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INVESTIGATING THE RELATIONSHIP BETWEEN ICT UTILIZATION AND EMPLOYEE PRODUCTIVITY AT ISLAMIC AZAD UNIVERSITY

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ABSTRACT

This study aims at investigating the correlation between the employees' productivity and ICT application at electronics and Science and Research Branches of Islamic Azad University. The research has descriptive (correlative) method in terms of data collection and is applied in terms of objective. The statistical population consists of all 200 employees at electronics Branch and 1100 employees at Science and Research Branches of Islamic Azad University. The sample size is estimated equal to 297 according to Morgan Table and the stratified random sampling is utilized for sampling. The ICT application questionnaire with alpha coefficient of 0.84, and Hersi and Goldsmith' productivity questionnaire (1960) with alpha coefficient of 0.82 are the data collection tools in this research. Pearson correlation coefficient and multiple-regression are utilized for data analysis. The obtained results indicate that there is a significant correlation between the employees' productivity and ICT application at Islamic Azad University and 3.2% of variance in productivity can be predicted by ICT application.

Keywords: *ICT, Productivity, Islamic Azad University*

INTRODUCTION

The productivity is significantly important due to the expansion of competition level, technological complexity, information exchange speed and variety of attitudes. The productivity is increasingly based on the knowledge, skills and abilities of trained human mind. The expanded concept of productivity is not the result of a fraction of output to data, but it is an intellectual system, and a kind of rational approach to life and a kind of culture under which the human adapts his activities to values and facts through the thought and seeks to obtain the material and spiritual result (Khodadadi, 2010). In scientific literature, the productivity refers to the productive usefulness and it is in fact defined as the correlation between the output and input and the obtained results and employee dedication or sometimes synonymous with the output (Singh & Mohanty, 2012).

Various factors affect the labor productivity, and according to the conducted studies, the information and communication technology (ICT) application is among the factors which improve the human resource productivity in an organization during the current millennium (Hatami and Dastar, 2012; Sharifi and Eslamieh, 2008).

Nowadays, the ICT application, which seeks to collect, organize, store, and disseminate data such as the audio, image, text or number using the computer and telecommunication (Sharifi and Eslamieh, 2011), is a source of power in organizations and an important factor in creating and maintaining the human resource productivity. It is believed that the information technology can enhance the capabilities of organizations if it is along with the reduction in costs (Benamati, 2008).

According to the classic definition, the technology is a set of created knowledge in the production tools and methods. The impact of technology on the development has been discussed since years ago and it can be clarified into three categories.

According to a view, the effect of technology is embodied and analyzed in the form of capital goods resulting in the increase in capital productivity. According to the second view, the technology increases the labor productivity; and based on the third view, the technology increases the total productivity and not necessarily the work or capital productivity (Mahmoudzadeh and Asadi, 2007). The ICT improves the individual performance among the knowledge-based staff. Furthermore, it promotes the organizational

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performance through the business processes, and finally develops the inter-organizational performance through the knowledge-based networks (Turban *et al.*, 2009).

The correlation between the information technology and the labor productivity (Staff) is a two-way and interdependent correlation. In other words, the real development and productivity and national knowledge-based sustainability cannot be achieved without skillful employees who are familiar with methods, literature and computer and its applied skills; and on the other hand, the information technology is an effective tool and method for enhancing and educating the human resource productivity (Duvalier, 2009).

Various studies are conducted on the research subject inside and outside the country. Among these studies, Bavarsad (2014) studies the effect of information and communications technology (ICT) on improving the organizational performance based on the Aligned Balanced Scorecard in Fajr Petrochemical Company.

The research findings indicate that the maximum effect of information technology is associated with the domestic processes, while the minimum impact is related to the financial improvement. In general, it is found that the improved organizational performance based on the Aligned Balanced Scorecard is largely affected by the information technology.

Esfandiari (2013) studied the correlation between the employees' rates of information technology application and organizational commitment with organizational productivity. The obtained results indicate the significant positive correlation between the organizational commitment and employees' information technology application with productivity.

Sharifi and Eslamieh (2012) conducted a research on investigating the correlation between the teachers' rates of ICT application and their performance in teaching-learning process. The obtained results indicate that there is a significant correlation between the teachers' rates of ICT application and their performance in teaching-learning process and 61.1% of variance in dependent variable of research (teachers' performance) is explained by the components, namely, the software, databases and then the Internet respectively.

Ahmadi *et al.*, (2012) conducted a research with the aim at identifying the impact of ICT education on the employees' productivity at Islamic Azad University of Sari. The research result indicate the ICT education has significant impact on the employees' productivity including the job knowledge, increased accuracy, increased job rate and speed, creation of job motivation, increased cooperation and increased ability to do different affairs.

Furthermore, the research results indicate that there is a significant difference between the employees' views on the impact of ICT education on the employees' productivity according to the employees' years of experiences in all components and based on the fields of study except for the increased speed and accuracy, but no significant difference is observed based on the educational degree.

Strong *et al.*, (2014) studied the impact of using the information technology and communications among the officers. The obtained results indicate that the use of ICT has a large impact on the increased rate of productivity in studied officers.

The empirical evidence indicate that the productivity has no desirable status at Islamic Azad University, and as mentioned earlier, the use of ICT is among the factors affecting the human resource productivity. Despite the fact the researcher is faced with numerous studies on the relationship between the ICT and productivity, it cannot be precisely claimed that there is a correlation between the ICT and productivity at Islamic Azad University. Therefore, this study seeks to find the answer this question: What kind of correlation is there between the employees' productivity and ICT application at Islamic Azad University, Science and Research Branch?

MATERIALS AND METHODS

Type of Research: This study is conducted according to the correlative-descriptive method.

Statistical Population, Sample and Sampling Method: The statistical population of this study consists of all 200 employees at Electronic Branch and 1100 employees at Science and research Branch of Islamic

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Azad University. Morgan Table is utilized to estimate the sample size and this table indicates that 297 samples represent the population of 1300 subjects, and then these samples are selected from the statistical population according to the type of university branch through random stratified sampling method. Table (1) shows the way of distributing the statistical sample.

Table 1: Distribution of population and sample in terms of university branch

University branch	Population size	Sample size	Percentage
Electronics	200	46	15.3
Science and research	1100	251	84.7
Total	1300	297	100

Data Collection Tool

The closed-response questionnaire is applied for data collection in this study. Each of these questionnaires has the following characteristics:

1- ICT Application Questionnaire: This questionnaire consists of 25 questions at four-point scale with questions 44 to 68 of questionnaire. The ICT Application Questionnaire is utilized in the studies by several master students in research course at university of Roudehen and its validity and reliability are approved. The obtained reliability coefficient is equal to 0.84 in this research.

2- Productivity Questionnaire: The Productivity Questionnaire, called "ACHIEVE", which is designed by Hersi and Goldsmith in 1960, investigates seven dimensions of labor productivity through 34 questions. These dimensions include the ability, clarity or understanding of role, organizational support, willingness (motivation or desire), assessment, validation and environment. This questionnaire has the four-choice scale. Emami (2010) found the reliability coefficient of ACHIEVE Productivity Questionnaire equal to 0.85 among the community of student-basij leaders. Sharifi and Eslamieh (2012) obtained the alpha coefficient of ACHIEVE questionnaire equal to 0.81 in their research. In a research on the employees' productivity in Insurance Companies at the light of emotional intelligence and quality of work life, Sabokrou (2010) approved the validity of productivity according to the survey on the experts and reported its reliability equal to 0.81. The obtained coefficient of reliability is equal to 0.82 in this research.

In this research, the content validity of both research questionnaires is approved according to the survey on the advisor and supervisor professors and their reliability is obtained on 30 samples, thus the Cronbach's alpha coefficient is obtained equal to 0.84 for ICT application questionnaire and 0.82 for productivity questionnaire.

Data Analysis Method: The K-S tests, Single-group t-test, Pearson correlation coefficient, multiple regression and path analysis tests are utilized for analyzing the collected data.

RESULTS AND DISCUSSION

Results

Research Question: What kind of correlation is there between the employees' productivity and ICT application at Islamic Azad University?

Table 2 shows the correlation coefficients between the employees' productivity and ICT Application at Islamic Azad University.

With regard to the measured significance levels which are all smaller than 0.05, it can be concluded that there is a significant correlation between the employees' productivity and ICT application at Islamic Azad University, so that the maximum correlation is seen between the ICT application and organizational support component equal to 0.21, and the minimum correlation between the ICT application and the clarity or understanding of role equal to 0.156.

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Table 2: The results of Pearson correlation coefficient between the ICT application and Productivity

Components	Indices	ICT application
Ability	Correlation coefficient	0.169 **
	Significance level	0.004
Clarity or understanding the role	Correlation coefficient	0.156 **
	Significance level	0.007
Organizational support	Correlation coefficient	0.214 **
	Significance level	0.000
Willingness (motivation or desire)	Correlation coefficient	0.160 **
	Significance level	0.006
Assessment	Correlation coefficient	0.185 **
	Significance level	0.001
Validation	Correlation coefficient	0.197 **
	Significance level	0.001
Environment	Correlation coefficient	0.170 **
	Significance level	0.003

Table 3: Summary of regression model for ICT application and Productivity

Multiple correlation	Coefficient of determination	Modified Coefficient of determination	Error Approximation
0.189 ^a	0.036	0.032	0.46381

As shown in Table 3, the multiple-correlation is equal to 0.189 and the modified coefficient of determination equal to 0.032 indicating that 3.2 percent of variance in productivity is predictable by ICT application. F test is applied to investigate the significance of multiple-correlation coefficient.

Table 4: F Test for significance of regression and the linear relationship between the ICT application and productivity

Model	Sum squares	Degrees of freedom	Mean square	F	Significance level
Regression	2.350	1	2.350		
Residual	63.459	295	0.215	10.925	0.001 ^a
Total	65.809	296			

As shown in Table 4, the calculated F is equal to 10.925 with degree of freedom equal to 296 which is higher than the critical value of F (3.84), thus it can be concluded that the obtained correlation between the ICT application and productivity is significant at the confidence level of 95%. The fragmented coefficient of determination (Beta) is utilized to determine the contribution of this component.

Table 5: Results of multivariate regression for ICT application and productivity

Model	Standardized beta coefficient	t	Significance level
Constant value		3.619	0.000
ICT application	0.189	3.305	0.001

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As shown in Table 5, it is shown that with respect to the beta coefficients, the contribution of ICT application in predicting the productivity is equal to 0.189, and a one unit change in this variable causes 0.189 units of change in this prediction of productivity.

Discussion

According to the findings of this study, there is a direct and significant correlation between the employees' productivity and ICT application at Islamic Azad University and 3.2% of variance in productivity is predictable by ICT application. This finding is consistent with the research by Bavarsad (2014), Esfandiari-Bayat (2013), Farazmand *et al.*, (2013), Sharifi and Eslamieh (2012), Imani and Sharifi (2011), Torkian (2004), Strong *et al.*, (2014), and Yonidiz (2001).

In the third millennium, the use of ICT is the essential principle for survival and success in the organizations and according to Drucker (2001), those employees with applied knowledge and skills in their scopes are critical to the success of organization; and the skill of ICT application is practically a considerable capability which plays the main role in staff approval or disapproval. Since each organization is looking for the productivity, according to research by Duvalier (2009), the relationship between the information technology and productivity is a two-way and interdependent correlation, and this is proven in this study and thus it is essential to take efforts for optimal ICT application in job affairs.

The following suggestions are offered based on the obtained results:

- 1- It is suggested holding the educational classes or providing the advertising educational brochures make the university employees familiar with the concept of productivity.
- 2- It is suggested reminding the managers and employees about the necessity and importance of ICT application during the work and the productivity.
- 3- It is suggested implementing the research subject among the other university units such as Payame Noor and University of Applied Science and Technology in future studied and then comparing the obtained results with results of this study.
- 4- It is suggested applying the other productivity models in future studies.

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