

Evaluation of relationship between acceptances of information technology with staff's creativity

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Abstract: The paper aims to analyze the relationship between acceptances of information technology with staff's creativity by descriptive method in correlation type in an industrial Company in 2014. All 800 employees of administrative sections in Company took part in the statistical universe of this survey. 259 people were chosen by using convenience sampling method and Cochran's sample size formula. To collect data, two researcher-made questionnaires of acceptance of information technology by using the dimensions of Davis Model (1989) with 38 questions, adjusted questionnaire of Randcip's staff's creativity (1979) with 26 questions based on 5 degree Likert scale have been used. Also content validity and face validity of questionnaires in this paper were confirmed by experts. Also content validity and face validity of questionnaires in this research were confirmed by experts and by using factor analysis in a group of statistical universe. The validity of two questionnaires were estimated by using Cronbach's alpha coefficient (α) which equals to (0.83) in acceptance of information technology, (0.81) in staff's creativity. Analysis of the data is done by using descriptive statistics (including Frequency, Percentage, and Mean, Standard deviation) and inferential statistics (including Factor Analysis, Pearson r, MANOVA, Post-Hoc Test). The result has shown that there is a significant relationship between acceptance of information technology and staff's creativity ($r= 0.577, P < 0.01$). Among the respondents' ideas in acceptance of information technology there was a meaningful difference regarding to education level, and in staff's creativity there was a meaningful difference regarding to education level and organizational position..

Key words: Accepting information technology; Staff's creativity

1. Introduction

In the current era that is called information age, information technology (IT) has affected all dimensions of human life as a strategic and new idea. Some organizations effected by IT so that today denying IT is impossible. IT is one of the most important tools that organizations can use it to reach higher performance and efficiency in businesses. According to Lucas (1988), IT is defined as all forms of technology which are used to processing, storage and transmission of information in an electronic format (Imani et al., 2011).

Heeks (2000) defines IT as technologies related to computer and telecommunication that provide automatic tools in working with information. IT is a field of technology using hardware, software, network, data application and processing that makes it possible to storage, manipulate, transfer, manage, control and automatic data preparation (Fathian and Mahdavi Noor, 2013). The explosive growth of IT in the middle of 1990s along with development of e-commerce and continued growth of investment in this sector has necessitated detailed examination of the effects of IT on structures of organizations and companies. These effects can be

usual effects such as facilitating the relation between staff of different parts of organization, facilitating the relation of organization with customers and beneficiaries and facilitating in making organizational value chain and also has some especial effects on organizational structure's main components like centralization, formalization and complexity (Namamiyan and Jaliliyan, 2011). Replying to demands and present and future expectations of society about IT provided the conditions that organizations have to use IT to survive and do investments for acceptance, application and development of the IT. In this regard patterns, known as the theory of planned behavior, innovation diffusion theory and IT acceptance theory that discussed the modern IT acceptance in social systems.

IT accepting model (TAM) based on Davis model (1989) is one of the most important theories that are used IT and computer widely. This model is based on two factors: perceived usefulness and perceived ease of use. Fig. 1 shows TAM and the relation of its components.

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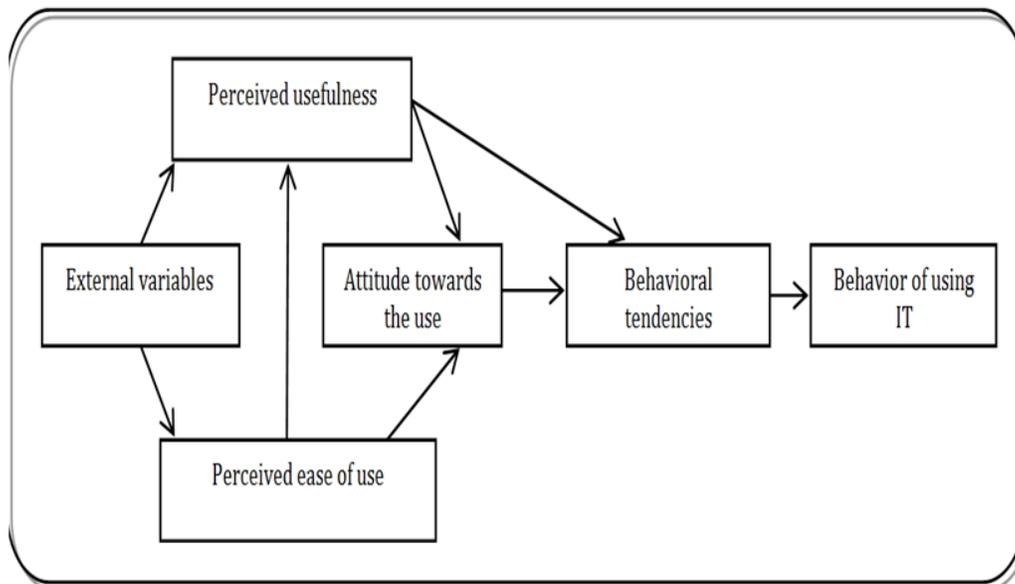


Fig. 1: The components of TAM model (Bahram Zadeh and Jafar Poor, 2011)

Table 1: Main variables of (TAM) (Bahram Zadeh and Jafar Poor, 2011)

Main variable	Definition
Perceived usefulness	Intellectual possibility of a user about using a special applied system in future causes to improve performance in a special organizational field.
Perceived ease of use	The degree that a user is expecting about using the system without attempting.
Attitude towards the use	Negative or positive personal feeling (Resulting from the evaluation) about a special behavior.

External variables (independent), form behavior through their effect on beliefs (Perceived usefulness & Perceived ease of use). Independent variables are able to be related to the education level, gender or training and support. Depending on the type of external variable, perceived usefulness and perceived ease of use, have more effect on behavioral tending (Burton and Hubona, 2005). This model supposes that users have better attitude to system when they imagine that system is useful and simple. The degree of being useful and its attitude, result in increasing behavioral tending, so the users can use the system in a real way, also apply the system and IT as a way to provide huge amount of information, thoughts, concepts and message and as an important factor in business communication (Bahram Zadeh and Jafar Poor, 2011).

Consequently the organizations that adjust themselves with new facts and needs are winners. Also the organizations, which can use their staff's motivation to face new situations in a creative, fast way, will be successful. Creativity means transforming or combining it with other phenomenon and things (Parkan, 2012). According to Koriki and Sanaei Zadeh (2012), creativity is the ability of combining material in different ways to

reach a new goal. Creativity is the ability of modulating ideas in a unique way to make unusual relation among different ideas (Moghimi and Ramezan, 2013). Austin (1974) defines creativity as a process of doing a new defensible job which is acceptable among some groups of people's views through its time. Bazerman (1989) believes that creativity is a mental process that results to a new idea, concept, product or discovery. Kao (1989) believes that creativity is a human process that results to a new and valuable result (Sadeghi and Amiri, 2007). Nowadays, if people follow a repeated discipline and routine, they will not survive and this is one of the threats the community may be involved with it. None of human dilemmas can ever be solved unless; some people behave creatively with developing organization. In fact the basis of developed communities is creativity. These communities not only recognize their problem by creativity, but also solve the problems by creativity. So we can conclude that one of the most important factors of organization's success is: paying attention to human resource as the information resource, providing necessary situation to innovation and creativity, awarding about the kind and direction of changes and having a good reaction to environmental sensitivities (Mohammadi et al, 2012).

2. Related works

Related to this study there are many researches that from among them we can refer to the following studies:

Heidari and et al (2011) in a study entitled "the relation of IT components with staff's creativity", concluded that there is a meaningful relation between using internet and the level of computer abilities. It means that when using internet and

computer abilities increase, staff's creativity will also increase.

Giraldo (2011) in a study entitled "Understanding the role of technology in service innovation" have investigated that technology and services are partly related together and all levels of technology result to innovation in organization. And also the result showed that technology can result productivity and efficiency in organization through innovation process. On the other hand, some findings showed that technology can't be the only source for efficiency and effectiveness in organization.

Karadal and Sayzhen (2011) in a study entitled "Impact of information technology on empowerment of innovation in small and medium enterprises in Turkey Ak Serai" have investigated that while the businesses are adjusting themselves with IT in order to empowerment of innovation, Information technology has an important effect on producing ideas to make new products. And today's businesses are trying to produce new products by IT technology with competitors. Also the result showed that the most important way to produce new and creative products is using information technology.

Nami and Jabari Zahir Abadi (2011) in a study entitled "The relationship between the use of information technology with employee creativity" have investigated that there is a meaningful relation between using IT and staff's creativity and the more they use IT, the more they have ability to produce new ideas which leads to problem-solving.

Kaewchur and Phusavat (2013) in a study entitled "Mediating role of knowledge sharing on IT and staff innovation in Medicinal Herbs Producing companies in Thailand" have investigated that IT has positive effect on both knowledge sharing and innovation, and also side findings showed that knowledge sharing has positive effect on staff innovation too, however this factor (knowledge sharing) has mediating effect on the relation between IT and staff's innovation.

Vahedi and Rahbari (2013) in a study entitled "the relation of IT and creativity and innovation", concluded that there is a meaningful relation between IT and creativity and innovation.

3. Research hypotheses

1. There is a relation between IT acceptance dimensions (Perceived usefulness, Perceived Ease of Use, Attitude towards the use, external variables, Behavioral tendencies, and the behavior of using IT) with staff's creativity.

2. There is a significant difference between IT acceptance dimension according to demographic factors (gender, age, education, job experiences, and organizational position) among responders.

3. There is a significant difference in staff's creativity according to demographic factors (gender, age, education, job experiences, and organizational position) among responders.

4. Methodology

This research with respect to the purpose is an applied study and its method is descriptive and correlative study. Population of this study is the entire Staff's s of an industrial firm in 2014 that are totally 800 individuals. From among this number and using Cochran's sample size 259 individuals were selected as statistical samples by accessible method. The instrument used in this study was two researcher made questionnaires of acceptance of information technology of Davis Model (1989) with 38 items, Randcip's Staff's creativity (1979) with 26 items. The formal and content reliability of questionnaires was approved and their stability was achieved using Cronbach's alpha coefficient for the questionnaire of acceptance of information technology (0.83), Staff's creativity questionnaire (0.81). For data analysis the statistical tests of factorial analysis, Pearson's correlative coefficient test, and post-hoc test were used were used.

5. Theoretical model

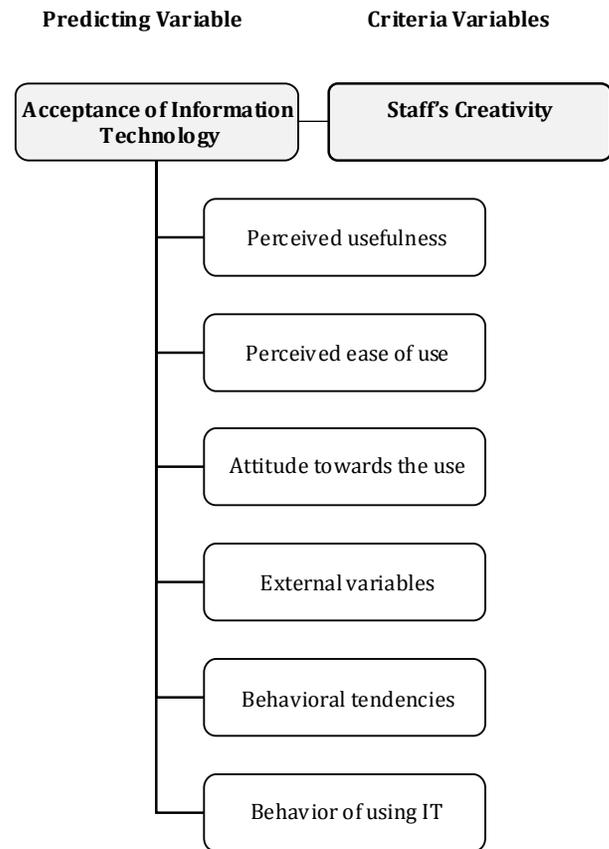


Fig. 2: The theoretical model of research

6. Research finding

First hypothesis: There is a relation between IT acceptance dimensions (Perceived usefulness, Perceived Ease of Use, Attitude towards the use,

External variables, Behavioral tendencies, and the behavior of using IT) with staff's creativity.

Table 2: Correlative coefficient between dimensions of acceptance of information technology and Staff's creativity

Criteria variable		Staff's creativity		
Predicting	Variable	Correlative coefficient	Statistical indexes	
			Square of correlative coefficient	Sig level
Acceptance of information technology		**0.577	0.333	0.001
Perceived usefulness		**0.499	0.249	0.001
Perceived ease of use		**0.393	0.154	0.001
Attitude towards use		**0.515	0.265	0.001
External variables		**0.566	0.320	0.001
Behavioral tendencies		**0.433	0.187	0.001
Behavior of using IT		**0.374	0.140	0.001

(P<0.01)

Results of Table 2 show that correlative coefficient between IT acceptance dimensions (Perceived usefulness, Perceived Ease of Use, Attitude towards the use, external variables, Behavioral tendencies, and the behavior of using IT) with staff's creativity is significant at the level of (P<0.01). It means that there is a significant relationship between acceptance of information technology and Staff's creativity (r=0.577). On the

basis of (r²) 33.3% of TAM and Staff's creativity is common. Therefore the first research hypothesis is approved.

Second hypothesis: There is a significant difference between IT acceptance dimension according to demographic factors (gender, age, education, job experiences, and organizational position) among responders.

Table 3: Multi-Way Analysis of Variance (MANOVA) of IT acceptance scores according to demographic factors (Gender, age, education, job experiences, and organizational position)

Factors	Sum of squares	df	Mean square	F	Significant level
Gender	503.941	1	503.941	1.758	0.186
Age	2538.076	5	507.615	1.771	0.121
Education	5756.921	3	1918.974	6.695	0.001
Job experience	550.794	2	275.374	0.961	0.384
Organizational position	936.367	2	468.183	1.634	0.198

(P<0.05)

The results of Table 3 show that there isn't a significant difference between accepting IT according to gender, age, job experiences,

Organizational position in (P<0.05) level, but the IT acceptance scores according to education is meaningful. Post hoc test in Table 4 shows the different between groups

Table 4: Paired-sample T test (compare mean) of IT acceptance scores according education

Education	Mean difference	Significant level
Associate Degree (166.59) → B.A (152.14)	14.20	0.001
Associate Degree (166.59) → M.A & upper (152.14)	24.53	0.001

(P<0.05)

The results of Table 4 show that there's significant difference between IT acceptance scores of staff with associate degree, B.A, and M.A & upper in (P<0.05) level.

Third hypothesis: There is a significant difference in staff's creativity according to demographic factors (gender, age, education, job experiences, and organizational position) among responders.

Table 5: Multi-Way Analysis of Variance (MANOVA) of staff's creativity scores according to demographic factors (Gender, age, education, job experiences, and organizational position)

Factors	Sum of squares	df	Mean square	F	Significant level
Gender	67.788	1	67.788	1.780	0.184
Age	492.209	5	98.442	2.025	0.057
Education	517.819	3	172.608	4.533	0.004
Job Experience	172.763	2	83.381	2.269	0.106
Organizational Position	475.667	2	237.833	6.246	0.002

(P<0.05)

The results of Table 5 show that there isn't significant difference between staff's creativity according to gender, age, job experiences in ($P < 0.05$)

level, but there is a meaningful difference between staff's creativity and education,

Organizational position. Post Hoc Test in Table 6 & 7 show the different between groups.

Table 6: paired-sample T test (compare mean) of staff's creativity scores according to education

Education	Mean difference	Significant level
Diploma (26.90) → M.A & upper (23.41)	6.42	0.013
Associate Degree (27.25) → B.A (20.68)	3.77	0.001
Associate Degree (27.25) → M.A & upper (152.14)	6.91	0.001

($P < 0.05$)

The results of Table 6 show that there is a meaningful difference between staff's creativity and

education with Associate degree, B.A and M.A & upper certificate in ($P < 0.05$) level.

Table 7: paired-sample T test (compare mean) of staff's creativity scores according to organizational position

Organizational position	Mean difference	Significant level
Manager (27.88) → Expert (22.01)	6.12	0.023
Expert (22.01) → Employee (26.05)	-4	0.001

($P < 0.05$)

According to Table 7, there is a significant difference between creativity scores of experts, managers and employee in ($P < 0.05$) level.

However, experts and masters usually do the jobs that relates to planning and analyzing and controlling independently. So the result of education is confirmed.

7. Results and evaluation

According to the first hypothesis, "There is a relation between IT acceptance dimensions (Perceived usefulness, Perceived Ease of Use, Attitude towards the use, external variables, Behavioral tendencies, and the behavior of using IT) with staff's creativity. The results of Table 2 show that there is significant relation between IT acceptance and staff's creativity ($r = 0.577$) in ($P < 0.01$) level. According to determination coefficient (r^2), 33.3% variance of IT acceptance with staff's creativity was common. So the first theory of the research is confirmed. The outcome is partly matched with the result of Karadal and Sayzhen (2011) based on "the effect of ICT on creativity and innovation", and Nami and Jabari Zahir Abadi (2011), Heidari and et al (2011), Vahedi and Rahbari (2013), based on "the relationship between IT and creativity", and Giraldo (2011), Kaewchur and Phusavat (2013) based on "the effect on IT on creativity", because the relation between IT acceptance and staff's creativity has confirmed.

The results of third hypothesis show that those with diploma and associate's degree and M.A, and also the ones, who are clerks and managers, have more creativity at work. It is possible to conclude that these people have worked a lot in technical and operative situations and are familiar with work process, not only can experience more in technical and operative things, but also they have more innovation in doing job, and they had higher score. To explain this view point that managers and experts have been more creative than clerks, it is possible to say that managers in organizations guide the present situation toward desirable situation and trying to make a better future for organization in every simple time. Furthermore regarding to this issue that creativity is provided through training, and by using methods like thoughts room. These personnel of organization have more experiences at revolutions and changes due to their organizational positions and they must test modern methods of doing well, and because they are trying to keep and improve their competitive empower so the difference of creativity score of them can be defined in recent reasons.

According to what said and the results, the relation between IT acceptance and staff's creativity is confirmed.

8. Conclusion

The results of Second hypothesis indicate that responders with associate's degree have higher accepted level of IT. According to people who have associate's degree who are Mostly users of computers or other IT parts in organization like (for example: system operators, accountants, clerks, secretaries, computer technicians) and spend a lot of time using these systems daily, because of more experience at this job and more depending on IT, may have more accepting and perceiving of IT.

The paper evaluates the relationship between acceptances of information technology with staff's creativity by descriptive method in correlation type in correlation type in an industrial Company in 2014. The IT acceptance is a demonstrable and provable satisfaction to use IT in tasks which is supported by IT. The IT as a modern event in today's life, automates all activities which are repeated and have no creativities by regularize in executive fields, so

make minds free to attention into thought, the human's unique property.

On the other hand by feeding the information of thought's field, productivity will increase through knowledge creation. So IT acceptance in private and governmental organizations can be a great situation to grow and flourish. The most important resource of organizational idea creation is internal resources, it means creative human resources. In the IT age, the wisdom men's thought produce information and is caused of productivity, creativity, innovation, development and growth of organizations. Increasing creativity in organization results to improving quality & quantity of services, competitive, efficiency, motivation and job satisfaction in employee and decrease the wasting resources.

The world experience indicates that IT-centered organizations prepare the progress of creativity. Because the effective use of IT can make more motivation, self-confidence, upgrade in job, improving social and communicative skills and promotion of independence learning, time improvement in doing jobs, less effort and contribution of information resources. This factor can result the staff's creativity and presenting new ideas.

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