

Effect of Knowledge Application on the Competitive Advantage: A Case Study of Nairobi City Water and Sewerage Company

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Abstract: *Knowledge is increasingly being recognized to be of importance in an organization's corporate strategy. An Organization that shares knowledge among its management and staff grows stronger and becomes more competitive. Previous studies conducted in the area of knowledge application are not conclusive and this has led to a limited understanding of the extent of its effect on an organization's competitive advantage. Despite organizations' having implemented knowledge application, there is inconsistent data to support how it affects firm's competitive advantage. The purpose of this study was to investigate the effect of knowledge application on the competitive advantage at Nairobi City Water and Sewerage Company (NCWSC). In addition, the effect of innovation, decision making, improved customer service, and improved operational processes on competitive advantage in NCWSC was investigated. A case study research design was adopted with a target population of 333 management staff from different departments in NCWSC. Data collection was done using questionnaires and data analysis and interpretation done using qualitative and quantitative methods. The study revealed that Knowledge application on the competitive advantage is a very important aspect on the performance of the organization. Organizations should utilize knowledge to create customer focus strategies, cost leadership strategies, improve revenues, create competitive advantage, enhance innovations, employee growth, and development, faster and better decision-making, faster response to key business issues, improve quality and service delivery. From the study it can be deduced that to have a sustainable competitive advantage, an organization should provide its employees with the platform for applying knowledge in their working environment. The study recommended that organizations should therefore encourage experts to take a very active role in the creation of a knowledge base towards attainment of the organizational goals.*

Keywords: Knowledge Application, Competitive advantages, Innovation, Decision making, Improved Customer service, Improved operational processes and Nairobi City Water and Sewerage Company

1. Introduction

Success in today's global, interconnected economy emanates from the fast and efficient exchange of information. Sustainable competitive advantage is no longer rooted in physical assets and financial capital, but in effective channeling of intellectual capital (Seubert, Balaji & Makhija, 2001). Drucker (1995) stressed that knowledge has become the key economic resource, the dominant and perhaps, even the only source of competitive advantage. Valuable knowledge often originates in individual experiences and perceptions (Polanyi, 1966). In order for firms to achieve a competitive advantage, knowledge must be coordinated at the organization level. According to Webb (1998), Knowledge management is the process of identification, optimization and active management of intellectual assets to create value, increase productivity and gain and sustain competitive advantage. Malhotra (2000) notes that knowledge management is a framework within which the organization views all its processes as knowledge processing, where all business processes involve creation, dissemination, renewal, and application of knowledge toward organizational sustenance and survival. This study was guided by three theories namely: Resource-Based View (RBV), Knowledge- Based View (KBV) and Dynamic Capabilities Theory (DCT).

Knowledge Management is the process of exploring, providing, creating and expanding, sharing, saving, evaluating, and applying the right knowledge by the right

person in appropriate time, that could be realized through combination among human resources, information technology, and communication; and by implementing appropriate structure to meet the organization goals (Afrazeh, 2005). Knowledge management can be defined as the organisational capability which identifies, locates (creates or acquires), transfers, converts and distributes knowledge into competitive advantage (Walters, 2002). The importance of knowledge management is further supported by International Organization for Standardization (ISO) 9001: 2015 quality management systems which places an obligation on organizations to consider the role of organizational knowledge as a resource. Davenport and Prusak (1998) also notes that the greatest driver for sustained competitive advantage in a firm is the knowledge that the firms owns and subsequently how prudently it is used and how promptly it creates new knowledge for innovation.

Murray (1998) states that knowledge management is a strategy that turns an organization's intellectual assets and the talents of its members to produce new productivity, value and increase competitiveness. The competitive advantage of many organizations is generally determined by the magnitude of knowledge sharing that takes place within the organization. Knowledge management consists of three major components namely educated people, process and high technology (Bose, 2002). The strategic benefits include the competitive advantage that can result from a proper and systematic management and application of the

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organization's knowledge. Through knowledge application, the organization can turn knowledge into a strategic asset and create an ever learning organization. By capturing relevant experiences and making them readily available throughout the organization, the entire organization can learn (Filemon, 2008).

Nonaka and Takeuchi (1995) provide a more philosophical distinction, starting from the traditional definition of knowledge as justified true belief. They define knowledge as a dynamic human process of justifying personal belief toward the truth. They contend that in order to produce innovation, it is necessary to create knowledge. For them, creation of organizational knowledge is the capability of a company as a whole to create new knowledge, disseminate it throughout the organization and embody it in products, services, and systems. Knowledge management is connected with activities that are related to organization's efforts in order to improve the development and usage of knowledge, therefore the organization can survive in a tough competitive industry. Nonaka and Takeuchi (1995) further explain the knowledge management process as the continuing process that can be divided into four sequential phases that covers knowledge acquisition, organizing, dissemination, and application. The study adopted knowledge application from the three components of knowledge management identified by Darroch and McNaughton (2002) namely knowledge acquisition, knowledge application and knowledge sharing.

The enactment of the Water Act 2002 created new institutions to manage water resources in Kenya. The actual implementation of these reforms saw formation of water service provision companies across the country, referred to as water service providers (WSPs) and licensed to provide water to specific jurisdiction by Water Service Boards (WSBs). The WSPs are linked to regional Water Services Boards (WSBs) in charge of asset management through Service Provision Agreements (SPA) with the WSPs. According to the Water Act of 2002, water services provider means a company, non-governmental organization or other person or body providing water services under and in accordance with an agreement with the licensee within whose limits of supply the services are provided.

The water service providers are either publicly or privately owned. The two face different constraints and require different incentives with respect to regulation. Public WSPs serve a wide range of customers from high to low-income, whereas privately-owned WSPs have a more homogeneous medium- to high-income customer base and only cover a small population base. Presently, there are eighty four (84) regulated publicly-owned WSPs and only two (2) regulated privately-owned WSPs (Water Services Regulatory Board [WASREB], 2016). Water Services Providers (WSPs) are the entities through which Water Service Boards (WSB) provide water and sewerage services. The WSPs provide water services under appropriate agreements entered into between them and the Water Service Boards with the approval of the Water Services Regulatory Board, the regulator of the water sector.

Nairobi City Water and Sewerage Company (NCWSC) was incorporated in December 2003 under the Companies Act

cap 486. It is a wholly owned subsidiary of Nairobi City County. It has its headquarters in Nairobi Kampala Road, Industrial Area and has its area of jurisdiction divided into six administrative regions, namely, Northern, Eastern, North Eastern, Central, Southern and Western regions which are further devolved into 25 zones.

The Nairobi Water Company has been appointed by the Athi Water Services Board (AWSB) to provide water and sewerage services to its residents under an agreed framework specified in the Service Provision Agreement (SPA) that ensures adequate and quality supply of water, affordable tariffs, maintenance and improvement of water and sewerage infrastructure. One of the main business objectives of Nairobi City Water and Sewerage Company (NCWSC) is quality service delivery and customer satisfaction. The total number active customer connections is 525,372 with a turnover of (Ksh million) 7,175 which is the highest amongst all the WSPs in Kenya (WASREB, 2016). Therefore, it is the best case to use in this study on the effect of knowledge application on competitive advantage.

2. Statement of the problem

Knowledge Application allows WSPs to better know their customers by integrating customer information with service history and billing preference lets an organization provide a higher level of service to the customer. The data generated by the water service providers is used daily to make operational decisions regarding water resource management, water treatment, and distribution strategies. If well managed, aggregated, and stored effectively, the data could help determine management strategies for repeated situations (America Water Works Association Research Foundation [AWWARF], 2003). According to Blankenship, Brueck, Rettie, Berry and Lee (2008) water service providers in Denver have made significant accomplishment in contributing to the field of Knowledge management retention for the water sector. In addition, they have helped their own organizations move forward with their knowledge retention and transfer efforts.

Mosoti and Masheka (2010) in their study; Knowledge Management: The Case for Kenya. Through data collected only 5 out of 69 organizations interviewed had a knowledge management policy or strategy written down. This represents less than 10 per cent which justifies the existing gap of application of knowledge management in Kenya. The study showed that the major reasons given by organizations for embracing knowledge management in their firm operations are: profit growth and firm market share expansion, quality improvement in operations, creation of a sustainable strategic competitive advantage, encourage creativity and innovation which is important to firm's strategy. Asava (2009) studied the relationship between knowledge management and competitive advantage within commercial banks in Kenya and found out that banks utilizing knowledge were able to create customer focus strategies, cost leadership strategies, record improved revenues thereby enjoying unmatched competitive advantage. Knowledge management enabled the banks enhance product innovations, inventory management, employee growth and development, faster and better

decision-making, intellectual property rights management, faster response to key business issues, improve quality and improve overall service delivery. Tiyan (2013) studied knowledge management as a competitive strategy among aviation training institutions in Nairobi, Kenya and found that knowledge management has improved competitiveness of employees in their duties in the aviation training institutes. So far, there has not been any study done showing how knowledge application affects the competitive advantage of WSPs in Kenya. This study sought to fill the knowledge gap by providing an assessment on the effect of knowledge Application on competitive advantage of WSPs in Kenya.

General objective of the study

To determine the effect of knowledge application on the competitive advantage; A case study of Nairobi City Water and Sewerage Company.

3. Theoretical Review

This study was guided by a number of theories including Resource-Based View (RBV), Knowledge-Based View (KBV) and Dynamic Capabilities Theory (DCT). The study is anchored on DCT which emphasizes the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments (Teece, David, Gary & Amy, 1997).

Dynamic capabilities theory

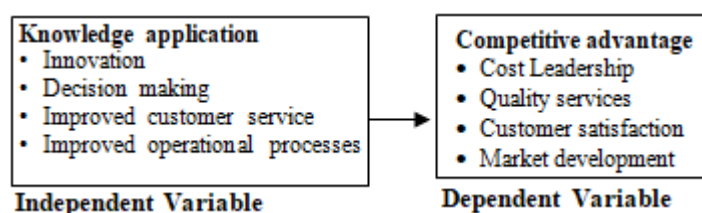
Dynamic capabilities reflects an organization's ability to achieve new and innovative forms of competitive advantage given path dependencies and market positions (Leonard-Barton, 1992). Griffith and Harvey (2001) the theory states that dynamic capability is the creation of difficult-to-imitate combinations of resources, including effective coordination of inter-organizational relationships, on a global basis that can provide a firm competitive advantage. Dynamic capabilities is the firm's ability to integrate, build, and reconfigure internal and external competences to address

rapidly changing environments. A dynamic capability is a learned and stable pattern of collective activity through which the organization systematically generates and modifies its operating routines in pursuit of improved effectiveness (Zollo & Winter, 2002). To address rapidly changing environments, WSPs need dynamic capabilities to gain competitive advantage in the turbulent environment of the water sector.

Dynamic capabilities arise from learning; they constitute the firm's systematic methods for modifying operating routines (Collis, 1994). Accumulation of capabilities is driven by organizational learning and molded by path dependencies, complementary assets and industry opportunities (Teece, Pisano, & Schuen 1992). Dunford and Snell (2001) observe that such dynamic capabilities require that organizations establish processes that enable them to change their routines, services, products and even markets over time. KM processes and dynamic capabilities are closely intertwined because the creation and evolution of dynamic capabilities requires experience accumulation and knowledge articulation and codification (Zollo & Winter, 2002). Eisenhardt and Martin (2000) further state that because dynamic capabilities are organizational routines, learning and KM processes guide their development, evolution, and use. Competitive advantage in the dynamic capability view involves organizational ability to adapt to environmental change through building, renewing and reconfiguring capabilities and competences (Teece *et al.*, 1992). In this view, the company's competitive advantage lies mainly in its dynamic capabilities, which refer to the capacity to build, renew and reconfigure capabilities and competences so as to achieve congruence with the changing business environment (Kylaheiko, Sandstrom & Virkkunen, 2002).

4. Conceptual Framework

The study adopted the following conceptual framework:



*Source: Author 2017
 Conceptual framework*

Knowledge Application

Knowledge application means the application of knowledge and the use of the existing knowledge for decision-making, improving performance and achieving goals. Organizational knowledge should be implemented in the services, processes and products of the organization. According to Bhatt (2001) it means making knowledge more active and relevant for the organization in creating value. In creating value, an organization will apply knowledge to their products and services by various means such as repackaging available knowledge, training and motivating its people to think creatively, and utilizing people's understanding of the

company's processes, products and services. Nonaka and Takeuchi (1995) suggest that the process of knowledge management is based on the ability of all members of the organization to add value to the basic business processes through the creation, communication, codification and coordination of both explicit and tacit knowledge stores. To get the most value from an organization's intellectual assets, knowledge management practitioners maintain that knowledge must be shared and serve as the foundation for collaboration. Consequently, an effective knowledge management program should help a company do one or more of the following: (1) Foster innovation by encouraging

the free flow of ideas (2) Improve decision making (3) Improve customer service by streamlining response time (4) Boost revenues by getting products and services to market faster (5) Streamline operations and reduce costs by eliminating redundant or unnecessary processes (Ellitan, Lena & Lina, 2009).

Sarin and McDermott (2003) suggest that learning significantly enhances the new product development team's ability to innovate and bring products to market faster. They also show that learning and knowledge application can be nurtured in teams by effective leadership. Organizations can either select team leaders with appropriate skills or train leaders to inculcate these management skills to enhance team learning and consequently achieve superior new product development performance. Knowledge management systems must connect people to enable them to think together and to take time to articulate and share information and insights they know are useful to their company (Lang, 2001). A knowledge repository should be a one-stop shop for knowledge application. Employees should be able to find out what they need in order to access, understand, and apply the cumulative experience and expertise of the organization. Knowledge management systems also allows for knowledge reuse, Markus (2001) suggests there are four distinct types of knowledge reuse situations according to the individual who is doing the reusing and the purpose of knowledge reuse: (1) Shared work producers (2) Shared work practitioners (3) Expertise-seeking novices and (4) Secondary knowledge miners. The ability of knowledge to be applied can be evaluated in terms of its relevance, comprehensiveness, and credibility that leads to managerial learning and the whole research and development learning process before applied (Moenaert et al., 1992). This conclusion provides the need for organizations to put in place a framework for measuring or evaluating the effects that their knowledge management initiatives has on overall performance.

5. Research Methodology

A case study research design was selected because this brought a researcher to an understanding of a complex issue and extended experience or add strength to what is already known through previous research. Case studies emphasizes detailed analysis of a limited number of events or conditions and their relationships, (Yin, 1997). Time and availability of data are also important considerations in the determination of the case study. In this study the target population was drawn from management team of the organization that made up a total of 333 employees. The main reason for this choice is that the respondents possess knowledge about all the employees and their position in the formulation and implementation of strategy in the organization.

In order to meet the objective of the study, open and closed ended questionnaire was used to collect the primary data developed by the researcher. The questionnaire was used to obtain primary data from the sampled population, who were the top managers, middle level Managers and entry level managers. All the respondents were asked the same questions in the same order. The questionnaire provide both qualitative and quantitative data.

Qualitative analysis was done on the information collected from the results of the questionnaires; quantitative analysis was included, both descriptive and inferential statistical techniques were used. Descriptive statistics was used to analyze the quantitative data. The findings were presented using tables, graphs and pie charts.

6. Results and discussions of the findings

Knowledge Application

The study through the questionnaire asked the employees to provide their opinion on knowledge application using a tool developed based on the Likert scale with the scores ranging from 1-5, it allowed the employees to express how much they agree or disagree with a particular statement. From the response on whether knowledge contributes to the success of innovations in the organization 73.34% of the managers agreed that knowledge contributes to the success of innovations in the organization, 26.66% of the managers disagreed. In regard to whether management actively seeks innovative ideas in the organization 80% agreed that management actively seeks innovative ideas in the organization, 20% disagreed. The findings concurs with Tan (2000) that effective knowledge management is now recognized to be the key driver of new knowledge and new ideas to the innovation process, to new innovative products, services and solutions. When asked whether the organization utilizes different sources and types of knowledge for decision making 83.34% agreed, 16.66% disagreed. This suggests that majority of the managers were of the view that the organization utilizes different sources and types of knowledge for decision making. Concerning use of knowledge to respond to consumer needs and preferences, 86.66% agreed that the organization uses knowledge to respond to consumer needs and preferences, while 13.33% disagreed. This implies that water service providers proactively seek information on consumer needs in order to improve their products and services. This corroborates with Cristiano and Maria (2007) who stated that Knowledge Management is fundamentally important in the product development process as a meaning to share information among the team who are involved in the product life cycle. Product development is a process, which companies transform client's information, market and technical opportunities into products and/or services that are disposed to the market. When asked whether the organization encourages employees to utilize knowledge to solve work related problems, 73.33% agreed while 23.33% of them disagreed and only 3.33% were undecided. This agrees with Mosoti and Masheka (2010) who found that when the organization uses knowledge more problems are solved. When asked whether the organization uses knowledge on a regular basis to develop new processes for work, 83.34% agreed while 16.66% of them disagreed. This therefore suggests that knowledge is critical for developing new processes and products and/or services in a firm.

Regression Analysis

Regression analysis was done to establish the effect of independent variable (knowledge application) on the dependent variable (competitive advantage). According to the regression analysis results, the independent variable

(knowledge application) explain 96% of change in the dependent variable (competitive advantage). The analysis yielded the results as presented in the model summary below.

Table 1: A Summary of the R, R Square and Adjusted R Square in the Multiple Regression Analysis

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.979 ^a	.958	.944	1.00574
a. Predictors: (Constant), Knowledge Application				

R² = 96% of the total variation can be explained by the model.

Table 2: Significance Level in Linear Regression Analysis

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	69.090	1	69.090	68.305	.004 ^b
	Residual	3.035	3	1.012		
	Total	72.125	4			
a. Dependent Variable: Competitive Advantage						
b. Predictors: (Constant), Knowledge Application						

With F (1, 3) = 68.305 and p-value of 0.004, which is lesser than alpha (< alpha), which means the model is significant. This implies that there is a statistically significant predictive relationship between competitive advantage and knowledge application.

Table 3: The Beta Coefficients in Linear Regression Analysis

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.789	.680		2.632	.078
	Knowledge Application	.702	.085	.979	8.265	.004
a. Dependent Variable: Competitive Advantage						

Table 3 reveals how accurately competitive advantage can be predicted from a linear with knowledge application; reference is made to the regression coefficients as shown in Table 3 above. Using the standardized beta coefficients, the constant "a" would disappear and the regression equation is of the form:

$$Y (\text{Competitive Advantage}) = a + b_1x (\text{Knowledge Application})$$

$$Y = 0.979x$$

That is, the regression coefficients for knowledge application as obtained from coefficients table is 0.979 which indicate a strong positive relationship with competitive advantage. Table 3 further reveals that, with P-values of 0.004 for knowledge application. Therefore, it can be concluded that, knowledge application has significant relationship with competitive advantage.

7. Summary of the findings

The study found that knowledge application helped in achieving competitive advantage in the organization, the organization uses knowledge to solve problems. Respondents further acknowledged that knowledge contributes to the success of innovations; the findings shows that innovation is one of the factors that leads to growth and development of any organization. Majority of the respondents agree that organization management actively seeks innovative ideas. The findings were in agreement with the study of Davenport and Prusak (1998) who notes that the greatest driver for sustained competitive advantage in a firm is the knowledge that the firms owns and subsequently how prudently it is used to create new knowledge to foster innovation. Further, the research suggests that knowledge application is one of the best way of beating competitors in the market where quality, quantity and the levels of customer satisfaction are very vital to improve customer service. The study ascertained that Nairobi City Water and Sewerage Company as an organization encourages employees to utilize knowledge to solve work related problems and improve decision making.

8. Conclusions

The study concludes that there is a significant positive relationship between knowledge application and competitive advantage in NCWSC. The study established that knowledge application is a very important aspect for the performance of the organization. Water service providers should utilize knowledge to create customer focus strategies, cost leadership strategies, improve revenues, create competitive advantage, enhance innovations, employee growth, and development, faster and better decision-making, faster response to key business issues, improve quality and service delivery. The findings of this study will help other institutions on handling knowledge application on achieving competitive advantage in the dynamic market.

9. Recommendations

Based on the findings, knowledge application helped in achieving competitive advantage in the organization and the study reveals that the use of training and development foster innovation in the working environment. Similarly, much of the innovation created and accumulated in an organization is actually based on tacit knowledge. Organizations should therefore encourage experts to take a very active role in the creation of a knowledge base towards attainment of the organizational goals.

References

- [1] Afrazeh, A. (2005). *Knowledge management (introduction, models, measurement and implementation)*. Amirkabir University of Technology.
- [2] America Productivity and Quality Center (2002). *Retaining Valuable Knowledge: Proactive Strategies to Deal With a Shifting Workforce*, Houston, Texas.

- [3] America Water Works Association Research Foundation (2003). *Strategies to Help Drinking Water Utilities Ensure Effective Retention of Knowledge*, Washington, DC.
- [4] Asava, L. K. (2009). *Knowledge Management for Competitive Advantage within Commercial Banks in Kenya*. Unpublished MBA project, University of Nairobi.
- [5] Byrd, T., Cossick, K. & Zmud, R. (1992). A synthesis of research on requirements analysis and knowledge acquisition techniques. *MIS Quarterly*, 16(1), 117-138.
- [6] Cabrera, A., Cabrera, E. F. (2002). "Knowledge-sharing Dilemmas". *Organization Studies* 23 (5): 687-710.
- [7] Collis, D. 1994. Research note: How valuable are organizational capabilities? *Strategic Management J.* 15 143-152.
- [8] Government of Kenya (2003), The Water Act NO. 8 of 2002, Nairobi, Government
- [9] Printer
- [10] Hammersley, M., Gomm, R., & Foster, P. (2000). Case study and theory. *Case study method: Key issues, key texts*, 234-58.
- [11] Helfat, C. E., & Peteraf, M. A. (2003). The dynamic resource-based view: Capability lifecycles. *Strategic management journal*, 24(10), 997-1010.
- [12] Hitt, M. A., Bierman, L. S., & Shimizu, K. K., & Kochhar, R. (2001). Direct and moderating effects of human capital on strategy and performance in professional service firms: A resource based perspective. *Academy of Management Journal*, 44(1), 13-28.
- [13] Hosseini, M. R., Tahsildari, H., Hashim, M. T., & Tareq, M. A. (2014). *The Impact of People, Process and Technology on Knowledge Management*.
- [14] Ikujiro, N. (1991). *The Knowledge-Creating Company*. Boston: Harvard Business
- [15] School Press.
- [16] Mugenda, O. M & Mugenda, A.G (1999). *Research methods, Quantitative and Qualitative approach*. Nairobi: African Centre of Technology Studies Press.
- [17] Mugenda, O., & Mugenda, A.G. (2003). *Research Methods: Quantitative and Qualitative Approaches*. Nairobi: Acts Press.
- [18] Mugenda, A., & Mugenda, A. G. (2008). *Social Science Research, Theory and Principles*. Nairobi. Applied Research and Training Services Press.
- [19] Murray, P.C. (1998), *New Language for New Leverage. The Terminology of Knowledge Management*, Corporate Education. Biz, LLC, NY, available at: www.ktic.com/topic6/13_term2.htm,
- [20] Nairobi City Water and Sewerage Company. (2008). City residents to benefit from alternative water sources initiative. *Nairobi Water News*, 14, 1-2
- [21] Nairobi City Water and Sewerage Company. (2011). *Customer water supply contract*. Nairobi: Nairobi City Water and Sewerage Company.
- [22] Nevis, E. C., DiBella, A. J., & Gould, J. M. (1995). Understanding organizations as learning systems. *MIT Sloan Management Review*, 36(2), 73-73.
- [23] Niederman, F. (1996). Acquiring knowledge about group facilitation: research propositions. *Proceedings of the 1996 conference on ACM SIGCPR/SIGMIS*. 58- 67.
- [24] Nonaka, I. (1991) *The knowledge creating company*. Harvard Business Review, November-December 1991. Reprint no: 91608.
- [25] Porter, E.M (1985). *Competitive advantage: Creating and sustaining superior Performance*. New York: Free press
- [26] Saunders, M. N. K. Lewis, p., and Thornhill, A. (2000). *Research methods for business students*. (2nd Ed.). Harlow: Pearson Education.
- [27] Senge, P. (1990). *The fifth discipline: The art and practice of the learning organization*. New York, NY: Doubleday/Currency.
- [28] Senge, P. (1994). *The fifth discipline fieldbook: Strategies and tools for building a learning organization*. New York, NY: Doubleday/Currency.
- [29] Seubert, E., Balaji, Y. and Makhija, M.(2001). "The Knowledge Imperative". *CIO Special Advertising Supplement*, March 15.
- [30] Teece, David J., Gary Pisano and Amy Shuen (1997). *Dynamic capabilities and strategic management*. Strategic Management Journal, 18 (7): 509-533.
- [31] Trochim, W. M. (2000). *The research methods knowledge base*, Retrieved July 11, 2001.
- [32] Van Buren, M. E. (1999). A yardstick for knowledge management. *Training & development*, 53(5), 71-78.
- [33] Van den Hooff, B., & de Ridder, J. A. (2004). Knowledge Sharing in Context: The influence of Organizational Commitment, Communication Climate, and CMC use on knowledge Sharing. *Journal of Knowledge Management*, 8(6): 117 130.