Appraisal of Innovation Knowledge

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ABSTRACT
The transformation into a full fledge innovative firm requires the firms to embrace, the concept of learning organisation. Transformation should be based on the premise that the foundation of good innovation is good knowledge. Furthermore, it is widely accepted that knowledge is a key component of the concept of learning organisation. Knowledge transfer which central to the innovation chain should be based on good knowledge which has been by appropriate method for measurement of knowledge. It is shown in this paper that assessment of knowledge should result in a better management of innovation. The paper proposes that good innovation strategies are always based on good knowledge and that in order to differentiate between which knowledge is good and which is useful or applicable for innovation, then knowledge must be first evaluated or assessed using an appropriate assessment method. The paper also shows that a method for assessing the attributes of knowledge should encompass nine important characteristics of knowledge.

Keywords: Knowledge Management, Knowledge Characteristics, Assessment of Knowledge.

1.0 Introduction

A large body of literature points to the link between improvement in performance and successful management of organisational intellectual assets such as knowledge. In other words, the most important component in the management of knowledge i.e. knowledge itself has become a key organisational imperative. This implies that enterprises can benefit from understanding the nature and location of their knowledge and their intellectual resources before embarking on substantial knowledge driven programs such as innovation.

Knowledge may be defined as what makes personal, organizational, and societal intelligent behaviour possible (Spaeth, et. al., 2010). Knowledge consists in a number of different types and forms of artefacts that exist in the form of documents, files, papers, conversations, pictures, thoughts, software, databases, e-mail messages, and in any other form that are used to represent meaning and understanding of that knowledge (Haefliger, et. al., 2008). In other words knowledge artefacts flow throughout and between organisations and individuals in what is known as knowledge flows (Newman, 2004). Knowledge flows must be managed effectively to ensure that the basic objectives of organizations and individuals are attained to the greatest extent possible (Nonaka, et. al., 2006, Soliman, 1989). In this context, knowledge in modern organizations should be considered from the following five interconnected perspectives:

1.1 Business Perspective

In business perspective knowledge is required for the development of strategies, products and services, alliances, acquisitions, and creating new products or services. Therefore better knowledge is necessary for the benefit of the business. That is knowledge should be suitable, creditable and fit for the purpose. This in turn means there should be a method for evaluating and assessing knowledge and its suitability for the business.
1.2 Management Perspective

In management perspective knowledge is used in determining, organizing, directing, planning and controlling and staffing the organisational activities required achieving the desired business strategies and objectives. Therefore better knowledge is necessary for creating policies and practices needed to determine required knowledge related activities. This also requires a method for evaluating and assessing knowledge and its suitability for management.

1.3 Operational Perspective

In management perspective knowledge is employed to determine the available knowledge needed to recruit, train and build human resources (HR) further. This also requires better and suitable knowledge for operational purposes i.e. a method for evaluating and assessing knowledge and its suitability for the operations is required.

1.4 Learning Perspectives

In learning perspective knowledge is the basis ingredient that is necessary for organisational learning (Soliman, 2011a). The concept of Learning Organisation originally purposed by Senge (1990 and 2006) and widely used and recognised as a necessary competitive advantage for organisation (Soliman, 2011a, 2001b, 2011c) require knowledge to facilitate the learning organisation activities proposed by (Garvin, 1993) such as problem solving, experimentation, learning from past experience, learning from others and for transferring knowledge to and from the learning organisation. Accordingly, knowledge for learning must also be suitable and must add value to learning for the organisation and for the individuals involved in the learning organisation activities (Al-Qawabah, M. (2012).

1.5 Innovation Perspectives

In innovation perspective knowledge is the basic ingredient that is necessary for building the innovative firm resources further. Pedler et. al. (1991) and Damanpour (1991) identified different types of innovation within organizations, as to include technical innovation and administrative innovation. Knowledge is needed to conduct better training, better research and development and establish a better pool of knowledge and systems that are necessary for the innovative firm (Davenport et al, 2000; Von Krogh et. al., 1999; Bontis et.al., 2003).

It should be noted that the perception that knowledge is a belief could lead to evaluation of knowledge on the basis of the correctness of answers only. According to Hunt (2003) such methods of knowledge measurement usually result in false or unpredictable levels of uncertainty. Hunt (2003) further added that “uncertainty, could adversely impact on the qualities of the correctness and justification”. Furthermore uncertainty could lead failure to formulate precise questions about acquiring, retaining and managing knowledge to perform certain tasks safely, effectively with a high quality level (Sveiby, 1997, Von Krogh and Von Hippel, 2006).

In addition, O’Dell and Grayson (1998, p. 3) pointed out that people do not explicitly recognize the importance of knowledge because knowledge is in fact a concept that may be invisible, intangible and cannot be directly observed by people and/or organizations. However Sveiby (1997) suggests that knowledge is invisible because it lacks “a generally accepted definition and a measurement standard”. However, there is a considerable literature that attempts to define knowledge based innovation and to suggest that the process of innovation itself relies heavily on innovation knowledge that is usually created and transferred or disseminated within a company, between companies, between companies and innovators (Nonaka and Von Krogh, 2009).
2.0 Innovation Knowledge Transfer through Learning

Cavaleri et. al. (2005) suggest that knowledge management initiatives must facilitate the transformation into learning organisation and further added that such transformation should improve capabilities and would ultimately improve the organisation’s competitive advantages. The concept of learning organisation was introduced by Senge (1990) and further developed by Pedler et. al. (1991). However, further work by Garvin (1993) identified learning organisation to be: “An organisation skilled at creating, acquiring, and transferring knowledge, and at modifying its behaviour to reflect new knowledge and insights”. According to Garvin (1993), in order to meet this definition, organisations should master five main activities, namely: systematic problem solving, experimentation, learning from past experience, learning from others and transferring knowledge. Furthermore, Garvin (1993) work shows that a learning organisation can be measured and manifested through series of activities including measuring knowledge transfer.

3.0 Measuring Intellectual Capital and Knowledge

The traditional method of relying only on the balance sheet to determine performance has been shown to be unsatisfactory as it does not take account of those intangible factors that largely determine a company’s value and its growth prospects. According to Skyrme (2003) there are more than 30 different knowledge measurement methods, which could be grouped into four main approaches that are focused on: valuing knowledge as an asset, the benefits of a knowledge management programs, assessment of the knowledge management effectiveness and on performance measurement. However, a significant part of the literature divides intellectual capital IC into three main categories as follows (Malone, 1997; Edvinsson and Malone, 1997; Lev, 1997; Roos et al., 1998; CMA, 1999; Liebowitz, and Suen, 2000; Stewart, 2001; Lev, 2001; Roos, et. al. 2006; Ricciardi, et.al., 2006; Westeren, 2008; Zeghal and Maaloul, 2010):

1. Human Capital (HC): Human Capital could comos of skills, talent, knowledge, and expertise of employees. HC can be described as an organization's collective capability to provide the best solutions to meet customers’ demands.
2. Structural Capital (SC): Structural Capital could be thought of as the knowledge that has been captured and stored within the organisational memory. SC could include patents, copyrights, proprietary software, trademarks, trade secrets and general organizational know-how.
3. Relationship (or Customer) Capital (CC): Customer Capital refers to the organization’s network of loyal and satisfied customers. The value of an organization's CC could be evaluated in terms of the quantity and quality of the customers' relationships that have been built up over time and is regarded as the organisation’s "goodwill".

A number of authors have stressed on the need for developing assessment methods for intellectual capital that cover key organisational activities such as financial, customer, human, renewal and development, (Malone, 1997; Edvinsson, 1977; Lev, 1997 and Bontis, 2000). In addition to the above measures, Skyrme (2003) suggest other measures such as Value Extraction and Value Creation measures that could be used to assess the organisation progress both from financial and non-financial perspectives. Value extraction usually includes profits, return on net asset value, total assets, revenues, and market value. While value creation may include cost of training, product development, investment in new product support and training, and administrative expenses. Thus, it is clear that there is a need for developing assessment measures for intellectual capital or knowledge assets that is beyond financial and balance sheet measures. However, the Skyrme’s (2003) proposal may have drawbacks or shortcomings.
4.0 Drawbacks of Quantitative Knowledge Measurements

Reviewing the literature reveals that the current knowledge measurements have significant limitations of due to the following drawbacks or shortcomings:

1. Most of the metrics use quantifiable data and thus ignoring important non-quantifiable data such as are ignored or not considered such as the reuse rate of "frequently accessed/reused" knowledge and the number of knowledge sharing proficiencies gained.
2. Those metrics lack creativity in determining the potential growth of the organization's knowledge base and the number of new ideas generating innovative products or services.
3. Most of the metrics do not necessarily address the types of knowledge that produce the most value-added benefits for the organization.
4. Furthermore, most of the metrics lack ability to determine the efficiency of the dissemination or distribution of knowledge to appropriate individuals.
5. The current metrics rely on a number of assumptions that do not reflect the organization’s vitality for innovation and in turn competitiveness.
6. Those metrics do not assist in determining other important measures such as "return on vision” in conjunction with "return on investment”.
7. Those metrics do not acknowledge the significance of the knowledge transfer that deals with transfer of tacit knowledge.
8. Those metrics do not evaluate the goodness of conversion from tacit to explicit knowledge.

The above drawbacks in the current knowledge metrics have strengthened the drive for development of new metrics or assessment measures that should be created to address the above drawbacks and concerns. However, organisations need to consider an appropriate strategy taking into account the following issues before developing their intellectual capital measurement systems:

1. The role of knowledge and the nature of intellectual capital must be clearly defined.
2. The role of human capital in creating environments that support and accept the proposed measures throughout the company.
3. Identifying and highlighting the proposed KPI that is suitable and appropriate and acceptable through the firm.
4. The proposed measurement systems should be supported by management and should lead to rewards and compensations.
5. Surveys and questionnaires should be handed by objective impartial consultants and should address the key aspects of the measurement process.
6. Involvement of and active communication of all staff relevant to the proposed measures.
7. The measurement model should be such that all indicators are incorporated into a coherent framework.

Thus creating innovative metrics for helping to measure knowledge assets is one of the aims of this paper.

5.0 Intellectual Capital Measurement Systems

Quantifiable metrics rely primarily on the use of quantitative data or information thus ignoring intangible information which could be significant and relevant to the assessment and evaluation. Furthermore, quantifiable metrics are relatively easier to use but the quantitative measures are generally useless or inappropriate for assessing intellectual capitals and in particular knowledge that are highly intangible
(Chourides et. al, 2003). In addition, qualitative data or information such as employees’ feelings, affinity, and sentiment and customers’ satisfactions may be difficult to track. On the other hand, improvements in intellectual capitals and knowledge may require some measures. In that regards Lord Kelvin once said “If you cannot measure it you cannot improve it” which implies that unless knowledge is measured, it would be difficult to objectively improve (Evans and Lindsay, 2011, Chourides et.al. 2003). Furthermore, Lord Kelvin also said:

When you can measure what you are speaking about and express it in numbers. You know something about it: but when you cannot measure, when you cannot express in numbers, your knowledge is of a meager and unsatisfactory kind. It may be the beginnings of knowledge, but you have scarcely, in your thoughts, advanced to the stage of a science.

However the lack of availability of a widely accepted intangible measures may be due to the lack of a universally accepted definition of knowledge characteristics which is needed to be clearly defined those characteristics that need to measured (Von Krogh, et. al., 2010). The key question that remained unanswered is “How to measure the extent of the innovation knowledge transfer that has occurred, so that transfer efforts could be improved?

6.0 Is it Knowledge or Knowledge Management that should be assessed?

The literature is full of articles that deal with measuring knowledge management in lieu of measuring knowledge itself. Since management is a concept that is not measurable and knowledge management is in fact a special case of management, then knowledge management is also non-measurable. However, knowledge management could be assessed for its value adding. In other words measuring knowledge management should be evaluation of the impact of managing knowledge its value added along five organisational dimensions such as financial, innovation, processes, clients and employees. According to Hunt (2003), the five organisational dimensions mentioned above are directly related to Intellectual Capital (IC) which includes knowledge, as well as data and information about the organisation activities and in particular the innovation. In this regards, Clemmons Rumizen (2002) suggests that knowledge management measures could be achieved through implementation of a six step strategy. This implies that the focus should be on evaluating knowledge since good knowledge management could contribute to the development of organisational innovation.

However, management of innovation knowledge should be seen as a means to an end and not as a goal in itself. Moreover, while decentralised enterprises may know where the bulk of their knowledge resides, the problem becomes disseminating that knowledge to the people who need it (Novak, 2010). For instance, knowledge sorting or screening may needed so that it is delivered timely and in the acceptable forms to the relevant people. Soliman and Youssef (2003) pointed out that characteristics for information critical to knowledge management should have seven characteristics. Soliman (2011a) identified nine key knowledge characteristics that could add value to the innovation process. Therefore, before even considering improvement to knowledge and intellectual capital it is necessary to define knowledge characteristics.

7.0 Knowledge Characteristics

Knowledge has been recognised and discussed by ancient philosophers and scientists such as Confucius, c. 500BC, in Streep, 1995; Aristotle, c. 300BC, in Auden, 1970; Polanyi, 1974; Russell, 1948; Ayer, 1958;
Quine, 1987. However, one of the earlier published works about knowledge is found in the book titled “The Concept of Mind” by Ryle (1949). Ryle introduced the concepts of know-how and know-that – or sometimes referred to them as know-what. Polanyi (1966) suggested that there are two major types of knowledge and named them tacit and explicit knowledge. Few years later, Von Hippel (1987) work defined knowledge transfer as a “process through which one network member is affected by the experience of another”. Further work by Bartley (1987) proposes that “individuals interact with each other and share their knowledge (on the unknown and unfathomable object-product) in a process to create not-yet-existing knowledge about the already existing products, as well as creating new products”. It should be noted that the work of Polanyi (1966), Von Hippel (1987) and Bartley (1987) received little attention from the management of organisations until later in the beginning of 1990s.

During the end of 1980s sluggish business activities forced many Multi National Enterprises MNEs to downsize and retrench portions of their work force. These negative business sentiments fuelled a huge major stock market crash and forced organisations to rethink their strategies. Accordingly, two important business and management concepts were born about the beginning of 1990s; namely the Business Process Re-Engineering concept (Hammer, 1990; Davenport and Short, 1990; Hammer and Champ, 1991) and the Knowledge Management concept (Nonaka, 1990 and Nonaka, 1991). The work by Nonaka (1990) elaborated on tacit and explicit knowledge further.

Ever since the first published work on knowledge management by Nonaka (1990), interests in the topic grow strongly and knowledge management has come to be a formal discipline in many teaching and research institutions. For instance Vincenti (1990) identified a number of categories that are of limited use in developing and improving knowledge management activities. It is clear from discussion that knowledge and in particular knowledge management must receive the appropriate attention and analysis from researchers and business management. However for Knowledge to be useful and appropriate it must encompass the following nine characteristics:

### 7.1 Accuracy

Accuracy of knowledge is difficult to measure but it is possible to judge the knowledge against already perceived knowledge. The degree of closeness of the knowledge of interest to the perceived knowledge may reflect confidence in the knowledge used which in turn may reflect its actual (true) value. Reproducibility and repeatability of knowledge could be dependent on other characteristics. Accuracy is the degree of veracity while in some contexts precision may mean the degree of reproducibility, Accuracy could refer to reliability, truthfulness, and correctness of the knowledge content such as:

1. Where does the knowledge come from?
2. Could the knowledge be supported by evidence?
3. Could the knowledge be verified by others?
4. Does the language or tone seem biased and free of emotion?

### 7.2 Timeliness and currency

Timeliness of knowledge is necessary to avoid making decisions that are out of date and hence harm the organisation's progress. Therefore one essential qualification of knowledge is that it must be current. Currency of knowledge means that it is possible to determine:

1. When was the knowledge obtained?
2. Has the knowledge been revised or updated?
3. Is the knowledge current or out-of-date for the topic?
7.3 Relevance of Knowledge

A number of authors have indicated a direct association between relevance and organisational impacts. This means knowledge relevance could be evaluated in terms of ease-of-use, functionality, reliability, flexibility, portability, integration, and importance. Organisational impacts should be determined by the quality of the work environment and job performance. The importance of relevance of knowledge could be determined by the following questions:

1. Does the knowledge relate to the topic?
2. Who are the intended users of the knowledge?
3. Is the knowledge at an appropriate level, i.e. not too elementary or advanced for employees’ usage?

7.4 Authority of the knowledge source

Authority of knowledge means a determination where the knowledge comes from so that its integrity and reality could be established. The source of the knowledge could be determined by knowing:

1. Who is the author/publisher/source/sponsor of the knowledge?
2. Are the author’s credentials or organizational affiliations given?
3. What are the author’s qualifications to produce or handle the knowledge?

7.5 Purpose

The purpose of the knowledge usage or acquisition or transmission or sharing is necessary to be established. In this regards the purpose of knowledge could be a critical factors in determining its integrity and hence the intended purpose should be determined though:

1. What is the purpose of the knowledge? to inform? teach? sell? entertain? persuade?
2. Do the authors/sponsors make their intentions or purpose clear?
3. Is the knowledge fact? opinion? propaganda?
4. Does the point of view appear objective and impartial?
5. Are there political, ideological, cultural, religious, institutional, or personal biases?

7.6 Importance

Importance of knowledge encompasses whether the characteristic of knowledge under consideration can be controlled within the organization, whether it focuses on a key management issue, whether it addresses a real-world problem, and whether it is timely. Based on these criteria, important is that which meets the needs of organisation by addressing a real world problem in a timely manner, and in such a way that it can act as the starting point for providing an eventual solution.

7.7 Accessibility

Accessibility of knowledge encompasses whether the knowledge is understandable. Substantial evidence suggests that if managers perceive knowledge as being difficult to understand, it loses its usefulness. Furthermore, accessibility of knowledge encompasses whether the knowledge is understandable, readable, and focuses on achieving the desired outcome for the organisation.
7.8  Applicability

Applicability of knowledge encompasses whether the knowledge is complete, whether it provides guidance and/or direction. Many projects lack, for example, detailed insights into how to use knowledge provided. This may be due to inapplicability of the knowledge. Furthermore, applicability of knowledge encompasses whether the published knowledge is complete, whether it provides guidance and/or direction, and whether it provides concrete recommendations for appropriate action. Even if managers believe that the knowledge is important, they may not be able to apply it.

7.9  Suitability

Suitability of knowledge encompasses whether the knowledge deemed to be important to the organisation and suitable for meeting its needs, can be further elaborated to assist the organisation achieving its strategic objectives. It is envisaged that applicability and suitability of knowledge may be interrelated. If knowledge is deemed to be important to the organisation and suitable for meeting the needs of practice, the knowledge could be further enhanced to be made more suitable for its intended usage.

It is important to mention that Soliman and Youssef (2003) pointed out that the purpose of the critical information for knowledge management is to: create efficient operations; provide control; measure performance, compare results with the standards and take corrective action if necessary. Therefore the above knowledge characteristics provide a safety net for the array of benefits obtainable from good knowledge management. In other words, enterprises need to enhance their efficiency and effectiveness with the aid of good knowledge management that creates opportunities to reduce and eliminate non-value-adding work.

8.0  Identification of Defective knowledge (knowledge gaps)

According to Soliman et. al. (1999a and 1999b) the processes of managing knowledge in organisations are the means by which value is added to raw-knowledge (inputs) which in turn is used to create processed-knowledge (outputs) that eventually add value to clients. The specifics of this will of course vary substantially across industries, however in general, there are four primary processes for handling resources knowledge, which are common across most organisations: namely: 1) Adding value to information, 2) Capturing and sharing knowledge, 3) Creating or generating knowledge and 4) Utilising knowledge.

In addition to the above four primary knowledge management processes, organisations must also have in place additional processes for organising and accessing knowledge. For instance when knowledge can be codified it must be organised in a way for others to find and recognise its relevance. It is only when the information is understandable, relevant and useable that it can be converted to knowledge and acted upon. This means knowledge should be assessed and evaluated before it is used.

Despite the benefits that organizational units will obtain from knowledge management and despite the wide spread popularity of knowledge management, no work was conducted for evaluating knowledge or at least identifying factors that influence decisions to choose or prefer knowledge entities over others. While researchers and strategists were able to distinguish between strategies, they lacked similar abilities in differentiating between good or useful knowledge from defective or poor or unhelpful knowledge until the end of 1990s.

Soliman and Spooner’s (2000) work on evaluation of strategies revealed that poor knowledge or defective knowledge could contribute to the failure of some strategies. The Soliman and Spooner work further
identified a relationship between poor or defective knowledge and poor or unachievable strategy. In that regard, Soliman and Spooner (2000) compared intended strategies with realized strategies and found that there is mismatch between the knowledge needed for the intended strategy and the knowledge associated with the realized strategy.

They referred to this knowledge mismatch as knowledge gaps and referred to the discrepancies between the intended strategy and the realized strategy as a strategic gap. They also found that the strategic gaps correspond to knowledge gaps which they identified as mismatch between knowledge need for intended strategy and knowledge associated with the realized strategy. They further used forward mapping techniques (Soliman, 2009) to identify what organisations can do, and sued the backward mapping to identify what organisations must know. Forward mapping identifies the difference between what an organisation can and must do and highlights the strategic deficiencies of the organisation. Equally true, backward mapping identifies the knowledge gaps and what employees know against what they should know to overcome existing knowledge deficiencies.

The Soliman and Spooner (2000) work has sparked interest in the topic of knowledge gaps as discussed below:

1. Campos and Sanchez (2003) have shown that complex knowledge management systems may lead to intensive knowledge spirals. However, they failed to point out that both knowledge loops and knowledge spirals could lead to knowledge gaps and this in turn could result in strategic gaps. Campos and Sanchez’s work was limited and could not be generalized to cover relationships' knowledge gaps and strategic gaps in organizations.

2. Further work by Maier and Remus (2003) has shown that most organizations improve their knowledge management initiatives by linking to business strategies and in doing so; organizations may be overlooking the existence of knowledge gaps and hence strategic gaps. Maier and Remus failed to recognize that the organizational performance may be related to the existence of knowledge gaps.

3. Other work by Snyman and Kruger (2004) emphasized the interdependency between strategic management and knowledge management. However, their work does not address the real issue which is the mismatch between knowledge strategy and business strategy and whether organisations could improve performance by eliminating or neutralising the effect of strategic gaps through identification of knowledge gaps.

4. Hellstrom and Husted (2004) have presented the finding of a focus group's study in a university setting, showing that knowledge mapping could be a useful tool in knowledge management. However, the findings are limited to an educational environment and there is no evidence that the finding could be generalized and related to the development of business strategies and the process of knowledge mapping in identifying knowledge gaps, and hence strategic gaps, in organizations.

5. Smith, (2004) pointed out to the relationship between knowledge management strategy and internal competitive strategies. Smith also reported the findings of a study of three organizations based on the grounded theory approach. Smith’s findings are limited to internal competitive strategies and lack the generalization to identify how the weaknesses in the relationship could be attributed to the existence of knowledge gaps that could lead to gaps in the organization’s internal competitive strategies.

6. Neef, (2005) reported that many organizations use a combination of knowledge and risk management to boost performance. Neef overlooked that knowledge gaps and strategic gaps may lead to further risks and in turn adversely affect the performance of organizations.

7. Nielsen, (2005) summarized the evolution of strategic management and knowledge management in contemporary business perspectives. Even though Nielson’s work pointed out to the significance of the linkage between strategic management and knowledge management, Nielsen failed to address the weaknesses of the linkage and in particular the existence of strategic gaps and knowledge gaps in
global organizations. Nielsen also failed to highlight how such strategic gaps and knowledge gaps could impact adversely on each other.

8. Mehrez (2010) applied the Soliman and Spooner approach to identify factors leading to failure of some industrial applications known for being of high quality. In fact Mehrez's (2010) work pointed to the existence of quality gaps in some of the well-known quality programs. The problem remains as to how one distinguishes between good knowledge and less useful knowledge.

However, as enterprises are continually challenged to perform better and go further than their competitors, they should be viewing their collective knowledge as a key competitive tool from which innovation and competitive advantages can emerge. Soliman et. al. (1999) noted that when enterprises attempt to define their existing knowledge management activities, they become in a position to identify areas for potential improvement, which could yield competitive advantages. Equally correct, management should be able to identify areas of weakness that could hinder the organisational effort to achieve or sustain competitive advantages. From the above discussion, knowledge gaps could be one such weakness that hinders or obstructs organisational progress.

Given that knowledge management is considered a key competitive advantage, efforts must be directed towards identifying and segmenting knowledge so that management can determine which knowledge is useful and which knowledge is inappropriate or unwanted.

9.0 Significance of the Nine Knowledge Characteristics

Knowledge management has been widely recognised as an essential tool in managing organisations and that knowledge management has a positive impact on organisations performance and in turn on their competitive positions. However, good knowledge management programs or tools must be based on sound or good knowledge. Therefore, it is imperative for organisations to attain and sustain a competitive advantage through acquisition and development and/or implementation of good knowledge management programs. The goodness and usefulness of knowledge management must be carefully evaluated or assessed. The assessment of knowledge itself must be assessment of the performance of the knowledge used or proposed to be used. In other words, assessment of knowledge should be assessment of the nine attributes of knowledge discussed above, namely; Timeliness of knowledge; Currency of knowledge; Relevance of knowledge; Authority for obtaining knowledge; Purpose of knowledge; Importance of knowledge; Accessibility of staff to knowledge; Applicability of knowledge, and Suitability of knowledge to the application.

In order to assess the performance of the above nine attributes of knowledge it is important that assessment of performance should be conducted at the level of the knowledge artefacts rather than at the process or the people levels. This is because the goodness of knowledge could be affected by the performance of either the processes and/or the people who work on the knowledge management processes (Soliman, 2009). According to Evans, and Lindsay (2011), “the performance measures are a quantification of how well the activities achieve a specified goal”. Therefore, the performance measures for assessment of knowledge must be developed around assessment of the knowledge itself and not about the performance of processes. Soliman and Youssef (2003) have shown that the performance measures must link to the company’s strategies, resources including tangible and intangible resources (such as knowledge). However, in the case of knowledge performance measures, it is necessary to evaluate the outcome of the knowledge artefacts. For example, poor outcome that is entirely due to lack of timeliness of knowledge could be interpreted as a poor performance of knowledge. Similarly other knowledge attributes could also be assessed on the basis of their outcomes.
10.0 Conclusions

This paper presents the concept of the innovation chain which consists of a number of stages that begins from a transformation from a knowledge-based firm into a learning organisation then into a full-fledged innovative firm. The transformation should be based on the premise that the foundation of good innovation is good knowledge, which is regarded as the key component of the concept of a learning organisation. Knowledge transfer is regarded (Garvin, 1993 and Soliman, 2011a and 2011b) as central to the innovation chain which encompasses information learning as a central activity for innovation.

The literature search reveals that there is a little attention to the assessment of knowledge. Instead, a number of articles that deal with measurement of knowledge management have focused on measuring the outcome of the knowledge management programs.

This paper argues that measuring knowledge management in lieu of measuring knowledge itself is not possible and also not meaningful. However, measuring knowledge management aims should be assessing the value driven from management of knowledge or intellectual capital of the organisation. Furthermore, the success of innovative firms today is often a result of good knowledge. This suggests that to improve innovation, then a method for assessment and evaluation of knowledge is required so that management can focus on achieving the innovation objectives. The paper proposes that good innovation strategies are always based on good knowledge and that in order to differentiate between which knowledge is good and which useful or applicable for innovation, then knowledge must be evaluated or assessed using an appropriate assessment method.

The paper also proposes a method for assessing the attributes of knowledge should encompass the following nine important characteristics of knowledge:

1. Timeliness of knowledge;
2. Currency of knowledge;
3. Relevance of knowledge;
4. Authority for obtaining knowledge;
5. Purpose of knowledge;
6. Importance of knowledge;
7. Accessibility of staff to knowledge;
8. Applicability of knowledge, and
9. Suitability of knowledge to the application.

References


Author’s Background

Dr. Fawzy Soliman is a Senior Academic and Doctoral Supervisor at the UTS Business School, Management Disciplinary Group, University of Technology, Sydney, Australia. Fawzy graduated with a PhD degree and Master of Engineering Science degree from the University of New South Wales, Australia and a Bachelor of Engineering degree from the University of Sydney. Published in international Journals in excess of twenty six papers, six book chapters and three books and in excess of fifty two conference proceeding papers. Former editor of Journal of Knowledge Management. Guest editor of Journal of Knowledge Management and Journal Operations Management. His publication citations are in excess of 593 with an author impact h-index of 9 and I10-index of 9. Supervised 9 PhD graduates. Convenor of Australia’s first conference on Knowledge Management KNOW’99 held on 26-27 November 1999. Taught in a number of international business schools in Australia and overseas. Invited speaker in a number of prestigious conferences. Prior to joining academia, he has held various positions in large Australian organisation.