

## Measuring the Impact of Electronic Knowledge on Innovative Behavior

Hasan Ali Al-Zu'bi

Department of Business Administration, Applied Science Private University,  
PO. Box 92271, Amman, 1119, Jordan

**Abstract:** This study came as a demonstration of the impact of using electronic knowledge as an independent variable with its dimensions represented by (human capital, intellectual property, e-learning and electronic telecommunications network) and the dependent variable of innovative behavior. The study has been applied in information technology companies in Jordan, of which there were 116 companies; 19 companies were selected including the study sample represented in accordance with the standard number of employee's medium-sized companies which ranges between (50-249) employees. In order to achieve the objectives of the study, a few hypotheses have been formulated which were tested by using statistical methods. A questionnaire was used as the main tool in collecting data relating to field study. The study has reached the following results: e-knowledge is one of the major topics in the administrative literature and also has a vital role in developing organizations and their excellence, the presence of a powerful and significant impact for the e-knowledge variable in achieving innovative behavior. The study has concluded recommendations as the continuation of publishing the e-knowledge culture in the corporation because it constitutes the basis through which they can achieve excellence through innovative behavior.

**Key words:** Electronic knowledge, innovative behavior, innovation, information technology, study

---

### INTRODUCTION

The end of the last century has witnessed widespread attention to knowledge in general and electronic knowledge in particular, as an important element in the development and growth of organizations in achieving excellence and uniqueness and leadership, those concerns coincided with the changes that the world has seen some knowledge of the era of electronic era, as everything has become electronically.

Hence, we find that the trend of innovative organizations around the electronic knowledge has become a strategic objective in the plans and programs to develop a vision for the future of their business and that innovation has become a goal of organizations and has a key priority in its plans and strategies which always seeks to be the first in the specialization and provide all that is new goods or services and the adoption of innovation and creativity ways of technology and the use of modern techniques and here we find a strong correlation between the electronic knowledge and organizations innovative and the importance of the present study was to clarify the impact of electronic knowledge in these organizations and their contribution to the business environment towards innovation and highlight the role of the electronic knowledge in the development and progress through the use of the human capital, including loads of experience and mental skills contribute to the survival and

sustainability of these organizations as well as intellectual property represented creations, patents and modern innovations that contribute to the modernization and development of products and inventions, as well as e-learning which contributes to added knowledge and modern information to the stockpiling of knowledge significantly and the duration of short time too as is a tributary of the massive information and helps reduce the cost, in addition to the electronic communications network because of its active role in finding a quick and sophisticated communication channels scattered around the world, represented by the Internet, intranet, extranet, a whole real channels to obtain or exchange of the latest developments in information and technology.

### Conceptual framework

**Electronic knowledge:** The concept of the electronic knowledge is not continuing philosophically but is a part of all of the ways we understand the world (Dervin, 1998). They grow increasingly becoming a routine efficiency, backed by specialists based on knowledge and also to anyone associated with his learning, training or any work related to the electronic knowledge and to become a first principle to organize information economies (Mason, 2005). That it is the process of broader access to information, knowledge and expertise to achieve the best efficiency of the re-use of existing knowledge and content to create new content.

Explained by Norris concept of the electronic knowledge they form it takes knowledge in the information network of the world which is difficult to understand and it is a digital information gathering, consisting of knowledge topics can be shared based on including the contents and contexts and opinions of global standards on how to use them.

And as confirmed by Bond as the knowledge that requires use on the Internet or information to apply the strategies and concepts, business models and practices of non-traditional.

Low (2000) Identified the importance of electronic knowledge illustrated by focusing on the transformation of primary resources and capital equipment to focus on information and knowledge and centers of learning and research which in turn saves time and effort and reduce the cost and increase profits through the use of all their electronic knowledge.

Released by Devise, the term electronic knowledge market which refers to the basic electronic components for knowledge, directly and actively contributed to the growth and spread of electronic knowledge. These dimensions are: human capital, intellectual property, e-learning, talent and knowledge products.

Many writers and researchers have been added to this area of electronic communications networks in addition to the dimensions mentioned (Davis) such as Seen (1998) and Krajewski and Larry (2004). In this study, it will be to adopt the following four dimensions: human capital, intellectual property, e-learning, electronic telecommunications network.

**Innovation:** Innovation is a source of competitive advantages and is worth studying under conditions of heightened global competition, technological change and the pace of change in the markets. The innovation is not only that part of the organization's activities, but is also a very important discovery capability, evaluate and invest the available market opportunities that lead to entrepreneurship.

Innovation helps business organizations to increase their competitiveness through speed in launching a new product, changing production processes, reduce production and manufacturing costs and improve the quality of the work environment, increase safety, reduce the risk, improve product quality by reducing damaged output and improve the image and reputation of the organization and status, consequently; the business organizations continue to innovate to be able to stay long in the market and to achieve a competitive advantage in the market (Simon *et al.*, 2002). It is not limited to only the role of innovation in finding new commodities in the

sector, but also the development of integrated operations associated with units of the organization, including production techniques, regulatory processes and every organization behavior (Damanpour, 1996; Newton, 1998).

The researchers used several definitions to clarify the concept of innovation and followed different methods and methodologies to do so. Some of them knew the definition of innovation in such (Rogers, 1983), known as the innovation: an idea, or practice, or something described as a new being by an individual or other unit adopted. He stressed some of the researchers in the innovation on the side of the application and implementation of these new ideas and reversed on the ground such as (Zimmerer and Scarborough, 2008) identified innovation as the ability to apply a creative solution to the problems and opportunities to improve or enrich people's lives.

On broadest has gone some researchers until after the application of new idea's through the statement of the effect of this application on the market and competitors such as (Hatten, 2011) which showed that small businesses innovate when submitting a new technology and the creation of new markets, develop new products and care ideas new acts to force big business to rival organizations.

**Innovative behavior:** Innovative behavior is known as a forward or intentional introduction by the employee for ideas, products, processes and new procedures on his job or his work unit or his organization which works out (West and Farr, 1989).

Xerri *et al.* (2009) defined more simply where it was innovative behavior as: the development of new ideas and the process to solve the problem into use. Carmeli recognized him as a 'multi-stage' process in which the individual perception problem. It generates new ideas and solutions to them and that works to promote and build support for these ideas and produce the viable model so that they can use it and benefit from it by the organization or part of it. The study Kleysen and Street (2001) a review of 28 previous studies to determine the dimensions of the innovative behaviors where the study a select of 17 behavior of these studies and then classified under five groups representing the stages of innovative behavior which: Opportunity Exploration, Generating ideas, Investigation, Championing and Application.

**The study questions:** The study seeks to answer the following questions:

- Is that the electronic knowledge-owned companies contribute to enhancing of innovative capabilities?

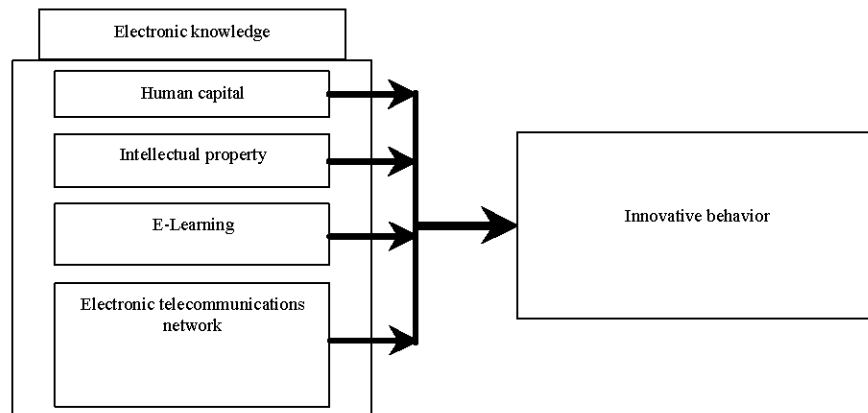


Fig. 1: Proposed model

- Is there an innovative behavior among employees in these companies?
- Is there an impact of electronic knowledge in innovative behavior?

**Objectives of the study:** The study attempts to achieve the following objectives:

- Diagnosis of the reality of the applications of electronic knowledge from the viewpoint of the respondents in the information technology companies sector in Jordan and its impact on the innovative behavior
- Test the impact of electronic knowledge indicators and their contribution in the formation of innovative behavior in the information technology sector companies
- Offer some suggestions and recommendations that will help the surveyed companies to benefit from contemporary concepts and ideas of to improve their performance

## MATERIALS AND METHODS

**Proposed model:** In light of the study and its objectives problem has been building a model of the default study shows the impact of electronic knowledge in the formation of innovative behavior and that is determined by looking at the relevant topic of study, management literature and this model includes two types of variables are: First, the independent variable is the electronic knowledge dimensions (human capital, intellectual property, e-learning, electronic telecommunications network) Second, the dependent variable is innovative behavior Fig. 1 illustrates this.

**Hypotheses of the study:** To achieve the desired objectives of this study it has been used a set of tests statistical in order to be accepted or rejected as the following sections concluded the results:

- $H_{01}$ : There is no significant impact of electronic knowledge (human capital, intellectual property, e-Learning and electronic telecommunications network) on innovative behavior

Then, testing the sub-hypotheses; to confirm the validity of the main hypotheses, a simple regression was used to predict the innovative behavior from impact of electronic knowledge:

- $H_{01-1}$ : There is no significant impact of human capital on innovative behavior
- $H_{01-2}$ : There is no significant impact of intellectual property on innovative behavior
- $H_{01-3}$ : There is no significant impact of e-Learning on innovative behavior
- $H_{01-4}$ : There is no significant impact of electronic telecommunications network on innovative behavior

## Methodology of the study

**Population and sample:** The study population consists of information technology sector companies, It is (116) company. It was selected medium-sized companies in terms of number of employees of (19) companies to be the study sample. The researcher withdraw (Stratified Random Sampling) of the study population which accounted for all of the companies of the (19) layer of the study population and it has been distributed (320) to identify the workers in the companies within the sample scale depending on the method for determining the sample size as Select each of retrieve (241) questionnaire, representing (76%) almost

Table 1: Simple regression-impact of human capital on innovative behavior

Dependent variable	Model Summary			ANOVA			Coefficients	
	R	R <sup>2</sup>	Adjusted(R <sup>2</sup> )	F-value	Sig.	$\beta$	t-value	Sig.
Innovative Behavior	0.591	0.350	0.346	102.282	0.000	0.591	10.114	0.000

Table 2: Simple regression-impact of intellectual property on innovative behavior

Dependent variable	Model Summary			ANOVA			Coefficients	
	R	R <sup>2</sup>	Adjusted(R <sup>2</sup> )	F-value	Sig.	$\beta$	t-value	Sig.
Innovative Behavior	0.629	0.395	0.390	125.261	0.000	0.629	11.189	0.000

from questionnaires distributed were excluded (23) to identify the lack of validity of the analysis, thus the number of valid questionnaires for analysis (218) questionnaire, representing the percentage (91%) of the questionnaires.

#### Measures

The questionnaire was designed and developed using the results of the literature review. Some measures were drawn from previous research. Electronic knowledge was measured using (Mason, 2005) and the innovative behavior was measured using (Kleysen and Street, 2001; Kanter, 1988)

The draft questionnaire was tested by experts which led to minor modifications in the wording of some survey items. Research constructs were operationalized by means of related studies and a pilot test. A five-point Likert-type scale, ranging from 1 (strongly disagree) to 5 (strongly agree) was used to measure the research variables.

## RESULTS AND DISCUSSION

From Table 1, the (R) represents correlation coefficients. R can be considered to be one measure of the human capital of the prediction of the innovative behavior at information technology companies in Jordan. A value of (0.591) indicates that the relationship between two variables is generally considered a positive.

The R<sup>2</sup> (also called the coefficient of determination) which is the proportion of variance in the can be explained by the human capital at information technology companies in Jordan. Hence, human capital explain (35%) of the variability of innovative behavior. However, the remaining proportion (65%) can be explained by other variables are not included in the regression model. The adjusted R<sup>2</sup> represent the accurately report of data (34.6%), this attempts to yield a more honest value to estimate the R<sup>2</sup> for the population.

ANOVA table provides an f-test to determine whether the model is a good fit for the data. Since, F = 102.282, (p = 0.05) which indicates that overall, the regression model statistically significantly predicts the outcome variable.

The coefficients table provides the necessary information to predict the innovative behavior from human

capital, as well as determine whether human capital contributes statistically significantly to the model. Based on the foregoing, Beta values for human capital has reached (0.591) which indicate that predicting (59.1%) of innovative behavior from human capital variable. In other word, the results can be interpreted as (For every unit increase in human capital, there is a 59.1% unit increase in the predicted innovative behavior). And (t = 10.114) at the level of significant >0.05 and this confirms coefficients are statistically significant to the model at (p = 0.05).

Based on these results, null hypothesis should be rejected and accept the alternative hypothesis that refer "There is significant impact of human capital on innovative behavior".

Table 2 provides the (R) and (R<sup>2</sup>) values. The (R) value represents correlation coefficients. R can be considered to be one measure of the intellectual property of the prediction of the innovative behavior at information technology companies in Jordan. A value of (0.629) indicates that the relationship between two variables is generally considered a positive.

The R<sup>2</sup> (also called the coefficient of determination) which is the proportion of variance in the can be explained by the intellectual property at information technology companies in Jordan. Hence, intellectual property explain (39.5%) of the variability of innovative behavior. However, the remaining proportion (60.5%) can be explained by other variables are not included in the regression model. The adjusted R<sup>2</sup> represent the accurately report of data (39%), this attempts to yield a more honest value to estimate the R<sup>2</sup> for the population.

ANOVA table provides an F-test to determine whether the model is a good fit for the data. Since, F = 125.261, (p = 0.05) which indicates that overall, the regression model statistically significantly predicts the outcome variable.

The coefficients table provides the necessary information to predict the innovative behavior from intellectual property, as well as determine whether intellectual property contributes statistically significantly to the model. Based on the foregoing, Beta values for intellectual property has reached (0.629) which indicate that predicting (62.9%) of innovative behavior from

Table 3: Simple Regression-impact of learning on innovative behavior

Dependent variable	Model Summary				ANOVA			Coefficients
	R	R <sup>2</sup>	Adjusted (R <sup>2</sup> )	F-value	Sig.	$\beta$	t-value	Sig.
Innovative Behavior	0.633	0.401	0.398	128.155	0.000	0.633	11.321	0.000

Table 4: Simple Regression-impact of electronic telecommunications network on innovative behavior

Dependent variable	Model Summary				ANOVA			Coefficients
	R	R <sup>2</sup>	Adjusted (R <sup>2</sup> )	F-value	Sig.	$\beta$	t-value	Sig.
Innovative Behavior	0.754	0.568	0.565	247.813	0.000	0.754	15.742	0.000

intellectual property variable. In other word, the results can be interpreted as (For every unit increase in intellectual property, there is a 62.9% unit increase in the predicted innovative behavior). And ( $t = 11.189$ ) at the level of significant less than (0.05) and this confirms coefficients are statistically significant to the model at ( $p = 0.05$ ).

Based on these results, null hypothesis should be rejected and accept the alternative hypothesis that refer “There is significant impact of intellectual property on innovative behavior”.

From Table 3, the (R) represents correlation coefficients. (R) Can be considered to be one measure of the learning of the prediction of the innovative behavior at information technology companies in Jordan. A value of (0.633) indicates that the relationship between two variables is generally considered a positive.

The R<sup>2</sup> (also called the coefficient of determination) which is the proportion of variance in the can be explained by the learning at information technology companies in Jordan. Hence, learning explain (40.1%) of the variability of innovative behavior. However, the remaining proportion (59.9%) can be explained by other variables are not included in the regression model. The adjusted R<sup>2</sup> represent the accurately report of data (39.8%), this attempts to yield a more honest value to estimate the R<sup>2</sup> for the population.

ANOVA table provides an F-test to determine whether the model is a good fit for the data. Since,  $F = 128.155$ , ( $p = 0.05$ ) which indicates that overall, the regression model statistically significantly predicts the outcome variable.

The coefficients table provides the necessary information to predict the innovative behavior from learning, as well as determine whether learning contributes statistically significantly to the model. Based on the foregoing, Beta values for learning has reached (0.633) which indicate that predicting (63.3%) of innovative behavior from learning variable. In other word, the results can be interpreted as (For every unit increase in learning, there is a 63.3% unit increase in the predicted innovative behavior). And ( $t = 11.321$ ) at the level of significant  $< 0.05$  and this confirms coefficients are statistically significant to the model at ( $p = 0.05$ ).

Based on these results, null hypothesis should be rejected and accept the alternative hypothesis that refer “There is significant impact of learning on innovative behavior”.

Table 4 provides the (R) and (R<sup>2</sup>) values. The (R) value represents correlation coefficients. R can be considered to be one measure of the electronic telecommunications network of the prediction of the innovative behavior at information technology companies in Jordan. A value of (0.754) indicates that the relationship between two variables is generally considered a positive. The R<sup>2</sup> (also called the coefficient of determination) which is the proportion of variance in the can be explained by the electronic telecommunications network at information technology companies in Jordan. Hence, electronic telecommunications network explain (56.8%) of the variability of innovative behavior. However, the remaining proportion (43.2%) can be explained by other variables are not included in the regression model. The adjusted R<sup>2</sup> represent the accurately report of data (56.5%), this attempts to yield a more honest value to estimate the R<sup>2</sup> for the population.

ANOVA table provides an F-test to determine whether the model is a good fit for the data. Since  $F = 247.813$ , ( $p = 0.05$ ) which indicates that overall, the regression model statistically significantly predicts the outcome variable. The coefficients table provides the necessary information to predict the innovative behavior from electronic telecommunications network, as well as determine whether electronic telecommunications network contributes statistically significantly to the model. Based on the foregoing, Beta values for electronic telecommunications network has reached (0.754) which indicate that predicting (75.4%) of innovative behavior from electronic telecommunications network variable. In other word, the results can be interpreted as (For every unit increase in intellectual property, there is a 75.4% unit increase in the predicted innovative behavior). And ( $t = 15.742$ ) at the level of significant less than (0.05) and this confirms coefficients are statistically significant to the model at ( $p = 0.05$ ). Based on these results, null hypothesis should be rejected and accept the alternative hypothesis that refer “There is significant impact electronic telecommunications network on innovative behavior”.

## CONCLUSION

Results of the study showed that electronic communications network ranked first, as it demonstrates the interest of corporate electronic communications in order to obtain new innovations and thus seeks to reduce costs and shorten the time and communicate globally through a modern communications network. Also it showed a clear interest in the development of learning and this indicates that the information technology companies have the awareness of the role of creative and innovative of employees. As intellectual property dimension was ranked third from the concerns of companies in order to develop innovations and ideas.

The study has concluded recommendations as the continuation of publishing the e-knowledge culture in the corporation because it constitutes the basis through which they can achieve excellence through innovative behavior.

## RECOMMENDATIONS

The e-knowledge of modern and important topics in the management literature, including occupied from an active role in the business environment and the Arab Administrative library, including private lacking research and studies in line with the role of the electronic knowledge in a competitive organizations.

## ACKNOWLEDGEMENT

The researchers is grateful to the Applied Science Private University, Amman, Jordan, for the full financial support granted to this research project.

## REFERENCES

- Damanpour, F., 1996. Organizational complexity and innovation: Developing and testing multiple contingency models. *Manage. Sci.*, 42: 693-716.
- Dervin, B., 1998. Sense-making theory and practice: An overview of user interests in knowledge seeking and use. *J. Knowl. Manag.*, 2: 36-46.
- Hatten, T.S., 2011. *Small Business Management: Entrepreneurship and Beyond*. 5th Edn., Cengage Learning, Natorp Boulevard Mason, USA.,.
- Kanter, R.M., 1988. When a thousand of flowers bloom: Structural, collective and social conditions for innovation in organizations. *Res. Organizational Behav.*, 10: 169-211.
- Kleysen, R.F. and C.T. Street, 2001. Toward a multi-dimensional measure of individual innovative behavior. *J. Intellectual Capital*, 2: 284-296.
- Krajewski, L.J. and R. Larry, 2004. *Operation Management Strategy and Analysis*. 7th Edn., Prentice-Hall, NEW Jersey, USA.,.
- Low, L., 2000. *Economics of Information Technology and Media*. Singapore University Press, Sangapor.,.
- Mason, J., 2005. From E-learning to E-knowledge. In: *Knowledge Management Tools and Techniques*, Madanmohan, R. (Ed.), Elsevier, London, pp: 320-328.
- Newton, K., 1998. The high performance workplace: HR-based management innovations in Canada. *Int. J. Technol. Manage.*, 16: 177-192.
- Rogers, E., 1983. *Diffusion of Innovation*. Free Press, New York, USA.,.
- Seen, J.A., 1998. *Information Technology in Business Practice and Opportunities*. 2nd Edn., Prentice-Hall, New Jarsey, USA.,.
- Simon, M., B. Elango, S.M. Houghton and S. Savelli, 2002. The successful product pioneer: Maintaining commitment while adapting to change. *J. Small Bus. Manage.*, 40: 187-203.
- West, M.A. and J.L. Farr, 1989. Innovation at work: Psychological perspectives. *Soc. Behav.*, 4: 15-30.
- Xerri, M., Y. Brunetto and K. Shacklock, 2009. The innovative behaviour of employees within a small to medium sized enterprise: A social capital perspective. *Proceedings of 23rd ANZAM Conference on Sustainability Management and Marketing*, Melbourne and Vic, December 1-4, 2009, ANZAM, Western Australia, q pp: 1-20.
- Zimmerer, T.W. and N.M. Scarborough, 2008. *Essentials of Entrepreneurship and Small Business Management*. 5th Edn., Pearson Education, New Jersey.