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To Link this Article: <http://dx.doi.org/10.6007/IJARAFMS/v3-i2/10455> DOI:10.6007/IJARAFMS /v3-i2/10455

**Received:** 15 April 2013, **Revised:** 17 May 2013, **Accepted:** 27 May 2013

**Published Online:** 19 June 2013

**In-Text Citation:** (Ansari et al., 2013)

**To Cite this Article:** Ansari, R., Allameh, S. M., Asadi, A., Vasfi, M. A., & Harooni, A. (2013). Investigating the Relationship between Knowledge Management Processes and Innovation Levels: Managers and Experts of Software Design Companies of Isfahan Province. *International Journal of Academic Research in Accounting Finance and Management Sciences*, 3(2), 63–76.

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Vol. 3, No. 2, 2013, Pg. 63 - 76

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## Investigating the Relationship between Knowledge Management Processes and Innovation Levels: Managers and Experts of Software Design Companies of Isfahan Province

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### Abstract

The purpose of this paper is to study the relationship between the knowledge management processes and innovation levels among the managers and experts of software design companies of Isfahan Province. Standard evaluating questionnaire of Daroach's innovation and knowledge management which was based on Likret scale (from 1-very low to 5\_very high) has been used to measure the studied variables. To evaluate its reliability, the Cronbach's Alpha coefficient has been applied. The population included the managers and experts of software design companies of Isfahan Province numbering 390 people from which a sample size of 77 people has been yielded using Cochran's formula. Considering the sample size, the questionnaire has been distributed by random among the 77 people of managers and experts of the software design companies of Isfahan Province. The results have been analyzed using the SPSS<sub>win18</sub> software. The Pearson's correlation test has been used to test the hypotheses. The results indicating that among the processes of knowledge, there is not a significant relationship between the knowledge acquisition and Knowledge dissemination and not also between the Knowledge dissemination and responsiveness to knowledge, but there is a direct and significant relationship between the knowledge acquisition and Responsiveness to knowledge. However there is a direct and significant relationship between the knowledge acquisition, Responsiveness to knowledge and innovation but there is no significant relationship between the Knowledge dissemination and innovation. In addition, the relationship between the processes of knowledge management and innovation levels has been studied one –on- one. The resulted the analysis indicated that there is a direct and significant relationship between the knowledge acquisition and all the levels of innovation except the Change level in productions to reduce the costs and on the other hand there is no significant relationship between the knowledge dissemination and all the levels of innovation.

**Keywords:** Knowledge Management, Innovation, Knowledge Acquisition, Knowledge Dissemination, Responsiveness to Knowledge.

## Introduction

During the last decade, universities and organizations facing rapid changes (Liao & Wu, 2010), have stressed the importance of knowledge (López-Nicolás & Meroño-Cerdán, 2011). Nowadays, knowledge is the basis of the competition (López-Nicolás & Meroño-Cerdán, 2011) and is considered as the vital source for the survival of organizations (Alaei & et al., 2012). Therefore, to maintain their competitive advantages, the organizations should update their knowledge and adapt it to the changes. In the coming years, the companies which create new knowledge and apply it effectively and efficiently will succeed in creating the competitive advantages (López-Nicolás & Meroño-Cerdán, 2011). In other words, access to profound knowledge and obtain understanding of all its levels are the necessary conditions for an organization to be successful, however many organizations do not yet pay serious attention to the subject of knowledge management (Alaei et al., 2012). In order to maintain their competitive advantages, modern companies should constantly work on their special abilities that are their same dynamic capacities (Cantner et al., 2011). Peter Drucker considers the knowledge management as the key to success in 21 century (Alaei et al., 2012). The purpose of knowledge management is the explicit and systematic management of the vital knowledge which includes the creation, organization, dissemination, and application of knowledge (Kebede, 2010; López-Nicolás & Meroño-Cerdán, 2011).

No doubt, today's IT revolution plays a major role in changing the knowledge of economic fields. Besides, by providing wide and affordable access to the variety of data, information technology suggests a new tool to control the information and also to accelerate and improve the knowledge creation and innovation processes. Innovation complexities will also increase.

Since the innovation in encountering customer's need, competitive pressures and technology rapid changes have become more complicated, organizations should know that their commercial strategies must be new enough so that they could create suitable competitive advantages. Innovation is strongly dependent on access to the knowledge. Thus, to have access to successful innovation, we should first determine the complexity created by development and enrichment of knowledge and then manage it (Alaei & et al., 2012). In fact, information technology as a substructure will provide an appropriate field to improve all the activities and knowledge management processes (Gimmy, 2003).

Gilbert (1999) considers those kinds of information technologies as the successful ones which are able of:

- Connecting all the members of organization to the external environment.
- Being somehow the accessible memory for all the members of organization (Gilbert, 1999:274).

Considering the importance of innovation and knowledge management in organizations, this research is attempting to study the relationship between the knowledge management processes and innovation levels among the managers and experts of Software Design Companies of Isfahan Province. In this regard, we have used the Darroch's model; first we have had a review on the literature of knowledge management, innovation and the efforts made by the national and foreign researchers and then we began to analyze the collected data and findings and finally through discussions we have made a conclusion.

### Literature Review

All organizations are involved with knowledge. (Gloet & Terziouski, 2004). Knowledge can be defined as "information mixed with experience, field, interpretation and reflection" (Davenport et al., 1998). The knowledge which plays the role of the key factor in all innovation forms is marked as a accepted principal in modern innovation management which is considered as a vital property and main resource of the competitive advantage for a company (Xu et al., 2010). Organizations could have a choice among the competitive systems, business processes, knowledge dissemination and management. These systems and processes are as implicit as they are explicit and the individual and organizational values and ideologies could influence on them (Gloet & Terziovski, 2010). Nowadays, knowledge management processes are so important for the survival of the organization in competitive environment and they have resulted also in creation of the concept of knowledge management (Ng & et. al., 2012). Wen (2009) defines the knowledge management as the creation, acquisition, sharing and application of knowledge in order to enhance the performance in organization. Gloet & Terziovski (2004) defines the knowledge management as the formality of access to experience, knowledge and expertise which has created the new ability and capacity, has enhanced the customer's value and has also developed the innovation motive in organization. Therefore, the definitions of knowledge management could be generally studied from three points of view as follows:

- Knowledge management definition from the result oriented manner point of view: in this aspect, the purpose of knowledge management is an appropriate accessibility of knowledge in a suitable time and location.

- Knowledge management definition from the process oriented manner point of view: it is the systematic management of process using the known, created, collected, shared and applied knowledge.

- Knowledge management definition from the technology oriented manner point of view: this manner points out the business intelligence, cooperation, search engines and intelligent factors. (Benjamins, 2001)

Considering the fact that Darroch (2005) regards the knowledge management as a process which includes three process of knowledge acquisition, knowledge dissemination and responsiveness to knowledge, this study attempts to discuss these processes, the relationship between them and also the relationship between these processes and innovation. Knowledge acquisition is defined as a discovery process of a new knowledge, existent in the environment of an organization and it has been previously shown that knowledge has been able of being shared in an organization so as to enhance its innovation performance (Ramita & et al., 2012). Since knowledge is gathered from the sellers, domestic employees and customers, knowledge acquisition is so important and has a high priority in organization to ensure the continuous improvement. This data collecting could enhance the organization understanding of employee's experiences and their skills and will make the organization capable of producing more qualified productions which could satisfy the customers (Ng & et al., 2012). Knowledge dissemination is the application of existent knowledge in order to produce a new knowledge which will result in enhancing the innovation performance in the organization (Ramita & et al., 2012). The organizational knowledge is principally acquired by individuals. The organizational capabilities could be developed by the dissemination and transferring of knowledge. The employee's cooperation to share the knowledge is the only way that makes an organization capable of achieving the maximum quality improvement (Ng & et al., 2012). responsiveness to knowledge is defined as the manner, in which the organization

responds to its required knowledge such as the knowledge about the customers, competitors, technology, marketing functions and other individuals in the organization, and also its presentation in an appropriate framework in order to adapt it to knowledge acquisition (Ramita & et al., 2012). Innovation and knowledge are obviously two highly interconnected issues. There is a general consensus on this fact that, both implicit and explicit factors of organizational knowledge play an important role in innovation process (Xu & et al., 2010). Parlby and Taylor (2000) believe that, the knowledge management supports the innovation, the creation of new ideas and also the exploitation of the thinking power of an organization. Therefore we could say that the enhancement and improvement of innovation are conceived as one of the essential output of knowledge management and the innovation consists of new products or services, new production process technologies, new administrative or structural systems or a new program or project pertaining to organizational members (Wu& Liao, 2010). Lundvall and Nielsen (2007), define the innovation as a process which adds something to new knowledge. Tchen and Tsou (2007), define the innovation as creativity, adoption and implementation of new ideas and activities which requires an understanding of opportunities and their use to create new products and services or new methods of working. Harkama (2003) states that the initial and essential goal of innovation is to produce a new knowledge which could discover the new solutions and also develop them for the society. Innovation is a process and also a procedure that having the aim of creating knowledge, captures, acquires, manages and distributes the knowledge in order to support the distinctive producing and delivery of productions and services and also their special features (Akram et al., 2011). Messa and Testa (2004), suggest that organization should develop some receptors to receive the external knowledge. Most of them stated that, organizations could gain their explicit and implicit knowledge by benchmarking the external resources. These internal resources of knowledge could be integrated into internal explicit and implicit knowledge and if any gap of knowledge appears, it can be filled through dissemination of a new knowledge which will be useful to create innovation. Companies differ from each other not only in their information acquisition manner but also in their knowledge management ability and these differences affect profoundly their basic performance and capability. Studies about the knowledge management and innovation illustrate the great consideration to the manner of creation, acquisition, sharing and dissemination of knowledge in strategic decision and performance in an organization (Lu et al., 2008). Regarding the fact that organizations have found out the importance of knowledge management for organizational efficiency and conceived it as a tool which applying the saved knowledge creates new values, a abroad external and internal researches on knowledge management and its impact on organizational performance or innovation have been accomplished. Some of these researches are as follows:

Gloet and Terziouski (2004), using survey-descriptive approach, have studied the relationship between the innovation efficiency and knowledge management procedures. The results of this study indicated that there is an inverse and considerable relationship between the IT components focused on technical progress (e-commerce) and innovation efficiency. Alegre et al (2011), did a research a study entitled "knowledge management and innovation performance in SME industry by high technology" in R&D sector of biotechnological company in France and concluded that knowledge management increases the innovation indirectly in the company. Palacios et al (2008), sending 20 questionnaires to the managers of companies (10 biological companies and 10 telecommunication companies), have made a research study entitled "the impact of knowledge management on innovation and entrepreneurship in biotechnology and telecommunication industries" and confirmed a positive relationship

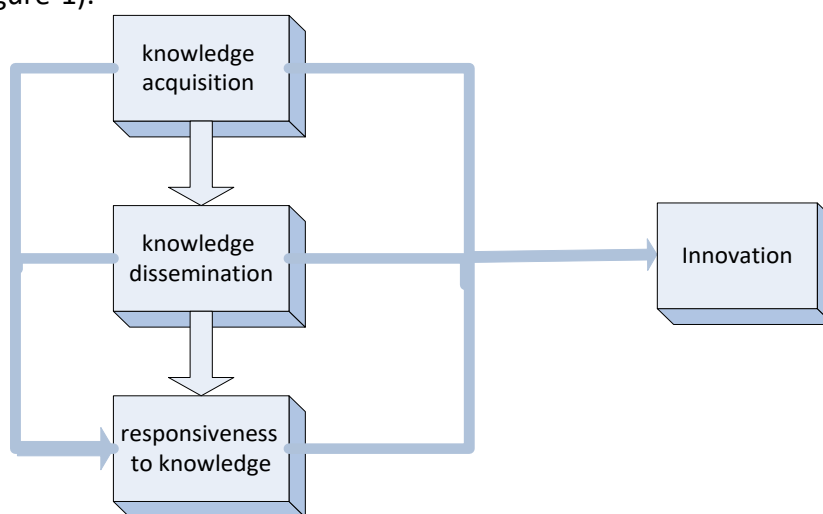


between the principals and procedures of knowledge management and the innovation distinct from competition.

In addition to the studies accomplished on these issues, some models are presented about the relationship between the knowledge management and innovation that some of them are as follows; Ruggles and Little (1997): greenhouse metaphor model, Andrew Goh (2005) the model of using knowledge for innovation, Ju et al (2006) probable model for knowledge management and innovation capabilities, Diem Ho (2007): research on innovation and knowledge management, Xu et al (2010): macro process of knowledge management for constant innovation, Ng et al (2012): model of the relationship between knowledge management processes and technologic innovation, Tranfield et al (2006): model of the hierarchic process of knowledge management for innovation and Darroch (2005): model of the relationships between the knowledge management, innovation and performance. According to research goal and success and innovation crucial variables of software design companies which are covered by Darroch's model and also based on the software experts' ideas, we decided to apply this model.

### **Darroch's Model**

Darroch (2005), using two procedures studies the role of effective knowledge management. Since she believes that this is the abilities of a company which guarantee its life and also a company having better behaviors and more qualified effective knowledge management procedures will create better resources and as a result it will have better outputs such as innovation and financial performance, therefore she first checks if the effective knowledge management could support the conversion of all resources to abilities or not. Considering the fact that in this industry, knowledge is constantly changing and only those companies would survive which could gain the update knowledge and spread it all over their organization and also according to expert's ideas and the experience attained in this industry, the companies which are more innovative will be more successful in competition fields. Therefore in this research, considering the importance of innovation- based on Darroch's model (2005), one of the effective knowledge management outputs - we will study in this industry only the relationship between knowledge management processes and innovation (figure-1).



*Figure 1. Relationship between the Variables Darroch (2005)*

Thus, according to Darroch's model the research hypotheses are as follows:

*H1: There is a significant relationship between knowledge acquisition and knowledge dissemination.*

*H2: There is a significant relationship between knowledge acquisition and responsiveness to knowledge.*

*H4: There is a significant relationship between knowledge acquisition and innovation.*

*H5: There is a significant relationship between responsiveness to knowledge and innovation.*

*H6: There is significant relationship between knowledge dissemination and innovation.*

## Research Methodology

This is an applied research study. This research's method is a survey-descriptive and also correlative type. Research variables include knowledge management processes (knowledge acquisition, knowledge dissemination, responsiveness to knowledge) and innovation. To assay studied variables, the Darroch's standard evaluation questionnaire of knowledge management and innovation (2005), has been applied which was based on Likert scale (from 1-very low to 5-very high). This questionnaire consists of five parts: demographic characteristics, knowledge acquisition evaluating scale, knowledge dissemination, responsiveness to knowledge and innovation. To determine the content validity, the questionnaires were given to professors and experts and needed reforms were introduced. In the final evaluation, Cronbach's alpha has been applied that is as follows in table below:

Table 1. Variable reliability evaluation

Status	Alpha Coefficient	Questions	Variable
High Stability	75.3	1-6	Innovation
High Stability	77.1	7-12	Knowledge Acquisition
High Stability	75.4	13-17	Knowledge Dissemination
High Stability	76.4	18-22	Knowledge Accountability

Research population consists of 390 people including managers and experts of software design companies of Isfahan Province. The sampling procedure of this study is that first some companies were randomly chosen and then the questionnaires were distributed among the managers and experts of these companies. Using Cochran's formula, the resulted sample size was 77, and according to the number of managers (12 people) and experts (64 people), the questionnaires were distributed from which 76 questionnaires were completed and returned.

$$n = \frac{s^2 Z^2_{\alpha/2} N}{Nd^2 + s^2 Z^2_{\alpha/2}} = \frac{390 \times 1.96^2 \times 0.75^2}{390 \times 0.15^2 + 1.96^2 \times 0.75^2} \quad (1)$$

In order to analyze the data in two parts of descriptive and inferential statistics, the **SPSS Win18** Software was applied. Therefore, in descriptive statistics, we have used frequency, average and standard deviation and correlative analyses have been used in inferential statistics.

**Findings**

The results of descriptive statistics demonstrate that the mean age of studied participants is 35.1 with a standard deviation of 5.77. Among the 76 studied participants, 51 of them are men and 25 women from which 12 (%15.8) are managers and 64 (%84.2) are experts. In addition, 42 of them are married and the rest are single and also among the 76 participants, 74 of them have a bachelor's or a higher degree which indicates the high level of participant's education. Respecting the carrier of studied participants we could say that 33 (43.4) of them have an experience of 5 or less years and the rest an experience more than 5 years. In order to use the parametric tests, the study variables should have a normal distribution.

Therefore, in this study, the distribution of variables has been supposed to be normal and parametric tests have been applied. Based on this fact, in this survey in order to test the studied hypotheses, Pierson's correlation coefficient has been applied. The results of correlation test are as follows:

*Table 2. Innovation and knowledge management procedures*

Knowledge management processes		Knowledge acquisition	Knowledge dissemination	Responsiveness to knowledge	Innovation
Knowledge acquisition	Pierson's correlation coefficient	1	170.	.397**	.489**
	Significance level		142.	000.	.000
	Number	76	76	76	76
Knowledge dissemination	Pierson's correlation coefficient	.170	1	.156	.135
	Significance level	.142		.178	.244
	Number	76	76	76	76
Responsiveness to knowledge	Pierson's correlation coefficient	.397**	.156	1	.460**
	Significance level	.000	.178		.000
	Number	76	76	76	76
Innovation	Pierson's correlation coefficient	.489**	.135	.460**	1
	Significance level	.000	.244	.000	
	Number	76	76	76	76

\*\*Correlation coefficient at the 0.01 level of significance

According to the results of correlation analysis, survey hypotheses could be studied as follows:



Table 3. Results of studying the hypotheses

Status	Correlation coefficient	Significance level	Hypothesis
Not supported	0.170	0.142	H1
supported	0.397	.000	H2
Not confirmed	.156	0.178	H3
supported	.489	.000	H4
supported	.460	.000	H5
Not supported	.135	.244	H6

The relationship between each innovation levels and knowledge management processes has been also studied as follows in table 1.

Table 4. The results of correlation analysis in order to study the relationship between knowledge management processes and innovation levels

Responsiveness to knowledge	Knowledge dissemination	Knowledge acquisition	Knowledge management processes	
			Levels of product innovation	
.010	.685	.013	Significance level	New product global manufacturing
.294**	.047	.282*	Pierson's correlation coefficient	
.051	.327	.004	Significance level	New product manufacturing in the company
.225	.114	.326**	Pierson's correlation coefficient	
.000	.068	.000	Significance level	Adding a new product to existing products category
.390**	.210	.399**	Pierson's correlation coefficient	
.000	.179	.000	Significance level	The improvement of existing products
.456**	.156	.525**	Pierson's correlation coefficient	
.486	.341	.271	Significance level	Changes in products to reduce cost
.081	-.111	.128	Pierson's correlation coefficient	
.000	.148	.001	Significance level	Changes in the position of existing products
.451**	.168	.361**	Pierson's correlation coefficient	

According to the values of significance and Pierson's correlation coefficient in table above, the relationship between innovation levels and knowledge management processes could be represented as follows:

Table 5. The relationship between innovation levels and knowledge management processes

Responsiveness to knowledge	Knowledge dissemination	Knowledge acquisition	
There is a significant relationship	There is not a significant relationship	There is a significant relationship	New product global manufacturing
There is not a significant relationship	There is not a significant relationship	There is a significant relationship	New product manufacturing in the company
There is a significant relationship	There is not a significant relationship	There is a significant relationship	Adding a new product to existing products category
There is a significant relationship	There is not a significant relationship	There is a significant relationship	The improvement of existing products
There is not a significant relationship	There is not a significant relationship	There is not a significant relationship	Introducing changes in products to reduce cost
There is a significant relationship	There is not a significant relationship	There is a significant relationship	Introducing changes in the position of existing products

According to the results obtained from the table above and the software industry situation which changes constantly, knowledge acquisition is considered as a vital factor for innovation levels. Therefore software design companies should be able of collecting the needed information from concerning markets and also from customers and sellers in order to acquire competitive advantages and survive in this complicated market, they should also employ the experienced and creative staffs and value their opinions.

### Discussions and Conclusions

Nowadays that business environment is strongly competitive, it is natural that most of the organizations try more than before to survive and compete with their competitors. We could say that among all other industries, because of the rapid rate of software production and the high population of the users, this competition is more serious in software industry. Thus, among all the organizations just that organization will be more successful which could through the idea creation and innovation, adapt itself to these changes and this will be achieved only by developing and implementing the knowledge management processes in organization. According to the significance of this issue, in this article we attempt to study the relationship between knowledge management processes and innovation levels in software design companies of Isfahan Province. Therefore, Darroch's standard evaluation questionnaires of knowledge management and innovation based on Likert scale were distributed among the managers and experts of randomly chosen software design companies of Isfahan Province. The results indicate that among the processes of knowledge management, there is not a significant relationship between knowledge management and knowledge dissemination and also no significant relationship between knowledge dissemination and responsiveness to knowledge but there is a direct and significant relationship between knowledge acquisition and responsiveness to knowledge. The findings also indicate that there is a direct and significant relationship between knowledge acquisition, responsiveness to knowledge and innovation. As mentioned before, knowledge acquisition is

defined as a discovery process of a new knowledge, existent in the environment of an organization and it has been previously shown that knowledge has been able of being shared in an organization so as to enhance its innovation performance (Ramita & et al., 2012). Considering the constant changing conditions of environment, companies which compete in the field of software industry need to generate ideas and innovation in order to survive and acquire competitive advantage and to achieve this, knowledge acquisition is one of the prerequisites. Since knowledge acquisition process plays an important role in generating innovation, the software design companies need to pay close attention to this factor. This finding is compatible with the result of the research of Davood Mohammadi et al (2010), which was conducted at Natural Resources and Agricultural Research Center of Kermanshah Province. They concluded that knowledge acquisition is the most effective factor in predicting the changes of innovation. Besides, knowledge acquisition falls effective if companies, using this collected knowledge can make an appropriate response in terms of environment. As mentioned in survey literature, knowledge accountability is defined as the manner, in which the organization responds to its required knowledge such as the knowledge about the customers, competitors, technology, marketing functions and other individuals in the organization, and also its presentation in an appropriate framework in order to adapt it to knowledge acquisition (Ramita et al., 2012). Besides, there is not a significant relationship between knowledge dissemination and innovation. The relationship between knowledge management processes and innovation levels has also been separately studied in this survey. In general we could say that there is a direct and significant relationship between the knowledge acquisition and all the levels of innovation except the variance level in productions to reduce the costs and on the hand there is not a significant relationship between the knowledge dissemination and all the levels of innovation. Concerning the relationship between knowledge responsiveness to knowledge and innovation levels we could say that there is a direct and significant relationship between knowledge management and some levels of innovation such as new product global manufacturing, adding a new product to existing products category, the improvement of existing products, introducing changes in the position of existing products and there is not a significant relationship between responsiveness to knowledge and two levels of innovation encompassing new product manufacturing in the company and introducing changes in products to reduce cost.

Therefore, regarding the results of the study and the discussions and conclusion, some suggestions could be represented to improve the knowledge management processes in software industry that is mentioned as follows:

-We can say that to improve the knowledge acquisition processes, the managers of companies must have an advanced marketing unit so that they could gain useful marketing information about their competitor's action, their customers and the technological changes through marketing research done in this unit. They should pay close attention to the information of changes introduced in the market so that they could take advantage of the opportunity occurred by changes. On the other hand, the managers in human resources department should attempt to employ and maintain the individuals who have been trained in the fields concerned with software industry and value their opinions. Therefore, a cooperative management system should be established which encompasses the building of a recommendation system in organization and involving the staffs in development of organizational programs such as organization's values statements, missions, perspectives and strategies.

- In order to improve the knowledge dissemination processes, the managers of companies should take advantage of special information technologies and techniques such as internet, intranet, teleconferencing, and video conferencing and provide the staffs with required updates to best deal with their jobs.

- Environmental monitoring of software industry to identify opportunities and threats in the environment and use of the opportunities and deal with threats

-Participating in prestigious national and international conferences to be familiar with the latest industry software

-Continuous monitoring of prestigious scientific journals in order to learn more about the latest scientific, research and technological events in the software industry

-Continuous monitoring of competitor's activity: in order to update the database of the competitor monitoring and partner companies, the responsibility of collecting information from competitors should be left to a certain individual or an organizational unit.

-In company's strategic planning, we should pay serious attention to technological cooperation with top technology companies; technological cooperation can reduce the risk of technological development and technological knowledge dissemination and thereby enhance the technological learning.

## References

- Akram, K., Siddiqui, S. H., Atif Nawaz, M., Ghauri, T. A., & Cheema, A. K. H. (2011). Role of Knowledge Management to Bring Innovation: An Integrated Approach. *International Bulletin of Business Administration*. <http://www.eurojournals.com> , ISSN: 1451-243X, Issue 11.
- Alaei, A., Shafaei, J., Ariana, A., & Salimi, T. (2012). The Role of Knowledge Management in Created Organizational Innovation. *Basic and Applied Scientific Research*, 2(2), 1136-1141.
- Alegre, J., Sengupta, K., & Lapiedra, R. (2011). Knowledge management and innovation performance in a high-tech SMEs industry. *International Small Business Journal*, 0266242611417472, first published on October 12, 2011 doi:10.1177/0266242611417472.
- Benjamins, V. R. (2001). *Knowledge Management in Knowledge-Intensive Organizations. Intelligent Software Components*.
- Bertels, T. (1996). What is knowledge management?. *The Knowledge Management Forum*.
- Cantner, U., Joel, K., & Schmidt, T. (2011). The effects of knowledge management on innovative success –Anempirical analysis of German firms. *Research Policy*, 40(10), 1453-1462.
- 7) Carolina, L-N., & Meroño-Cerdán, Á. L. (2011). Strategic knowledge management, innovation and performance. *International journal of information management*, 31(6), 502-509.
- Chen, J. S., & Tsou, H. T. (2007). Information technology adoption for service innovation practices and competitive advantage: The case of financial firms. *Information Research*, 12(3). Retrieved from [http:// InformationR.net/ir/12-3/paper314.html](http://InformationR.net/ir/12-3/paper314.html).
- Darroch, J. (2005). Knowledge management, innovation and firm performance. *Journal of Knowledge Management*, 9(3), 101 – 115.
- Davenport, T. H., De Long, D. W., & Beers, M. C. (1998). Successful knowledge management projects. *Sloan Management Review*, 39(2), 43-57.

- Filemon, A., Uriarte, Jr. (2008). Introduction to knowledge management. Indonesia: Asean Foundation.
- Gilbert, P., & Raup, S. R. (1999). Managing Knowledge: Building Block for Success, New York: Wiley.
- Gloet, M., & Terziovski, M. (2004). Exploring the relationship between knowledge management practices and innovation performance. *Journal of Manufacturing Technology Management*, 15(5), 402-409.
- Goh, A. L. S. (2005). Harnessing Knowledge for Innovation: An Integrated Management Framework. *Journal of Knowledge Management*, 9(4), 6-18.
- Harkama, S. (2003). A complex perspective on Learning within Innovation Projects. *The Learning Organization*, 10(6), 340-346.
- Ho, D. (2007). Research, Innovation and Knowledge Management: the ICT Factor. In commissioned paper for the UNESCO Forum on Higher Education, Research and Knowledge, UNESCO, Paris.
- Ju, T. L., Li, C. Y., & Lee, T. S. (2006). A Contingency Model for Knowledge Management Capability and Innovation. *Industrial Management and Data System*, 106(6), 855-877.
- Kebede, G. (2010). Knowledge management: An information science perspective. *International Journal of Information Management*, 30(5), 416-424.
- Liao, S-H., & Wu, C-C. (2010). System perspective of knowledge management, organizational learning, and organizational innovation. *Expert Systems with Applications*, 37 (2), 1096-1103.
- Lu, Y., Tsang, E. W., & Peng, M. W. (2008). Knowledge management and innovation strategy in the Asia Pacific: Toward an institution-based view. *Asia Pacific Journal of Management*, 25(3), 361-374.
- Lundvall, B. Å., & Nielsen, P. (2007). Knowledge management and innovation performance. *International Journal of Manpower*, 28(3/4), 207-223.
- Messa, S., & Testa, S. (2004). Innovation or Imitation? Benchmarking: A Knowledge Management Process to Innovate Services. *Benchmarking: An International Journal*, 11(6), 610-620.
- Ng, J. J. M., & Li, K. X. (2003). Implications of ICT for knowledge management in globalization. *Information Management & Computer Security*, 11(4), 167 – 174.
- Ng, Y. K., Lee, V. H., Foo, A. T. L., & Gan, P. L. (2012). The Relationship between Knowledge Management Practices and Technological Innovation: A conceptual Framework. *International Journal of Management, Knowledge and Learning*, 1(1), 71-89.
- Palacios, D., Gil, I., & Garrigos, F. (2009). The impact of knowledge management on innovation and entrepreneurship in the biotechnology and telecommunications industries. *Small Business Economics*, 32(3), 291-301.
- Parlby, D., and Taylor, R. (2002). *The Power of Knowledge: A Business Guide to Knowledge Management*. Retrieved from <http://www.kpmgconsulting.com>.
- Ramita, A. R., Fazalina, N. S., Fazirah, S. R., & Suzana, R. K. (2012). The Relationship between Knowledge Management Strategies and Innovation Performance among Electronics, Foods and Beverages Organizations. *International Conference on Innovation, Management and Technology Research*, Malacca, 21-22 May, 2012 (pp. 112 – 117).
- Ruggles, R., & Little, R. (1997). Knowledge management and innovation: an initial exploration. Center for Business Innovationism.
- Wen, Y. F. (2009). An effectiveness measurement model for knowledge management. *Knowledge-Based Systems*, 22 (5), 363-367.



Xu, J., Houssin , R., Caillaud, E., & Gardoni, M. (2010).Macro process of knowledge management for continuous innovation. *Journal of Knowledge Management*, 14(4), 573-591.