Role of Trust, Innovation and Attraction in Adoption of Informational Systems within Organizations

Morteza Talebi
Department of Information, Faculty of Management Electronic Branch, Young Research and Elite Club, Electronic Branch, Islamic Azad University, Tehran, Iran; Dr_hormin@yahoo.com

Abstract
Background/Objectives: Despite many investments on IT systems, due to different reasons there is no any accurate information about the result of such investments. However, evidences indicate that fiasco in such investments is more common in comparison with their success. Methods/Statistical Analysis: In this study, a model is presented based upon study history that expresses the role of variables of innovation culture, IT ability and cooperation based upon trust on informational systems adoption by considering adjusting variable of organizational adoption. In order to test the impact of these variables through a questionnaire in NAJA organization and by using regression method, the analysis of assumptions has been done. Findings: Results of this study suggested that cooperation based on trust is pointed as an inter-organization factor that has impact on IT innovation adoption within organization and they are mentioned the indicators like effectiveness of employees cooperation in the process of system development and alignment of users' interests with other key users of organization and existence of inter-organization trust and facilitation of information within organization in order to increase cooperation based on users' trust. Application/Improvement: In conclusion, if organizational attractiveness is considered, it will cause relation increase between two variables of cooperation based upon trust and IT adoption.

Keywords: Innovation, Organizational Attractiveness, Technology Adoption, Trust

1. Introduction
Technology adoption is one of major titles of researches relating to information systems during recent decades. There is variety of viewpoints about perceiving of effective factors on users’ decision-making in connection with IT adoption. The logic lying behind such viewpoint is that success or investment return in IT depends on the users’ tendency in utilizing systems. Regarding organizations’ investment in establishing technology substrates for doing affairs, the issue of users’ attendance and using new technologies practically that are provided for them are significant and the managers of organizations have to know the effective factors on the way of new technologies’ use and by managing and controlling them to achieve the intended goals.

Katler in 1999 in defining technology adoption said when a product or service is distributed by a company, customers shall be convinced to purchase that product or service and such stimulation customers is done through manufacturers or service providers by a complicated process that a part of it is based upon characteristics and customers’ behaviors. This is a mind flow I connection with an individual that it is called the process of adoption from the first hearing of individual about an innovation until its final adoption by the individual. Katler in 2003 has presented a new definition that adoption is an exclusive decision that a normal consumer is making in connection with using a product.

Rogers (1995) describes that a potential adopter is passing specific stages before decision making about acceptance or rejection of an innovation. Also, He describes the process of adoption as a process that an individual or other decision making people passing initial learning in connection with the innovation to form a viewpoint about that innovation in order to accept or rejecting new idea.

There are many models for estimating the amount of technology adoption by individuals that we can point...
Role of Trust, Innovation and Attraction in Adoption of Informational Systems within Organizations

2. Research Model

Based on the factors presented in introduction, research model takes the Figure 1:

As it is explained by recommended model, the purpose of present study is to study the impact of variables like innovation, trust, IT capabilities besides adjusting variable of organizational attractiveness on informational systems adoption. In continue, we will describe each one of model elements separately:

2.1 Culture and Innovation

IT is considered as an innovation when it is felt as a new thing by its possible acceptors. Knol and Stroeken (2001) have explained that IT in high combinational level is introduced as a new technology paradigm on management and production control and service providing systems through economic aspects via a set of linked electronic computers and engineering software and control systems and coherent circuits and strong connections from far distance that widely decrease the cost of saving, process, connections and internalizing information. Briefly, information technology refers to a wide range of technologies containing processing and conducting information like hardware, software of computers and far distance connections and administrative automation that such technologies are introduced as new systems’ methodology development.

The process of innovation adoption decision causes institutionalizing of using innovation that may be as one of sequential order of steps that people of organization will pass to achieve the initial knowledge for innovation and as a result that positive or negative vision will be created against it and then they make decision to accept or reject innovation and to use the related innovation and as a result they are trying to reinforce the decision of adoption.

2.2 Cooperation based on trust

There are many differences in defining trust in different fields. This issue causes ambiguity in defining it. Concisely, we can consider trust consisting of two elements: confidence in ability and intent.

There is another research introducing three similar dimensions for trust: ability, benevolence, integrity. Ability refers to the trust of confiding person that the thing he putting his trust on can do what he wants. Benevolence refers to that the trustee, excluding personal benefit motivation, how much it has god intension for the individual. Integrity refers to the belief of confiding person on honesty and truth telling of trustee and fulfilling his promises.

Zoney and Katen have defined the dimensions of trust based upon psycho-sociological and marketing researches. They define target of trust as “perception of credit” and “benevolence”. The first dimension of this definition, perception of credit, refers to the trust of the individual on another party whether he can fulfill his
promises efficiently and reliably. Other dimension of trust refers to how much he is interested in other party’s target of trust honestly. Therefore, we can concisely state that trust has two dimensions: dimension of trustee benevolence and the ability of trustee in trusting on him. In other words, one party may be benevolent and honest but he cannot fulfill the reliabilities or vice versa, it is clearly distinguishable in the area of information systems. In a way that, the trust of an individual towards information systems depends on the feeling of the individual about the honesty and benevolence of system and also it depends on the abilities of system technology.

2.3 Organizational Attractiveness

Different studies refers to organizational attractiveness as the limit that the applicants are showing their interest in work and they try for organizational purposes and they like working for the organization and they accept their job. Organizational attractiveness is relating to the real behavioral results like intentions in connection with attempts for searching interview and intentions relating to accepting a job and the recommendation of an organization and accepting the suggestion of a job. According to experts, the competition among organizations is one of the vivid features of today’s world of organizations. In such situation, organizations can be successful if they have high quality and genius human resources. In this regard, there formed a close competition among organizations for recruiting genius and expert human resources. During recent years, many researches have done about recruiting genius and expert employees and in such researches the researchers have considered the indexes of organization attractiveness. The reason of such consideration is the decrease of population growth rate in many countries since World War II. In some of developed countries like Germany, Italia, Japan and the population growth is negative and it is forecasted that such countries will face the problem of manpower in upcoming years. In such situation, related organizational researches were trying to recognize the behavior and tendency of individuals in order to establish necessary things and providing the situation for recruiting them. For this reason, experts of organizations’ human resources help organizations to select and recruit properly by recognizing the indexes of organizational attractiveness. Following increase of researchers’ considerations for the issue of organizational attractiveness, wide range of related indexes for assessing the organizational attractiveness have been recognized for selecting and recruiting properly.

3. Hypotheses and a Tool to Test Them

Based upon the framework of explained conceptual model in previous part, the assumptions of this research are:

First hypothesis: organizational attractiveness increases the impact of innovation culture on IT adoption.

Second hypothesis: organizational attractiveness increases the impact of cooperation based upon trust in IT adoption.

Third hypothesis: organizational attractiveness increases the impact of IT ability on IT adoption.

In this research, we have used questionnaire in order to test the mentioned hypotheses. The questionnaire of “determining significance of each one of indicators on ITT adoption” which is filled by organization users and we have used Likert comparison for it. Also, in order to test the hypotheses of the research, appropriate statistical methods are utilized. When we have achieved information for statistical analysis from a research design, there are several different statistical test, it is necessary to obey a specific logic to select one of such tests. Criteria like test power, kind of measurement and utilized comparison in the practical definition of variables can consider as factors that are significant in selecting an appropriate statistical test. Since in this research, in order to test the normality if achieved data, we have used KS method and regarding the greatness of significant level of 0.05 which is indicated in result of data normality test, therefore, we have used parametric methods like correlative method and the regression analysis test in SPSS software.

Questionnaire includes 45 questions that we have used these questions to prove the hypotheses. The questionnaire relating to users includes questions about research hypotheses and it includes total information about research topic. The number of questions (19 to 31 and 40 to 45), Questionnaire is according to the first hypothesis of the research and it includes 19 questions. Also questions (36 to 40 and 7 to 18) of the questionnaire were about second hypothesis and is has measured above hypothesis and it includes 17 questions. Number of questions (1 to 7 and 32 to 35) includes 11 questions about the third hypothesis.

3.1 Validity and Reliability of the Questionnaire

Measuring tools shall have two main features. These two features are called validity and reliability. Reliability
refers to that how accurate a research tool can measure. Reliability is the amount of similar results that a tool may achieve in different usages.

3.1.1 Validity

Questionnaire validity of this research has been mentioned in two dimensions including content validity and construct validity.

Content validity: content validity of a tool, refers to adequacy of coverage that includes the content of utilized scales in tools, all the dimension relating to the research and explains them. Determining content validity is done by judgment. Such judgment about content validity can be done by researcher or as a responsibility of a panel. Questionnaire content validity of this research is through both of these ways. At first, we get assured the content validity of research by accurate definition of each one of research structures, testing criterion of each structure and combined scales from such criteria. In second step, we will give the criteria and scales of each structure to 5 expert people in the area of the research. Each one of these people have confirmed content validity of the questionnaire independently about criteria and scales content coverage.

Construct validity: construct validity assess a tool in terms of matching with results that are expected from the tools theoretically. Such credit is created by comparing the results of using new tools for measurement of a construct and theory or reliable tools that are for measuring the construct. In order to provide construct validity first it is tried to use stock scales that were proved their validity before. For constructions that there is no any valid scale for them, we have created scale based on theories and definitions. Some of criteria were completely concrete and we didn’t need to prove them.

3.1.2 Reliability

One of the reliable methods for testing reliability of a questionnaire is to measure matching of answers of an individual to one item from scale with his answers to other items of the same scale or item by item correlation. Therefore, we obtain a criterion for reliability of the whole questionnaire. The statistic that indicates such criterion is called “Cronbach’s Alpha coefficient” that its size is between 0 to 1.

\[
a = \frac{k}{k-1} \left(1 - \sum_{i=1}^{k} \frac{S_i^2}{S^2}\right)
\]

The size of this coefficient is resulted from below equation: higher index provides higher reliability of scale. But, as a general rule, the amount of alpha shall be at least 0.7. Table 1 indicates the amount of Cronbach’s Alpha coefficient for each one of scales. Based on the collected data in pre-test step, all the scales have coefficient higher than 0.7.

4. Hypothesis Testing

The questionnaire of the research has been distributed among 105 of information systems’ users of NAJA organization in different levels including top managers, middle managers, and executive managers and 92 questionnaires have been collected and analyzed. In continue first background variable and then independent and dependent variables have been analyzed in connection with sample people.

4.1 Description of Sample Background Variables

- Age

Table 2 indicates the frequency of distribution based upon age that the highest frequency relates to ages 20 to 30 by 49 people equal to 53.3% and the least frequency relates to ages more than 40 by 10 people equal to 10.9%.

- Education

Table 1. Research Components Reliability

| Alpha coefficientscale structures          |
|-------------------------------------------|
| 0.8682 First hypothesis                  |
| 0.8791 Second hypothesis                 |
| 0.8696 Third hypothesis                  |
| 0.8660 Organizational attractiveness     |
| 0.8563 Information technology adoption  |

Table 2. Sample Frequency Distribution Based on Age

| percent | frequency | Age    |
|---------|-----------|--------|
| 53.3    | 49        | 20-30  |
| 35.9    | 33        | 30-40  |
| 10.9    | 10        | Over 40|
| 100     | 92        | Total  |
Table 3 indicates frequency distribution based on education that the highest frequency is relating to experts that they are 45 people, 48.9% and the least frequency relates to the group of MA with frequency of 10 people, 10.9%.

4.2 First Hypothesis Testing

H0: Organizational attractiveness doesn’t increase the impact of innovation culture on IT adoption.
H1: Organizational attractiveness increases the impact of innovation culture on IT adoption.

For testing the first hypothesis, we have used regression analysis technique.

Regression analysis is a statistical method that dependent variable is explained based upon independent variable or variables and it is predicted. In linear regression equation b is the distinguishing weight index of regression and it forecasts the amount of y change for one unit change in x. In below equation, in every unit change in the variable of innovation culture the amount of IT adoption will be increased up to 1.04.

\[ y = -0.566 + 1.04x \]  

In this part, in order to practical analyze of the data by using regression technique, the amount of correlation among independent and dependent variables will be determined in first hypothesis. For this purpose, first we calculate regression analysis of dependent and independent variable of first hypothesis without adjusting variable of organizational attractiveness. Table 4 indicates the results of such calculation.

Obtained results from regression analysis indicates that correlation coefficient of IT adoption is 0.47 by linear combining of innovation culture variable. Also, the ratio of variance of IT adoption that is explained through the variables of innovation culture and IT adoption (determination coefficient) is 0.221.

In next part, in order to conclude about the adjusting role of organizational attractiveness, this time we calculate regression analysis of innovation culture and IT adoption one for a group of users that have assessed organization attractive and once for users that assessed organization unattractive to compare them with above table to judge properly about the adjusting role of organizational attractiveness. The results of this analysis are as below.

The results of analysis for users have assessed organization attractive as presented in Table 5:

The results of analysis for users have assessed organization unattractive as presented in Table 6:

Regarding to correlation coefficient of above tables, it is determined that correlation coefficient of innovation culture variable by IT adoption for users that assessed organization attractive is 0.585 and it is 0.514 in absence of organizational attractiveness in absence that indicates the fact that the variable of organizational attractiveness have adjusted and increased the relation of innovation culture and IT adoption.

As a conclusion we can explain that regarding above tables, it is confirmed by the reliability of 95% of research hypothesis based upon that the organizational attractiveness have reinforced the relation of innovation culture and IT adoption.

Table 3. Frequency Distribution of Users Based on Their Educational Level

| percent | frequency | Age           |
|---------|-----------|---------------|
| 19.6    | 18        | Diploma       |
| 20.7    | 19        | Associate or Bachelor’s students |
| 48.9    | 45        | Bachelor’s    |
| 10.9    | 10        | Master’s      |

Table 4. Regression Analysis of the First Hypothesis

| R     | R2     | F   | Stg | Reg Coefficient | Beta | B   |
|-------|--------|-----|-----|-----------------|------|-----|
| 0.470 | 0.221  | 25.5| 0.470| 1.04            |       |     |

Table 5. Regression Analysis of the First Hypothesis (Attractive Organization)

| R     | R2     | F     | Stg | Reg Coefficient | Beta | B   |
|-------|--------|-------|-----|-----------------|------|-----|
| 0.585 | 0.342  | 25.4  | 0   | 0.585           | 0.641|     |

Table 6. Regression Analysis of the First Hypothesis (Unattractive Organization)

| R     | R2     | F     | Stg | Reg Coefficient | Beta | B   |
|-------|--------|-------|-----|-----------------|------|-----|
| 0.514 | 0.264  | 14    | 0.01| 0.514           | 0.395|     |
4.3 Second Hypothesis Testing

H0: Organizational attractiveness doesn’t increase the impact of cooperation based on trust to IT adoption

H1: Organizational attractiveness increases the impact of cooperation based on trust to IT adoption

For this purpose, we calculate the regression analysis of independent and dependent variable of first hypothesis without the adjusting variable of organizational attractiveness. Table 7 indicates the results of this calculation.

The results of regression analysis indicate that correlation coefficient of IT adoption by linear combination of cooperation variable based upon trust is 0.35.

Also, the ratio of variance of IT adoption that is explained through the variables of cooperation based on trust and IT adoption (determination coefficient) is 0.12.

In next part, in order to conclude about the adjusting role of organizational attractiveness, this time we calculate regression analysis of cooperation and IT adoption one for a group of users that have assessed organization attractive and once for users that assessed organization unattractive to compare them with above table to judge properly about the adjusting role of organizational attractiveness. The results of this analysis are as below.

The results of analysis for users have assessed organization attractive as presented in Table 8:

Analysis results of the applicants who found the organization unattractive are as presented in Table 9:

The results of analysis is as follow for those users assessing organization unattractive: regarding above table it is determined that correlation coefficient of cooperation variable is based on trust by IT adoption is 0.351 that such coefficient is 0.494 when the cooperation variable is based on trust with organizational attractiveness and on absence of organizational attractiveness variable it is 0.450 which indicates the fact that the variable of organizational attractiveness have adjusted and increased the relation of cooperation based upon trust and IT adoption.

As a conclusion we can explain that regarding above tables, it is confirmed by the reliability of 95% of research hypothesis based upon that the organizational attractiveness have reinforced the cooperation relation based upon trust and IT adoption.

4.4 Third Hypothesis Testing

H0: Organizational attractiveness doesn’t increase the impact of IT ability on IT adoption.

H1: Organizational attractiveness increases the impact of IT ability on IT adoption.

For this purpose, first we calculate regression analysis of dependent and independent variable of third hypothesis without adjusting variable of organizational attractiveness. Below Table 10 indicates the results of such calculation.

Obtained results from regression analysis indicate that correlation coefficient of IT adoption is 0.23 by linear combining of IT ability variable. Also, the ratio of variance of IT adoption that is explained through the variables of IT ability and IT adoption (determination coefficient) is 0.053.

In next part, in order to conclude about the adjusting role of organizational attractiveness, this time we calculate regression analysis of IT ability and IT adoption once for a group of users that have assessed organization attractive and once for users that assessed organization unattractive to compare them with above table to judge properly about the adjusting role of organizational attractiveness. The results of this analysis are as Table 11.

The results of analysis for users have assessed organization attractive as presented in Table 12:

Table 7. The Analysis of Second Hypothesis
Regression

| R    | R2   | F    | Stg  | Reg Coefficient |
|------|------|------|------|-----------------|
| 0.351| 0.123| 12.6 | 0.01 | 0.351 0.551 |

Table 8. Regression Analysis of Second Hypothesis (Attractive Organization)

| R    | R2   | F    | Stg  | Reg Coefficient |
|------|------|------|------|-----------------|
| 0.494| 0.244| 15.8 | 0    | 0.494 0.479 |

Table 9. Regression Analysis of Second Hypothesis (Non-Attractive Organization)

| R    | R2   | F    | Stg  | Reg Coefficient |
|------|------|------|------|-----------------|
| 0.450| 0.2  | 9.8  | 0.03 | 0.450 0.30 |

Table 10. Regression Analysis of the Third Hypothesis

| R    | R2   | F    | Stg  | Reg Coefficient |
|------|------|------|------|-----------------|
| 0.230| 0.053| 5.04 | 0.02 | 0.230 0.185 |
Regarding correlation coefficient of above table it is determined that correlation coefficient if IT ability variable by IT adoption is 0.23, this coefficient is 0.53 when IT ability variable is with organizational attractiveness and it is 0.43 in absence of organizational attractiveness variable that indicates the fact that organizational attractiveness variable adjusts and increases relation of IT ability and IT adoption. As a conclusion we can explain that regarding above tables, it is confirmed by the reliability of 95% of research hypothesis based upon that the organizational attractiveness have reinforced the relation of IT ability and IT adoption.

### 5. Conclusion

As it is implied by the research literature, organizations with strong innovation and set of norms, symbols and beliefs encourage learning and innovation within organizations. This kind of culture facilitates the improvement and progressive adoption in all aspects. Regarding obtained results from the previous researches about the role of culture in IT adoption in research literature, all of these researches are introducing culture as a platform for innovation and it is mentioned in all the researches while the dominant culture doesn’t consider ideas, therefore any innovation will be shut down before pop.

Now regarding the obtained results from the analysis of first hypothesis, we observe this relation in our research is having higher coefficient, the reason is that within military organizations there are hierarchical authorities and decision makings that creates hierarchical culture in such organizations. Existence of such hierarchical and bureaucratic cultures is considered as obstacle for innovation and creativity and freedom of thought.

Then in order to increase IT adoption within organizations that are based upon IT, it is required to turn their hierarchical culture to innovation culture to wit innovations and creativities along with updated systems with high adoption. Also, the factor of organizational attractiveness as an adjusting variable can reinforce the relation between innovation culture and IT adoption. Since, the higher this agent is, it can have more impact on the relation of mentioned variables. Current literature of cooperation based on trust is pointed as an inter-organization factor that has impact on IT innovation adoption within organization and they are mentioned the indicators like effectiveness of employees cooperation in the process of system development and alignment of users’ interests with other key users of organization and existence of inter-organization trust and facilitation of information within organization in order to increase cooperation based on users’ trust. Also, in this research, there is a positive and significant relation among cooperation based on trust within organization and increase of informational systems, such relation is reinforced by the agent of organizational attractiveness. Since cooperation based upon users’ trust causes commitment to innovation and internalizing norms relating to them and it will establish satisfactory for the users. Here if organizational attractiveness is considered, it will cause relation increase between two variables of cooperation based upon trust and IT adoption.

### 6. Reference

1. Jan AU, Contreras V. Technology acceptance model for the use of information technology in universities. Computers Human Behaviour. 2011; 27(2):845–51.
2. Dehbashi S. Factors affecting on Iranian customers acceptance towards E-ticketing provided by airlines. Lulea, Sweden: Lulea University of Technology; 2007. IADIS. p. 1–9.
3. Hamidfar M. Adoption of electronic patient records by Iranian hospitals’ staff. Business Administration and Social Sciences. 2008. p. 43.
4. Davis FD, Bagozzi RP, Warshaw PR. User acceptance of computer technology: A comparison of two theoretical models. Management Science.1989; 35(8):982–1003.
5. Goodhue DL, Thompson RL. Task-technology fit and individual performance. MIS Q. 1995; 19(1):213–36.
6. Rogers EM. Diffusion of innovations. 4 ed. New York, NY: Free Press; 1995.
7. Ahn T, Ryu S, Han I. The impact of web quality and playfulness on user acceptance of online retailing. Information Management. 2007; 44(3):263–75.
8. Chung JE, Park N, Wang H, Fulk J, McLaughlin M. Age differences in perceptions of online community participation among non-users: An extension of the technology acceptance model. Computers in Human Behaviour, Online interactivity: Role of technology in behavior change. 2010; 26(6):1674–84.

9. Koufaris M. Applying the technology acceptance model and flow theory to online consumer behavior. Information Systems Research. 2002; 13(2):205–23.

10. Rogers EM. Diffusion of innovations. 4th ed. New York City: Simon and Schuster; 2010.

11. Knol WHC, Stroeken JHM. The diffusion and adoption of information technology in small- and medium-sized enterprises through IT scenarios. Technology Analysis Strategic Management. 2001; 13(2):227–46.

12. Dodgson M, Gann D. Innovation Technology: How new technologies are changing the way we innovate. NESTA Making Innovations flourish. 2007; 1–22.

13. McKnight DH, Chervany NL. What trust means in E-commerce customer relationships: An interdisciplinary conceptual typology. International Journal of Electronic Commerce. 2002; 6(2):35–59.

14. Schreurs B, Druart C, Proost K, De Witte K. Symbolic attributes and organizational attractiveness: The moderating effects of applicant personality. International Journal of Selection and Assessment. 2009; 17(1):35–46.

15. Gomes D, Neves J. Organizational attractiveness and prospective applicants’ intentions to apply. Personal Review. 2011; 40(6):684–99.

16. Van HG, Lievens F. Social influences on organizational attractiveness: Investigating if and when word of mouth matters. Journal of Applied Social Psychology. 2007; 37(9):2024–47.

17. Vaus D. Analyzing social science data: 50 Key problems in data analysis. USA: SAGE; 2002.

18. Li C-Y. Persuasive messages on information system acceptance: A theoretical extension of elaboration likelihood model and social influence theory. Computers in Human Behaviour, Including Special Section Youth, Internet, and Wellbeing. 2013; 29(1):264–75.

19. Kleinbaum D, Kupper L, Nizam A, Rosenberg E. Applied regression analysis and other multivariable methods. Cengage Learning; 2014. p. 1072.