Research Article

Study of the Role of Individual, Cultural, and Organizational Factors in Acceptance of Information Technology Among Students of Urmia University

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Abstract

Background: Nowadays, the use of information technology to be consistent with environmental change and gain flexibility is necessary. The use of IT in the education system or any other system and organization has different effects. Understanding these factors will facilitate the use of this technology. This study investigated the relationship between individual, cultural, and organizational factors and acceptance of information technology among students of Urmia University.

Methods: This correlational descriptive study was conducted at Urmia University in 2014. The statistical population comprised 1500 students. A sample of 200 students were selected among literature, engineering, physical education, and art students using relative stratified sampling method. We used two types of questionnaires with 85 items for gathering the data. The reliability of individual, cultural, and organizational questionnaire was 85% and the reliability of IT questionnaire was obtained as 88%. Validity of the questionnaires was confirmed by a panel of experts and the supervisor. Analysis of the data was done using "SPSS" version 20 and multiple regression method.

Results: The results showed that there was a significant positive relationship between all the organizational factors and IT adoption, while no significant relationship was found between two culture components (manhood/womanhood and ambiguity aversion) and IT adoption. Also, in terms of individual variation, there was not any relationship between computerized stress and IT adoption (P = 0.406). There was a positive relationship between computerized self-efficiency and IT adoption.

Conclusions: Universities have realized the importance of IT and its effective role in increasing productivity, decreasing face-to-face communication, increasing the rate of work done outside the university, and saving time required to do things; thus, they have convinced own and their organization to use this technology. If students have more experience in using computer, they will have more efficacy and therefore less stress in working with computer.

Keywords: Organization, Cross-Cultural, Individual Factors, Information Technology, Students, University

1. Background

Undoubtedly, the remarkable development of information technology and its effect on all the aspects of human life is one of most important phenomena in the third millennium. Creating serious changes in all human structures like management, cyber education, and knowledge coefficient in all regards in comparison with the past century had caused macroevolution in the type of communications of organizations, nations, and international assemblies (1). In recent years, the increasing wave of using information technology with the purpose of increasing efficiency has enveloped our country and many organizations have made many investments to benefit from information technology. The university which is considered to be one of the social entities of the society should have a dynamic interaction with the other social systems with regard to its duties and desires; because it is in the inside

of society and interacts with them. Thus, the university should adapt itself with the changes and evolutions to be developed.

The different factors are effective in the acceptance of one technology while if disregarded, all activities such as providing the necessary substructures or motivational programs for the students can fail. These factors, in addition to the individual factors, can be considered as the cultural and organizational factors which affect the amount of acceptance and the use of this technology by the individuals. The permanence and perpetuity of educational systems depend on two fundamental points: the realistic perception of situation of itself and environmental conditions and the intellectual planning of goals and determining efficient strategies. The information technology has affected the teaching methods, individual efficiency, network communications, and the demand for achieving

information (2). The amount of development and acceptance of technology depends on the background and it is affected by economic, social, technological, and natural factors. On the other hand, as a deterrent factor in the development of technology, they interact with each other and this increases the complexity of matter of acceptance of technology (3). At the present era, the rapid development of communication and information technology has affected different aspects of life such as cultural, social, economic aspects, and so on. The appearance of concepts and terms such as informational society and communication era is of the consequences of this technology. In this regard, the educational systems should prepare themselves for educating agencies which play an important role in the present era (4). Briefly, information technology can be regarded as applying knowledge and expertise with respect to all technologies which involve in the process of collecting, saving, organizing, marketing and generally processing information by the use of hardware, software, network communications, and computerized substructures. In the regard of acceptance of information technology, the related factors can be divided into three parts: individual, cultural, and organizational variations (5). The individual variations which are effective in the acceptance and use of information technology are divided into two groups: computerized stress and computerized self-efficiency. Haris and Grandgenett have defined the computerized stress as: "The fear of compulsive or probable interaction with the computer that doesn't harmonize with the actual threat to which the computer attracts the user's attention" (6). The efficiency of computer is considered to be the users' beliefs about their ability to do special duties with the help of computer that is the indicative of a judge about their abilities or the use of computer (7).

The cultural variations include cultural values such as individualism/socialism, ambiguity aversion, power distance, and manhood/womanhood. The manhood/womanhood refers to the individual's belief about the distinction of sex roles in the society. The ambiguity aversion refers to this matter that how people deal with the uncertain aspects of future and also to level at which the members of one culture feel danger in the ambiguous and uncertain situations. The individualism/socialism refers to the relationship between the individual and people in a certain society. The power distance refers to the level at which the less-powered members accept and expect that the power is divided unequally (8). The organizational variations: With regard to the multilateral development of information technology and its influence on different levels of organizations, the necessity of applying the strategic programs in the range of information technology is increasingly emerged. These plans are designed,

collected and performed for dealing systematically with the matter of investment and obtaining better results in this regard (9). The organizational variations which are effective in the acceptance of information technology include the function expectancy, effort expectancy, social influence, and facilitating conditions. The function expectancy indicates individual's belief about how the use of information technology helps him/her achieve the expected function in his/her affairs. The effort expectancy is defined as the amount of emotion of an individual in the time of using information technology. The social influence is the indicative of amount of an individual's belief about this matter that the other individuals in the organization, who are important to the individual like the managers, believe that the individual should use information technology. The facilitating conditions are the situation in which the individual believes that there are an organization and technical substructures that support the use of information technology (10). The successful use of information technology in the work environment depends on the factors which affect the acceptance of information technology of users, that their recognition can facilitate the integration of technology in the university. In the regard of acceptance and use of technology, the technology acceptance model of Davis presents a powerful and reliable description about the acceptance of systems and the users' behavior for the use of them. The main purpose of technology acceptance model is to present a basis for pursuing the effect of external factors on the internal beliefs, attitudes, and goal of use (11). This model has a descriptive approach, in addition to anticipative aspect; so, the managers can recognize the reason that one system may not be accepted and with regard to the obtained recognition, adopt proper amending steps. The goal of use is defined as the goal of a behavior and deliberate decision for involving in a certain and special behavior such as the use of computer. The apprehended facility of use is the amount of which the user expects of the use of intended system and there would be no need to try. According to technology acceptance model, the perception of individual about the efficiency of system is affected by this fact that s/he understands that the use of the system is easy (10). In this method, Davis has defined the apprehended facility of use as the level at which an individual believes that learning or using a system does not need further effort and also defined the apprehended efficiency as a level at which an individual believes that applying one special system improves his/her occupational function and offers that the apprehended facility of use and also apprehended efficiency are specified directly by the external variations. According to the role which the communications and information technology play in the

development of goals of excellent education, the present research tries to recognize factors which play an important role in the acceptance of technology. Generally, the Technology acceptance model expresses that the acceptance or rejection of informational systems by the users is directly affected by their perception of the facility of use and efficiency of these systems (12). This model has been tested successfully in a range of processing technologies, organizational conditions, and populations of users. The different factors can be considered for the categorization of the studies done about the acceptance of information technology. For instance, from the viewpoint of level of analysis, some researchers have studied the acceptance of technology by the individuals (13). While in the other group, a part of organization s or social groups have been in the range of studies of organization (14). Ghorbanizade et al. have revealed in a research that the empowerment of employees, area of applying technology, perception of facility of use and perception of efficiency are the variations which have had, in sequence, the most effects on the acceptance of information technology in the Iranian organizations (15). The results of research of Azhei et al. showed that the efficiency and apprehended facility of use play a role of intermediate in the relationship between the trend to innovation, computerized stress, supporting the user, and decision for the use. The trend to innovate and support the user by the efficiency and apprehended facility of use has an indirect and positive effect on the decision for the use of computer. The computerized stress has an indirect and negative effect on the decision for the use of computer by the efficiency and apprehended facility of use. The apprehended facility of use has an indirect and positive effect on the decision for the use of computer by the apprehended efficiency (16).

Aggelidis, in his research, concluded that the perception of efficiency, facility of use, social influence, attitude, facilitation of condition, and self- efficiency remarkably affect the behavioral inclination of personnel of hospitals. Furthermore, he also confirmed the existence of a statistically positive relationship between self-efficiency and social influence, perception of efficiency and stress, and facilitation of condition and social influence (17).

With regard to this matter, the research hypotheses are summarized in the six axes as follows:

1) There is a relationship between the organizational variations and the facility of use of computer.

2) There is a relationship between the organizational variations and the decision to use computer.

3) There is a relationship between the cultural variations and the facility of use of computer.

4) There is a relationship between the cultural variations and the decision to use computer.

5) There is a relationship between the individual variations and the facility of use of computer.

6) There is a relationship between the individual variations and the decision to use computer.

2. Methods

This is an applied research that investigated the relationship of individual, cultural, and organizational variations with IT acceptance. In this correlational descriptive study, the statistical population comprised all BA students of Urmia University (N = 15000) in 2013 - 2014. The inclusion criteria included: passing courses like analysis and design of systems, computer usage in visual art, and familiarity with ICDL. If the students were not familiar with one of these courses, we could not have valid results. Exclusion criteria from the study were: lack of these conditions. We decided that all students contributing to this work used to pass these courses. Also, according to differences in the characteristics of departments, the relative stratified sampling method was used. The sample size was determined as 200 persons by using Kokaran formula. The research tools included questionnaires about triple variable (individual, cultural, organizational variables) and dependent variable of information technology adoption. Based on the results of Table 1, validity of the questionnaires was confirmed by the researchers, experts, and faculty members of Urmia University. The reliability of the questionnaires was obtained by Cronbach's alpha method.

Table 1. Total Reliability of the Individual, Cultural and Organizational Questionnaires[a]

Questionnaires	Reliability
Individual variations	83
Cultural variations	86
Organizational variation	87
IT	88

[a] Values are expressed as No. (%).

The scale used for rating system in the questionnaires was designed based on a 5-point Likert scale, including (completely agree, agree, no idea, disagree, and completely disagree). The individual variations questionnaire with 13 items, cultural variations questionnaire with 15 items, organizational variations questionnaire with 20 items, and IT questionnaire with 10 items were used. In total, the questionnaires were composed of 58 items. Finally, after getting permission from the security of Urmia University and obtaining informed consent of the students of colleges of literature, art, technical, and medicine, the questionnaires

were distributed to 200 students. Data analysis was accomplished using SPSS version 20 software at two levels of descriptive and inferential. At the descriptive level, statistics such as frequency, percentage, mean, and standard deviation were used. At the inferential level, multiple regression analysis was used to determine the correlation between individual, cultural, and organizational factors and dependent variable of information technology. The ethics code and the registration number of this research are 2-3413 A and 2171174, respectively.

3. Results

In the study of relationship between individual, cultural, and organizational variations and information technology acceptance, the following results were found. Frequency distribution of the sample based on gender is shown in Table 2. Based on the findings, 85% of the students were single and the sample placed in the age range of 18 and 23 years.

The multiple regression analysis was used to investigate the relationship between organizational variations and the facility of using computer, in response to the first hypothesis, and the results are shown in Table 3. The analysis calculated the F value as 122.565 that is significant at the level of $P < 0.05$ ($P = 0.000$). Also, the regression coefficient shows that effort expectancy ($\beta = 0.827$) and facilitating conditions ($\beta = 0.345$) can significantly predict facility of using computer ($P < 0.05$). In response to the second hypothesis "there is a relationship between organization variety and decision to use computer, the result of Table 3 shows that the amount of F value to examine the relationship between organizational variations and decision to use a computer was equal to 114.764 that is significant at the level of $P < 0.05$ ($P = 0.000$). The amount of R^2 shows that 0.637 of variance of the variable decision to use the computer is explained by organizational variations. Also, the regression coefficients show that function expectancy ($\beta = 0.229$), effort expectancy ($\beta = 0.633$), and facilitating conditions ($\beta = 0.343$) can predict significantly the variable decision to use computer. Therefore, the second hypothesis is confirmed.

The result of multiple regression analysis on the relationship between organizational variation and facility of using computer, in response to the third hypothesis, is shown in Table 4. The result shows that the amount of test statistic F to investigate the relationship between cultural variation and facility of using computer was equal to 1.802 that is meaningful at the level of $P < 0.05$ ($P = 0.000$). Amount of R^2 shows that 0.36 of the facility of using computer variance was explained by cultural variations. Also,

the regression coefficient shows that individualism/socialism ($\beta = 0.082$) and ambiguity aversion ($\beta = 0.162$) can significantly predict the facility of using computer. Considering these circumstances, the third hypothesis is not approved. The result of multiple regression analysis on the relationship between cultural variations and decision to use computer in response to the forth hypothesis, is provided in Table 4.

Table 4 shows that the amount of test statistic F to examine the relationship between cultural variations and the decision to use a computer is equal to 6.723 that is meaningful at the level of $P < 0.05$ ($P = 0.000$).

The amount of R^2 shows that 21% of variance of the decision to use computer was explained by cultural variations. Also, the regression coefficient shows that power distance ($\beta = 0.196$), manhood/womanhood ($\beta = 0.008$), individualism/socialism ($\beta = 0.185$), and ambiguity aversion ($\beta = 0.053$) can significantly predict the decision to use computer. Therefore, the forth hypothesis is approved.

The result of multiple regression analysis on the relationship between individual variations and facility of using computer, in response to the fifth hypothesis, is shown in Table 4. The results show that amount of test statistic F to investigate the relationship between individual variation and facility of using computer is equal to 50.315 that is meaningful at the level of $P < 0.005$ ($P = 0.000$). The amount of R^2 shows that 0.338 of variance of facility of using computer was determined by individual variations. Also, the regression coefficient shows that computerized self-efficiency ($\beta = 0.575$) can significantly predict facility of using computer. The result of multiple regression analysis on the relationship between individual variations and facility of using computer, in response to the sixth hypothesis, is shown in Table 5.

The result of Table 5 shows that the amount of test statistic F to investigate the relationship between individual variations and the decision to use computer is equal to 503.592 that is significant at the level of $P < 0.005$ ($P = 0.000$). The amount of R^2 shows that 0.836 of variance of decision to use computer was determined by individual variations. Also, the regression coefficient shows that computerized stress ($\beta = 0.038$) and computerized self-efficiency ($\beta = 0.924$) can significantly predict decision to use computer.

4. Discussion and Conclusion

The research result shows that there is a positive and full relationship between all the organizational elements and the ease of computer use. Aegean and colleagues indicated that the increased level of students awareness and knowledge, their increased ability to use IT in university,

Table 2. Frequency Distribution of Sample Based on Demographic Variables

Statistics	Marital Status		Frequency	Percentage	Mean Age
Gender	Married	Single			
Male	15	88	103	51.5	21.5
Female	12	85	97	48.5	20.3
Total	27	173	200	100	41.7

Table 3. The Result of Multiple Regression Analysis on the Relationship Between Organizational Variations and the Ease of Using Computer and the Decision to Use a Computer

Predictor Variable	Criterion Variable	β	Std. Error	T	P Value
function expectancy	Ease of using computer[a]	-0.09	0.25	-1.91	0.057
Effort expectancy		0.82	0.01	16.04	< 0.001
influence expectancy		-0.1	0.001	-2.25	0.025
Facilitating conditions	Decision to use a computer[b]	0.34	0.12	1.25	0.35
		0.22	0.03	4.35	< 0.001
		0.63	0.02	12.02	< 0.001
		-0.03	0.03	-0.85	0.39
		0.34	0.29	1.25	0.35

[a] criterion variable R^2:0.652.
[b] criterion variable R^2:0.637.

Table 4. Results of Regression Analysis on the Relationship Between Cultural Variables and Facility of Using Computer and Decision to Use the Computer

Predictor Variable	Criterion Variable	β	Std. Error	T	P Value
Power distance	Facility of using computer[a]	-0.03	0.01	-0.36	0.71
Manhood/womanhood		-0.01	0.01	-0.25	0.8
Individualism/socialism		0.08	0.01	1.02	0.3
		0.16	0.12	1.8	0.07
Ambiguity aversion	Decisions to use computer[b]	0.19	0.03	2.36	0.01
		0.008	0.01	0.11	0.9
		0.18	0.03	2.44	0.01
		0.53	0.12	0.61	0.54

[a] criterion variance R^2 : 0.036.
[b] criterion variable R^2 : 0.121.

Table 5. Results of Regression Analysis on the Relationship Between Individual Variables and Ease of Using Computer and Decision to Use Computer

Predictor Variation	Criterion Variation	β	Std. Error	T	P Value
Computerized stress	Facility of using computer[a]	-0.24	0.01	-0.39	0.69
		0.57	0.006	9.54	< 0.001
Computerized self-efficiency	Decision to use computer[b]	0.03	0.01	1.26	0.2
		0.92	0.02	30.87	< 0.001

[a] criterion variance R^2 : 0.033.
[b] criterion variable R^2:0.83.

the ease of use, and having access to available technology have accelerated the development of IT adoption. Providing appropriate conditions, the impact of IT on the effectiveness of students' performance, having a positive attitude towards using technology, and being supported from professors and senior managers may be the reasons for IT acceptance. Also, this perceived ease of use indicates that students who consider computer as a useful, beneficial, and easy-to-use tool have more tendency to use or plane to use it. As this study shows, this variable affects students beliefs about computers. Thus, providing conditions to facilitate the use of computer as well as holding qualified training courses in the background of using computer are effective. According to this study, there is a positive and

meaningful relationship between all the organizational elements and decision to use computer. Universities have realized the importance of IT and its effective role in increasing productivity, decreasing face-to-face communication, increasing the rate of work done outside university and saving time required to do things; therefore, they have convinced own and their organization to use this technology. Also, the research results indicate that there is no positive and meaningful relationship between any of cultural elements and the ease of using computer. This result is in line with those of Amani Sari Beglo and colleagues ([18]). Acceptance and implementation of strategic IT programs at university levels require students preparation and maturity in different dimensions as we observed no significant relationship between the variables of this hypothesis. It may be due to some limitations such as failure to provide appropriate and accurate answers to some of the provided questions and time limitation for doing the research. Therefore, it is recommended to remove cultural barriers and provide proper and continuous notices for students and other stakeholders, because it would increase the awareness and knowledge of audiences. As a result, it provides a reception basis and also creates the right incentive mechanisms. Using the qualified teachers in ICT education and providing practical training in this field is a right way to make positive attitudes in student to make them believe that using technology is easy. According to the result, there is a positive and meaningful relationship between cultural elements and decision to use computer. This result is in agreement with those of Amani Sari Beglo and colleagues. Despite the novelty of study of the effects of cultural factors on IT acceptance in universities and the lack of previous research in this area, the depth and richness of their study are appropriate and research in this area is suggested. It should be noted that a few studies have focused on investigating the acceptance of technology and culture; thus, little research has been done in this area. Our research results also showed that there is a positive and meaningful relationship between individual elements and the ease of using computer. This result is also consistent with the results of Aegean et al. If students have more experience in using computer, they will have more efficacy and therefore less anxiety in working with computer. Also, academic managers should play a facilitator role in the encouragement to use computer software by providing resources. Moreover, the research results indicated the relationship of individual elements with decision to use computer. This result is consistent with the research results of Tseng and Hsia who indicated that students' attitude possibly affects their willingness to use computer ([19]). Thus, it can be said that students' beliefs about their ability to do their work by computer help them be more positive. The students will understand and use computer more convenient and easier to do their own work, so the possibility of using computer to do things by students will increase. It is also proposed that computer training courses and related ISPs skills be carefully designed and implemented because the knowledge and understanding of ICT enhances with this courses and this, in turn, will reduce the resistances against it.

This study like other studies has some limitations including the followings:

Independent variables of this research describe part of affecting factors on IT adoption, while other variables such as subjective norms, perception of usefulness, and pleasure of using a computer and so on can also affect IT adoption.

In the present study, questionnaire was used to collect initial data while other tools such as interview and observation may generate different results. Another major limitation is that in such studies there is a lack of understanding of the IT management topics and IT governance in universities so its implementation takes lots of preparation and support.

Regarding the role of IT in the progress of educational goals and having access to updated information as identified in this research and previous researches, the increasing trend in the use of computer at different levels in our society is irreversible due to educational, economic, and even cultural reasons. However, there is a long way to go in the removing and providing effective software conditions. The first step is to further study the various aspects of problems.

Acknowledgments

Footnotes

References

1. Jamali K, Hashemi D. Assessment of the relationship between risk factors affecting information technology projects the bank's Bushehr province, using fuzzy Dymtl. *Technol Manag.* 2011;**3**(9):21–40.

2. Jankowska MA. Identifying university professors' information needs in the challenging environment of information and communication technologies. *J Acad Librariansh.* 2004;**30**(1):51–66. doi: 10.1016/j.jal.2003.11.007.

3. Rao KU, Kishore VVN. A review of technology diffusion models with special reference to renewable energy technologies. *Renew Sustainable Energy Rev.* 2010;**14**(3):1070–8. doi: 10.1016/j.rser.2009.11.007.

4. Ayati M, Ataran M, Mehrmohammadi M. A model of codify curriculums based on informations and communications technology. *J Curricul Stud.* 2007;**5**(55-80).

5. Fazel A, Kamaliyan A. The feasibility study and implementation of e - learning systems. *Sci Educ Technol Res Time.* 2009;**4**(13-27).

6. Harris J, Grandgenett N. Writing apprehension, computer anxiety and telecomputing: A pilot study. *Technol Pedagogy a Educ.* 1992;**1**(1):101–11. doi: 10.1080/0962029920010107.

7. Ambrose PJ. Metacognition and software developer competency: construct development and empirical validation. *Issues Inform Syst.* 2003;**6**:273–9.

8. Srite M, Thatcher JB, Galy E. Does within-culture variation matter? An empirical study of computer usage. *J Global Inform Manag.* 2008;**16**(1):1–25. doi: 10.4018/jgim.2008010101.

9. Turban M. Information Technology for management. New York: Wiely; 2005.

10. Venkatesh V, Morris MG. Why don't men ever stop to ask for directions? Gender, social influence, and their role in technology acceptance and usage behavior. *Manag Inf Syst Q.* 2000;**24**(1):115–39. doi: 10.2307/3250981.

11. Davis FD, Bagozzi RP, Warshaw PR. User acceptance of computer technology: A comparison of two theoretical models. *Manag Sci.* 1989;**35**(8):982–1003. doi: 10.1287/mnsc.35.8.982.

12. Hsu CL, Lin JCC. Acceptance of blog usage: The roles of technology acceptance, social influence and knowledge sharing motivation. *Inform Manag.* 2008;**45**(1):65–74. doi: 10.1016/j.im.2007.11.001.

13. Svendsen GB, Johnsen JAK, Almås-Sørensen L, Vittersø J. Personality and technology acceptance: the influence of personality factors on the core constructs of the Technology Acceptance Model. *Behav Inform Technol.* 2013;**32**(4):323–34. doi: 10.1080/0144929x.2011.553740.

14. Lee W, Xiong L, Hu C. The effect of Facebook users' arousal and valence on intention to go to the festival: Applying an extension of the technology acceptance model. *Int J Hosp Manag.* 2012;**31**(3):819–27. doi: 10.1016/j.ijhm.2011.09.018.

15. Ghorbanizadeh V, Hasan Nangir ST. factors affecting the acceptance of information technology in Iran. *J Manag Res Iran.* 2012;**7**(2).

16. Azhei J, Amani Sari Beglo J, Khezriazar H, Golami M. Mediating role cognitive beliefs in the relationship between the individual and organizational factors with the adoption of information technology. *Behavioral Sci Mag.* 2012;**6**.

17. Aggelidis VP, Chatzoglou PD. Using a modified technology acceptance model in hospitals. *Int J Med Inform.* 2009;**78**(2):115–26. doi: 10.1016/j.ijmedinf.2008.06.006. [PubMed: 18675583].

18. Amani Sari Beglo J, Golam Ali Lavasani M, Azhei J, Khezriazar H. relationship cultural values and the individual variables with the use of the computer in students [In Persian]. *Behav Sci Mag.* 2011;**5**.

19. Tseng AH, Hsia JW, editors. The impact of internal locus of control on perceived usefulness and perceived ease of use in e-learning: An extension of the technology acceptance model. International Conference on Cyberworlds 2008. 2008; Hangzhou, China. pp. 815–9.