

Investigating the Relationship Between Information Technology and Organizational Entrepreneurship (Case Study: Yazd Saderat Bank Branches)

Fatemeh Zarezadeh Mehrizi
Department of Management, Isfahan University, Isfahan, Iran

Abstract: This study examines the relationship between information technology and organizational entrepreneurship in Yazd city's Saderat bank branches. In this regard, information technology based on the model by Chanoopas and other authors and organizational entrepreneurship based on the model by Leonidas and Vasilis has been used. The study population includes all the employees of the branches of Saderat bank of Yazd city that are equal to 800. The sample size using Krejcie and Morgan Table, determined to be 260. This study is applied in terms of purpose and is descriptive and correlational in terms of method. In order to determine the reliability of the questionnaires, Cronbach's alpha coefficient, in order to determine the validity of the questionnaire, convergent and divergent validity method and in order to analyze the data, normality test and Pearson correlation coefficient and regression and variance were used. The results of this study showed that information technology has an impact on organizational entrepreneurship in Yazd Saderat bank branches.

Key words: Information technology, organizational entrepreneurship, Saderat bank, regression, variance

INTRODUCTION

The role of information in today's world is very dramatic and complex, so that, the present age is called the age of information explosion. Also for this reason, the use of information technology in organizations is also spreading rapidly and organizations in order to reach their goals need to use information technology. In the present age which has been called the age of change from the industrial society to the information society, it is natural that information, knowledge and awareness to be considered as the most basic properties for human being and human societies and rapid development of information technology is one of the phenomena that describes this age.

On the other hand, today's business environment requires considering intangible assets in order to improve organizational productivity. Information technology has been proposed as one of the most value-adding company resources and a key investment in entrepreneurial growth. Therefore, now a days the necessity to develop and manage information technology has been turned to a serious necessity in macro national level and in business field and with movement towards science-based economy has led to change of the ruling paradigm of industrial economy, such that we can see economical visibility based on information and knowledge which its foundation is based on intellectual capital.

Organizational entrepreneurship means that organizations can develop useful innovations by

encouraging employees to think like entrepreneurs and give them freedom and flexibility for following their plans without putting them in a bureaucratic swamp (Moghimi, 2010). suggested a model for organizational entrepreneurship which includes five dimensions: Paper work in the prganization, changes in the behavior of employees, strategic vision, creating a dynamic working environment, supportive environment.

Now a days the theory of organizational entrepreneurship as a new model of management in most developed countries has been appropriated which aims to focus on increasing efficiency and effectiveness, focusing on outputs rather than inputs, creativity and innovation, structural flexibility, reducing the size of the organization. In other words, entrepreneurial organizations compete better than traditional organizations and have the ability to quickly respond to environmental changes. In this research, the researcher is looking to answer this question that: is there a significant relationship between information technology and organizational entrepreneurship in the branches of Saderat bank in Yazd city?

Literature review: Entrepreneurship is rapidly progressing and entrepreneurs due to various reasons such as unemployment, wage cuts and job dissatisfaction, enter entrepreneurship from their previous work and entrepreneurship as a way to go out of unemployment and reach economic growth is common in many communities. Entrepreneurs in the world are creative,

innovative, inventive people who are a source of great changes in the production and services fields; hence they are also known as National Champions (Sarma, 2011). From about 1700 onwards, the French people have used the word entrepreneurship frequently about the government contractors involved in construction of roads, bridges, ports and fortifications (Altinay and Wang, 2011). Several scholars have discussed about entrepreneurship. People like See, Schumpeter, Rosen, Cantillon and Filion, each based on the methodology of their research work have presented specific definitions. "See" defines entrepreneurship as the equivalent of innovation. People like See and Cantillon claim that entrepreneurship is a factor of economic development because if entrepreneurship exists, the resources will be turned from low efficiency areas to high efficiency areas. Steevenson defines entrepreneurship as the process of value creation through collaboration, as a series of unparalleled resources in order to get the opportunity. Thus organizational entrepreneurship is the process of creating new competences and capabilities through hunting opportunities, delivering it and turning that idea into tangible results and new capabilities (Auer and Antonic, 2011).

Rezayee (2012) showed that organizations that have benefited from information and communication technology have had a higher level of success in their marketing affairs and improvement of their entrepreneurial activities. Lavanya and Murthy (2009) in their research have reported a positive relationship between informational technologies and their content with the improvement of entrepreneurship behaviors in the organization due to ability in improvement of the knowledge of the organization and timely management of human resources. Taheri and Shamsfard (2011) show that knowledge management in organizations can also be performed by the aid of semantic web technologies. Osuna examined the role of information technology as intellectual capital in educational productions. The results showed that information technology has been considered as an opportunity to develop intellectual capitals.

Research purposes: Identifying and describing the relationship between information technology and organizational entrepreneurship:

- Identifying and describing the relationship between information technology and paperwork in the organization
- Identifying and describing the relationship between information technology and change of employees' behavior

- Identifying and describing the relationship between information technology and strategic insight
- Identifying and describing the relationship between information technology and creating a dynamic work environment
- Identifying and describing the relationship between information technology and supportive environment

Theoretical definitions of words

Organizational entrepreneurship: Organizational entrepreneurship is a process in which the entrepreneur, backed by an organization, conducts his entrepreneurial activities. Organizational entrepreneur is someone who works in an organization like an independent entrepreneur and his activities include creation of new units in the organization and provision of new services which leads organizations towards development. Leonidas and Vassillis presented a model for organizational entrepreneurship which includes five dimensions:

- Paperwork in the organization
- Changes in employee behavior,
- Strategic vision
- Creating a dynamic working environment
- Supportive environment (Moghimi, 2010)

Paper work: an efficient way that reduces the paperwork in organizations, that is created due to excuses such as lack of presence of the boss for signature, document defects and employees' off-time and is a weakness of the administrative system.

Change in the behavior of the employees: Creating desirability and acceptability of entrepreneurial activities of the employees and the search for a permanent change based on the personality traits of the entrepreneur is called change in employees behavior.

Strategic vision: Strategic vision is a mental image of the entrepreneurship strategy that remains in the minds of employees or at least is expressed. This strategic vision plays both the role of induction and the role of understanding the work which must be done .

Creating a dynamic work environment: An environment where an atmosphere of teamwork, based on collaboration in organizational units is created in which the organization employees will be interested in making improvements.

Supportive environment: An environment where initiatives of the employees are supported and there is possibility to access management information.

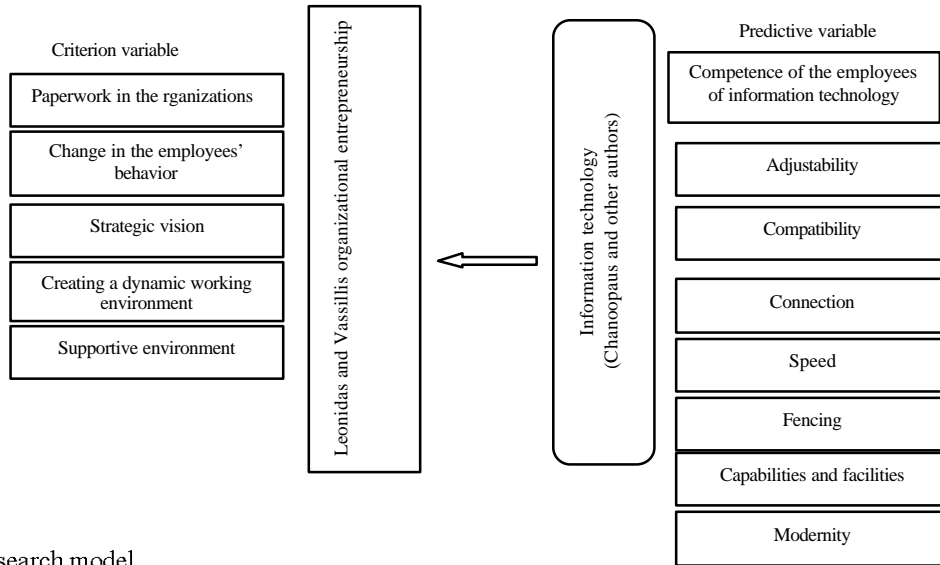


Fig. 1: Research model

Information technology: Information technology is to collect, organize, store and disseminate data such as audio, video, text, or number that is done by means of computer and telecommunications (Bitsani, 2011).

The competence of staff of information technology: IT staff understand the objectives and policies of the organization and have the ability to plan for facing the challenges of technology in the future.

Adjustability: In this dimension, software and hardware can easily adapt themselves to the changing needs and standards and hardware and software can be changed, modified or transported, without having much effect.

Compatibility: Data can be used on joint operating systems and this existing data have integrity and consistency.

Connection: Internal users and external users and groups can, through IT networks, reach authorized data.

Speed: In this dimension, information technology across the entire organization, whether hardware or software is standard and the speed of IT communication is satisfactory for users.

Fencing: Data is separate from applications and legal systems of the organization do not restrict the development of new applications.

Capabilities and facilities: The existing facilities in the system are familiar to the users and IT employees need to be trained to use the system applications.

Modernity: Hardware and software are based on new technologies and up to date (Chanooapas *et al.*, 2006). Information technology is a landscape which is related with phrases such as management information systems, information technology management, data management, business intelligence, competitive intelligence, content management and case management (Stewart, 2008). Information technology is a tool that helps to create changes in the nature of work, integration of organizational functions and nurturing competitive forces of the organizations. Process redesign is done by IT (Bouchard and Basu, 2011). Information technology is to collect, organize, store and disseminate data such as audio, video, text or number that is done by means of computer and telecommunications. The new definition of IT that several scholars agree on that is as below: "Information technologies include a broad range of communicational inventions and medias that links communication systems and people, including voice mail, email, audio conferencing, video conferencing, internet, groupware and collaborative internet connections, cars' special phones, fax machines, personal digital assistants and the like. Information systems and information technologies are often intertwined and usually they are used together in the name of information technologies".

Conceptual model of the research: All research studies are based on a theoretical framework that defines the variables and the relations between them. Since, any fieldwork requires mental map and conceptual model that has been drawn in the form of appropriate analytical tool, variables and relations between them in this study also the researcher has used theoretical framework in Fig. 1 of the conceptual model is as follows.

MATERIALS AND METHODS

The study population consists of all employees of the branches of Saderat bank of Yazd city who are 800 people. The sample size according to Krejcie and Morgan table is 260 people and in order for sampling from the community, simple random sampling method was used. The main tool for collecting information in this research is questionnaire. Among the obvious points of the questionnaire method is collecting information broadly and with a very low cost. This questionnaire has been set according to the research variables and their operationalization and this questionnaire is composed of two standard questionnaires such that for investigating information technology, the standard IT questionnaire of Chanoopaus *et al.* (2006), containing 27 questions and for investigating organizational entrepreneurship, the standard organizational entrepreneurship questionnaire of Leonidas and Vassillis which contains 12 questions have been used. In order to investigate convergent validity of the questionnaire, the amount of correlation between each structure with the questions (indexes) is investigated (Table 1).

Given that the appropriate value for AVE is 0.5 and according to the results of the above table, this criterion has had an appropriate value about the hidden research variables and so the appropriateness of the convergent validity of the research is confirmed. In order to check the divergent validity by comparing the amount of correlation of a structure with its indexes, versus its correlation with other structures (Fornel and Larker method), we analyze the below matrix.

The main diameter of this matrix includes the square root of the values of EVA of the research structures. As can be seen in the above matrix, the value of square root

of AVE of the hidden variables in the present study that are located in the main diameter of the matrix is higher than the correlation between the values that are located in the bottom and left of the main diameter. Therefore, it can be said that in the present study, structures (hidden variables of the study) in the model have more interaction with their own indexes than the other indexes. In other words, divergent validity of the model is appropriate (Table 2).

In this study, Cronbach’s alpha method was used for evaluating reliability of the questionnaires. According to this formula when the calculated α coefficient will be higher than 70%, it can be concluded that the obtained data have the necessary reliability. In order to be sure of the reliability of the distributed questionnaires between the employees, using the SPSS Statistical Software, the Cronbach’s alpha for each of the questionnaires was calculated separately that for the IT questionnaire, it was 0.806 and for the organizational entrepreneurship questionnaire, it was 0.802. Thus, it was concluded that the questionnaires have the necessary reliability. In this study, in order to collect data, the survey method was used and in designing the questions and answers also the Likert spectrum was used.

RESULTS AND DISCUSSION

Analysis of data: In inferential statistics, after determining the distribution of variables in the community and after describing the data, researcher with patterns of inferential statistics and according to the distribution of research variables in the population, has used the correlation coefficients for testing hypotheses. Researcher for performing the test has used the Pearson's correlation coefficient pattern and regression and variance.

Table 1: Results of convergent validity of the hidden variables of the research

Hidden research variables	Average variance extracted (AVE>0.5)
Strategic vision	0/6064
Creating a dynamic working environment	0/5218
Information technology	0/5984
Paperwork	1/0000
Organizational entrepreneurship	0/5948
Supportive environment	0/6833
Change in the behavior	0/5083

Table 2: Results of the divergent validity matrix

Structure	Strategic vision	Creating a dynamic working environment	IT	Paper work	Organizational entrepreneurship	Supportive environment	Change in behavior
Strategic vision	-	-	-	-	-	-	1
Creating a dynamic working environment	-	-	-	-	-	1	0/3789
IT	-	-	-	-	1	0/3989	0/3453
Paperwork	-	-	-	1	0/3620	0/1886	0/0438
Organizational entrepreneurship	-	-	1	0/7706	0/7244	0/6768	0/6025
Supportive environment	-	1	0/5449	0/3861	0/3767	0/3193	0/2195
Change in behavior	1	0/7694	0/7344	0/6352	0/6033	0/3325	0/3197

Table 3: Results of Kolmogorov-Smirnov test of research variables

Variable	Significance level	Test result
Information technology	0/076	Data distribution is normal
Paperwork in the organization	0/057	Data distribution is normal
Change in the employees' behavior	0/052	Data distribution is normal
Strategic vision	0/061	Data distribution is normal
Creating a dynamic working environment	0/064	Data distribution is normal
Supportive environment	0/110	Data distribution is normal
Organizational entrepreneurship	0/069	Data distribution is normal

Table 4: Pearson correlation test results

Variable	Statistical index	Criterion variable
IT (predictor variable) Organizational entrepreneurship (criterion variable)	Correlation coefficient	*0/641
	Significance level	0/000
	Sample size	234
IT (predictor variable) Paper work in organization (criterion variable)	Correlation coefficient	0/347*
	Significance level	0/000
	Sample size	234
IT (predictor variable) Change in employees behavior (criterion variable)	Correlation coefficient	0/560*
	Significance level	0/000
	Sample size	234
IT (predictor variable) Strategic vision (criterion variable)	Correlation coefficient	0/330*
	Significance level	0/000
	Sample size	234
IT (predictor variable) Creating a dynamic working environment (criterion variable)	Correlation coefficient	0/411*
	Significance level	0/000
	Sample size	234
IT (predictor variable) Supportive environment (criterion variable)	Correlation coefficient	0/300*
	Significance level	0/000
	Sample size	234

To select the correct test to analyze the hypotheses, firstly we must be sure about the statistical distribution of the variables that are tested. So we use Kolmogorov-Smirnov test in order to investigate the normality of the distribution of the tested variables.

According to Table 3, the significance level of normality test of the research variables is greater than 0.05. Thus the H0 hypothesis is confirmed meaning that data distribution in this statistical sample is normal; for this reason, in order for testing research variables, Pearson parametrical tests, regression and variance are used. In order to investigate the relation between the two variables which have normal distribution, Pearson correlation coefficient is used. Correlation coefficient is one of the criteria used in determining the correlation between two variables and is an expression of power or degree of this relationship. This ratio is in the range of 1 -1 and in the absence of a relationship between two variables, it is equal to zero.

The first main hypothesis: there is a significant relationship between information technology and organizational entrepreneurship of the employees of the branches of Saderat Bank of Yazd.

The first sub-hypothesis: There is a significant relationship between information technology and paperwork in Yazd Saderat bank branches.

The second sub-hypothesis: There is a significant relationship between information technology and change in the employees' behavior of the Yazd Saderat bank branches.

The third sub-hypothesis: There is a significant relationship between information technology and strategic vision of the employees of Yazd Saderat bank branches.

The fourth sub-hypothesis: There is a significant relationship between information technology and creating a dynamic working environment among the employees of Yazd Saderat bank branches.

The fifth sub-hypothesis: There is a significant relationship between information technology and the supportive environment among the employees of Yazd Saderat bank branches.

Based on the results of the Pearson correlation test in Table 4 with 95% reliability (0.05>significance level), it can be said that there is a direct significant relationship between information technology and the variables specified in the table (0<correlation coefficient). Therefore, the relationship between them is approved and it is the correlation coefficient between information technology (predictor variable) and criterion variables of the employees of Saderat bank branches of Yazd.

Table 5: Results of regression test

Predictor variable	Statistical index			
	Criterion variable	Modified determination coefficient	SD	Durbin-Watson statistic
Information technology	Organizational entrepreneurship	0/409	5/48991	2/157
Information technology	Paperwork in the organization	0/117	0/87707	1/991
Information technology	Change in the employees' behavior	0/311	3/191	2/114
Information technology	Strategic vision	0/105	1/843	2/464
Information technology	Creating a dynamic working environment	0/165	1/781	1/561
Information technology	Supportive environment	0/086	2/095	1/818

Table 6: Results of variance test

Predictor variable	Statistical index			
	Criterion variable	df	Fisher statistic	Significance level
Information technology	Organizational entrepreneurship	1	162/074	0/000a
Information technology	Paperwork in the organization	1	31/771	0/000a
Information technology	Change in the employees' behavior	1	106/093	0/000a
Information technology	Strategic vision	1	28/316	0/000a
Information technology	Creating a dynamic working environment	1	47/133	0/000a
Information technology	Supportive environment	1	22/927	0/000a

Table 7: linear correlation coefficient

Criterion Variable	Statistical index				
	Predictor variable	Beta coefficient	SE	T statistic	Significance level
Organizational entrepreneurship (Y)	Fixed coefficient	18/942	2/244	8/440	0/000
	IT (X)	0/180	0/014	12/731	0/000
Paperwork in the organization (Y)	Fixed coefficient	2/381	0/359	6/641	0/000
	IT (X)	0/013	0/02	5/637	0/000
Change in the employees' behavior (Y)	Fixed coefficient	6/980	1/305	5/350	0/000
	IT (X)	0/085	0/008	10/300	0/000
Strategic vision (Y)	Fixed coefficient	3/929	0/754	5/213	0/000
	IT (X)	0/025	0/005	5/321	0/000
Creating a dynamic working environment (Y)	Fixed coefficient	2/253	0/728	3/094	0/002
	IT (X)	0/031	0/005	6/865	0/000
Supportive environment (Y)	Fixed coefficient	3/399	0/857	3/967	0/000
	IT (X)	0/026	0/005	4/788	0/000

Table 8: The linear regression equation

Predictor variable	Criterion variable	a	b	Regression line equation
IT	Organizational entrepreneurship	18/942	0/180	(18.942+0.180) IT = Organizational entrepreneurship
IT	Paperwork in the organization	2/381	0/013	(2.381+0.013) IT = Paperwork in the organization
IT	Change in the behavior of employees	6/980	0/085	(6.980+0.085) IT = Change in the behavior of employees
IT	Strategic vision	3/929	0/025	(3.929+0.025) IT = Strategic vision
IT	Creating a dynamic working environment	2/253	0/031	(2.253+0.031) IT = Creating a dynamic working environment
IT	Supportive environment	3/399	0/026	(3.339+0.026) IT = Supportive environment

According to Table 5 Durbin-Watson statistic is in the range of 1.5-2.5 (so we can use regression test) and according to the modified coefficient of determination, the rate of change of criterion variable is explained by predictor variable (information technology).

Analysis of regression variance tests the linearity of the relationship between the variables. According to Fisher statistic amounts with the degree of freedom of 1, it is determined that information technology affects the criterion variables of the employees of Yazd Saderat Bank branches and there is a linear relationship between them (Table 6).

In Table 7, the first row is related to the test of significance of intercept (regression fixed coefficient) and

the next row is related to the regression slope coefficient (beta). Also the standard error represents the regression coefficient criterion error and the t-value is to test regression coefficient which is significant at the level of <0.05. In Table 8, information technology is the predictor variable x which according to the formula $Y = a + b(x)$ and the values of a and b specified in Table 8, the linear regression equation is resulted as follows in Table 8.

CONCLUSION

After data analysis, it was found that there is a significant relationship between information technology and organizational entrepreneurship of the employees of

the Saderat bank branches of Yazd. The research findings indicate that, the obtained correlation of the two variables of information technology and organizational entrepreneurship is $r = 0.770$ at the significance level of $\text{Sig.} = 0.000$. This correlation is significant and the main hypothesis is confirmed. Regarding the sub-hypotheses also it was determined that there is significant relationship between information technology and paperwork, changes in behavior, strategic vision, creating a dynamic working environment and supportive environment in Yazd Saderat bank branches. The research findings indicate that the results of this test can be extended to the statistical population with 95% reliability.

Information technologies not only are the factor creating change but they also change themselves rapidly and increasingly. Information technology based on knowledge and wisdom of human being and his thoughts, in order to benefit from thought and consigning the repetitive and non-creative affairs to machines and also increasing efficiency and freeing human skills has gained particular attention in recent decades. With the help of information technology, a high step in doing affairs with more accuracy can be taken that this is only possible with having entrepreneur and capable and dynamic employees who having decision making power in doing the consigned affairs having enough information in their organizational field and also having working commitment in doing the consigned affairs. Today, organizational entrepreneurship is highly dependent on the backgrounds provided by IT and benefit much from that; in fact entrepreneurial activities lead to knowing of needs, creating ideas and creation of technologies and information technology is the engine of development of entrepreneurship and economic growth. Activities, occupations, cultures and all have been under the influence of information technology and have changed. In the changing world of today, prosperity is for the communities and organizations that establish a meaningful relationship between scarce resources and management capabilities and entrepreneurship of human resources. In other words in the development path a society and an organization can move forward and accelerates that creating necessary conditions, mobilize its human resources to generating knowledge and entrepreneurial skills, so that using this valuable

capability manage and direct the other community and organization resources toward creating value and attaining growth and development.

REFERENCES

- Altinay, L. and C.L. Wang, 2011. The influence of an entrepreneurs socio-cultural characteristics on the entrepreneurial orientation of small firms. *J. Small Bus. Enterp. Dev.*, 18: 673-694.
- Auer A.J. and B. Antoncic, 2011. Employee satisfaction intrapreneurship and firm growth: A model. *Ind. Manag. Data Syst.*, 111: 589-607.
- Bitsani, E. and A. Kavoura, 2011. Organizational networks migration and intercultural relations in Trieste Italy. *Int. J. Culture Tourism Hospitality Res.*, 5: 26-37.
- Bouchard, V. and O. Basso, 2011. Exploring the links between entrepreneurial orientation and intrapreneurship in SMEs. *J. Small Bus. Enterp. Dev.*, 18: 219-231.
- Chanopas, A., D. Krairit and D.B. Khang, 2006. Managing information technology infrastructure: A new flexibility framework. *Manage. Res. News*, 29: 632-651.
- Lavanya, L.K. and B.E.V.V.N. Murthy, 2009. Problems of small-scale entrepreneurs in Nellore District. *J. Chin. Entrepreneurship*, 1: 268-278.
- Moghim, S.M., 2010. *Entrepreneurship in Civil Society Institutes*. Tehran University Entrepreneurship Center, Tehran, Iran.
- Rezayee, H., 2012. The application of information technology and its relationship with organizational intelligence. *Procedia Technol.*, 1: 94-97.
- Sarma, S., 2011. NGO transformation: Institutional entrepreneurship in Indian microfinance. *Bus. Strategy Ser.*, 12: 167-176.
- Stewart, R.A., 2008. A framework for the life cycle management of information technology projects: ProjectIT. *Int. J. Project Manag.*, 26: 203-212.
- Taheri, A. and M. Shamsfard, 2011. Mapping FarsNet to Suggested Upper Merged Ontology. In: *Information Retrieval Technology*, Salem, M.V.M., K. Shaalan, F. Oroumchian, A. Shakery and H. Khelalfa (Eds). Springer Science and Business Media, New York, pp: 604-613.