has impressive innovative products. Therefore, innovation is definitely implemented in the company; however, the Dubai branch is not part of that implementation. That is because the branch does not come up with innovative products; rather, it imports products and sells them. Although the firm has an innovation centre in Dubai, the centre is used as a way to provide customer trainings rather than innovating. Moreover, Organization C has limited its innovation capabilities to Suggestion and Reward Program. The company has innovation infrastructure and processes implemented; however, the scope is limited to improvements. Such potentials can be used to create disruptive innovations and breakthrough the markets. Furthermore, each company is using innovation for different purposes that are new product generation, marketing, saving costs, and improvements to current products and processes.

Table 6 Innovation Definitions

Organization	Innovation Definition
Organization A	Interviewee said: "Whenever we speak about innovation, we are referring to the product innovation because products are our core offerings to our customers. I think it is a common understanding" (29 May 2011).
Organization B	Marketing Manager said: "The marketing role is to educate every person with what innovation means, how the chain reaction works, how the technology platforms work together to make things happen, and how we make ideas multiply. So, we definitely have a definition for innovation" (6 June 2011). Technical Manager said: "We don't have clear definition of innovation. The definition of innovation is not documented" (6 June 2011).
Organization C	No clear documented definition. Rather, the company is looking at innovation from the perspective of the Suggestion and Reward Program.

6.4 Category 2: Impacts of Innovation KPIs on Performance

Organizations communicated that KPIs impact on innovation is both positive and negative. One of the positive impacts is to monitor the organization's progress towards reaching its innovation objectives. The three organizations use innovation KPIs to monitor the innovation strategy of the company or special innovation programs. Two organizations had their innovation KPIs linked to strategy. In case of Organization C, the KPIs were linked to the Suggestion and Reward Program's objectives. Organization A made it very clear that the reason behind implementing innovation KPIs is to monitor department's innovative performance rather than individuals even though the department's KPIs are cascaded to employees' individual level. In addition, organizations positively benefit from innovation KPIs by early spotting any deviation from the track or processes misbehaviours. Organization A had a unique consequence of innovation KPIs implementation that is standardizing the business language between international branches. The company argued that KPIs enforced discipline by unification of processes, functionalities, and management focuses. As a result, management can be more focused on their innovation responsibilities across branches. Interviewees from Organization B stated that innovation KPIs helped them in setting yearly plans which aligned employees with their company's objectives including innovation goals. They claimed that such alignment motivates the employees since they share a common plan. Table 7 summarizes the positive impacts identified by the organizations.

Table 7 Summary of Innovation Positive Impacts

Positive Impacts	Organization A	Organization B	Organization C
Monitor Organization progress towards Innovation	■	■	■
Early Spotting of Deviation and Misbehaviour	■	■	■
Processes Unifications	■		
Align Employees With Innovation Yearly Plans		■	

On the other hand, innovation KPIs had negative results on the cases studied. The first and common negative effect is resistance as pointed by Organization A and Organization C. Interviewee from Organization A referred to lack of execution knowledge and human nature to resist changes as the reasons for resistance. Organization A overcame this issue by using the KPIs so that employees can share success and failure experiences. Employees can get rewarded rather than punished in failure cases. Consequently, future errors and disappointments are avoided. Employees' participation throughout the implementation is another technique used by Organization A to change the mindset. The company promotes the benefits of innovation KPIs to the employees regularly to get their buy-in. Promotion is also used by Dubai word to reduce resistance. Organization C also involved the top management and it communicated the processes of Suggestion and Reward Program to motivate people to use the system. Interviewee from Organization C said transparency is one of the most important factors in reducing resistance.

Organizations provided different views on how employees work around processes or manipulate innovation KPIs figures to reach targets. Organizations A and B indicated that such cases never happened in the firm. Interviewee from Organization A expressed very minimal concern about this issue because the company has a systemized mechanism to collect the information. Therefore, it will be hard on employees to manipulate the figures. The third interviewee said that in Organization C such cases happen. Examples of such cases would be rejecting the idea merely to avoid the hassle of implementation. He said that giving ownership to Subject Matter Experts (SMEs) to provide their targets against KPIs resulted in better responses. He also added that Service Level Agreement (SLA) between the departments and the program reduced workarounds and manipulations.

Table 8 lists the negative impacts communicated by the organizations studied and the techniques used to overcome them.

Table 8 Summary of Innovation Negative Impacts

Negative Impacts	Methods to Overcome	Organization A	Organization B	Organization C
Resistance		■		■
	Reward Failures	■		
	Employees Participation	■		
	Promote KPIs Benefits	■		■
	Top Management Involvement			■
	Process Transparency			■
Manipulations				■
	Trust SMEs			■
	SLAs			■

To enforce the positive results, to overcome the negative impacts, and to motivate employees, all organizations linked innovation KPIs with incentives. The link is established through the employee appraisal, which includes employee's individual KPIs and his/her evaluation against them. The incentives consist of monetary and intangible rewards. Though, the link between innovation KPIs with incentives slightly differs in organizations B and Organization C. In both firms, innovation KPIs have direct link with incentives. For example, Organization C is rewarding employees on their suggestions. Therefore, both firms agree that direct or indirect link between innovation KPIs and incentives positively correlates with the relation between organizations performance and innovation. As a result, all organizations agreed that KPIs have positive consequences on performance. That is concluded from the fact that all companies are linking performance with incentives either directly or through employees' appraisals. Interviewee from Organization C conditioned the incentive to be valued by the employees for the rewarding mechanism to work properly. He has also communicated that employees can exploit the system for the sack of getting incentives. However, he added that the overall saving from the program was way higher than the total incentives provided.

6.5 **Category 3: Innovation KPIs Frameworks and Methodologies**

Linking KPIs with companies' strategies and objectives is expressed by all interviewees as the most important factor. To understand how innovation KPIs are generated, organizations' KPIs frameworks will be explained in general. After that, the usage of KPIs frameworks to monitor and enhance the innovation capabilities of the companies will be investigated.

Each company has its own methodology of linking KPIs to strategy. Organizations A and B use tailored Balanced ScoreCard explained in section 3.6.4. In the tailored Balanced ScoreCard, Organization A uses five perspectives that are financial, customer, business processes, growth and innovation, and employee commitment. Financial, customer, and business process is already discussed in section 3.6.4. Growth and innovation perspective is concerned with system development, advancement, and planning. Employee commitment is concerned with employees' development, skills, and progressions. These five perspectives are linked to the company's strategy. Since Organization A has functional departments, the KPIs generated from the scorecard will be assigned to the respective head of function/department. Because a function/department could exist in more than one country, the targets of the KPIs differ from a branch to another based on needs. Similarly, Organization B has a tailored Balanced ScoreCard. However, Organization B differs from Organization A in the setup of the tailored Balanced ScoreCard. Since Organization B has different core businesses like health and vehicles, each core has its own tailored Balanced ScoreCard linked to the top level strategy of the firm. Again, the targets differ from a country to another. But, the scorecard perspectives of Organization B were not communicated. In Organization C, KPIs are used to monitor systems' functionalities rather than monitoring organization's performance towards its objectives. Therefore, the KPIs are either set using benchmarks or international standard basis. Organization C is following the set of KPIs generated by Ideas.UK, which is one of the international organizations focusing on Suggestion and Reward Programs. However, the interviewee has explicitly expressed the importance of linking innovation to strategy for programs' sustainability.

The KPIs methodologies used by firms are not enough to have a holistic KPIs system. Once KPIs are linked to strategies, there should be means to filter the outcomes to get the best set of KPIs. The filtering mechanism used by those organizations to select the appropriate set(s) of KPIs differs. Organization A uses 'Critical Few' method as explained in section 3.4.6. That has been implicitly communicated when the performance manager said that he/she kept the KPIs as minimal as possible. The method used by Organization B was not comprehensively communicated. I believe that was due to the fact that the Marketing Manager lacked the knowledge on how the firm is filtering the KPIs. Therefore, the answer was too broad when the Marketing Manager referred to the linkage to strategy as the mechanism. In Organization C, the filtering mechanism is not applicable as KPIs are generated either from benchmarking or from standards. However, the KPIs selected have to provide operational indicators for the program.

Linking KPIs to strategies and having filtering mechanisms ensure the availability of adequate KPIs system. Therefore, the same system can be used to manage innovation. With regards to innovation KPIs, Organization A has strongly coupled the innovation with its strategy by having a separate perspective in its scorecard to address this matter. Nevertheless, the organization is limiting the scope of innovation to systematic advancements and introductions. Interviewees from Organization B have not communicated their scorecard perspectives and they have not explained the KPIs filtering method. As a result, I could not perceive how their innovation KPIs system works. Additionally, the interviewees stated that Organization B's Dubai branch is not evaluated by innovation KPIs. That is because labs do not exist here as they said. Yet, the branch is being measured by the sales of new products ration from the total sales. This measure is one of the patents KPIs. Since the KPIs are not linked with strategy in Organization C, the firm used KPIs advised by Ideas.UK. This adaptation is considered a form of benchmarking which is covered in section 3.4.5. Apart from that, the SLAs, which are signed with different departments involved in the Suggestion and Reward Program, include KPIs for processing and evaluating the suggestions by the departments.

Sufficient innovation KPIs system is not enough to incorporate innovation in organizations. There are supporting factors that enhance the effectiveness of innovation KPIs. Management involvement is an essential aspect in innovation and KPIs implementations. All interviewees agreed on this necessity, but each organization has its own management engagement plans. The functional heads and the performance manager in Organization A meet on yearly basis to review their achievements and to plan for the next year. In the same meeting, KPIs are discussed and reviewed. Middle management will have monthly meetings with subordinates to evaluate KPIs and targets. Similarly, Organization B sets up monthly gatherings including vice president and core business leaders to discuss the business plans and KPIs. Organization C has a different involvement plan. Management involvement is considered when each department head signs an SLA with the Suggestion and Reward Program. Another way of engagement happens when departments' heads form committees to periodically evaluate and act upon the suggestions that are assigned to the departments.

Innovation process is another important factor in innovation implementation. All organizations claimed that they had innovation processes. However, none of them used a recognized methodology for innovation. The importance of such processes was very inadequate in organizations A and B. Product development and introduction is the core business for Organization A. Therefore, the interviewee referred to innovation processes as "how the department is handling its products efficiently" (29 May 2011). This is not an innovation process. Organization B refused to share its innovation process and it provided generic phases of innovation process that are idea generation, feasibility study, project initiation, and commercialization. In Organization C, there is no innovation methodology. Rather, the process of the Suggestion and Reward Program is solid. The process starts with an idea submitted by an employee. Then it gets evaluated by the subject matter expert. After that, it gets implemented if it passes the evaluation. The last phase is rewarding the employee.

Table 9 recapitulates the innovation frameworks and methodologies used by Organization A, Organization B, and Organization C.

Table 9 Summary of Innovation KPIs Frameworks and Methodologies

Category	Organization A	Organization B	Organization C
Linking KPIs to Strategy	Customized BSC	Customized BSC	Following Standards
KPIs Filtering Mechanism	Critical Few	Not Communicated	Based on Operational Needs
Type of Innovation KPIs	Product Development and Enhancement KPIs	Sales KPIs	Operational KPIs
Management Engagement	Executive Management on Yearly Basis. Middle Management on Monthly Basis	Executive and Middle Management on Monthly Basis	Executive on Yearly Basis to Sign SLAs. Departments Have Their Own Evaluation Plans
Innovation Process	Depends on Product Development Department	Not Communicated	Solid and Transparent Process

6.6 Category 4: Prerequisites for Efficient Innovation KPIs Implementation

For an organization to implement a good innovation KPIs, it has to understand what sparks innovation. Organizations A and B viewed customer needs, product improvements, and leading in competition as reasons to innovate. Organization A looks at entering new markets and enriching portfolios as spars as well. Organization B understands that business continuity and internal capabilities are reasons to innovate. Organization C believes that employees' interests and management decisions are the drivers for innovation. Table 10 summarizes the innovation triggers distinguished by the interviewees.

Table 10 Summary of Identified Innovation Triggers

Innovation Triggers	Organization A	Organization B	Organization C
Customer Needs	■	■	
Product Improvement	■	■	
Lead Competition	■	■	
Entering New Markets	■		
Enriching Portfolio	■		
Business Continuity		■	
Internal Capabilities		■	
Employees' Interests			■
Management Decisions			■

Nobody denies that clear objectives and strategies are required in the innovation journey. Interviewee from Organization C expressed that "when people do not have clear objectives, they are lost" (26 June 2011). Organization B had clear innovation objectives which led the company to open an innovation centre.

Interviewees had the same opinion that linking innovation to strategy is a critical factor in implementing innovation. Interviewee from Organization A stated that KPIs and initiatives are drilled down from the strategy. The interviewee also indicated that BSC was selected because it likes KPIs with strategy by stating "linking KPIs to our strategy is the whole purpose of the scorecard" (29 May 2011). Organization B reinforced the importance of the link by stipulating that "scorecards are linked to the main objectives of the company which are the mission and strategy" (6 June 2011). In addition, the Director of Business Excellence supported this opinion by expressing that "the link means the program is sustained" (26 June 2011).

Incentives play a vital role in the process of innovation. Incentives program is applied in all organizations. The incentives can either be linked directly or indirectly with innovation as explained in section 6.4. Organization C extended this opinion by adding that for the incentives system to be efficient, the incentives have to be valued by the employees. On the other hand, there are minimum negative side effects to applying this strategy. Firms can use different kinds of techniques to reduce these effects.

Innovation is just like any other business plan that needs management and employees involvement to drive it to success. Bounding innovation to a firm's strategy is somehow enforcing innovation over managers and subordinates. However, that is not enough. Both organizations A and B are having management committees to discuss different aspects of the business plans. The same committees also look after the implementation of innovation strategy. In addition, managers cascade the innovation strategies and KPIs to departmental or individual levels. In Organization C, the management is involved by signing SLAs and by making sure that those SLAs are met. The interviewee added that the management needs to perform innovation and to be examples to other employees for constructing innovative outcomes. Employees are also part of that engagement by generating ideas, evaluating them, and implementing them. That is exactly what Organization A and Organization C have implemented.

Culture is another fundamental challenge faced by organizations in implementing innovation. Organization A faced a lot of resistance when KPIs were implemented because people were against change and because people were intimidated. Organization B was conservative against sharing how culture affected innovation activities. Organization C linked innovation with change. The interviewee says "without change, you cannot improve. If you do not change, you will get the same result" (26 June 2011). To enhance the culture towards innovation, organizations selected different paths. Organization A and Organization C made the process of innovation transparent. Thus, employees know exactly what activities are involved. Additionally, both firms use communications to inform the employees about the progress and deliveries of innovation within the company. By making such success stories, employees realize the importance of innovation. It also endorses the KPIs system by providing a lot of awareness sessions. Similarly, Organization C provides different channels for employees to submit their ideas through. Moreover, all companies have used incentive programs to promote innovative behaviours.

Since innovation is a new concept and since innovation culture is weak in this region, leaders are the key towards successful innovation KPIs implementation. Organizations A and B have yearly and monthly meetings where top management will communicate their interests in innovation. Interviewee from Organization C says that "we need to see big chief executive talking about innovation" (26 June 2011).

Having performance measurement KPIs ensures the continuous monitoring of innovation implementation. Organization A created a separate perspective in their BSC to focus on innovation. As a result, it cascaded innovation KPIs to departmental and individual levels. Organization B shares the same practice with Organization A. Organization C is using KPIs to ensure that the Suggestion and Reward Program behaves healthily. However, an organization has to balance between using KPIs for monitoring organizational performance with monitoring individual performance. That is because employees should not perceive that KPIs are used against them.

To overcome the negative impacts of KPIs, organizations use different techniques to break its employees' resistance. Organization A rewards failures to encourage employees to share their innovative experience. It also asks its employees to participate in the KPIs implementations to get their buy-in. Both Organization A and Organization C continuously promote the benefits on their innovation KPIs as a method to eliminate intimidation. Also, Organization C involves its top management in the process and it communicates the innovation processes transparently.

Organizations should have clear innovation processes to follow. One out of three organizations had a proper process for innovation. In Organization C, the innovation starts with collecting ideas. These ideas are evaluated by the subject matter experts. Each respective department has its own evaluation mechanism. Once the departments select the ideas to be implemented, projects are initialized to realize the ideas. After the successful implementation, the owner of the idea will be rewarded.

6.7 Expert View on Innovation KPIs

The above three case studies presented the usage, implementation, and effects of innovation on these companies. Weighing the outcomes against an innovation consultant will provide a more holistic picture of the four categories we explored in the above case studies. Therefore, this section will continue to use the five identified categories of information groups in section 6.1.

Category 1: Current State of Innovation

The expert agreed that the current practice of the companies to accommodate innovation is by including innovation as part of the strategy. He says that tools like strategy planning, performance management, and HR rules are used by organizations to enforce innovation. His confirmation is on accordance with what organizations A, B, and Organization C are implementing. However, he stated "we still apply and practice management tools that were invented in the beginning of the century. Why management tools are not changing" (21 June 2011)? KH believes that innovation is the whole strategy. In other words, innovation should be used as a foundation for the strategy. He added innovation should be used to deal with financials, processes, and customers. KH identified social networking as a new innovative channel to deal with customers. He believes that if firms do not know how to innovate, they will get back to the old tools.

Category 2: Impacts of Innovation KPIs on Performance

KH did not touch how KPIs impact performance. Rather, he touched on what motivates employees in a company, what keeps them around, what makes them change behaviours, and what makes them happy at work. He specified six motivational factors that are:

- Theoretical: company's contribution to the employee's knowledge.
- Utilitarian: firm's efficiency and effectiveness.
- Balance of work and life: entrepreneurs love this environment as they can start their own business and have fun at work.
- Social: organizations support the society and environment.
- Individualistic: company's serve employees personal interests.
- Tradition: beliefs and values are shared between employees and organizations.

KH considered these as factors of motivation. Similarly, he believes innovative organizations will attract employees who value innovation. Since the motivational factors for employees were not explored, comparing this section to the organizations studied is irrelevant.

Category 3: Innovation KPIs Framework and Methodology

KH confirmed the current practices used by Organization A, Organization B, and Organization C to incorporate innovation like customized BSC and special innovation programs. However, he implied that such methods as practiced by the three organizations are mainly useful in case of incremental innovation.

KH's method to innovate any company's strategy is by looking at the company from three perspectives that are *who*, *what*, and *how*. The *who* represents the customers. The *what* represents the offers as value proposition to the customers. The *how* represents the business processes. Exploring the *who* as an example, five customer tiers will be identified. In a supposed scenario where BMW is investigating its five tiers of *who*, the first tier will be luxury buyers and people who love speed cars. The second tier will be people who drive Mercedes or Audi. The third tier will be people who drive Honda. The fifth tier will be people who do not buy cars. To innovate, the company should stretch its strategy all the way to tier five as KH indicated. Applying that to BMW, the company would be looking at building busses, trucks, and maybe bicycles. Alternatively, the company might seek to embed BMW's quality in car seats used by different brands and so on. The same principle applies to the *what* and *how*.

When stretching strategy to cover all the tiers, a company may have so many ideas to implement. Therefore, it will need a strategy or a plan to deal with them. Such plans would be selling patents, designs, and know-how. Another strategy would be to incorporate innovation related to tiers one, two, and three; innovations in tiers four and five will be sold as patents. A different plan is to setup an investment budget to support entrepreneurs who come up with ideas and the company would then share profit percentages if they succeeded.

KH agrees to use KPIs as a tool to measure your success as the case for organizations A, B, and Organization C. However, he believes that KPIs have been set to gather historical data. An example of that would be financial KPIs which look at generated revenues. In innovation, he promotes that KPIs have to be set to direct future behaviours. Coupling KPIs with incentives to reach desired outcomes is encouraged by KH. He thinks that incentives are good motivators for employees.

Another important technique companies are not paying attention to is feedback. KH believes that companies are lacking in this practice especially in the Middle East region. He argues that organizational systems do not consider the voice of lower level employees who deal with day to day operations and, therefore, firms have poor views on how to improve the company's performance. An example of that would be the banking systems and the customer service advisors. If an advisor does not communicate to the management that there are customers interested in loans without opening accounts, the bank will never target those customers. That is why feedback and employee's voices are very important in the innovation cycle as KH stated. This technique is used by Organization A and Organization C. Both firms apply such method because they understand the importance of the lower levelled employees.

Category 4 Prerequisites for Efficient Innovation KPIs Implementation

Innovation processes and systematic approach is identified by KH as one of the main challenges in implementing innovation. In category 3 of this section, use of frameworks and methodology to implement innovation have already been explained.

In agreement with what Organization A and Organization C identified as a challenge of innovation, KH views culture as a vital concern in innovation. He suggests that HR has to change its processes and procedures to allow employees to spend time in creativity. As a result, those employees can generate ideas and solutions. That is one example of how culture is important. If the company's rules and environment do not stimulate innovation, it will not work.

KH trusts that a company has to have the management buy-in for innovation. That is because the management has to enforce innovative culture in the organizations. Also, the management has to present innovation outcomes to employees. That will act as success stories to encourage employees to innovate. All interviewees from the case studies pointed out that management has to take part in the innovation plan. That is why they have periodic management meetings to discuss innovation matters.

KH identifies patience as an enabler for innovation. He explained that changes take time to happen. He said that real outcomes support the environment because it builds trusts between employees and management. To expedite building the trusts, the management has to consider showing fast outcomes to employees. That is accomplished by hitting low hanging fruits to show quick results from the innovation system. Examples of these fruits will be cutting costs and demonstrating growth. As KH indicated, watching trends and predicting future are key factors to become innovative. He thinks that future foreseeing opens up the windows of opportunities for innovators and entrepreneurs. None of the cases studied pointed out that they are watching trends and acting accordingly.

In this chapter, we have explored three different angels of innovation as explained by Sartorius (2006). The three case studies used two angels of innovation that are using less inputs and resources to reach the same outcome, and producing or improving the products and services. The third angel was opened up with the expert who emphasised the use of innovation to develop new business models. In the next chapter, we will extract conclusions and recommendations out of the data analysed.

7.1 **Results**

So far, the literature review, the case studies, and the expert view on innovation have been examined. In this section, the examinations will be used to present the findings against the research objectives.

7.1.1 To Evaluate the Organizations' Awareness on Innovation

The extension of innovation concept understanding was explored. Out of the three case studies, one organization had a holistic view on innovation. It is the only organization addressed the innovation very clearly in its strategy. This firm has a performance department which sets the overall performance indicators including innovation. However, the department consist of only one employee. The other two organizations had clear understanding of innovation although their implementation does not match their innovation recognition. One of these two companies has a program to collect innovative ideas, evaluate them, implement them, and reward their owners. This specific organization has a separate department to operate and manage the program. Apart from that, only one company had a clear innovation process.

This objective indicates that companies grasped the innovation concept. However, innovation is not mature enough in these organizations either because it is not remarked in the strategy or because there is no clear innovation processes defined. The expert contradicts using innovation as a component in the strategy. Rather, he believes innovation has to be applied on the whole strategy. The result of that implementation will be innovative. Rather than focusing on innovative products or services in specific fields, this approach widely opens the box of thinking to be innovative in the whole strategy. Consequently, innovation is forced across all functionalities and operations and is used to come up with adjacent or disruptive products and/or services.

7.1.2 Investigate the usage of KPIs in Organizations and Their Effectiveness in Enhancing Performance Through Influencing Behaviour

All organizations confirmed the use of KPIs as a management methodology. Two organizations use customized BSCs which are linked to strategy. The third firm used benchmarking as a mean to set KPIs; though, its KPIs are not related to the corporate strategy. Furthermore, organizations have also communicated that KPIs have positive and negative impacts on performance and employees' behaviours. The main positive impact is to monitor organizations' performances and to spot deviations and misbehaviours early. The other two minor positive consequences are to standardize processes and to align employees with yearly plans. On the other hand, there are two negative results from implementing KPIs; companies have different tactics to reduce their effects. Resistance is one of the major unenthusiastic influences of KPIs. Never the less, organizations used to decrease resistance by rewarding failures, allowing employees to participate in setting KPIs, promoting the benefits of KPIs, involving top management in the process, and communicating the process transparently. The second unwanted outcome is manipulating KPIs figures. This effect showed up in only one company out of the cases studied. The organization used to trust the SMEs that are providing the figures and signed SLAs with different departments to give them more control over the KPIs. Besides, all organizations utilize incentives to emphasis on the wanted results and to overcome the negative consequences.

This aim confirms that KPIs bring both advantages and disadvantages. However, the benefits overweigh the negative impacts. Moreover, there are tactics that can be used to minimize or conquer the drawbacks. Therefore, setting KPIs and linking them to strategy is a good mechanism to evaluate organizations' performances toward achieving their plans. Similarly, KPIs are used to correct behaviours, and therefore, enhance innovation culture in organizations. That is accomplished by setting futuristic, behaviouristic KPIs. For example, placing KPIs for employees to come up with a specific number of ideas in a specific timeframe will direct their future behaviours toward innovation.

7.1.3 Examine the Use of KPIs in Managing Innovation

Two companies use customized BSCs which are linked to their strategies. Therefore, the innovation KPIs are linked to the strategy. The third organization had their innovation KPIs unrelated to the strategy. That was not a barrier to innovate; however, innovation was unfocused in this firm. In addition, organizations manage innovation using different types of KPIs like product development and enhancement KPIs, sales KPIs, and operational KPIs. Furthermore, yearly and/or monthly management meetings discussing innovation matters proved to have positive impact on directing innovation. Likewise, communicating the innovation process transparently enforces innovation habits between employees. Alternatively, using innovation as an organization's strategy will ensure that KPIs extracted from the strategy are already linked to innovation.

Linking innovation KPIs to strategy directs the employees toward focused targets rather than random innovations. Also, it was interesting to see how sales KPIs can enforce innovation such as the case of Organization B. However, using one type of innovation KPIs are not enough. In contrary, using a mixed types of innovation KPIs creates a holistic KPIs set for innovation. Moreover, management engagement in the innovation strategy and implementation creates an inspiring environment for employees. That is because they see the seriousness of the management to achieve innovation goals and because employees try to follow their leaders and role models by innovating. On the other hand, two organizations lacks clear innovation process. This means that their implementation of the innovation strategy is not complete. Therefore, such organizations might face resistance from employees to coop with firms' innovation strategies.

7.1.4 Investigate How Innovation KPIs Can Be Used to Influence Innovation in UAE

Innovation is relatively new concept in the UAE. As a result, the culture in this region is not mature enough in this area. Hence, culture creates the biggest barrier in front of innovation path.

To have a holistic innovation structure in organizations, the definition of innovation has to be clearly understood and documented. Moreover, the organizations' strategies have to incorporate innovation as its core driver to success. That is reached by using linear innovation model for existing products and services, by using innovation to come up with new, adjacent products and services, and by using disruptive innovation to bring unexpected breakthroughs. Furthermore, innovation processes have to be designed and clearly communicated to employees, who have to participate in the innovation cycles. Later, performance management has to be formed to identify, set, and monitor innovation KPIs which lead to measuring the organizations' performances toward achieving innovation goals. In addition, organizations have to rely on different sources of innovation like internal capabilities, customers, stakeholders, and external knowledge or patents.

Once the structure is set, organizations can use few tactics to boost their innovation activities. For example, management regular engagements during innovation cycles and processes are very encouraging for employees. Also, linking incentives with KPIs is one of the good methods to increase innovation productivity. This will not only ensure employees' participation in the innovation goals, but will also improvement their outputs. Likewise, regular communications regarding the selected and successfully implemented innovative ideas will strengthen employees' trust in innovation goals. Similarly, companies have to use different techniques to extract ideas from innovation sources. Trend watching and consumer behaviour observations are examples of such methods.

7.2 Conclusion

This research used non-random method in selecting companies to study their implementations of innovation strategies. Therefore, I cannot conclude on the level of innovation awareness in UAE. However, I can conclude on how companies are using or implementing innovation. None of the organizations studied had a mature innovation model. Reasons for immaturity were because of unavailable processes, unlinked innovation activities to corporate strategy, and absent of proper innovation KPIs. These companies lacked the full view of innovation incorporation. As a result, there were broken links in their innovation methodology. However, organizations are taking considerable steps to incorporate innovation strategies. They are spending money and efforts to incorporate innovation whether by injecting it into strategy or by having special innovation programs. But, this study showed that such efforts are not enough.

Based on the interviewees, management is partially participating in the innovation cycles. Even that participation is not solid enough and it does not provide confidence that innovation is the key factor to consider. Rather, innovation is always underestimated. To incorporate innovation properly, management has to understand that relying on innovation is the only way to lead markets continuously; therefore, management has to extensively participate and embed culture, environment, mentalities, and attitudes which stimulate innovation. The management has to provide the needed tools and invest in capabilities to enable innovation. It has to set realistic targets and goals to direct organization's efforts toward innovation. Accepted performance and achievements have to be rewarded to enforce such attitudes and behaviours.

Most firms are relying on KPIs to monitor their progress against set strategies. Since innovation is used as a component in the strategy, it can be monitored by KPIs as well. Therefore, companies can use innovation KPIs to monitor their innovation performance and to direct employees' behaviours towards innovation. Two companies have their innovation KPIs linked to their innovation strategy. One company did not have innovation strategy. So, it selected a number of innovation KPIs from benchmarking. KPIs do indicate your progress and they do set behavioural directions if implemented correctly. Controversially, KPIs could provide wrong indications as explored in this research. Therefore, relying solely on KPIs to measure progress is not the best way because the management will not be able to challenge the KPIs results. Firms require the continuous engagement from the management in the innovation strategy in addition to the KPIs so that organizations can get the best innovative results.

Apart from that, companies have to use proper KPI filtering mechanism to select the best set of KPIs representing their innovation implementation plan; which was neglected by all case studies. Such ignorance could result in using KPIs that have negative rather than positive behaviours as communicated by the interviewees.

Furthermore, there are different types of innovation KPIs to be used based on organizations' functional structures. There are operational, financial, and product development or enhancement KPIs. I strongly believe the best results will come from using a mixture of KPIs types. That is because all aspects of innovation processes are considered in the mixture.

I believe using innovation as an element in the strategy and using KPIs to monitor its progress does not enable firms to use the full power of innovation. Rather, I consider this method to provide very minimal results of innovation that are linear based. Therefore, I think the expert had a more interesting and convincing method to innovate. Looking at strategy from an innovation perspective is a better way to integrate innovation in organizations. That is because it clearly separates organizations' current from future, desired state. Also, it separates the future state into two views that are adjacent and disruptive innovations. As a result, firms will look at different areas in which they can innovate. Consequently, the KPIs driven from strategy will be focused on innovative plans. I suppose the drawback of this method is that it does not look at the current customers, products, and offerings of organizations.

Therefore, I strongly believe that combining both methods will comprehensively incorporate innovation in organizations. Firms can use the linear model to progressively innovate their current products or services. This will also help in changing the culture in the companies. At the same time, organizations can look at their strategies from innovative perspective to open new opportunities for disruptive innovation.

7.3 Recommendations

In the UAE, it was very difficult to find information on Government's programmes which enforce innovation infrastructure for companies. Similarly, the found information demonstrated the lack of innovation in UAE compared to others. Although the country has patenting system, the number of registered patents is insignificant. Therefore, there is a fundamental change needed in the system to stimulate innovation in the country. Although the UAE Government initiated a number of innovation summits, I believe the first step is to have a complete roadmap on how innovation will be addressed by the government. The UAE Government could start implanting the importance of innovation in education system. The education system could teach students how to be innovative. The system could also provide them with the space and courage to practice innovation. Also, the country could setup innovative contests for individuals and for organizations to create and boost innovation environment. Likewise, patents registered should have special recognition by investing in them to bring desired outcomes for both owners and the UAE.

In Organization A, the company is doing well in terms of setting innovation elements in strategy and implementing innovation KPIs. It has a perspective in its BSC to focus on innovation. Also, the company is using a systematic approach to filter the KPIs. Likewise, the firm is using good tactics to reduce the unwanted results of KPIs. On the other hand, the definition of innovation is not documented. Therefore, the expectations of innovation might differ between the management and employees. The company has to document the meaning of innovation to be used as a reference by the employees and the management. Also, the firm should adapt a system to register ideas and their analysis for future considerations. The system should allow other stakeholders like customers to participate in the analysis. Moreover, innovation process has to be clear enough for employees to follow. From the conclusion, the management has to drive innovation passionately rather than just monitor the progress. Organization A has to innovate its strategy to look at different opportunities. In Organization B, interviewees lacked the full knowledge on how their companies incorporate innovation. Therefore, there were a lot of contradictions. Also, the interviewees tried to enhance the company's image with innovation. On the other hand, the company is using financial innovation KPIs which is relevant to their branch since the inventions are made in different branches. Consequently, I believe the branch has to communicate extensively with innovation laboratories to come up with new products suited for this region. Similar to Organization A, Organization B has to document the definition of innovation. Its strategy has to specify the way such branches will participate in innovation. Then, a proper set of KPIs has to be derived from the strategy. The firm has to set proper innovation processes with innovation laboratories to consider factors specific for this region.

In Organization C, the innovation process is very clear. There is a system to collect ideas as well. However, the Suggestion and Reward Program looks detached from the corporate strategy. Also, the program is very limited in supporting the existing functions. I believe the company has to define and document innovation. As well, it has to draw a clear strategic path for innovation. In addition, the company has to incorporate KPIs to monitor its progress in terms of innovation strategy rather than to monitor the functional progress of the program. Furthermore, the company has to look at its strategy from innovation perspective to come up with new opportunities for innovation. By using the same incentive system and by incorporating the above said recommendations, I believe the innovation result will be boosted significantly.

7.4 Research Limitations

This study encountered few limitations. The lack of similar studies in UAE was the major limitation. Very limited companies are known for their innovative strategies. Consequently, the case studies were minimal. Also, official statistics and reports from the UAE Government were hard to reach. These limitations affect the innovation indications in the UAE. Likewise, companies refused to reveal statistical benefits they gained from incorporating innovation. As a result, the credibility of the answers reduces. Therefore, the actual firms' situations cannot be authenticated.

7.5 Future Research

This study is one of the initial researches in innovation KPIs in the UAE. The research shows that having a comprehensive approach to incorporate innovation and its positive outcomes are the major requirements to focus on in future. Future researches could focus on firms without innovation strategies. Business cases could be built to illustrate the benefits such companies will gain from implementing innovation. Examples of such business cases are as follows:

- Investigate how IT companies can innovate their services and provide financial data to support the study.
- Study how the UAE Government can enhance the innovation culture.
- Examine the role of the UAE education system in stimulating innovative mentalities in future generations.
- Develop a business case on how to bring benefits of innovation to manufacturing industry.

Appendix A

Case Study 1, Organization A: Interview with Performance Manager on 29 May 2011.

Can you brief me about your company and your role?

We are IT solution provider to the banking sector. Our main targets are the banks, financial houses, exchange houses, financial brokers, and private and government financial organizations. The solutions we provide are both hardware and software like anti-money laundry, gateway connectivity, and swift.

Performance management is not a common thing in small to medium size companies. Usually, international companies adapt such functions into the company because it is a support function. International companies have performance management function centralized in head quarters (HQs) which define the companies' strategies and objectives. Once the strategies and objectives are set, the HQs will translate them to different branches to adapt them. Our company used to be local based. The company now became regional based and it has branches in Egypt, Turkey, and Dubai. In 2007, we acquired a company in Europe and our coverage expanded to Italy, Europe, and US. That led us to become multinational company. So, we started speaking different languages, and we used different business communication approaches, which were hard to understand. As a result, we had communication problems because of different mentalities and different languages used by the global branches. For example, the Account Manager in Amman sells in different mentality or a point of view that the one in UAE. Such difference in mentality is a subject we wanted to tackle. Once we had the ethnic diversity became wide, we had to unify the language. Therefore, we thought of standardizing our operations and functions. To be able to do that, we have to define what we are, we have to brand ourselves, we have to set the vision, mission, objectives, values, and strategy, and then you drill those objectives down into sub-objectives, initiatives, KPIs and valuables that come with that. To do that, you need a person, if not a department. This is where I come to assess what we have, revisit what is already implemented, and come up with anything new if we don't have it.

Initially, I used to be a process controller. I used to take care of all internal communication whether it is policy, processes, manuals, or so on. Performance came later. Performance management used to be outsourced like most of companies. They outsource a consultant to assess what they have and to build up their strategy. They also perform the gap analysis that every company needs to have. By gap analysis I mean SWOT, PESTLE analysis, value chain, and so on. All such analysis used to be outsourced on yearly basis. At some point we did not have any. We started doing that with outsourcing companies until I joined the company. I took what we have, revisited, and implemented. That was on 2008, and we still do that on yearly basis. Sometimes vision, mission, and values need to be changed, eliminated, and adjusted. August 2008 we kicked off the project. January 2009, it was implemented. And we are still until now.

I am the only person working on this project and function.

Why did the organization choose KPIs as an innovation performance measurement technique?

We believe that you cannot manage what you cannot measure. Also, everybody understands that operations functions are the most important functions in companies. That is why you need to see tangible results and quantitative figures that you can base your period and location performance upon it. That is why you build initiatives fast. For example, you will understand that the sales department are not working efficiently because you have measures that you base your decisions upon. Usually, the support functions like HR are the ones left behind. That is because they don't come up with quantitative outcomes. That makes it hard for human being to evaluate these support functions. It is a human nature that if we don't see numbers, we don't know how to evaluate anymore. The evaluation becomes subjective in such cases rather than objective. The best way to judge as objectively as possible is by narrowing the qualitative results into quantitative ones. We wanted to know if we are on the right track or not; especially, when the company acquired the European company. In that period, we noticed that branches are not unified in terms of functionality, processes, and management. So we had a need to create a common understanding between our branches. Unifications will lead us to merge processes between companies. That can lead to misunderstanding between branches by wrongly anticipating that one of the processes are right and the other is wrong. Therefore, we had to bring all branches in a single level where they understand each other. That is done by building a framework with defined results, which can be measured. That is why we needed KPIs to measure the outcomes and to limit the subjective judgement as much as possible.

Also, there are branches which communicate with each other. We have a HQ which manages the same functions in different branches. There are direct communications between branches and HQs, and between branches with each other. Such communications happens on regular basis depending on the needs. For example, global operational functions might have daily or weekly communications; while support functions might have monthly or yearly communications. Another example of regular communication would be the yearly sales meeting for the whole group when sales representatives and sales managers meet from all over the world to discuss sales matters. During these communications participants have to use a unified language.

Using KPIs is relatively new in the region. That is why some of us thought the journey of KPIs is short. We knew that it is a long run. That was one of reasons why people dropped the subject when they heard that the KPIs will take up to 3 years to be implemented in our case. In addition, some of us saw that the KPIs subject is incomprehensive because they did not understand it. Also, some people talk only with numbers. A person who is used to quotas and targets will have hard time understanding the function of performance management and why it takes so long time to implement. That is why we went step by step. It was hard to go the whole mile from the first step. The first step was to build the gap analysis report. This report was a result of a study phase using different methods like PESTLE, SWOT, value chain, vertical and horizontal analysis, and competitive analysis. The report also included the 5 years plan and strategy of the company. This report was built with participation of employees from different managerial levels. So, everybody had his/her say with regards to his/her own function and responsibility. Based on the feedback, which was included in the gap analysis report, we started talking to people about what we are going to do next.

The whole implementation of the KPIs was divided into 4 phases that are data gathering, data analysis, building KPIs, and optimization. Building the gap analysis represent the phase 1 also helped us introducing KPIs so that people are involved from the start and so that they have their opinions heard. Once the committee approved the report, we started the analysis phase in which we had to select the appropriate KPIs method to be used. We chose to go with balanced score card. However, this method was not fully applicable in our company. That was because the balanced score card has 4 main categories that are financial performance, customer satisfaction, process, and learning and growth. Our company had partially different objectives to consider in KPIs implementation. So, we decided to customize the balanced scorecard to include all our objectives. That was done by changing the 4th objective learning and growth into 2 objectives that are growth and innovation, and employee commitment. Growth and innovation is about planning advancement in software development since this is our core products. So this objective is specifically for systems and software. We also used a 5th objective in our customized scorecard which is the employee commitment. This objective separates the advancement of employees from systems by concentrating on how people develop their skills and abilities. After that, these 5 objectives were divided into sub-objectives. For example, financial performance is an objective to reach. That is done by identifying the targets of this objective as an indicator to its successful achievement. Those sub-objectives represented what the management wanted to monitor like revenues, profit margins, new products introductions, number of new market segments entry, and geographical locations introduction. Then, we identified the set of KPIs that will support us monitor the sub-objectives. For instance, one of the sub-objectives is improving profit margins. To be able to do that, we need to monitor gross margins, EBIT, EBITDA, and net income. That completes the sub-objective of improving profit margins by having its measures. Using the same approach, we go through all sub-objectives and identify all their measures to come up with a map illustrating the balanced scorecard 5 objectives, their sub-objectives, and their related measures. Once those measures are set, we need to set their variables. Variables depend on measures. For example, the unit of measure like percentage, number, etc; frequency of the measure like monthly, quarterly, etc; the owner of achieving the measure; the data provider responsible of the measure; the source of the data like manual or automatic; and the polarity of the measure like the higher the number the better. The 3rd phase was implementation. In our case, we decided to automate all the processes of KPIs measurement because this was the first KPIs implementation in the company. We bought a system to create our scorecard. This decision increased the project period by 6 months just to systemize it. That was because we had to build the infrastructure, the rules of measuring the actual figures, users and groups management, and the views and reports users are authorised to see. Apart from that, we had to integrate the scorecard system with existing systems used by functional areas like Customer Relation Management. Once the system was ready, we started phase 5. Gathering the figures and calculating the KPIs had 3 scenarios. 1. We have the numbers and it is automated. 2. We have the numbers but not automated. So we had to give them deadlines to log the needed information in their system which will be used to pull the data to the scorecard system. 3. We don’t have information. That happens when we never logged this information or when we never had this measure before. So, we ask the department to automate the generation of this measure by using their respective system. Again, scorecard system will pull the measures from their system.

By this time, we had our actual measured. The next step is to prepare the targets. They have different scenarios as well depending on the difficulty of the processes that are measured and targets are set. The scenarios are either benchmark, observe, or compare against last year. Benchmarking will be good when you are too specific at what you do and you have a better company against which you can benchmark. Observation is done by looking at the trend of the measures within 6 months. Analyzing how fast, slow, wide, narrow the trend is helps us figure out the actual figure of the measure. After that, we set the next best scenario we want to see in the next month. Comparing against last year like sales orders in every July in the last 5 years.

Once targets are set, we had to make people love and use performance management and KPIs. If nobody used the KPIs, it would be as if we did nothing. That is done by reminding them about the purpose of performance management which is providing suggestions and taking actions to improve the performance by using actual numbers compared with previous figures. Somehow in the middle of the implementation of KPIs and scorecards, people forget the purpose of the implementation. That is why you need to remind them about the purpose of the performance management throughout the project and it is the trickiest part in the process.

We choose scorecard because the scorecard is linked to the strategy. This is how to get our KPIs from the strategy not the other way around.

We received a lot of KPIs from the departments when we were in the process of identifying the KPIs. We cannot add each and every KPI we receive from the department. We select whichever is strategic. We would have to verify and validate the KPIs before adding it to the sub-objective and scorecard. For instance, in the sales KPIs, the sales managers would tell me that he wants to see the number of proposals that comes out from his department every month. This KPI is crucial to him but not to the global strategy. However, we might create for him a separate view in the system to enable him to look at those figures.

Creating sub-objectives limits the number of KPIs because you are saying that I want to cover this specific sub-objective. You cannot add ad hoc KPIs under this sub-objective. Linking KPIs to our strategy is the whole purpose of the scorecard. We are not creating departmental scorecard. Since it is new, it usually starts with minimal KPIs. With years, people might want to add new KPIs and then we will have to know how to limit and control the expansion of the KPIs. Because we are just starting using KPIs, we do not want to start with much, we want to start with the basics. And actually by the time we figured out what we need, it was not much. It was exactly as much as we needed. Straight to the point. We kept it as minimal as possible. We do not want to start big and loose it in the middle of the process. We want to create a success story about implementing the KPIs. If you talk to singe department or individual, that will make it explosive KPIs. It would generate lots of KPIs and ideas. But when take a bit from here and bit from there, and when you try to standardize across the board, it eliminates itself by default.

Awareness is available continuously and it is on personal level, face to face, and direct communication with each and every user. We think this is the best way. It is a hard thing to grasp. We do not want to do it the wrong way. We are still implementing and we are still fresh and we have not thought of that yet. To answer your question, no we do not have any process or workflow to follow for re-evaluation. I think it is too early to start thinking of that. Until January 2011 we had measures without targets. It is a very long process and that is why we have not thought of revisiting. We took 1 year to gather the data. We did not get them all at once. We had different deadlines. Some departments were totally unready. So we had to build the department's scope of work. By early 2010 it was almost ready.

Along the way, we had management change. The company was undergoing structural change. We had to introduce this functional operational communications. The departments re-engineering made us wait or extend the deadline. People did not change in the restructuring. Only the reporting changed. This did not affect what we build. It just delayed the process because the departments are busy fixing their internal affairs. That is why we needed to give extension for the departments. After that we had to undergo the second exercise which is the targets. As we speak, there are minimal department that are not ready. That is why we have not given a thought of revisiting.

Until now, we did not have cases where KPIs needed to be changed because we have limited the number of KPIs in the implementation. We make sure we hand pick whatever we want to start with because we want to start the right way. Along the way, people might ask to add KPIs and some of them are going to be turned out to be absurd. This is when we decide to build a process to validate and verify KPIs. We do not want people to say I think this is right or I think this is wrong. We also have to set up another workflow about revisiting the whole thing on yearly basis. KPIs have made measurement specific. Before we had performance reporting on ad hoc basis. KPIs have also made objectives centralized in the scorecard system. Before we had the information apart in surveys, and in discussions. Now we have specified KPIs. Every department is being monitored and measured. That is why we have to set future plans, action points to follow. These are not ad hoc or annual anymore. They are on monthly basis. They have to be shared with management. It is also 2 ways communication where both employees and management share to each other their monthly plans. This way, the communication will be flowing without delay and we will always be monitoring what is happening. It might not be perfect and there might not be a well defined mechanism in implementing innovation but at least it is a start.

To what extend is the management involved in KPIs?

Usually, there should be something called committee board. This committee is supposed to review all these changes or initiatives that appear on yearly basis. Here, the board happens to be the executive management which consist of 4 persons that are the CEO, CFO, CIO, CHRO, and performance manager. We sit on yearly basis to see what we did, what we didn't do, and what of these KPIs or measures were absurd evolved and did not add any value. Based on that we make the decision and of course we cascade to group managers, line managers, and subordinates. We need to get the buy in from all parties before we go ahead with any updates or changes.

The performance management function exists in our HQ in Dubai. We use global balanced score card which is across the board. Since the board consists of functions heads like CIO, who is responsible for all IT related matters in all global branches, he ensures that the score card related to IT is implemented in all branches. When we built up the global balanced score card, we made sure it is as generic and global as possible. It is not country or branch specific.

The operations that we reflect in all branches are standardized. It is the same way we deal with customers in all branches and countries. Of course, there are minor changes depending on cascading down the score card to a branch, location, or business area. At this point we have it generic and globalized, but we see it by different locations. So, we see it from branch level. This is how we measure. We don't measure on global level; instead, we measure on office level. However, the performance management is generic across the board. The KPIs are same whether they are for GCC, Europe, and US offices. So, the KPIs are global and are the same set across the branches, but we look at the measures from office levels. For example, we have revenue per month as a KPI and we measure it on location basis. The targets against this measure are different from a branch to another.

We eliminated manual reports since we have a system to calculate the measures of KPIs and generate reports automatically. There is monthly performance review meeting with committee. Apart from that, the system also provides users with certain views to allow them to review the KPIs they are responsible for. That facilitates the departments' managers and line managers to review their performances and have separate meetings with their subordinates to act upon their performance matters.

We are still getting used to making these reports, so it is still on observation phase. Later on, we have to come up with action plans, corrective plans, and preventive plans. We cannot just keep observing. This is our intention. At this point, we thought it is a bit early.

Management participate in the definition of the KPIs. There is a monthly meeting when actual and targets are reviewed. Also, the executive committee will come up with suggestions and improvement plans. Departments' managers cascade the KPIs down to individual tasks and objectives. They do not participate in actual and targets because they are automated in the system. They also participate in communications. Every manager has to communicate with the management in writing the summery of the month, the action plan for next month, success or failure stories they want to share, and they have to communicate the performance of their department to their subordinates. Acting as both way communication.

What are the impacts of KPIs over teams and individuals?

When it was implemented, it looked attractive because it s a hard work from each and every department to see that by the end of this lengthy process, they came up with a formula to measure their performance. The impact of this idea is somehow intimidating to people. The management would love it but any lower would be intimidated. It is monitoring tool just like any other technique used to monitor the working environment. That is because if you know what you are doing, it is for your own good. But if you are not, then you can be intimidated. But, it is not something to be intimidated at because it clears everything that you are talking about. It clears everything that you are doing on daily or monthly basis. It clears the whole view of your department. Department and people that are not usually measured, they feel that they are somehow intimidated by the look and feel of how it is. It was hard to implement not only because of this factor and because the factor that people don't get at the balance scorecard seriously, but also because people are against change. And because they are used to a certain kind of report and because they are used to a certain kind of evaluation, it is so hard to drift their attention to another source of reporting. That was one of the hardest periods in our implementation to make people let go of whatever they are used to and make them get used to what they have in terms of them being evaluated, them not being intimidated by what they are seeing, them referring to this tool as an insight to their department's performance, and them communicated to their management through our balanced scorecard. All these perspectives had to be digested by each and everyone to be implemented. We are still in the process by the way, it is not completely done. We still have resistance, we still have fear of change, and we still have like conservative people who love to stick to their own manual reporting and to write essays about their monthly achievement. It is a long way.

We were keen to have the buy in of everyone from the start. So, this comes the involvement of every single person during each and every step of the process. Unfortunately, it is a management tool. You cannot give access to everyone and you cannot let everyone interfere. At the end of the day it is a reporting tool that monitors the performance of each department. It is not something that you can give access to everyone and let everyone have a say in it at the end of the day. You cannot force this practice. As we said, it has to be bought in or digested by each and everyone. We urged them to communicate using this tool. We urged them to share their success stories; we urged them to share their concerns, their failures, their future action plans, and their way forward through our balanced scorecard. We tell that whatever you have as good, brag about it and say to us how you did it. We tell them that whatever you have as bad, tell us what happened, from whom you need more support, why this will never happen later, and explain to each and everyone that his was out of your hands. We tell them to share your experience with everyone. At the end of the day this is your channel. This is the way you speak up. Use this tool to speak through every person you want your voice to be heard. Do not consider this as a death sentence to each and every department. You have to take advantage of this tool. You can know how to use this tool either against us or for the best of their departments. So just tailor it to your own needs. Use the tool to help you. Use it internally to see how you can improve your subordinates or your internal affairs or your internal communications. Don't think of it as your own way to get exposed. We tell them that this is to monitor departments not individuals. This is how we keep saying. This is the only way that we can get into people by promoting the needs and the importance of having this tool. We also emphasize that this is not a department to management or management to executive management thing. It is a communication tool. It highlights the positivity and negativity of the departments regardless of the ownership. It does not have to mean that someone made a mistake; rather, it means that something went wrong and we need to know why. It will help you not to have this mistake later on. It will help other branches to learn from. It will help other subordinates to learn from your experience. It will help the management to take care of you in later incidents. This is how we try to promote it.

On yearly basis, I get in touch with HR. They ask what departments KPIs. They add it to the appraisals and other appraisal categories are things that are manager's addition to this specific employee. Appraisals do not only include the KPIs. However, each employee should have in his appraisals the cascaded objectives from his department's objectives. Not all KPIs will be cascaded to individuals. Appraisals already have KPIs related to discipline, time, tardiness, and etc. I do not know how HR is handling the incentive plans. Our appraisal processes end up with rewards, benefits, penalties. That is the whole reason behind the appraisal system. However, I do not know its mechanism. When appraisals come, HR in a way communicates with me to make sure that whatever set objectives set on individual basis are somehow the same level of the department level objectives. At the end of the day, you cannot have a person with a certain set of objectives that have nothing to do with his department's set of objectives. So, on yearly basis, HR and I communicate to ensure that everything is on sync.

The most important of the all is that balance scorecard is a new concept in the region. It is a misunderstood concept on all aspects like the length of the implementation, the impact, the need, and all what matters. I don't know how this happened, but I think it was not implemented the right way when it was first introduced in the region. Maybe people considered it as an excel sheet that every department should have and that's it. They don't know that it is drafted from strategy, objectives, sub-objectives, and that those KPIs have to be revisited on yearly basis because things change. Also, it is an intimidating factor. Whether they have personal agendas or not, they think that KPIs will be used to evaluate and monitor them. It sounds intimidating. Though as much as we try to promote that KPIs are used as a communication tool through which you can channel your needs, it is still intimidating. Because you are limiting the achievement of the department to a certain percent at the end of the month. Whatever they try to do if they did not achieve a certain target whether it is operational or support, they will be in a red zone. That is why they get intimidated by the KPIs.

You would get such impression that people might manipulate data, but in our case they cannot. That is because the system doesn't have privileges. Also, it is automated. Nobody can manipulate it. It is driven by from other systems. It is locked. Whomever owns the measures in the system have the right to enter their commentary, action plans, and notes. They cannot play with numbers.

You would always get such intentions that people might workaround KPIs; especially with departments that they cannot do that like HR. They can tailor the number and play around with them because they are numbers they control. Sales department for instance, they cannot manipulate because it is either they get this number or they don't. It is also logged in the ERP system which owned by financial department. It needs a crew to manipulate on this case. That is why I say it depends on the department. If you are asking me if it ever happened, I would say never. Will it ever happen? I have no idea. Is it easy? No because it is automated. Can it happen? Yes it can but it depends on the department. For some departments it is almost impossible and for some departments it is easily. We will have to wish for the best.

We did not use to have any systematic reporting before. So we were not organized in this area. Now everybody knows that there are reports to be come up, there is communication to be set, we need to hear stories from everyone, we need to hear their comments, we need to hear their action plans. This opened a panel of discussion through employees to management. It focused on communications, results, and sharing concerns. People would have negative results when nobody used to talk about it, and they get shut down and closed as an old chapter and nobody comes back to it. Now employees can talk about their concerns, they can tell us how the management can help them. Now it is ok to share bad stories or failures because everyone is here to help. I think it made people more organized in the way they report to each other. They communicate with each other and they report the management. It created some kind of discipline because at the end of the day you have a target to achieve and based on it you have to know how to do it and you have to prepare your plane for next month. It created this environment of empathy where it is ok to share failures and concerns because everybody is available to help.

We have resistance and we have success. We never had failure. We have people who resist and we have people who tried. Whomever tries, we never fail them. Whomever channel their positives and negatives through the scorecard, they got positive replies. So everyone knows that if you speak up, you would be granted empathy, understanding, and support. So, employees either do not participate or they participate and receive positive feedback. Nobody participated and got negative feedback from the management. Whatever complication we are having is because they are not using the system. Not because they think if they use it, it will hit them back with negativity.

People resist the whole system. The type of KPIs is generic. It is not something that you can fright on. The resistance is because of the idea not because of specific KPIs.

In the last couple of years, did the organization produce new products and/or processes? Why do you consider them new?

We have separated innovation to keep it strictly to our scope of work. We focus on product innovation. I think everyone is aware that whenever we speak about innovation, we are referring to the product innovation, which is our core offerings to our customers. I think it is a common understanding. That is why we adopted 5 objectives instead of 4 in our scorecard. So that we give it the right amount of intention.

Process is already covered in the scorecard as the quality. They are totally separate from product innovation. It is an innovative tool, but it is under the quality objective. That is because the purpose of re-engineering is to improve quality. This is how you achieve your quality process objective.

In scorecard, we have growth and innovation. So it covers multiple functions. Product management, software development, marketing, and channel partnership. If I talk about product management, say we have product a, b, and c that will have new releases in months a, b, and c. This is one of the targets that we want to monitor and see if they are going to work. That is because those new releases are being promised to customers. Based on that, we build our pipeline and everything else. This is a target that is going to be owned by the software development department. In software development, the process innovation would be how the department is handling its products efficiently. Did they send proposals whenever account manager announce that this potential deal is in that specific phase. If product department management followed the process correctly, they will have to send the proposal on time. This is one of the measures. They will have to send to all opportunities available in the CRM. So, this is another measure. They have to send it and receive back acknowledgement. This is how we measure the quality process.

Customer needs triggers innovation. That is why whoever receives those needs, whether it is customer service through surveys or account managers through their regular visits, he/she will report it in the monthly or annually reports. Those needs have to be gathered, discussed and act upon. Of course, we have to adapt to those needs like changing our products to accommodate them. That change happen by adding or removing features. Innovation triggers: Technology advancement, customer needs, enter new market segments, enriching our portfolio, and competitors.

Those new accomplishments are considered innovations. Does the organization have measurement methods over innovation?

Annual plans are on department and global levels. Those plans are shared across the board. This is why we have cascaded them to monthly plans. Monthly reporting which is provided by the scorecard report includes the monthly plans. So, we do not have to wait for 1 year period for the next plan.

Our product innovation does not only refer to software development. In our case, the product innovation is extended to R&D which is owned by marketing department to research competitors, new trends in the region. The software development is divided into sections like developers, quality assurance, and technical writers. Also, we have product development department who is responsible of owning the product once the development is completed. Development managers will own all the responsibility to all aspects of the products. They will speak of the products, they will present them to clients, and support the sales.

I do not think we have a certain mechanism to register and share ideas, but everybody is welcomed to share. Although the company might seems to be big, however we are still having personal communication. It is still somehow personal. It is not numbered and we do not communicate though systems. We still have meetings like annual meeting and annual workshops. All managements will have annual workshops to discuss these kind of ideas. We call it regional meeting which is attended by group managers and executive managers across the board. Everyone attending has to have conducted workshops with his/her subordinates to brainstorm ideas.

How do you evaluate the use of KPIs over new products/processes to improve the organization’s performance?

It is one of our 5 value creation objective (scorecard perspectives). It has to because we made a separate object for it. That means we are monitoring it and we are acting upon its improvement. If we didn't see any results yet, that is because we are still fresh. We will see innovative results in future.

Case Study 2, Organization B: Interview with Marketing and Technical Managers on 6 June 2011.

Can you brief me about your company and your role?

The company is multinational. It is diversified. We make ideas multiplies. We work on technology not products. For example, adhesive technology can be used in products varying from posted notes to building. The same technology is used to produce different varieties of products ranging from weak to strong adhesives. We believe in chain reactions. Same technology reacts differently in different products. We have 6 core businesses that are health, safety security, industrial, telecom, display and graphics, and consumer and office. We have 45 technology platforms in those 6 cores. Also, those 45 can be combined to produce unique products. The company is an American based in Mhanisuta. We started 170 years ago with sand papers. Innovation is our slogan and core. Everything around the company relates to innovation. For example, thinsulate is a company's trademark used in gloves and thermal under wares. The same technology is used in cars to insulate noise.

Our labs are global and owned by the HQ. Other offices will use these labs to utilize the technologies and, therefore, a lot of interactions will happen to produce the products. It is ongoing collaborations between corporate levels and the offices or locations.

In Dubai we have 230 people. Worldwide we have 70,000.

Why did the organization choose KPIs as an innovation performance measurement technique?

Each core business has its annual operating plan. As BU head of healthcare, I know in 2012, I have to achieve a target of sales. As a head, I am accountable that all new products introduced global in health business are imported in GCC and commercialize it into hospitals. And I make sure that the percentage is achieved. We have a lot of products in healthcare like dental, medical, and footage. That is how the strategy is transferred from global into local. And we take it into market. We have globally defined vision, mission, and strategy which are cascaded down to core business in locations.

Definitely. We don't look at sales solely. We look at penetration, customer service, inventories, supply chain, and profitability. We need to make sure that we sell profitable products rather than just sales. What is the use of selling to customers if their orders are not received on time. Each core business look at different objectives or scorecard to make sure that they are delivering on time.

We are using scorecard as our KPI methodology. However, it is customized. We do not follow the balanced scorecard standard. Basically, depending on the function, the scorecard differs. For example, if you are a marketing manager, you are accountable for marketing plans, advertisements, market shares, market research, pricing, new product introduction, etc. If you are a sales manager, you are accountable for top line sales, introductions of new products in certain accounts, and serving customers. If you are a country business leader, you are accountable for top line, buttom line, profitability, pricing. Functions have different scorecards. So, we have multiple scorecards based on functionalities. Those scorecards are linked to the main objectives of the company which is the mission and strategy.

We have a high level strategy; for example, here this is Middle East Africa office. So this is the top vision of Middle East Africa. And we break it down per country and business. For example, the objectives of Morocco are different than Dubai and Saudi. Each country has its managing director who role down the objectives and activities to market. If you roll all up, it will come back to the main objectives of the company.

We also look at portfolio based on locations. Products sold in Dubai are not the same sold in Morocco. It is prioritized based on portfolio. We look at GDP, IDI, and country specific indexes to decide the best fit for this country. We look at consumers, habits. Each country will have managing director who is revising the plans and KPIs with Vice President for that year. In the mean time, overall we all have KPIs of brands and innovation. Everybody is accountable to build the company's brand in his/her region by ensuring that the company is known for its innovation. This is the core function of corporate marketing. The function is also accountable to work in good wells like donations and working with organizations. We also work on building the company's innovation position. That was 1 of the company's objective. That was why we opened the innovation center in Dubai. On the other hand, not only business and sales, we work on educational sides. We work with authorities, universities, and schools. We affiliate with such committees and authorities to educate and to improve the company's brand.

We filter KPIs based on strategy and objective. Whatever KPIs help us achieve our strategy, is the KPI we take into accountability. For example, if you mission is to achieve the number 1 leader in healthcare, we select the deliverables that help us to achieve there. And we break it down into core business and location.

Each scorecard is part of the development and contribution plan of the individuals. These plans are annually set by the HR and your manager. Twice a year, these plans are reviewed. Basically, individuals` KPIs are derived from their manager's individual KPIs. I will agree on the beginning of the year on the plan. If things changed in the mid of the year, we review the plan and agree on how to impact will affect the plan of the remaining year.

To what extend is the management involved in KPIs?

Each sector has a leader who meet in steering committee with vise president (VP). The leaders participate in committees are also available in the internet. They meet at least on monthly basis to set strategy, vision, the VP hears if any business has problems or issues. Apart from those sectors leaders, other functions' heads also participate in the committee like HR director, head of logistics, IT head. They meet to decide how to facilitate the business, how to address customer needs, and what is needed.

For example, in this year when we have all the turmoil in the region like Bahrain, Egypt, they relook at numbers and objectives. Also, the dynamics of the markets is another issue they address. For example, the UAE regulatory is strengthening their rules; especially in healthcare. Any product to be imported, a lot of time is required to process the import in terms of forms and regulatory. For that, we have recruited 2 employees to work on these rules. Those are reasons on which the management revisits the targets. For example, although we have agreed to introduce new products, we cannot satisfy that agreement now. Most of the new products are stuck because we need registrations. So, market dynamics also affect our targets which tell you that our KPIs are dynamic. We set the KPIs as direction, but we relook at them as per the market needs.

What are the impacts of KPIs over teams and individuals?

From my opinion, it is positive. When we sit in the beginning of the year to agree on the plan, employees get clear strategy, they have the vision so they know where we are heading, and they are aligned with global vision. Those annual agreement divides the work between subordinates who understand how these activities will reach to certain objective which contributes to the global vision. Such practice aligns the employees. When you do constant reviews with employees, that realign employees in case they went off direction. The sooner you bring them back on track, the less corrective actions need to be taken.

We did not find cases where people deviate, but you will find people who are not delivering on time. Or they just don't want to perform the extra mile. When you have 30-40 subordinates, each one will have his/her own base. There are people who are energetic and there are people who work slowly. Every individual is different.

Managers are responsible to motivate and push people to get them back on track. Managers are also responsible to get the team together to deliver and to define common objectives. The common objectives should motivate employees because they are aligned with everybody. However, it is more complicated on the ground. Sometimes you will find pit holes or road blocks. It is not always motivating; especially when projects are complicated. Some people do not accept “no” for an answer. Others will keep on trying. Others will also try to push back.

We have performance incentives. First of all we encourage employees to use 15-20% of their time in thinking to bring out ideas. We have a database where we capture those ideas. We have much recognition for employees like incentives and awards to bring best technical ideas that we promote on global basis. But every contributor that showed significant difference is awarded. So we have huge incentive plans and awards.

What challenges and difficulties faced during and after implementing performance indicators?

There are always challenges. The first challenge is the budget. The second is investment. If you have to improve the production line, the investment and CAPEX goes to US for final approval. It takes a lot of bureaucracy and convincing; especially in such crisis. Cash makes a big difference. The corporate has cash. The management knows that they will invest 1.2 billion dollars in R&D. the ones that has better story to convince that investments in a project will have higher return, they will invest. It could be a very nice project but it is a long term investment. I have a lot of short terms with higher return which will have priority. That does not mean that you have to have couples of long term projects.

In the last couple of years, did the organization produce new products and/or processes? Why do you consider them new?

As a company we believe in innovation. The marketing role is to educate every person with what innovation means and how the chain reaction works, how the technology platforms work together to make things happen, and how we make ideas multiply. We are in the same wave length. We don’t just say innovation. We tell stories of what we do. So we definitely have a definition for innovation.

We promote innovation. We don’t have a process for innovation. We don’t have clear definition of innovation. When we are scored globally, we are looked at our R&D investments and new products. We are measured by monthly Product Price Index (PPI), sales return over. Today, they are looking at how much new products we are generating. Percentage of our total sales has to come from the new products.

We don’t only sell, we provide solutions. For example, the sales will bring the customers in our innovation center to get hand on products, to get education, and to get workshops by our technical experts. I believe this is considered innovation because it is not just selling, but also we provide full solutions with trainings in our innovation centers to get their buy-in and to allow customers to assess our products.

The definition of innovation is not documented. We have our own systems, technology, scientists that blend in all the technologies. There is no fixed innovation process beside that idea, project, commercialize.

When you do filtering for the list of potential projects, you have to take into account the investment and the potential. I think these 2 criteria are very important. If you have small potential but high investment, you keep the idea aside. We use six sigma methodologies. The C&E Matrix is used for evaluation. We list the projects. Then we put some criteria that are linked with the projects. Then we evaluate based on the criteria. The projects that go to the top of the list are the ones that are filtered. Those filtered projects are highly possible to be processed for implementation. So, we register ideas, we analyze them, we filter them, we implement, we develop a prototype, we test the prototype with the technical people, then we start bringing the voice of customer and market to see where is the position, where the product should come, who is the end user, and how to distribute.

We consider customer voice in the beginning of the process. First, the customer showed an interest or a need. When the product is finished, you have a solution. You want to see if it works. You want to see if there is a competition and the feedback about the product.

Innovation triggers:

Customers’ needs, survival of business, ongoing improvement. We have a product named Empro. The product as is today is still acceptable, but you still have capability to bring something new in the market, you want to be market leader, you want to take a second step. Another trigger is to be market leader in certain area.

Those new accomplishments are considered innovations. Does the organization have measurement methods over innovation?

We did not evaluate it that way. We are part of the big organization. We do not do it here. But I am sure that in the R&D in US, they have these kinds of measures like number of patents, how much of sales these patents have generated, when it is going to expire, and etc. There are patents that you can sell and generate money.

In the region, we are not measured by innovation KPIs. That happens globally. The reason is that we do not have labs in Dubai. However, there are 2 things that we are measured in terms of innovation. These are 1. New product production ration. That means the new products ratio from the total sales. For 2010, we had global sales of 27 billion $. Out of this, 30-40% is only from new products. This shows you how innovative we are. This ratio is also aligned with the corporate strategy.

The ideas are in our database. Normally, they start with idea and they move forward into products. This is the process to move if from idea to prototype or mockup or trial in 3m premises or customer premises and reach the final stage of commercialization. However, we do not follow a standard innovation process.

I cannot share the details of our innovation process because each product line will have its own process. However, in general, we register the idea, then it becomes a project, then depending on market, voice of customer, competition, and potential, we start working closely on the idea. Finally, it becomes commercialized.

We have a phase called feasibility study. We also look in intellectual property which will facilitate the idea. We have a whole process for that. For example, if Boing came up with a need to stick the wing on something. This is an idea. So, we start developing the solution by taking into account all the criteria like potential business, the size, do we have it or not, the technical people are involved, the labs are involved, until we reach into a point where we say yes we have it and we are ready to provide such solution.

Our KPIs are mostly related to sales rather than the number of newly introduced products. We do not have innovation specific KPIs. If you have 100,000 new products. So what? KPIs linked to sales are what really measure your success.

How do you evaluate the use of KPIs over new products/processes to improve the organization's performance?

We claim that we are innovative. We want to show the market and our customers that we are what we claim. We need to continue to bring new products. Today, it is a fast moving and changing environment. What is high tech today will very soon becomes legacy. Innovation is the key to survival to come up with new products always.

It is one of the reasons of the project existence. You need them to ensure your delivery. For example, a lot of people are visiting our innovation center. At the end of the day the innovation center has to contribute to the company. The innovation center is a cost we have taken to improve our image and eventually to bring more customers and generate revenues. Otherwise, the center will have no use. So we have to know the number of people visited the center and as a result we generated so many dollars out of them.

In your opinion, what improvement areas that must be addressed to make innovation KPIs more effective in your company?

Innovation center by itself is something we have developed and we thought that to be different, we have to have innovation center. We need to show our customers our capabilities. However, new products don't come from the innovation center. They come from R&D. R&D function is available outside Dubai. The company has 200 R&D locations around the world. This is not one of them. The company has 7200 scientists with investments of 1.2 billion dollars yearly to bring new products. That would need huge number of trails, bringing technology together to come up with new products. Here we mostly import ready products. We are trying to do some application development like heat conditions. Most of the products invented outside; especially US. Sometimes they come to most common environments. We don't look at extremes environments. However, we helped the company invent products to sell them here that has no need in US or Europe. For example, paint protection for cars is important here because of dusts and sands; while in Europe the cars need products for rains and snows.

We have 2 sections. 1 is to showcase some technologies. Some of our products have story path which we show to our customers. The second section is the labs. We have technical people in labs like medical, dental, and industrial. These guys promote or teach customers how to use our products. They train the sales people how to sell the products. They bring ideas from the market. Either they try to incorporate the ideas here; that is what we are trying to do. Or the ideas will be transferred to the R&D which work with their partners to innovate. Then, the R&D will bring the product to us here. Also, we have started supporting local manufacturing. So they need technical support, quality assurance, and process. They rely on our technical knowledge. We have to expand our services more by investing more.

Case Study 3, Organization C: Interview with Business Excellence Director on 26 June 2011.

Can you brief me about your company and your role?

Innovation is a wide angle. The definition of innovation is not one thing. I will come from a certain angle where we have worked in that line. I will give you a story which lead to the formation of the non-profit organization. you can use it as a base to get more information. In the process we will answer your questions which are very important. Whatever you cannot measure, you cannot manage. When I was in my previous company, I managed the QA which had the suggestion and reward program. This year, the previous company is celebrating its 30th year of the program. Every week we had people coming to see the program. So we decided to dedicate Wednesday to present for other companies our experience. It is not what you tell them. It is about what you implement. There is talk and there is action. Innovation is no difference. You cannot just talk, you got to do it. We saw a lot of interest. So, we decided to form a club, an association, or an organization to discuss, benchmark, and share best practices on idea management or suggestion programs. At that time, I knew about Dubai Quality Group. In 2005 we approached Dubai Quality Group to get a permission to form a sub-group. We also inspired the name from Ideas.UK and Ideas.US. we became a small group to get together every month.

To what extend is the management involved in KPIs?

The sustainability of the program is also important. In innovation, you have to have the leadership. I will not say support because it is not a very good word. You need the leaders involvement. As a leader, I can give you a budget to implement the program. That is not involvement. Involvement has to come from all the leaders and managers from all levels of organization hierarchy. This is why it is important to tie the innovation to your strategy. This link means the program is sustained. Otherwise, a lot of people start the journey, the get the program implemented, but it goes down. Another important aspect of sustainability is to have a person responsible. You cannot give it to committee. You have to have a person who is assigned objectives. These objectives have to be SMART. Specific, measurable, achievable, realistic, and time bound. An example is to go from here to AD. Now it is 2 pm. I want to reach there at 3:30. That is the goal. I get in the car and switch it on. I know that there is 150 KM to drive. All of the sudden, my car's dashboard is all blank. Can I make it? I do not know the gas I have. I do not know my speed. I cannot make it unless I know how much gas I have and my driving speed. You calculate to know ahead that you will make it or not. Similarly is innovation. Indicators for innovation have to be in place in form of KPIs to make sure you will reach your objectives. We saw the management involvement.

We also partner with Ideas.US to provide a 2 days course with certifications. To implement such a successful suggestion program we have to assess it. We partner with Ideas.UK which has the assessment and we use it. We have 83 questions to assess.

Why did the organization choose KPIs as an innovation performance measurement technique?

In suggestion program, you have to have KPIs to measure the successful of the program. Ideas.US has a good KPI list like number of the suggestion per employee, number of implemented suggestion, number of suggestions received, number of suggestion in pipeline, and a number of rejected suggestions. For example, an organization rejecting more than 50% of the ideas means there is something wrong in the process. These KPIs are essential. It is not only to report for the management, but also to measure the behaviour of the program. Today, if you look to compare 2 companies which are doing the same thing, investors will look at the people working there to decide to buy the company or not. Meeting people is about looking at leadership and style. The one that are more proactive and aggressive on innovation is the one you choose. I believe without change, you cannot improve. This is a thermodynamic equation. If I have to walk from here to there, I will need 3 seconds. If I need to make it in 2 seconds, I will have to change my walking speed. I have to change the input and the process to reach to the output.

Does that mean we have to change best practices as well?

Do not change for the sack of the change. Change for the output. You can make it or not. People say why do you change something that is not broken. If you want to improve, you have to change. Change has to be in process. If you do not change, you will get the same result. Sometimes the change brings down the performance. That is normal and you have to learn from it. I will give you a practice about KPIs and objective in organization. When people do not have clear objectives they are lost. You need to set clear objectives whether a department or a company. When the company's management decide to cut cost by 20% or a decision of increasing revenue. That objective has to be cascaded to the second level of the hierarchy like managers. Each level has to do something from their end to reach the management's objective. Everybody has to play role because sometimes it cannot be a straight implementation. Sometimes you have to increase cost in one department which will save you cost in others. Each leader or department need to decide within their own domain to meet objective. An old fashion management method is MBO which is management by objectives. That means every department has to have its own objectives which are linked to the companies objectives. They need to achieve something within themselves but they have to be aligned with the companies. That can also be cascaded down to the individual level where employees will have their own objectives which is linked to their department's objectives. For example, if you want to cut down the overtime payment by 20%. That means you will not allow giving overtime. That is one way of doing it. How do you make the people downstairs know that we do not have budget for overtime when you want to make them happy. The only way to do it is by involving people. They have to understand that cutting down the overtime is for their benefit at the end. You got to be able to be able to tell the people to look for innovative way of implementation. Something has to be good for them. One of the labours said that he could not work for extra time even if that means he has to stop before time to make sure he is not in the middle of the process by the time of leaving. He added that he will finish that extra work even though he will not get paid for the overtime he will have to work. He explained that he knows that the extra work will benefit the company at the end. That benefit will come to them later like a better bonus.

That is how you change the culture. That is why you need leaders for innovation. Some companies will depend on consultants to fix their problems. These consultants will come and all they do is getting the solution from the employees. All they do is to put a nice presentation for the management. If leadership is lacking, at least you need a system for innovation. Suggestion and reward program is one system. When people have ideas for improving, why don't we harvest these ideas? Idea is the first step in innovation. Somebody would crash the idea from the beginning. Others would water and protect and put the ideas in the right place to bring it to reality and gain from it. What we are saying is that put a proper system to get these ideas and reward them. That will make people provide you with zillions of ideas.

If you are going to implement the suggestion program, you will have hundred of KPIs. How do you select the most efficient KPIs?

Look at the process itself. An idea goes into 4 phases which are generation ideas, evaluation, implementation, and rewarding. Then you think of how do you decide where to put KPIs to monitor the process. It is important to generate ideas. You come up with ways for people to realise that you have a system for idea registration. You also have to ensure that ideas are reaching to the right place. A lot of people just take the program and impalement in their companies. That does not work. For example, 2 people cannot wear the same suit. The suit has to be adjusted for each one of them. That is exactly the same with the suggestion program. You cannot just implement it; rather, it has to fit the culture you are in. In some organizations, there is no transparency. For example, employees know that their ideas are taken by their bosses. So, why would they bother to provide ideas? If such cases, you have to adjust the system to ensure credibility. How do we make sure that we have a lot of ideas? We do a lot of marketing about the program. We need to see the big chief executive talking about it. Use marketing campaign to market the program. You give them more channels to submit their ideas. Once you have the idea, who is evaluate it? The subject matter experts have to evaluate the idea. If the idea is in IT, IT department has to evaluate it and so on. Evaluation process is something related to the department more than to the suggestion program. We have to respect the decision of the departments because they are the subject matter experts. It is also good to ask the subject matter experts to provide us with the timelines for submitting the evaluation.

Don’t you think sometimes, people will reject just for the sack of not implementing?

This happens and is a fact. This is why you need to raise the program with involvement from top management. When they know it is linked to strategy they will be encouraged. However, you will always have resistance from people. But, at the beginning, you have to respect their decisions. That is because as suggestion program head, we do not know. They could have their own objectives other than the evaluation. To overcome this issue, we implemented a Service Level Agreement (SLA). SLA plus KPIs ensures that the processes are set and measured. SLA is like a contract, departments have to ensure that the evaluation has to be submitted within an agreed timeframe. Departments are committed to SLAs. It also ensures that departments provide their own timeframe so that the commit to the process. Enforcement will not really work because managers and directors have other objectives and operation tasks to handle. That is why you let the person who needs to evaluate to give you the timeline. When you improve the process while having the commitments, people will response to process optimization. That ensures that departments and managers own and ease the system.

In the last couple of years, did the organization produce new products and/or processes? Why do you consider them new?

It is not really new process or products. I have a good example or result happened from implementing the suggestion and reward program. In our civil engineering department, the engineers used to build power stations in certain projects. One of the suggestion we received had an attachment explaining a new design of the power supply to save money. The suggestion was submitted by one of the civil engineers who had management not listening to them. So we took the new design and we went to the civil engineer department and we assigned them the suggestion for consideration. Imagine that the suggestion were implemented and saved the company more than 100 million dirham. To answer your question the suggestion and reward program helps employees produce new improvements and implement them.

What are the impacts of KPIs over teams and individuals?

There are some studies about what employees want from organizations. People want to be recognized in one way or another. It is in the human behaviour. Thank you is enough as recognition. It does not harm to include monetary incentives as well. Do you know how the program recognize people? In the civil engineer suggestion I just told you, we made a campaign to reward the suggestion owner with half a million dirham. We also conduct several gathering each year to recognize the idea submitters with certificates and money. That recognition attract people to do more and more.

Don’t you think monetary incentives make employees exploit the system to get the rewards?

There is a study in the western about not providing monetary incentives. We find that in UAE, cash is a very good incentive. That is because most of the people are expats and money means something for them. You cannot provide intangible incentives all the time because people will get board from intangible. Reword has to be valuable for the person you are rewarding. You can start with small appreciation and you grow as the system grows. Evaluation and award goes together. Evaluation is proper and the reward is according to the outcome of the idea.

What happens to the ideas that are not implemented?

Implementation is the biggest problem in everything. That is because it takes time, efforts, and resources to make it. Always involve people to be able to get it done. Delegation is one way that things to be done. Availing resources makes job done. If I have 10 ideas and I have 2 programmers to do it. Unless I put more resources, I won’t be able to do it. You have to have a weighting mechanism based on priority. One way of weighting is by implementing ideas which will bring the most benefit for organizations. Others might be good ideas but they will not serve the best. You cannot do everything.

Why don't you sell those ideas to different industries?

You have to look at practical things. People are paying money to get ideas and get copy rights. It is good to share best practices, but would you share ideas? I think it depends on circumstances. I am not saying you cannot. In the non-profit organization, we are showing people ideas so that they learn from them. Consultants are being paid for ideas and solutions. I think you can sell ideas but it depends on circumstances.

How about we set investment budgets to provide for entrepreneurs to make their ideas reality and we share percentage with them?

There are people with business ideas and others invest in them. For example, Sheikh Mohammed Bin Rashid is investing in local entrepreneurs without sharing benefits because he knows that these entrepreneurs will benefit Dubai at the end. So there are people interested in investing with entrepreneurs. It is differently a way to do. Nothing wrong with it. At the level of the company where a lot of ideas are pending, you can sell some of these ideas.

Interview with KH, CEO of an innovation institute on 21 June 2011.

Can you brief me about your company and your role?

I have a master degree in genetic engineering which is little bit strange. I come from background where I utilize my left brain more than right brain. Genetic engineering is more about statistics and analysis in very detailed. But I found that I am more interested in using the right brain which is about creativity. I wanted to link my genetic experience with creativity. So I got an MBA in marketing which is not related to genetics from San Francisco State. That opened my interest in starting entrepreneurship and started business in sales and marketing. Immediately, I dropped all genetic engineering and started in my entrepreneur in my passion. The first thing I learned is that if you want to be entrepreneur, you have to learn how to fail. Failure is very important in the process of innovation. You have to learn how to fail and how to avoid failures. I failed twice in my ventures. Then, somebody told me that if you want to learn not to fail, you have to see people failing and learn from their mistakes. So I decided to jump into consulting because I wanted to see more industry rather than stick to specific industries. Consulting allows you to see different industries, clients, and problems. I wanted to go into management consulting and I wanted to pick an area that is different than others. There are too many people in management consulting like strategy and so on. So I dived into innovation consulting and that's where I started building my capabilities. I spent a lot of time in the US. In 1982 I moved to US. My professional experience started in 1990 working for other companies. My consulting experience started in 1996. I worked in US most of my life. I have experience in China, Europe, and Middle East.

When we are building a strategy, we include innovation as part of the whole plan?

I differ with that. This is where you will find me controversial. Most of strategy design and planning are tools designed and created in the early century. If you look at the history, we used to be peasants in 1800s. At that time, the businesses were all 4-5 people. In the beginning of the century, is where the industrial revolution happened between 1900 and 1940. Organizations moved from peasants of 4-5 people up to thousands of people. The whole industrial revolution required that we stop to look at organizations differently. We invited tools to allow us to manage the organizations and the revolution. These tools are strategy planning, performance tools, and HR. whatever the modern companies are using actually were invited in the beginning of the century. Until today, we have been incrementally improving of these tools over time. But, the forces have changed on these organizations. Internet is a big force came in place that changed the landscape of organizations. Internet force led to changes like virtualization, type of customer, and purchasing behavior. Why management tools are not changing? We still apply and practice management tools that were invented in the beginning of the century. This is why I am in contradiction with traditional tools in strategic planning. That is why in some programs, innovation is taught as a component of strategy. I do not like that. Innovation is the whole strategy. Some people says that innovation is an item in growth strategy because we have to deal with financials, we have to deal with customer service. I agree that we have to deal with financial planning and customer service, but we can innovate all these areas. If you do not know how to innovate them, you will get back to the tools created in the beginning of the history.

If you look at strategy, you will find certain components in it like financial, customers, growth, and learning. We have been used strategic maps to build the strategies. Then you find KPIs that measure these strategic components. That's what I mean by traditional way of looking at strategy. For example, if you are looking at financial strategy, then the financial KPIs are backward looking KPIs to measure the past. This way, the KPIs are measuring our historical performance. If you want to innovate your financials and you want to create innovation strategy, you have to build KPIs that are future looking KPIs. That's a big difference.

Combining KPIs with targets, does it create future looking KPIs?

Let's take an example with customer related KPIs. Customer retention, customer satisfaction, customer royalty, and more revenue from the same customer are example of customer KPIs. These are backward looking KPIs. Let's look at future looking KPIs when it comes to innovation KPIs in customer field. Most strategy and most KPIs are shy away from predicting and targeting new customers. That is because they through new customer on merging and acquisitions. They say gaining new customers will come from merging and acquisitions. They do not say that new customers will come from what we have now called customers. Management is also shy away from predicting new channels for customers. We use our channels like stores and showrooms in manufacturing cars. If they want to have strategy for their channels, they will work on their stores and new channels. It is very difficult to convince the strategy people that the new channel is social media. They will say that this is not for customer, it is for marketing. If you tell them that social media is a channel to sell cars, they will call you crazy. Social media is a future channel that strategy people are pushing back. Very few companies look at future challenging KPIs are targets that will change the business because their strategy is typically incremental improvement theme. If you go and look at a typical strategy map and KPIs for one of the good companies, you will find their strategy is mainly to improve their current business. Such strategy is not innovating the current business. Strategy people in such companies think that innovation is a separate thing. My opinion on innovation is that it has to spread across all strategic map. For example, HR and people related KPIs are about career development, retention, and succession planning. If you want to build a future organization, these types of metrics are not good anymore in my opinion. Some of the new metrics to look at would be a pure virtual organization. That will reduce the cost tremendously. However, the first impression you will get from employees and management is that this way will not work. That is because they do not want to be challenged. At some point, organizations might get forced to move in that direction. We used to say internet will not work. Now, look at how internet is used in business. So, why do we have to have a full organization as we are having now! Why do we measure performance based on revenue! Performance measures are tangibles sometimes. We stopped measuring intangibles. We forget the intangibles that are extremely important in organizations. We through intangibles away because we cannot measure them. The ideas that I am giving you are controversial and if you give them to strategy people, they will through you away.

So how would you convince them about them if you do not have the buy-in?

If the management does not have the buy-in, it will not work. In everything we do as business, there are the who, the what, and the how. Who are our customers? What do we offer as value proposition? How we conduct our business? If you are doing a strategic planning using the traditional way, you will look at your first tier customers on the who. On the what, you will look at first tier offers which are your core. On the how, you will look at first tier processes and pricing. Any strategy guy to put a strategy for this, he will put it really around here in this box. If you want to innovate, you have to stretch yourself all the way to the end. For example, you would say let's look at second tier customers. In many causes, the second tier customers are those who are unsatisfied. If we are BMW, our first tier customers would be luxury buyers and people who love speed cars. Second tier customers would be people driving Mercedes or Toyota. Third tier customers would be Honda buyers. The fifth tier would be the ones who do not buy cars. If you are a traditional strategy guy in BMW and I tell you let's look at fifth tier customers who never buy cars, you would say why to look at customers who are not buying cars! In my view, you are limiting your market. But there is a huge audience in somewhere else who are interested in transportation, but they do not want or do not see value in your BMW. So if you leave them, you are limiting yourself. But, how do you innovate? A traditional strategist would say to increase R&D. Guess what he is doing? He is again working to grow the same first tier of who, how, and what. I am saying grow by including other tiers of the who, how, and what too. If MBW would innovate the who, customer, and they start targeting fifth tier customer, the company will start looking at building buses, trucks, and maybe bicycles. That is why communication and internet providers never invented Skype. If we look at the how, offers, our core offer is a luxury BMW cars. Looking at second tier customers would be by building nice seats so we sell it to Mercedes. The third tier might be creating great leather stick shifts which can be sold not only to Mercedes, but also to Honda and others. By extending your innovation, you start moving from core to adjacent, and to disruptive. Someone would say wait a second, I am not becoming a specializes to stretch that far. I would say that the internet and other forces are allowing people to find alternatives to you. If you do not know how to play your alternatives, then you are just exploiting your market by incrementally improving.

In traditional way, customer would refer to first tier customers. To innovate, you need to extend up to fifth tier customers. Those who you never thought of and the ones with unspoken needs. In BMW example, you go from the richest people to least profitable people. If you keep moving in this direction, you become more innovative. This is called innovation space, blue ocean, the unspoken needs. I am a customer who never buy BMW. For them, I am the very least customer for them. So, they don't consider me as a customer. But, I might be buying BMW as well. They might be embedding BMW quality, patent, knowledge, and product into something else I buy like a bike. So they don't have to sell me directly, they can sell to chain of buyers. At the same time, BMW might not have to manufacture bikes. They might design the bike and sell the design to different manufacturers. This is the how.

How do you limit your scope?

You don’t have to limit. You don’t have to manufacture or sell for everybody. However, to have an innovative strategy, you have to address the unspoken needs. That’s the only needs you can innovate. There are jobs that are done differently than how you do it. If you don’t understand that, you will always exploit not explore and you will always spin in your own atmosphere.

If you are not limiting yourself, you are getting into something that you do not have the capabilities for. How do you prepare yourself for that?

You do. But you don’t know that you do. If BMW innovated into bicycles, they would sell the knowledge which is the design. It does not have to operate the manufacturing.

Yes, but that is not stretching enough in your case. If you keep stretching, you will end up in things that are completely new. How will you enable yourself for that?

Yes and that is how IBM is almost 300,000 employees. That is why GE has almost 400,000 employees. That is why Wallmart is 1.4 million employees. They kept expanding. Other companies have different innovation strategy. They would create new innovation and they would sell it. We have to keep creating and use those innovations. That is how some companies come out of them 20 different companies. They start as a small entrepreneur and they profit from the different companies they create. This is the how. This is how you innovate your how. Companies like IBM and GE will have their own billion dollars investment funds. They fund these innovations and they put them outside their organization.

There will be a circumstance where you are limited by a budget for example. How do you think companies should move in that case?

That’s again the how. I would go from a conventional budget to an investment budget. If you work for me in the BMW and you came up with a way to create a new customer or market which is a bicycle. If I am a traditional strategist, I would say no because I don’t have a budget for design, manufacture and operate your idea. But, if I am an innovator in my financial planning, I would say I don’t have a budget, but I have an investment. I will give you 50,000 and you go and struggle as an entrepreneur to get your idea real and we both share percentage. This is exactly what the most innovative companies are doing. They are solving such questions. If they don’t have budget, they would find alternative ways to do it. They don’t lose ideas. So they find ways to build them.

Big companies like Google or BMW can come up with millions of ideas. Do they have to deal with all the ideas?

No. that is their innovation strategy. As a company, I would say for 2011-2015 I want ideas in second and third tiers and I will do it. I cannot handle beyond that although I know that there are ideas in those tiers. If I got ideas in tier four or five, I will have different model for handling it like spin off. I will work on the idea and I will get rid of it by getting benefit. Or, I might invest by providing you an investment budget. Or, I might create joint-venture. Companies do not have to limit the ideas. They would put ideas in pipeline. See how dynamic your strategy became.

Let’s look at a more typical model of strategy. If you are a bank, and it has 3 offers that are cash management, checking accounts, and saving accounts. From there we have 3 types of processes. Each process has a team of execution like sales and marketing. This is the hierarchy of strategic execution model. Let's suppose that I am a customer service individual who works in a cashier. I have learned this strategy very well and I am executing it. A person comes and says I need to buy a car but I really do not want to open an account or do what your process is asking. Typically, I would say this is not the way we operate. I have turned him away and I have lost him. That is because I am not taught how to feed back the strategy. Guess what, I am actually turning people away and I am not telling anybody about such cases. I am not taught how to feed the strategy to get it going dynamically. That attitude does not help the company capture consumer insights. I am not really looking at the changes like e-wallet. When Kaplan wrote the strategy execution in the 60s, he was thinking of organizations as body where the top management is the brain and the middle management would represent the body and the low level employees are the hands and legs. That leads to have 1 direction of strategy execution. The human body is more intelligent than this model. It adapts to changes. If every time I kick a hard wall, the brain will learn that there is a hard wall here and it will start to adapt. That is what Kaplan missed. He modeled the brain orders to the legs, but he missed the next reaction which is learning and adapting. Strategies are designed to go top to down in 1 direction rather than both directions. In both direction strategy, if you come up with something, I go and modify the strategy. Then you execute and so on. It is very agile. Very innovative companies started to apply this.

You said that companies might deal with tiers with different plans. Will organizations have the capability to process all ideas?

Why not. However, you should have metrics and understanding on which one to process and not. If I am BMW and I would say I will process tier 2 and 3 because they are adjacent to what I am doing. My adjacent would be the body of the car, trucks, and buses. But, I don't want to go to bikes because they are too far away. Or, I don't want to go even to telecommuting because that is too far away. Even in adjacent we can have different plans as we said earlier about having full budget or investment budgets. I might patent ideas and sell them. For extremes, we might join-venture. We might have people cooking and designing a bike but I will sell the design. I don't want to do the manufacturing. Let's look at offers. We used to offer luxury cars for tier 1. Then we offered small cars for tier 2. Then we offered trucks and buses for tier 3. If you stretch more, BMW can build engines for airplanes although they are not building airplanes yet. They found that they can extend to that level of tier. You go from single product all the way to experience. BMW can take the knowledge of building luxury environment for people and create a product that has nothing to do with cars. So you take the experience and transfer it to different industries. That will generate you money. For example, they can sell the window motor to be used for different purposes since it is a BMW quality. Even showroom experience which has very high end experience. They treat you well and you feel like you are in a theater rather than a showroom. They can sell that experience in restaurant industry for example. I guarantee you that they are doing that. They said they learned a lot from the showroom experience that they want to take it to different environment. They are patenting their experience, models, furniture and go to other industry to help you. That starts showroom consultant business. They don't have to call it BMW. They are extending all the way by innovating.

Is there any measurement or indication that tells you that you are on the right innovation path?

To get to this level of thinking, to accepting such strategy, and to become creative, the first thing you have to change in organizations is culture. This is one of the challenges. I can come to you and convince you about such innovation strategy. But if the culture does not support you, then it will not work. For example, one of the changes in HR to support innovation would be to allow people to imagine and explore. Line managers might reject this because they have tasks to complete. That is why HR should have a complete governance through all organization to allow people to explore and get creative. HR has to change the way to deal with employees. Also, the management will need rooms around the place in which people are allowed to gather and think. Most of innovation happens around the water cooler. It is ok for people to come many times and talk to each other because that stimulates sharing ideas. HR used to stick with punch in and out because of culture issues. HR has to force employees to use 20% of the time to explore, play games, and share ideas as long as employees are bring ideas from such activities. Then, HR will measure how many ideas are generated. To change the culture, companies will have to identify their current state. Then they will draw a map on how to head towards world class innovators. That will happen over time. First step in this map would be changing HR processes. Second step is to change reward system. I do not reward to back behavior. I reward on future behavior. You have to put steps which will take you to world class innovators. Then you start changing things around.

Can we say that reducing processes cycle times to allow people more time for exploration is a KPI?

Yes. In HR processes you have to change the job descriptions, competency model, and rewards and punishment models to support innovation. For example, you can start reward success and failure. You tolerate mistakes. You punish inaction. You support risk taking and change. You support teamwork and collaboration. You support open environment for ideas. You put processes in plan that allows you to have this happen. Culture is a fuzzy word. You have to put steps and make the flow happens.

When you say future, you mean you guide the behavior towards what you want. You guide it using measures and targets to improve the culture over time.

That's on the cultural level. That is one component. Now comes more tactical KPIs and details. On strategy and cultural level, time senior managers invest on innovation, time required for development of strategic concept to operational implementation, money invested in innovation, growth expected from innovation process in present and dollars, actual portfolio compositions. These are quantitative. There are softer qualitative measures. Now, we have put measures on strategy level. We need to put measures on execution level too. Examples would be how much ideas we turned into products. You can say in year 1, 2, and 3, I will turn 25% of the ideas into products. If I am an innovative culture company, I can turn more. You should time up with cultural change as well. These measures cannot be fixed. If I move the dial a little bit, I can increase the measures. If the dial is not moving fast, I should reduce the measures.

When you put new measures, you will have targets towards your objectives as behaviors.

I am saying it has to be a matrix of 2 dimensions which are culture and measures. The culture ties the measures. The better the culture, the higher metrics you can set. To reach world class innovators, culture has to be very innovative and metrics are high. If one of our measures is to generate a 1,000 of ideas, I guarantee you will reach the number. If the behavior is not supporting by rewarding failures for example, guess what will happen? Next year you will not get any idea. That is why you have to move the culture in parallel with the metrics.

Can you elaborate more how innovation will affect employees' behavior?

We have mistakenly thought that motivational force that keeps employees is only money. What keeps people around is not money. It is a combination of a bunch of things. Many studies have been done to say what motivate an employee in a company, what keeps them around, what makes them change behavior, and what makes them happy to work. Studies showed that money is not one of the top 6 listed. The key is that when you are hired because of the need, the first motivation is the money. That is why you sometimes accept lower salaries. However, after a year or two you will leave because their lifestyle changes and they want more which is not working for the company. Studies found that there are 6 motivational forces. The first is theoretical which means that company's contribution to employees' knowledge. Typically, such companies will have a lot of training and education. Such companies attract people who are looking for knowledge even if the salary is lower than other companies. The second force is utilitarian motivation. That means I only work in very efficient companies. If I find that the company is not efficient I get bored. I get bored with bureaucracy and meetings. The third force is the balanced entrepreneurship and a balance of work and life. There are people who are looking for environment to think creatively and to create their own businesses and to have fun at work. For example, there are companies who offer nursery at work. This is very applicable to Emiraties; especially women. They can bring their kids to work and they can take time offs to check on their kids. Although such companies pay less, women with families prefer to join them because of the lifestyle the company is providing. The fourth force is social. Some people are attracted to organizations which have environment or cultural contributions. That is why you will find people volunteer to work in such organizations. The fifth force is individualistic. This is where I know that in this organization I will become the CEO one day. There is career advancement and if I work hard I will have opportunity. For example, Safe Way is a big grocery store which has 280,000 employees, the CEO of this company was a cashier. You are motivated to work there because you know that at some point you will advance in your career by your hard work. The sixth force is tradition where believes and values are shared. For example, I don't work with companies that harm the environment. Did I say money until now! No. these are the six motivators that identified. To direct people to change, we have to provide the right motivation for them. Innovation is a cultural thing so it fits in the social force. If my environment traditional, then I will attract traditional people. if my environment is innovative, then I will attract innovative people.

What are the challenges?

Cultural change, management buy-in is already mentioned. I would add 2 things. 1 is the process of innovation. If you talk without processes and systematic approach, the whole thing will fail. 2 is patience. The changes take time. If you accept only if it will take you 1 year, you are actually not resisting. You are accepting if there is quick return. So the way to solve this is by hitting low hanging fruits quickly. We have to provide immediate impact out of innovation for people to accept the strategy. That is done by either cutting cost or demonstrating growth with innovative strategies. That will provide people with evidence that such strategies work. Cutting cost would be by saving wastes in processes. Growth would be by partnering with different companies. Demonstrating results establish trusts for you. That makes it easier for people to change.

You need to predict the future. If you don’t, somebody else is predicting and he is planning. Guess what? The better you are in predicting and expecting the future, the more competitive you become. At the beginning you might fail. But do not give up. Start be better in predicting the future by trend spotting for opportunity. That is why, in my opinion, chief strategy officer has to change to chief innovation officer.

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