THE INVESTIGATION OF THE ROLE OF INFORMATION TECHNOLOGY IN CREATING AND DEVELOPING A SUSTAINABLE COMPETITIVE ADVANTAGE FOR ORGANIZATIONS THROUGH THE IMPLEMENTATION OF KNOWLEDGE MANAGEMENT

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ABSTRACT

The main purpose of this study was to investigate the role of Information Technology in the development of sustainable competitive advantage in organizations through implementing knowledge management. This research is applied research in terms of purpose and correlational research in terms of data analysis. the statistical population of this study was 45 Companies active in the electronic insurance industry of Iran. Questionnaires were used for data collection. Structural equation modeling was used to analyze the data. The results showed that IT has a positive and significant association with a sustainable competitive advantage and knowledge management of the companies under study. The results of this study showed that companies operating in the electronics insurance industry can achieve a sustainable competitive advantage by using the appropriate tools of IT and implementing knowledge management.

Keywords: Information Technology, Sustainable Competitive Advantage, Knowledge Management, Structural Equation Model.

JEL Classification: M1, M16, O31

1. INTRODUCTION

Information Technology (IT) is a tool used by organizations to deal with pressures and threats. IT not only enables effective business operations, but also changes the way in which a competitive advantage is achieved in the business environment. (Rusly et al., 2014). The advent and in-depth use of IT, particularly communication networks and the Internet, have brought a fast, safe, and convenient method of obtaining, sharing, and storing knowledge by increasing collaborations and reducing costs (Mohamed et al., 2006). Therefore, IT policies and strategies should be consistent with the organization's vision, important activities, and mission to include targeted goals (Ziraba & Okolo, 2018). In recent years, rapid development of IT helped staff, customers, suppliers, and business partners to interact with each other. Also, inter-professional partnerships have been effective in product development, marketing, distribution, and customer service (Tseng, 2014). Recent studies have shown that the use of IT can improve a company's performance and competitive position (Bharadwaj, 2000). IT can create a competitive advantage for an organization and improve its competitive position in the marketplace (Anderson, 2001). Previous empirical and theoretical analyzes have shown consistent results in terms of the effect of integration

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between IT and sustainable competitive advantage (Mao et al., 2016). Many companies have used knowledge management to survive and to continue working in their industry. Knowledge management is defined as managing the knowledge of the company's employees and stakeholders. Many companies through the use of knowledge management, have been able to survive in the current economic situation and gain sustainable competitive advantage (Sultan, 2013). Today, in addition to using the knowledge of their employees, Companies should consider the idea of using the knowledge of customers as well. The most important tool used by companies to communicate with their customers is the customer relationship management tool, which is a kind of Simultaneous management tool (Lin & Kozhikode, 2008). A sustainable competitive advantage in an organization is created by the unique combination of the organization's resources and skills (Mao et al., 2016). The resources of the organization are physical, human, and organizational capital. Nowadays, IT and knowledge management are the most important of these organizational resources (Yassen et al., 2016). The main purpose of this study was to investigate the role of IT in creating and developing a sustainable competitive advantage of organizations operating in the Iranian insurance industry with the help of knowledge management implementation. The main purpose of this study was to investigate the role of IT in creating and developing a sustainable competitive advantage about the mediating role of knowledge management among companies operating in Iran's e-insurance industry. The provision of electronic insurance services is influenced by the development of IT by insurance companies, in other words, from the insurance company, the use of IT tools such as the Internet significantly reduces the physical costs of insurance services. Insurance companies around the world are shifting their business strategies to new opportunities through e-insurance, because the provision of e-services enables insurance companies to expand on a large scale and change strategic behavior, ultimately achieving facilities. Therefore, it is necessary to study the relationship between IT and sustainable competitive advantage of companies operating in this field, and in the meantime, the role of knowledge management as a facilitator is undeniable.

2. LITERATURE REVIEW

2.1 Information Technology and Sustainable Competitive Advantage

Nowadays, there is a wide and continuous interest in information systems and their effects on business strategy, especially systems that can provide a sustainable competitive advantage for innovative companies (Clemons & Row, 1991). Organizations can now take advantage of the sustainable competitive advantage of IT in a way that meets the needs of the business (Lohrke et al., 2016). Organizations need to know how to use this technology in their organizational activities and processes. Experience shows that implementing successful business strategies using IT has improved organizational efficiency and effectiveness (Ajhvan, 2004). Despite the relatively short history of IT and its rapid expansion, various definitions and perceptions have been presented for it; which with a thorough and deep look, there are also inconsistencies between them (Tanui et al., 2016). The term "Information Technology" was first used by Leavitt and Whisler in 1985 to express the role of computers in supporting decision-making and information processing in organizations. In the early years, IT was only seen as a supportive tool in the overall corporate strategy. But with the successful implementation of IT innovations, these beliefs have changed. As we can see today, IT plays an important role in organizational processes, creating new needs, developing new products, and the advent of new procedures (Chang, 2005). With the advent of e-commerce, the use of technology is becoming an acceptable and fully anticipated solution in business management. As a result, organizations are increasingly looking at technology as a tool

to create new business processes and opportunities and try to increase their competitive advantage. Accordingly, the first hypothesis of the research will be as follows:

H1: Information Technology has a positive and significant association with a sustained competitive advantage.

2.2 Information Technology and Knowledge Management

Benefiting from the usefulness of the knowledge management process depends a lot on the coordination of issues such as organizational culture, human resource management, and IT, the weakness of each of which is considered as one of the harms of the knowledge management process (Chan, 2002). The rapid development of new technologies and digital communications has led to an increase in the importance of knowledge management as a vital source for gaining competitive advantage by organizations (Donate & Pablo, 2015). Malhotra (2000) defines knowledge management as Knowledge management is the process by which organizations obtain skills in internalizing (learning) and externalizing knowledge (coding), and knowledge distribution and transfer (Malhotra, 2000). Knowledge management is the transfer of skills related to the specific task and the transfer of conventional and empirical knowledge, including appropriate organizational behavior and comprehensive decision-making skills (Sprinkle & Urick, 2016) Knowledge management consists of several processes including the production of new knowledge, making knowledge accessible from external sources, applying knowledge in processes, products or services, transferring existing knowledge in the organization, applying existing knowledge in decision making and knowledge management impact (Masadeh et al., 2017). Performing these processes requires the use of IT in knowledge management (Ray, 2008). Accordingly, the second hypothesis of the research will be as follows:

H2: Information Technology has a positive and significant association with knowledge management.

2.3 Knowledge Management and Sustainable Competitive Advantage

Due to the challenges facing organizations in the knowledge economy, organizations are constantly forced to do business Maintain their competitive advantage (Kasemsap, 2015; Torres et al., 2018). They need to differentiate between setting up and using growth strategies at the same time, which can be long-term or short-term, knowledge management strategy is long-term and sustainable. (Bazrkar et al., 2018). Create balanced innovation and high-risk activities. Hard competition, technological change, change The preferences and demands of consumers and the formation of new business models force organizations Builds to review their activities and processes, including knowledge management (Nowacki & Bachnik, 2016). Most organizations focus mainly on solving the problems and weak points in their systems and processes so that they can enhance their efficiency and finally sustain in the competitive environment of world trade (Bazrkar & Iranzadeh, 2017). Competitive advantage is the value delivered by the organization to its customers so that at that time this value is not delivered by potential and actual competitors (Chuang, 2004). Organizational awareness of the factors affecting knowledge management, which leads to its successful acceptance and implementation, will lead to the realization of their goals. Also, improving the quality of work, increasing efficiency, having up-to-date information, increasing efficiency, increasing motivation, creating a common culture to maximize innovation performance and also, creating a competitive advantage is another reason organization use knowledge management (Margilaj & Bello, 2015). Accordingly, the Third hypothesis of the research will be as follows:

H3: Knowledge management has a positive and significant association with a sustainable competitive advantage

2.4 The Mediating Role of Knowledge Management in the Relationship between Information Technology and Sustainable Competitive Advantage

IT achieves success by creating a competitive advantage. IT increases the organization's long-term competitiveness by increasing capabilities, reducing costs, and improving services (Hou & Huang, 2006) knowledge management, in addition to improving innovation performance, is also needed to create a competitive advantage for the organization. In order for an organization to have a competitive advantage, it needs to be able to continuously monitor the progress of its products and services (Guimaraes et al., 2018). In general, it should be borne in mind that the main basis for the success of a company is to find and maintain a stable competitive advantage (Kim et al., 2012). Today, without increasing the competitiveness of companies, there will be little economic justification for sustaining one's life and financially declining (Darroch et al., 2015).in such circumstances, the only firms able to survive their position to promote their focus on all aspects of competition, the quality, price, speed, customer responsiveness, and innovation-oriented country, to gain a sustainable competitive advantage to its competitors to take the lead (David & David, 2016). Accordingly, the fourth hypothesis of the research will be as follows:

H4: Information Technology through knowledge management has a positive and significant association with a sustainable competitive advantage.

According to the main purpose of the research and the hypotheses, the conceptual model of the research is shown in Figure 1.

Figure 1. Conceptual Model of Research
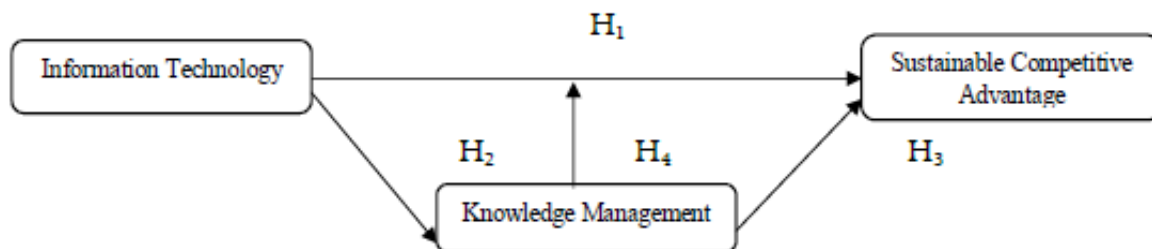
Source: Own Elaboration

3. METHODOLOGY

This study is considered to be applied research because it seeks to develop applied knowledge in a specific field. This research is survey-based because data will be collected through a questionnaire and the method will be correlational since we will seek to understand the relationship between variables. The statistical population of this study consists of 22 insurance companies in Iran that are active in providing electronic insurance services. The statistical sample of this research consists of 45 managers of these companies. The criteria for selecting these managers are having sufficient experience and specialized knowledge about electronic insurance services. Due to the small size of the statistical population studied and the small number of managers selected, which was qualified as a statistical sample of the study, the census sampling method was used, census method is the method

of statistical enumeration where all members of the population are studied. To collect data, library studies were carried out for collecting information about the theoretical basis of research, and questionnaires were used for collecting field information. Considering that the population of the statistical population was 45, the same number of questionnaires were distributed among them. of these, 32 questionnaires (71% return rate) were obtained. The present research questionnaire consisted of 61 questions. The questionnaire consisted of a combination of three questionnaires: The IT Questionnaire for Leavitt and Whisler (1958), the knowledge Management Questionnaire for Nonaka and Takeuchi (1995), and the Sustainable Competitive Advantage Questionnaire for Hill and Jones (2010). A questionnaire containing 61 questions was distributed among the statistical sample members. In this questionnaire, a five-point Likert scale was used. Cronbach's alpha coefficient was used to calculate the reliability of the questionnaires. The results of this test are shown in Table 1.

Table 1. Results of Cronbach's Alpha Test

Components	Items	Cronbach's alpha coefficients
Information Technology	22	0.84
knowledge management	16	0.81
Sustainable competitive advantage	23	0.89

Source: Output from SPSS

The results show that the value of Cronbach's alpha coefficients of all components is more than 0.7 and considering that the criterion value of this coefficient (Cronbach's alpha) is 0.7, it can be said that the reliability of the research components is confirmed. In this research, structural equation modeling method in Smart PLS.3 software has been used to analyze the data and test the research hypotheses.

4. DATA ANALYSIS

4.1 The Normality of Data

It is necessary to first determine the normality of the distribution of variables. The Kolmogorov-Smirnov test (K-S) is used to test the normality of the distribution of variables. When checking that the data is normal, the zero hypothesis that the data distribution is normal is tested at the error level of 5%. If a significant value greater than or equal to the error level (5%) is obtained, then there is no reason to reject the zero hypotheses. In other words, data distribution will be normal. The results of this test are shown in Table 2.

Table 2. Results of Significant Coefficients of K-S

	Information Technology	knowledge management	Sustainable competitive advantage
Sig	0.081	0.075	0.080

Source: Output from SPSS

Since the significance level of the test of each of the studied variables is more than 50%, it can be said with 95% confidence that all the variables under study are normal.

We used the partial least squares structural equation modeling (PLS-SEM) method in this study for analysis of the data, fitting the conceptual model of the research, and testing

the hypotheses. PLS is a variance-based approach, which needs fewer conditions compared to similar structural equation techniques such as Lisrel and Amos (Liljander et al., 2009). For example, unlike Lisrel, PLS path modeling is more suitable for actual applications. In cases where the study aims to analyze causal relationships and prediction, the PLS path modeling method is preferred to covariance-based techniques such as Lisrel (Hair et al., 2014). PLS modeling is performed in two steps. In the first step, the measurement model is examined through validation and reliability analyzes and confirmatory factor loadings analysis. In the second stage, the structural model is evaluated by estimating the path between the variables and determining the fit indices of the model.

4.2 Evaluation of the Measurement Model

In this process, the composite reliability (CR) and average variance extracted (AVE) were performed and examined aimed at achieving the convergent validation and correlation rate. Reliability above 0.7 associated with an average variance of at least 0.5 is the two conditions required for the convergent Validation (Ching Lin & Chih Huang, 2009). factor loadings greater than 0.5 also indicate good reliability for the studied constructs (Fornell & Larker, 1981). Cronbach's alpha shows the level of reliability (reliability of internal consistency) of the construct. The values higher than 0.7 are considered desirable for the Cronbach's alpha, while values lower than 0.6 are considered undesirable. The divergent validation is also measured by the interaction factor loadings method and the Fornell-Larcker method. The first method includes examining the interaction factor loadings, in which, the correlation of the indices of a construct is compared with that structure and the correlation of that index with other constructs; if the correlation of the indices of a construct with the construct other than itself is greater, the divergent validation is questioned (Ringle & Sarstedt, 2011). The second method is the one presented by Fornell and Larker in 1981. According to this method, the divergent validation is confirmed if the squared average variance extracted of each construct would be more than the correlation between the constructs. The results of this test are shown in Table 3 and Table 4.

Table 3. Results of Evaluation of Measurement Model

Construct	Item	Factor loadings	Cronbach's alpha	Composite reliability	Convergent validation
Information Technology	IT1	0.631	0.861	0.830	0.551
	IT2	0.618			
	IT3	0.669			
	IT4	0.701			
	IT5	0.667			
	IT6	0.725			
	IT7	0.639			
	IT8	0.842			
	IT9	0.730			
	IT10	0.729			
	IT11	0.620			
	IT12	0.650			
	IT13	0.881			
	IT14	0.680			
	IT15	0.679			
	IT16	0.830			
	IT17	0.777			
	IT18	0.699			
	IT19	0.590			
	IT20	0.600			
	IT21	0.701			
	IT22	0.849			
Knowledge management	KM1	0.611	0.839	0.793	0.591
	KM2	0.618			
	KM3	0.658			
	KM4	0.619			
	KM5	0.779			
	KM6	0.806			
	KM7	0.684			
	KM8	0.793			
	KM9	0.729			
	KM10	0.638			
	KM11	0.716			
	KM12	0.597			
	KM13	0.628			
	KM14	0.634			
	KM15	0.681			
	KM16	0.677			

	SCA1	0.672			
	SCA2	0.778			
	SCA3	0.710			
	SCA4	0.796			
	SCA5	0.758			
	SCA6	0.912			
	SCA7	0.886			
	SCA8	0.842			
	SCA9	0.839			
	SCA10	0.920			
Sustainable competitive advantage	SCA11	0.795	0.798	0.818	0.549
	SCA12	0.740			
	SCA13	0.39			
	SCA14	0.768			
	SCA15	0.694			
	SCA16	0.703			
	SCA17	0.897			
	SCA18	0.835			
	SCA19	0.827			
	SCA20	0.681			
	SCA21	0.774			
	SCA22	0.731			
	SCA23	0.857			

Source: Output from PLS-SEM

Table 4. The Results of Evaluating the Divergent Validation of Constructs

	Information Technology	Knowledge management	Sustainable competitive advantage
Information Technology	0.742		
Knowledge management	0.684	0.768	
Sustainable competitive advantage	0.629	0.679	0.740

Source: Output from PLS-SEM

These results indicate a good internal consistency for the measurement model and reports the fit of the model. As a result, the measurement model is confirmed.

4.3 Structural Model Evaluation and Hypotheses Testing

The path coefficients are the most basic criteria to measure the relationship between constructs in the model. The paths in which the Significance coefficients are opposite to the direction claimed in the hypothesis will lead to the non-confirmation of the hypothesis. Some researchers including Chin (1998) suggest that the value of 0.2 is a basis for showing the accuracy of the relationship between the constructs, and thus, confirming the research hypotheses at the confidence level of 95% (Hair et al., 2010). The t-value also indicates the accuracy rate of the relationship and is used to test the hypotheses in the PLS-SEM algorithm. In the structural equations modeling method, after fitting the measurement models, the fitting of the structural model of the research is investigated. In analyzing the structural model, the relationships between latent variables (constructs) with each other are analyzed and the criteria of significance coefficients t-value and the coefficient of determination or the same, R^2, are used to fit the model. The significance *t*-values are used to evaluate

the fitting of the research structural model by several criteria that the first and most basic criteria are significance coefficients *t*, or the same *t*-values. The values of *t* greater than 1.96 indicate the accuracy of relationships between the constructs, and as a result, the research hypotheses are confirmed at 95% confidence level. According to the results, all the numbers on the paths are higher than 1.96 This indicates that the paths are significant, the structural model is fit, and the research hypotheses are validated. These results are reported in Table 5. The second criterion necessary for measuring the structural model fit is to determine the coefficients of determination, or the same R^2 related to the endogenous latent variables (dependent variable) of the model. This criterion is used to connect the measurement and structural components of the structural equations modeling and represents the effect of an exogenous (independent) variable on an endogenous (dependent) variable. It should be noted that the R^2 values of the model are calculated only for the endogenous constructs of the model the value of this criterion is zero for the exogenous constructs of the model. Chin (2010) introduced three values of 0.19, 0.33, and 0.67 as weak, moderate, and strong criteria of R^2 criterion. Given that the value of R^2 for the knowledge management variable 0.454 and Sustainable competitive advantage variable 0.523 was calculated, considering the three values of the criterion, the suitability of the structural model fit is confirmed.

Table 5. The Structural Model Evaluation Results and Hypotheses Testing

Hypothesis	Path	Path coefficient	t-value	p-value	Test result
Direct Effect					
H1	IT →SCA	0.657	2.451	0.002	supported
H2	IT →KM	0.728	2.848	0.000	supported
H3	KM →SCA	0.619	3.911	0.001	supported
Mediator effect					
H4	IT →KM →SCA	0.450	2.887	0.003	supported

Source: Output from PLS-SEM

The results of testing the two hypotheses showed that IT has a positive and significant association with Sustainable competitive advantage and knowledge management of the studied companies. Hence, IT with path coefficients of 0.657 and 0.728 directly explain the changes related to the Sustainable competitive advantage and knowledge management. The results of the third hypothesis test show that knowledge management directly explains 0.619 of the changes related to sustainable competitive advantage. Also, the result of the fourth hypothesis test showed that the mediating role of knowledge management variable in the relationship between IT and sustainable competitive advantage is confirmed and the IT variable through knowledge management has a positive and significant effect on the sustainable competitive advantage of companies.

5. CONCLUSION

The purpose of this research was to investigate the role of IT in creating and developing a sustainable competitive advantage for organizations through the implementation of knowledge management. The mediating role of knowledge management on the relationship between IT and sustainable competitive advantage has been evaluated in this research. The results of the structural equation test confirmed all four research hypotheses. Based on the first hypothesis, it can be concluded that the implementation of IT positively and

significantly affects the development of sustainable competitive advantage for organizations. The results are consistent with the results of Mao et al. (2016), Lohrke et al. (2016), Gupta et al. (2018). For the second hypothesis, we investigated the relationship between knowledge management and IT. The results of the hypothesis test showed that the t-value is 2.848 Because this value is greater than 1.96, there is a significant relationship between the organization's IT and knowledge management. The results of this hypothesis are consistent with the results of Masadeh et al. (2017) and Kasemsap (2015). In the third hypothesis, the relationship between knowledge management and the competitive advantage of the organization was tested. The value obtained for the t-value was 3.911, and since this was more than 1.96, we concluded that there is a positive and significant relationship between knowledge management and the creation and development of competitive advantage in the organization. The results of the third hypothesis of the research were consistent with the results of Torres et al. (2018), Guimaraes et al. (2018), and Yassen et al. (2016). for the fourth hypothesis of the research, we sought to test the mediating role of knowledge management on the relationship between IT and sustainable competitive advantage. Considering the value of the path coefficient of 0.450 and the value of t-value 2.887, the mediating role of knowledge management was confirmed. The results obtained for this hypothesis test are consistent with Mao et al. (2016). According to the literature, IT has the potential to create and develop a sustainable competitive advantage for organizations. Moreover, in addition to IT, implementation of the principles of knowledge management in the organization leads to increased efficiency, effectiveness, and capabilities and reduced costs and improved services which in turn increase the competitive advantage of the organization. As the findings of the research showed, IT has a significant relationship with knowledge management. The results of testing the two hypotheses showed that IT has a positive and significant association with sustainable competitive advantage and knowledge management of the studied companies. knowledge management and this increases the organization's attention to the customer, financial issues, human resources, and productivity. The results show that the use of IT affects the sustainable competitive advantage and knowledge management of companies operating in Iran's electronic insurance industry. Based on this, it can be said that IT can provide effective and efficient tools for all aspects of knowledge management, including sharing, storage, and application of knowledge, and put the organization on the path to achieving sustainable competitive advantage. Based on the research findings, it is suggested that a combination of existing IT technologies be used to improve the flow of knowledge management in companies operating in the e-insurance industry to gain a competitive advantage. It is also suggested that special attention be paid to the next capacity of IT innovation to access optimal knowledge and the need for proper planning in this field. Accordingly, it is recommended to the managers of these companies to have appropriate knowledge planning to realize knowledge management, in this planning they should have knowledge perspective, partial goals, operational goals, and finally mechanisms to evaluate the improvement of knowledge management in operate to increase sustainable competitive advantage. Managers can inform their employees of the important consequences of knowledge management and teach them how to use IT and knowledge management tools to improve service innovation and improve sustainable competitive advantage.

5.1 The Research Limitations and Suggestions for Future Research

Since it was an exploratory study, the research findings are limited to the sample size and the results may change if the sample size changes. Also, different views on the research subject among members of the statistical population can somehow affect the results. The studied population in this research included companies operating in the electronic insurance services industry in Iran. Accordingly, the results obtained are specific to these companies and cannot

be generalized to all organizations and companies. It is recommended that researchers will conduct future research on this topic in other organizations and manufacturing and service companies in the electronics insurance services industry worldwide and other industries, and compare the results with the results of the present study. Given that the present study examines the relationship between IT and sustainable competitive advantage concerning the mediating role of knowledge management, it is recommended that researchers are advised in future research to examine the relationship between other variables such as innovation and individual knowledge management with a sustainable competitive advantage, addressing these issues can have effective results for production and service organizations.

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