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Investigación educacional sobre la relación entre el componente de tecnología de la información y el espíritu empresarial organizacional

Educational study on the relationship between information technology component and organizational entrepreneurship

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Abstract
The objective of this study was to investigating the relationship between information technology component and organizational entrepreneurship in the aviation industry. The method of this research was descriptive. The statistical population of the study included all employees of the administrative department of Iran Civil Aviation Organization of Tehran province which was 140 employees. Due to the limited size of the population, the whole population was selected as a sample and examined. The present research is descriptive-survey type. The instruments of this study are researcher-made questionnaires of information technology and organizational entrepreneurship questionnaire whose validity and reliability in this study were obtained based on Cronbach's alpha coefficient of 0.89. In order to analyze the data, Pearson correlation coefficient and multiple regressions were used to test the hypotheses and Cronbach's alpha method was used to calculate the reliability coefficients. Results of testing research hypotheses showed that there is a significant relationship between information technology and the tendency to organizational entrepreneurship. According to results we say that this is a educational research that information technology is one of the tools of entrepreneurship that cannot replace real development, but provides tools that can accelerate development of organization. It is suggested that information technology and entrepreneurship training and retraining classes be held simultaneously in order to develop and based on proper planning for the use of computers in entrepreneurship.

Keywords: Information technology, organizational entrepreneurship, Iran civil aviation organization, air navigation, Aviation

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Resumen
El objetivo de este estudio fue investigar la relación entre el componente de tecnología de la información y el espíritu empresarial organizacional en la industria de la aviación. El método de esta investigación fue descriptivo. La población estadística del estudio incluyó a todos los empleados del departamento administrativo de la Organización de Aviación Civil de Irán de la provincia de Teherán, que fue de 140 empleados. Debido al tamaño limitado de la población, se seleccionó y examinó a toda la población como muestra. La presente investigación es tipo encuesta descriptiva. Los instrumentos de este estudio son cuestionarios de tecnología de la información elaborados por investigadores y cuestionario de emprendimiento organizacional cuya validez y confiabilidad en este estudio se obtuvieron con base en el coeficiente alfa de Cronbach de 0.89. Para analizar los datos, se utilizó el coeficiente de correlación de Pearson y regresiones múltiples para probar las hipótesis y se utilizó el método alfa de Cronbach para calcular los coeficientes de confiabilidad. Los resultados de probar hipótesis de investigación mostraron que existe una relación significativa entre la tecnología de la información y la tendencia al espíritu empresarial organizacional. Según los resultados, decimos que la tecnología de la información es una de las herramientas del emprendimiento que no puede reemplazar el desarrollo real, pero proporciona herramientas que pueden acelerar el desarrollo de la organización. Se sugiere que las clases de capacitación y reciclaje en tecnología de la información y emprendimiento se realicen simultáneamente con el fin de desarrollar y basarse en una planificación adecuada para el uso de computadoras en el emprendimiento.

Palabras clave: Tecnología de la información, espíritu empresarial organizacional, organización de aviación civil de Irán, navegación aérea, aviación

Introduction

The world has witnessed changes in management styles and the transformation of this style into entrepreneurial management since the mid-1990s, and organizations have sought to establish and develop an entrepreneurial system in order to improve their strategic and productive activities (Uclera & Gokb, 2015). Also, the technological revolution Information and communication and information and network society as well as the advancement of superior technology and its close relationship with the organization have been proposed as a strategic factor in this (Zhang et al., 2018). One of the main strengths of organizational development activities is to create conditions in which people find that they need to change in this regard for reasons such as limited resources and social problems, the process of downsizing governments, the traditional method of public administration, rapid change. Environmental and maintaining efficient human resources organizational entrepreneurship has been proposed as an irreplaceable phenomenon in today's organizations (Long & Lin, 2017).

On the other hand, organizational entrepreneurship is a process that leads to product and process innovation by inducing an entrepreneurial culture in an organization (Soomro, et al., 2019). Nowadays, there are issues that can no longer be solved with the solutions of the past. The main feature of today's issues is the size of the data and information that must be collected and maintained, produced, processed, marketed and analyzed. Organizational companies are moving towards the development of a new technology called information technology, which will facilitate the work with a lot of data and information. Perhaps two decades ago, many experts did not believe that the industrial age would change so quickly to the information age. And today, human beings should figure out the future so that time, physical disability, economic problems and geographical structures are not an obstacle to move and progress. Bringing an era is challenging in such a way that the prerequisite for survival and continuity of life in that era is equipping with information technology (Wang & Li, 2017).

Today, entrepreneurship and entrepreneurs are highly dependent on the platforms provided by information technology and benefit from it. In fact, entrepreneurial activities identify needs, create ideas and the birth of technologies, and information technology is the engine of entrepreneurial development and economic growth. Activities, occupations, cultures and all have been influenced and transformed by information technology (Jung et al., 2017). Success in entrepreneurship and new investments lies in a variety of factors, including information technology (Arabiyat et al., 2019). Information has always been a competitive advantage in the business environment, but the important point is that the real change that can increase the potential value of information is the ability of organizations to use this important resource through new technology (Zhang et al., 2019). Also, today, information technology has affected all social activities, including entrepreneurship, and has brought about fundamental changes in many of them (Pathak & Muralidharan, 2019). Entrepreneurship is heavily dependent on and uses IT styles, and it may not be an exaggeration to say that entrepreneurship without IT is impossible (Arabiyat et al., 2019).

Background research

Due to the significant growth of information technology and the important role of this parameter in the growth and promotion of the organization on the one hand and organizational entrepreneurship on the other hand, many studies have been conducted by various researchers in this field today (Wang & Li, 2017). For example, Mohammadi and Amiri (2016) identified the factors affecting the acceptance of information technology innovation in government organizations (Arabiyat et al., 2019). The results showed that indicators such as comparative advantage and

innovation capability, security and reliability, organizational culture, management support, socio-economic status and cooperation and coordination between parts of the organization, play an important role in accepting information technology innovation. For its part, Farhadi et al. (2016) investigated the effect of information technology acceptance on human resource productivity of Isfahan Zarnama Brick Factory and found that there is a significant correlation between employees' mental perception of usefulness and ease of information technology with the desire to use technology and labor productivity among human being.

For the other hand, Kahoui and Mohammadi (2016) examined the perception of acceptance of clinical information systems by nursing staff based on the IT admission model (a study on hospitals affiliated to Semnan University of Medical Sciences and Social Security Organization). The results showed that IT admission in There were more nurses who were aware of their duties towards the computer program or those who were aware of the goals of the computer program.

Mirkamandar and Zia Al-Dini (2016) studied the relationship between the use of information technology and creative atmosphere in the executive organs of Kerman and found that there is a significant and positive relationship between the use of information technology and creative atmosphere and its components. Mohtarami et al. (2016) identified a set of factors affecting the adoption and dissemination of information technologies in economic enterprises. The results showed that factors such as managers' perceptions of the benefits and challenges of information technology, organization size, management stability, readiness of suppliers, have a positive effect on the willingness to accept information technology in relevant organizations.

In another study, Roja (2015) examined the implications of the impact of organizational entrepreneurship, flexibility, market willingness, and job satisfaction. One of the results of this study was the existence of a significant relationship between the level of trust and organizational entrepreneurship. High levels of trust among members of the organization have a positive effect on innovation through information exchange. Accordingly, trust in the organization expands when information channels are open and information sharing is common.

Pathak and Muralidharan (2020) also examined the effect of intra-organizational and extra-organizational factors on innovation in professional sports leagues and showed that out of the total of intra-organizational and extra-organizational factors, intra-organizational factors had a greater impact on innovation than internal factors. Organizational (formality, complexity, focus and leadership, group values, size, age and education of employees) the three factors of formality, focus and leadership accounted for the most variance explained in terms of innovation.

Methodology

The method of this research was descriptive. The statistical population of the study included all employees of the administrative department of Iran Civil Aviation Organization of Tehran province which was 140 employees. Due to the limited size of the population, the whole population was selected as a sample and examined. Statistical sample in this study, due to the size of the statistical population, and due to the limited statistical population to select a sample of the census method, the entire statistical population was considered as a sample (N=140), which returned 111 after distributing the questionnaires (N= 111).

To collect the data of the present study, the researcher-made questionnaires of information technology (Rehman et al., 2018) and the researcher-made questionnaire of organizational entrepreneurship (Kreiser et al., 2019). The main tool in this research was a questionnaire and at the same time most of the questions were extracted from valid research indexed in prestigious and international journals and books. Due to the importance of ensuring the means of data collection, in this study, the validity of the content of the questionnaire has been ensured. Content validity means that the measurement tool contains all the conceptual features you want to measure (Lomberg et al. 2017). Formal validity, which is one of the types of content validity, depends on the researcher's mental assessment of the validity of the measurement tool. In order to determine the formal validity of the questionnaire, researchers and experts in the field of research on the accuracy and transparency of the questionnaire questions are consulted; In this regard, the opinion of the supervisor and the professors of the sports management department was facilitating (Kreiser et al., 2019).

Considering that the questionnaires used in this research (Rehman et al., 2018), exploratory and confirmatory factor analysis was used to determine the validity of the structure. KMO test coefficient = 0.77 showed the appropriateness of the questionnaire data. The level of significance of Bartlett sphericity test was statistically significant (sig = 0.0001). Therefore, the data are suitable for factor analysis. In this analysis, 4 factors were extracted from the principal component analysis method (Varimax rotation) and eigenvalues higher than one. Of the 4 extracted factors, the first factor was 17.16, the second factor was 15.84, the third factor was 13.09 and the fourth factor was 12.51% of the total variance. Also, the sum of the variances explained by these 4 factors is 58.60. Cronbach's alpha coefficient method was used to assess the reliability of this research questionnaire.

According to Kuratko et al., (2015), if Cronbach's alpha is greater than 0.7, the questionnaire is reliable. Of course, Kollmann and Stöckmann (2014) considered stars and Slater alpha 0.6 as the basis of reliability. In social science and management research, Cronbach's alpha coefficient is assumed to be acceptable above 0.7 (Kreiser et al., 2019). In the present study, Cronbach's alpha method was used to determine the reliability of the research questionnaire, which is equal to 0.85 for the whole questionnaire, which indicates the optimal reliability coefficients of the questionnaire.

Results

The following tables show the characteristics of descriptive statistics of research variables.

Table 1
Frequency distribution of subjects by gender

Gender	Male	Female	Total
Frequency	63	38	101
Percentage	62.4	37.6	100

As can be seen in Table 1, 62.4% (63 people) of the subjects are male and 37.6% (38 people) are female.

Table 2
Frequency distribution of age of subjects

Age	Frequency	Percentage
Less than 25 years	0	0.0
25 to 35 years	58	57.4
36 to 45 years	35	34.7
46 to 55 years	6	5.9
Over 55 years	2	2.0
Total	100	100

The results of table 2 show that 57.4% of the subjects between the age ranges of 25 to 35 years, 34.7% of the subjects between the age ranges of 36 to 45 years, 5.9% of the subjects between the age range is 46 to 55 years and 0.2% of the subjects are over 55 years old.

Table 3
Frequency distribution of subjects' education

Education	Frequency	Percentage
Diploma and lower	13	12.9
Associate Degree	27	26.7
Bachelor	51	50.5
Master's degree and higher	10	9.9
Total	100	100

As can be seen in Table 3, the level of education of 12.9% of the subjects is diploma and lower, 26.7% of the subjects are post-diploma, 50.5% of the subjects are bachelor and 9.9% of the subjects have a master's degree or higher.

Table 4
Frequency distribution of subjects by type of job

Job type	Manager	Supervisor	Employee
Frequency	1	9	91
Percentage	1.0	8.9	90.1

Table 4 shows that the job of 0.1% (1 person) of the subjects is manager, 8.9% (9 people) of the subjects are supervisors and 90.1% (91 people) of the subjects are employees.

Table 5
Frequency distribution of subjects' work experience

Work experience	Frequency	Percentage
Less than 5 years	9	8.9
Official	50	49.5
Contractual	42	41.6
Total	100	100

As the results of Table 5 show, 8.9% of the subjects are less than 5 years old, 49.5% of the subjects are formal and 41.6% of the subjects are contracted. To determine the normality of data distribution, Kolmogorov-Smirnov test was used. According to this test, the distribution is normal when the value of P is greater than the critical number at the level of 0.05. The results of this test are presented in Table 6.

Table 6
Summary of Kolmogorov-Smirnov test results for research variables

Variable	Z value	Significance level
Gender	0.504	0.962
Age	0.435	0.991
Education	0.626	0.828
Job Type	0.801	0.542
Work experience	0.568	0.903
Information Technology	0.765	0.602

The results of Table 6 show that all measurement variables have a natural distribution. Table 7 shows the results of the Pearson correlation test between the IT component and organizational entrepreneurship.

Table 7
Results of Pearson correlation test between information technology and organizational entrepreneurship

Indicator		Organizational entrepreneurship
Information Technology	Correlation coefficient	0.41
	Significance level	0.001
	Number	111

The results of Table 7 show that according to the test statistics (sig = 0.001, r = 0.41) there is a relationship between information technology and the tendency to organizational entrepreneurship. Table 8 also shows the general results of the multiple regression tests between information technologies with a tendency to organizational entrepreneurship in a step-by-step manner.

Table 8
General results of multiple regression test between information technologies with a tendency to organizational entrepreneurship in a step-by-step manner

Source of changes	Total squares	Degrees of freedom	Average squares	F Ratio	Significance level	R	R2
Regression	3.22	3	1.07	8.37	0.001	0.46	0.21
Left over	11.95	93	0.12				

Total	15.18	96

The results of table 8 show that there is a multiple relationship between information technology and the tendency to organizational entrepreneurship in the staff of the of Iran Civil Aviation Organization of Tehran province.

Discussion

The research hypothesis states that there is a relationship between information technology and the tendency to organizational entrepreneurship in the staff of the of Iran Civil Aviation Organization of Tehran province (Kreiser et al., 2019). Pearson correlation coefficient and correlation hypothesis test were used to examine the existence of a significant relationship between information technology as an independent variable and the tendency to organizational entrepreneurship as a dependent variable. As can be seen in Table 7, there is a significant relationship between information technology and the tendency to organizational entrepreneurship. Therefore, the first hypothesis is confirmed. It can be said that there is a positive relationship between these two variables (Long & Lin, 2017). This means that the more the use and application of information technology in the organization, the greater the tendency to organizational entrepreneurship; as a result, the first hypothesis that the relationship between information technology and the tendency to organizational entrepreneurship in the staff of Iran Civil Aviation Organization of Tehran province is confirmed with a significant level ($\alpha = 0.05$) (Zhang et al., 2019). .

Also, the multiple relationship between information technology and the tendency to organizational entrepreneurship in the staff of Iran Civil Aviation Organization of Tehran province is confirmed with a significant level ($\alpha = 0.05$). The results of this study are consistent with the findings of Rehman et al. (2018), Dangolania et al. (2011), and of Linton and Walsh (2016).

In explaining this assumption, it can be said that innovation, creativity and change are the key and inevitable factors of sport. This leads us to study the scope of sports from an entrepreneurial perspective. In recent years, the expansion of the field of sports management on the one hand, and the development of the field of entrepreneurship on the other hand, have created a new framework in the context of sports; In a way that at the intersection of these two disciplines, a new approach to sports management and entrepreneurship has emerged (Bot & Renaud, 2012).

In the changing conditions of global business, innovation and change have always affected the center of sports. As global competition in this area increases, so do sports organizations through innovation in order to achieve greater competitive advantage. Hence, one of the ways that sports managers and marketers remain competitive is to be an entrepreneur. Entrepreneurship provides a pathway for business owners who want to improve their overall performance (Aydiner et al., 2017).

Every research has a series of limitations. The same goes for this research. Among the limitations of this research, we can mention the lack of cooperation of some personnel, lack of sufficient time and cost, lack of completion of the questionnaire by some of the residents. Therefore, due to the linear relationship between creativity and innovation and information technology, with the increase in the use of information technology in the Civil Aviation Organization, the level of creativity and innovation also increases and managers should provide new services/ activities in units and use new technology and techniques. The results obtained in this study consisted with the findings of studies of Aydiner et al. (2017); Rojas et al. (2017); Audretsch et al. (2020); Rachinger et al. (2019); Dong et al. (2019); but it does not agree with the findings of Hinings et al. (2018); Yu et al. (2015); Martín-Peña et al. (2018); Scholz et al. (2020); Autio et al. (2018). The reason for this discrepancy is perhaps the study of the only aspect of holding ICT training courses on entrepreneurial motivation in this research, while in the present study; all aspects of information technology on entrepreneurship have been examined. To explain this assumption, it can be said that information technology is one of the tools of entrepreneurship that, although it cannot replace real development, but provides tools that can accelerate development. Access to new technology for an entrepreneur can help assess needs and improve production and ultimately increase the level of income and welfare (Parviainen et al., 2017).

Conclusion

In a high-tech company, innovation is vital. In high-tech industries, where the pace of change is high, the company places more emphasis on the efforts of its research and development department in products, processes and technologies, thereby overcoming technological barriers and distinguish competing companies.

As a result, it must be said that in order for industries to have an innovative performance, they must first strengthen the research and development sectors, which will lead to the development of products and improve production and service processes, as well as the relationship between information technology and innovation. The product and process must pay full attention

to information technology because it creates better innovative performance. Therefore, it is strongly recommended that the managers of the studied organizations pay special attention to this issue.

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