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Studying the Role of Information and Communication Technology in Learning and Research Activities among MA Students

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Abstract

This paper aimed at studying the role of Information and Communication Technology (ICT) in learning and research activities among MA students at Payam Noor University (PNU), Tehran Branch, in the academic years 2011-2012. The questionnaire used in this paper was designed based on formal and content reliability, and its reliability was measured by applying it experimentally. The Cronbach Alpha was 0.85, indicating its good reliability to collect data. The data was analyzed using descriptive-deductive method, and SPSS software, version 15. The results show that there is no significant relation between using ICT and gender. Moreover, according to the results, there is a significant relation between using ICT and the students' English language competency, knowledge about computer, and research activities.

Key words: Information and Communication Technology, Learning Activities, Research Activities, PNU

Introduction

Human is moving from an industry-based community into an information-based community; in other words, from a physical world into a figurative world. Entering to the information age and having an efficient life in the information-based community, one should recognize its features. Increasing developments of knowledge along with developments of technology, especially in information and communication, increasingly influences teaching and learning processes in classrooms and outside (Zare'eizavaraki, 2005). The modern age is known as a combination of information and communication; the age at which human needs information and having

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communication in order to get required information for a better life more than before (Asnafi, Hamidi, 2006).

Emerging and developing ICT, global changes, based on the information factor and knowledge, are developing rapidly. Mc Lohan summarizes the most important changes, and defines it as a change to a global village (Ghoorchian, 2002). Getting closer to other citizens of this village, communication cultures, interacting the experiences, improving political and social ideas and quick access to the information all over the worlds can be considered as some results, among others, of information technology (Sharifi, Reghabi, 2003).

The most challenging, and perhaps the most important, matter in communicative activities is a network of computers connecting to each other, known as the Internet. Generally, the role of internet as a vast and various set of information networks in all subjects cannot be ignored; all advantages hidden in using the internet are based on three factors: access, information, and speed (Moosakhani, 2004).

Electronic learning is that kind of learning by using the internet. Its roots stem in a kind of teaching based on using computer, emerged first in 1980s; the CD-ROMs were used to train some technical skills to technicians. Recently, electronic learning is changed to a kind of learning that is of vast usages at universities and companies (Moor, 2001).

Movaheddi studied the role of internet network in teaching programs in department of agriculture (Movahed Mohammadi, 2002). Al-Motrif, in his paper, studied the effects of the students' degree and gender on using the internet as a teaching, research, and entertainment instrument among the students of Ohio University (Al-Motrif, 2000).

Lubans conducted a research on using the information and communication technology (the Internet). Some of its features and key results are as follows: gender can make a significant statistical difference. Having a PC and access to the internet has a strong effect on using the internet by the students, and using the internet causes academic achievement (Lubans, 1999).

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Lavfield, Radhankrishna, and Scanlon (1998) conducted another research on using the internet by the teachers in agriculture high schools.

Given the necessity of using information and communication technology among MA students at PNU, the only distance learning university in Iran, this paper aimed at studying the role of information and communication technology in learning and research activities among students of PNU, Tehran branch. The results can be as strategies to improve and develop sciences at this university. In this context, the following questions are asked, and then the results and answers are analyzed.

1. Is there any difference in using ICT among male and female students?

2. Is it possible to predict using ICT according to the students' knowledge of using computer?

3. Is it possible to predict using ICT according to the students' English language competency?

4. Is it possible to predict the students' research activities according to their knowledge of using ICT?

Method

Population

The population in this paper consists of 374 MA students at PNU in the academic years 2011-2012, studying at Tehran branch. Generally, MA majors at PNU include 24 majors in sciences and basic sciences. 18 majors are in PNU branch in Tehran and 6 majors in other cities. Facilitate access to the students and limiting the population, the students in Tehran branch were selected.

Subjects and Methodology

The subjects are 200 students at PNU branch of Tehran, who were selected using the Morgan Chart. The methodology used in this paper was category random sampling method as such 18 majors, according to the ration of the female students to the males in any field, were randomly selected.

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Tool

To collect the data, we used a questionnaire made by the researcher. It includes 6 questions asking for personal information, and 34 questions on using and the role of ICT in learning and research activities and influential factors on using information technology. Of 34 questions, 8 questions are in part B, 5 questions in part C, 14 in part D, and 7 questions in part E.

This questionnaire is divided into 5 parts:

A) The subjects' personal information
B) The subjects' using different dimensions of ICT
C) The subjects' access history and ability to use ICT
D) The role of ICT in learning and research activities
E) The influential factors on using ICT

Measuring the subjects' attitudes toward the issue, we used the Likert scale, a common scale in measuring. This scale was used in a 5-option scale for any dimension:

So high=5 high=4 moderately high=3 low= 2 very low=1

Reliability and Validity

The tool used in this paper was a questionnaire made after studying the literature. The experts confirmed its validity. The reliability of this questionnaire, answered by 30 students, was measured by using Cronbach Alpha as 0.851, indicating its good reliability.

Analysis

According to the variables in this research and the data resulting from their analysis, we used t statistical test, independent groups, one-way variance analysis, and regression analysis to analyze the data.

Results

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In this section, we will analyze the answers by using good statistical tests:

Question 1: Is there any difference in using ICT among male and female students?

The results of analyses related to this question are summarized in Table 1.

Table 1. The summary of results by t-test for question 1

Variable	Groups	No.	Mean	Standard deviation	t	Significance level	Difference in means
The using ICT	Female	93	3.31	0.529	0.441	0.660	0.0326
	Male	107	3.27	0.515			

According to the measured t-test (0.441) and the significance level (0.660), there is no significant difference in using ICT among male and female (with 95% confidence). Therefore, there is no evidence for affirmative answer to the first question.

Question 2: Is it possible to predict using ICT according to the students' knowledge of using computer?

The following Table shows the results of analyses by multiple regression to predict the using ICT according to knowledge of using ICT in different ages.

Table 2. Regression analysis to predict the using ICT according to knowledge of using computer in different ages

Predictors	The using ICT			
	Non-standardized constants	Standardized constants	t	Significance level

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Constant number	2.128	-	14.134***	0.000
Knowledge of using computer	0.286	0.490	7.918***	0.000

*** F= 62.687 modified R^2=0.237 R^2=0.240 R= 0.490

*** Significance in 0.001

As Table 2 shows, R^2=0.240 shows that the variable of knowledge and ability to use computer determines 24% of the variance of using ICT. Also, the measured F (62.687) is significant with 99% confidence. Therefore, the regression coefficient is significant. This Table shows that the Beta coefficient of the variable of using computer (β=0.49, $p<0.001$) is both positive and significant. Regarding this matter, the regression equation can be written as follows:

Using ICT (y) = 2.128+0.286 (ability to use computer)

As seen, there is enough evidence for affirmative answer of the second question.

Question 3: Is it possible to predict using ICT according to the students' English language competency?

The following Table shows the results of regression analysis to predict using ICT according to the students' English language competency.

Table 3. Regression analysis to predict using ICT according to the students' English language competency

Predictors	The using ICT			
	Non-standardized constants	Standardized constants	t	Significance level
Constant number	2.114	-	13.981***	0.000

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The students' English language competency	0.279	0.493	7.982***	0.000

*** F= 63.697 modified R^2 =0.240 R^2 =0.243 R= 0.493

***Significance in 0.001

As this Table shows, R^2 =0.243 indicates that the variable of English language competency determines 24.3% of the variance of using ICT. The measured F (63.697) is 99% significant. Therefore, the regression coefficient is significant. Moreover, the results in this Table show that Beta coefficient of English language competency is positive (β=0.493, $p<0.001$) and significant. Hence, the regression equation:

Using ICT (y) =2.114+0.279 (English language competency)

Therefore, the answer to this question is affirmative.

Question 4: Is it possible to predict the students' research activities according to their knowledge of using ICT?

Table 4 summarizes the regression analysis of question 4.

Table 4. Summary of regression analysis

Model	R	R^2	Modified R^2	Standard deviation of regression	F	Significance level
1	0.837	0.700	0.698	0.506	461.495	0.000

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Table 4 shows that measured R^2 (0.700) indicates that the variable of using ICT determines 70% of the variance of the students' research activities. The measured R (0.837) shows that the regression model be a good predictor. Furthermore, the measured F (461.495) is 99% significant. Therefore, we may say that there is a significant correlation between using ICT and the students' research activities. Therefore, the answer to question 4 is affirmative.

Discussion and Conclusion

This paper aimed at studying the role of information and communication technology in MA students' learning and research activities. And the case study were MA students in Tehran branch of PNU. The questions in this paper were 6 studied by good statistical tests, and the results are as follows:

1. There is no significant difference between using ICT among male and female.
2. It is possible to predict the using ICT according to the students' knowledge of using computer.
3. It is possible to predict the using ICT according to the students' English language competency.
4. It is possible to predict the students' research activities according to using of ICT.

These results conform to the results by other researchers in this matter. For instance, Lavfield, Radhankrishna, and Scanlon (1998) found no significant relation between gender and using the internet by the users. The results in this paper showed that it is possible to predict the using information and communication technology according to the students' knowledge and ability to use computer, which conform to the results by Movahed Mohammadi (2002). Moreover, the results showed that it is possible to predict the students' research activities according to using ICT, which confirm the results by Movahed Mohammadi (2002). Also, according to the results, it is possible to predict using ICT according to the students' English language competency, confirming the results found by Movahed Mohammadi (2002), and those by Ya'ghubi (2001).

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