

**The Survey of the Relationship between Information
Technology Acceptance and Organizational Agility
from the Perspective of the Public Institutions
Employees
(Case Study: Markazi Province Organization of Road
Maintenance and Transport)**

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ABSTRACT – According to the extensive aspects of the organizational agility in the science of management and also the considerable role played by information technology in the development of agility in an organization, the current study aims at the survey of the relationship between information technology acceptance and organizational agility from the perspectives of the public organization staff members who made a constant use of information technology. In the present study the survey-field study method has been applied and the questionnaire reliability and content validity had been previously confirmed by taking advantage of Cronbach's alpha method, and the study population of the current study were public organizations' staff members and due to the low number of the study population members we decided to select all of the public organizations' staff as the study sample volume. Also, the data were analyzed by making use of descriptive statistics and linear regression test. The study findings were indicative of the positive relationship between four factors of perceived usefulness, perceived ease of use and attitude towards using and intention to use technology with agility. Also, the study results indicated that the agility level in an organization increases along with the increase in the technology acceptance rate in public sector and the key to this increase was the improvement in the intention to use technology and institutionalization of positive mental norms for making use of technology among the staff.

KEYWORDS: technology acceptance model, organizational agility, staff, perceived usefulness, perceived ease of use, attitude towards application

Introduction

Nowadays, the subject of information technology acceptance and application is the central discussion proposed in every organization and everyone is talking about the usefulness and the necessity to use computers and due to the same reason managers are constantly engaged in making decision regarding spending monetary budgets or investment in accepting and applying technology in their own organization, (but we are continuously facing with one fundamental question and that is what relationship exists between technology acceptance and organizational agility?). It is natural to think that technology as a cost-effective option is of more importance in contrast to the more traditional options, to the extent that the application of information technology has been followed with a widespread evolution in facilitating the way things happen, enhancing the human workforce and management output, the increase in the products and/or services diversity and the improvement in the quality of the services and products and attracting the customer satisfaction in the organizations. For the same reason, the managers should know how much it is useful and efficient to accept and the apply technology in an organization? The subject of organizational agility is something which cannot be considered only for the private sector. Applying agility in public sector can be a convenient area for the growth and fostering of the concept. Of course, some believe that according to the absence of competition and speed in public sector and in one word due to the absence of dynamicity in work and operational environment the proposition of the subject of agility in this sector is practically meaningless and irrelevant, but we believe that the public sector due to the great many of its clients and customers and also the greater need for satisfying their needs and wants and parallel to its own exaltation and sublimation in the fields of speed and quality and more importantly regarding the cost management issues is in real need of agility more than the private sector [1]. For the same reason, we decided to evaluate the relationship between technology acceptance and organizational agility in public organizations (public institutions) for one more time in the present study and find out that how much the governmental organizations have been successful for reaching to the organizational agility and application of information technology. To better understand the relationship between the study variables, firstly the reader is provided with a background summary of the studies which have been conducted previously in relation to the current study variables and the way they work and affect

each other and then it is dealt with the explication of the variables and the study model. The discussion of agility and agile organization was formally and academically proposed between the years from 1998 to 2005 based on a research entitled “a move towards agile public sector” by the Future Institution (in the England governmental policies meeting). Although the history of the discussions regarding the agility and the agile organizations dates way back to the aforementioned years, but the main foundation of the topic was laid during the above-mentioned years. Also, the topic of agility has also been dealt with and perfectly elaborated on in the articles such as “the survey of the organizational agility status in the city of Kerman governmental organizations” [2], “the role of learning culture and knowledge management in organizational agility” [3]. Concerning the factors effective on the information technology also there are articles such as “the effective factors on information technology acceptability by the librarians in Tehran’s state universities technical departments libraries” [7], but the essence of the current study and the other studies related to the topic of the relationship between information technology acceptance and organizational agility in Iran and many of the other countries in the world there is another study entitled “the relationship between the information technology acceptability and organizational agility from the perspective of the governmental institutions’ senior management” in Malaysia which is taken advantage of in the present study due to the similarities extant in the study model. In fact, it can be stated that since agility exerts an undeniable effect on the organizational success in the variable markets of the time and, on the other hand, we know that the organizational success depends greatly on the optimized use of the information technology, for the same reason the current research is seeking to figure out the quality of the relationship between the information technology acceptance and organizational agility from the perspective of the public institutions’ employees to enable the organizations to identify solutions for maximizing their investment returns and make a more adoption of the information technology for getting access to agility and improve their competitive advantages. To conduct the present study, we have, on the one hand, the independent variables related to the acceptance of information technology which are comprised of perceived usefulness, attitude toward the use of information technology, perceived ease of use and intention to use and, on the other, we have the dependent variables which include organizational agility and we are trying here to indicate the relationship between independent variables and dependent variable. One problem that can be observed in the works conducted in respect to the subject of information technology acceptance and organizational agility and the relationship between them by the other fellow researchers is the issue of the study population being very huge which in itself causes errors in measurement, that is because the complete survey of the entire institutions existing in one country or in one single city or province is infeasible and consequent to this saying when we try to select a study sample volume the error percent goes up, so we decided to survey the relationship between information technology acceptance and organizational agility in an organization for specimen the road maintenance and transport organization in Markazi Province for the first time. Since the study population number was very low we decided to consider the entire study population as the study sample volume. To make it more straightforward and to be able to more simply explain the relationships between the variables firstly we deal with the definition of the primary concepts and then we try to pose the study proposition and provide the suggested solutions.

Concepts definitions:

1.1. Information technology: is a term which is used to describe advances which have been obtained by the humans for problem-solving issues in area such as designing plans for development and application of the systems and logical processes. Information technology is a combination of software and hardware that receive, store, display and transfer the information [10].

1.2. Organizational agility:

Theoretical definition: the word agile in dictionaries has been defined as fast movement, sensitive, active and agility is defined as the ability to move in a fast and facilitated manner, and being able to think fast and with an intelligent method. Agility in the organizations can be defined as the organization’s close parallelism to the variable work-related needs for achieving a competitive advantage.

Operational definition: in the present study by organizational agility we mean the evaluation of dimensions (leadership, culture and values, performance management, providing service to the customers, organizational change, E-governments) and these dimensions have been compiled for the organizational agility calculation by the Science Study Institution in London. We also prepared indices to be evaluated in the form of study questions (according to the study analytical model).

1.3. Perceived usefulness (mental perception of being useful):

Theoretical definition: the mental probability shaped in the minds of the users regarding the usefulness of various kinds of information technologies available in work environment to better perform duties; in the manner that the more their work performance is improved in the organizational ground by such technologies they are thought to be more useful and consequently are put into more use [12].

Operational definition: one of the aspects of the technology acceptance model is the aspect of perceived usefulness for the evaluation of which we make use of 6 indices in the format of 6 study questions to figure out how much each employee believes in IT usefulness, work quality improvement by the use of information technology, increase in productivity, accelerating the task accomplishment, the easiness and nimbleness with which the task is performed, the enhancement in the amount of access to the vocational objectives?

1.4. Perceived easiness (mental perception of ease of use):

Theoretical definition: the mental probability formed in the mind of the users regarding the ease of use of various types of information technology available in work environment for accomplishing the tasks and duties; in such a manner that the less effort is spent for learning and using such information technologies the more they are used [12].

Operating definition: one of the aspects of the technology acceptance model is the aspect of perceived ease of use for the evaluation of which we made use of 6 study questions to assess the amount employees believe in the ease of IT use, the ease with which they can acquire skills, flexibility, establishing understandable and clear-cut relationships, the comfortable use of

IT in the entire array of the required cases, learning ease and by doing so we try to obtain the likelihood to which the employees accept technology.

1.5. Attitude towards the use of technology (operational definition): one of the other aspects of technology acceptance model aspects is the attitude towards the application of technology for the evaluation of which we also made use of 5 indices in the format of 5 study questions to assess each employee's attitude towards IT application usefulness, pleasure earned in its use, its application loveliness, application reasonability, goodness of application.

1.6. Intention to use technology (operational definition): one of the other aspects of the technology acceptance model is the intention to apply technology for the evaluation of which we also made use of 4 indices in the form of 4 study questions, to assess the amount of each of the employees intention to the use of IT in future, the use in case of availability, constant use of IT, the use of IT for accomplishing tasks and duties and by way of this obtain the IT acceptance possibility number from their part.

1.7. Leadership: agility is the result and outcome of efficient and effective leadership. Real leaders are those who test the new ideas, patterns and approaches and in the end come up with an accurate viewpoint of what they tend to create [5].

1.8. Culture and values: the objective of a governmental organization is to strengthen and enhance culture in those of the individuals who feel attached and belonged to the organizational strategies. Also, decision-making is a key factor in agile governmental organizations.

1.9. Performance management: to acquire a competitive margin in the world market the companies and the suppliers and customers should work together to make synchronized operations more uniform and obtain agility.

1.10. Providing service to the customers: by this item we mean that an agile governmental organization similar to a private sector company should be accountable to the customers and seeks to attract customers and keep them satisfied.

1.11. Organizational change: agile governmental institutions should firstly be well-programmed to be able to collect all of the potential benefits resulting from population translocation and change and they should be beforehand prepared to the extent required to confront with the changes. Moreover, the leading governmental organizations can compile and execute the intended change plans and programs in a fast and rapid pace to influence the entire organization and convey assessable results within 12-18 months.

1.12. Electronic government: one of the main foundations and bases of agility in the organizations is the use of technology as the evolution driver in the entire organization, and to do so, the electronic government makes use of electronic communication systems to be substituted for tiresome paper communications and interactions, and this is to change the institutions business style and integrates the various and different areas and fields in the government [5].

Study methodology

In the current study we intend to investigate the relationship between information technology acceptance and organizational agility from the perspective of Markazi Province road maintenance and transport organization staff members, therefore, it has been tried here to blend TAM model proposed by Davis and the organizational agility model suggested by London's social sciences studies (A. T. Kearney) according to figure (1) and based on the technology acceptance model constituents, their interrelationships and their relationship with the general structure of the model, their relationships with the organizational agility will be evaluated according to the following hypotheses. So, firstly, we deal with the survey and evaluation of the organizational agility in the above-mentioned organization according to its effective factors, then we try to survey the relationship between TAM model factors (information technology acceptance) and agility index in the above-cited organization to see whether there exists a relationship between technology acceptance factors and agility index and, in the next step, to find out the relationship between the information technology acceptance per se and agility index, if any.

According to the diagram (1) we see that the main and secondary hypotheses can be posited as below:

Main hypothesis:

There is a positive relationship between information technology acceptance and organizational agility.

Subordinate hypotheses:

1. There is a positive relationship between perceived usefulness regarding the technology use and organizational agility.
2. There is a positive relationship between the perceived ease of use regarding technology use and organizational agility.
3. There is a positive relationship between attitudes towards using information technology and organizational agility.
4. There is a positive relationship between intention to use information technology and organizational agility.

And the primary and the secondary objectives proposed in the current study are as follow:

Primary objectives:

Determining the relationship between the information technology acceptance and organizational agility from the perspective of Markazi Province road maintenance, transport and terminals organization staff members

Secondary objectives:

1. Identifying the relationship between the perceived ease of use and organizational agility in Markazi Province road maintenance and transport organization
2. Identifying the relationship between the perceived usefulness and organizational agility in Markazi Province road maintenance and transport organization
3. Identifying the relationship between attitude towards using technology and organizational agility in Markazi Province road maintenance and transport organization
4. Identifying the relationship between the intentions to use technology and organizational agility in Markazi Province road maintenance and transport organization

Proposed model

According to the main and subordinate hypotheses stated above the simplified figure (2) below is put forth for the purpose of problem solving issues:

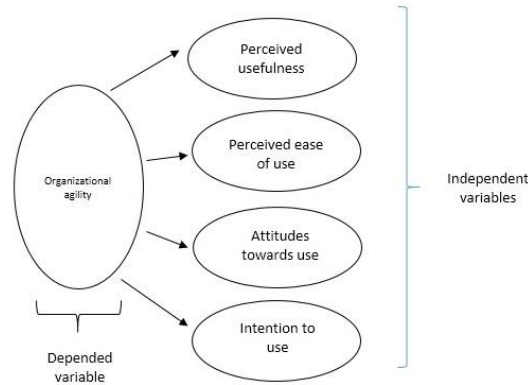


Figure 1: the author-proposed problem-solving model

Here, the study type and methodology is of the applied research type from the perspective of classification based on objective. From the perspective of classification based on study methodology the current research is of a descriptive style. The data collection tool is a questionnaire and the data extracted are scored based on Likert's scale. The sampling method is based on a simple randomized method. The questions have been designed based on an ordinal scale and Likert's 5-point scale (from completely disagree, disagree, neutral, agree, completely agree) and they are in a classified form and are designed based on the study hypotheses subject matters. The study population used in the present study is all of Markazi Province road maintenance and transport organization employees. By the evaluation of the organization we noticed that all of the units and departments employees are well-interested in cooperation in completing and responding to both of the study questionnaires. The total number of them was 56 individuals, so the study sample volume for the current study was considered to be 56 individuals. In the current study due to the low number of the study sample volume there was no need for executing any sampling method and the entire population was taken into consideration as the measurement scale. The questionnaires used in the present study were two separate questionnaires one of which pertained to the evaluation of the technology acceptance which was excerpted from the article entitled "factors effective on information technology" [7]. And the other questionnaire was excerpted from the translation of the organizational agility questionnaire which had been offered in chapter 19 of a book entitled "management performance change" [20]. Due to this reason, the questionnaires' validity has been confirmed previously. To assess the questionnaires' reliability there was made use of SPSS software and computer and the Cronbach's alpha coefficient was calculated for them and the coefficient was found to be as equal to 0.982 and for the information technology acceptance model questionnaire variables, i.e. perceived usefulness, perceived ease of use, attitudes towards using IT and intentions to use IT the obtained values were 0.936, 0.952, 0.944, 0.977, respectively, the mean value of reliability for both of the questionnaires reaches to the value 0.985 which is indicative of the fact that the questionnaires enjoy high reliabilities.

Data analysis method:

To test the study subordinate hypotheses and the survey of the existence of a linear relationship between independent and dependent variables simple regression test was conducted and to test the main hypothesis and the survey of the relationship between information technology acceptance and organizational agility we made use of multiple linear regression. Followings are the mathematical formulae for simple (1) and multiple (2) linear regressions:

$$Y=a+bX+\epsilon$$

$$Y=a+bX_1+cX_2+\dots+\epsilon$$

where, a is the y- intercept, b is the line slope, Y is the dependent variable or response, X is the independent variable or predictor and ϵ is the error factor. The goal of simple linear regression was to estimate a and b parameters and by doing so we would like to estimate the goodness of fitness of a simple linear regression in respect to data. In multiple linear regressions, we would like to measure the simultaneous and multiple effects of several variables on the dependent variable. In fact, a regression model which is consisted of more than one independent variable is called multiple linear regressions and it is written in the following form $Y=a+bX_1+cX_2+\dots+\epsilon$, where, Y is the dependent variable and X_1, X_2, \dots are independent variables and finally ϵ is the model error. The regression constants are calculated from the following formula, and in case that the theoretical linear equation can be in the form $Y=b+aX$, then we will have:

$$\hat{\alpha} = \frac{\overline{xy} - \bar{x} \cdot \bar{y}}{\overline{x^2} - \bar{x}^2}$$

$$\hat{\beta} = \bar{y} - \hat{\alpha}\bar{x}$$

And the relationships between the study variables in formulae (3) have been given in appendix section of the current study. The descriptive results obtained from the calculation of the means and standard deviation values for the study question scales have been presented in table (1). The most important subjects described analytically are:

- Marital status analysis
- Gender analysis
- Education level analysis
- Age analysis
- Work and recruitment history analysis
- University field of study analysis

- Activities type analysis
- The analysis of the degree to which the individuals are familiar with computers
- The analysis of the degree to which the individuals are acquainted with the internet

The analysis of the agility status and information technology acceptance in Markazi Province road maintenance and transport organization staff members

To survey the descriptive results of the study variables we take advantage of the data extracted from table (1) which investigates the agility status and information technology acceptance in Markazi Province road maintenance and transport organization staff members

Table 1: number, minimum, maximum, mean and standard deviation and main variables

variables	Standard deviation	Mean	Maximum	Minimum
Organizational agility	0.81073	3.7143	4.61	1.39
Perceived usefulness	0.86229	3.6131	5.00	1.33
Perceived ease of use	0.83025	3.6577	5.00	1.17
Attitudes towards using	0.78426	3.5857	5.00	1.80
Intention to use	0.92349	3.5625	5.00	1.00

In the present study, the linear regression analysis has been used to test the study hypotheses. The researcher can make use of the linear regression in case that the following conditions hold:

The errors mean equal zero.

Errors variance equal zero.

There should be no correlation between model errors.

The dependent variable should exhibit a normal distribution.

To test that the relationship is linear or not we make use of the independent and dependent variables dispersion against one another that is to say we make use of figure (3). In this diagram we should be able to draw a line through the scattered points for the linearity of the relationship between the two variables to be confirmed.

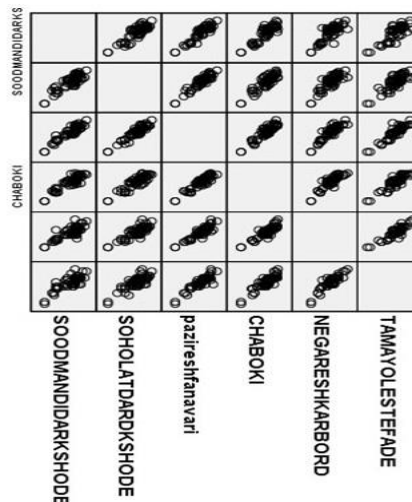


Figure 2: independent and dependent variables scatter diagram

As it is observed from table (3), the relationship between the variables is found to be linear and therefore the linear regression method can be used. One of the other presuppositions considered in the regression method is that the errors should have a normal distribution with a zero mean. It is evident that regression method cannot be taken into use in case that this presupposition cannot be stated as true or holding.

Residual is the discrepancy between the observed values and the values predicted by the dependent variable model. Therefore, if this presupposition holds the regression method can be used regarding the relationship between the independent and dependent variables. The histogram or the residual p-p diagram is used for the survey of the error term normality supposition. The histogram shape should approximately follow the normal curve shape [9]. The diagram shown in figure (4), known as normal graph paper, is also a type of normality test, and if the data belong to a sample of a normal population they are expected to be dispersed and scattered close to a straight line and if the diagram reflects that the data are not deviating from the straight line then it is said that the data are normal.

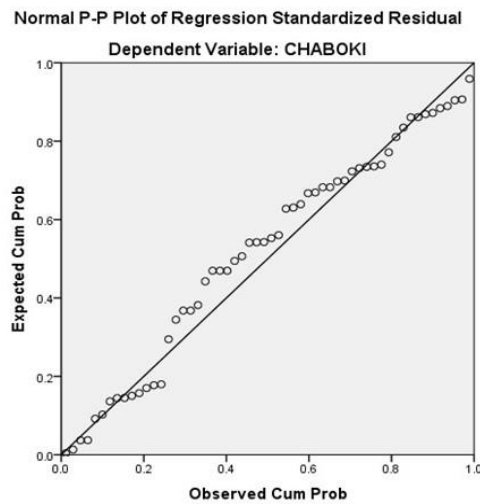


Figure 3: normal paper test

Residuals in p-p diagram should follow a 45-degree line. P-p diagram does not contradict the normality hypothesis [9]. Figure (5) is indicative of the survey of error normality as another regression presupposition. Based on this presupposition, the errors should have a normal distribution with zero mean.

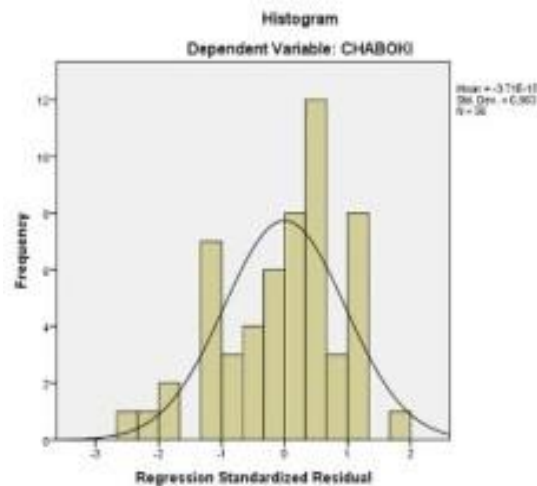


Figure 4: error normality test

In other words, Mean=0, Std.Dev=1. And based on the above diagram it can be observed that the mean value is close to zero and the standard deviation is also approximately 1 which has been indicated on the right hand side of these diagrams. According to the diagrams, the errors normality hypothesis can be confirmed. Now, according to the results obtained from table (2) ad considering standardized regression coefficient it can be dealt with the rejection or acceptance of the following hypotheses.

Table 2: Regression coefficient, regression test

Model	Non-standardized coefficients		Standardized coefficients
	Std. Error	B	
Perceived usefulness	0.255	0.083	0.295
Perceived ease of use	0.186	0.090	0.207
Attitudes towards using	0.301	0.125	0.274
Intention to use	0.229	0.109	0.234

First hypothesis:

There is a positive relationship between perceived usefulness regarding the technology use and organizational agility.

There is not a positive relationship between perceived usefulness regarding the technology use and organizational agility.

$H_0: \beta=0$

There is a positive relationship between the perceived usefulness regarding the use of technology and organizational agility.

$H_1: \beta>0$

According to table (2) it can be seen that the standardized regression coefficient related to the perceived usefulness equals 0.295, therefore, the H_0 hypothesis stating the regression coefficient being zero cannot be accepted, so this claim made by the researcher is confirmed and accepted and it can be stated that there is a positive relationship between perceived usefulness regarding the use of technology and organizational agility. Observing the data extracted from table (2) it is clear that the second, third and fourth hypotheses of the present study provide us with results similar to the first hypothesis that is to say that because the standardized regression coefficients values are positive for them, so it can be stated that there is a positive relationship between independent variables, perceived usefulness, attitudes toward using technology and intention to use technology, and the dependent variable, organizational agility.

Conclusions:

- There is a positive relationship between the perceived usefulness and intention to use and this is corresponding with the results obtained in the studies [6, 7].
- There is a positive relationship between the perceived ease of use variables and the perceived usefulness. Another point which was highlighted by the current study is that in the current study environment like many of the other prior studies including [4, 7, 8] the perceived ease of use affects the perceived usefulness, in other words, the more the individuals feel at ease in making use of the systems the more they feel that the systems are more useful for accomplishing their tasks and duties.
- There is a positive relationship between the perceived ease of use and the perceived ease of use and attitudes towards using technology and this is unlike the results obtained in the study [14]. Therefore, these three factors are the most effective ones in accepting the information technology, so the more the perception shaped in the minds of the study population managers is indicative of the information technology usefulness their attitudes to use technology will be more positive and the more the perception shaped in their minds is indicative of the technology ease of use their attitudes towards using information technology will be more positive, what was obtained in the present study is consistent with the results obtained in [6, 7, 8, 11, 13, 15, 16, 18].
- There is a positive relationship between the employees attitudes to the use of IT and the intention to use IT that is to say that the more positive their attitude towards using IT they will be more eager in their decisions to make use of IT and this conforms to the results obtained in [7, 14].
- Generally, the results obtained in this part of the study underline that the strategic and operational programming of which part of the study should be taken into consideration to insert facilitating activities in IT acceptance process. On the other hand, the findings obtained from the current study identified the technology acceptance model constructive factors as the most effective factors for accepting the information technology within the model framework which correspond to the results obtained by [6, 11, 17, 18].

The results obtained from the inferential statistics

As it was observed in table (2), it can be said that there is a positive relationship between the independent variable, perceived usefulness, and the dependent variable, organizational agility, since in order for the linear relationship to be existing between both of the independent and dependent variables (based on the simple linear regression equation), the standardized regression coefficient should be larger or smaller than zero, but because here we are seeking to figure out the perceived usefulness positive effects on organizational agility not the negative effects so the discussions regarding the coefficient being smaller than zero is out of the scope of the present study and thus the discussions regarding the coefficient being larger than zero is taken into consideration. It should be noted that if the standardized regression coefficient be equal to zero then the independent variable, perceived usefulness, exerts no effect on the organizational agility. Now, we can see that according to the results extracted from table (2) the standardized regression coefficient influence the dependent variable, organizational agility, positively. Therefore, the first hypothesis is accepted. Of course, in comparison with the results obtained from the study [19] in which it has been shown that the variable, perceived usefulness regarding the IT application with the intention to use IT intermediary role, has been effective on the organizational agility in manufacturing companies in Malaysia the results presented by the current study indicate that in the public sector of the Iranian organizations the variable, perceived usefulness is in a considerable direct relationship with the agility factor without any intermediary role played by any other variable, on the other hand, the similarities existing between these two studies is in that both of them show that two variables of perceived usefulness and organizational agility have a positive relationship with each other. Applying a little precision it can be observed that since the standardized regression coefficient for the three variables of perceived ease of use, attitudes towards using and intention to use technology is positive also according to table (2), therefore the above relationships and inferences also hold for the third and fourth hypotheses. It has to be mentioned only that based on the results obtained from the study [19] we noticed that the variable perceived ease of use in the present study has a relationship with the organizational agility intermediated by the role played by the variable attitude towards using and there is no direct relationship between these two factors. Also, corresponding to the same results, the relationship between attitudes towards using IT with the organizational agility has been considerably in a low level and this result does not conform to the results obtained by the current study, since in our study there is a positive relationship between the two aforementioned variables. According to the positive relationship extant between the information technology acceptance components, perceived usefulness, perceived ease of use, attitudes towards using and intention to use information technology, and the organizational agility, it is worth mentioning that there is also a positive relationship between information technology acceptance, independent variable, and organizational agility dependent variable, since there is a linear relationship between all of the information technology acceptance components and organizational agility therefore it can be concluded that there is a linear relationship between the information technology acceptance itself and the organizational agility, as well (according to the multiple linear regression). Therefore, the primary hypothesis of the study is confirmed. This result is exactly corresponding to the result obtained in the study [19]. According to the regression coefficients between the technology acceptance model

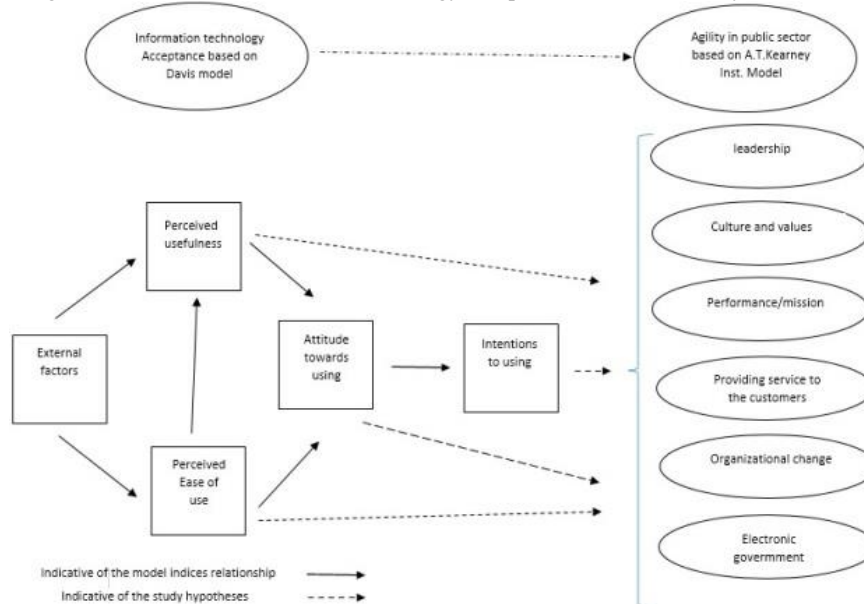
main constituting and organizational agility factors we figure this important issue out that in the studied organizations in the current study the staff members are well aware of the IT intention to use and usefulness and ease of use and its advantages and they have a positive attitude towards using IT in order for the organization to become agile and nimble. Therefore, they are well-trained in the aforementioned fields and grounds and they have come up with positive beliefs regarding the relationship between such factors and organizational agility which is considered as the state-of-the-art subject matter in global discussions.

Suggestions drawn based on study hypotheses

1. A) Since there is a positive relationship between the two variables of attitudes towards using and organizational agility, it is suggested that there is a need for cost-effectiveness and the reasonability of the further changes in the organization to be considered carefully.
2. A) According to the high degree of the positive relationship between the independent variable, perceived ease of use, and organizational agility it is suggested that there is a need for the organization managers to concentrate more on the application of the modern technologies.
3. A) According to the appropriate relationship between the variables attitudes towards using and organizational agility there is a need for the usefulness of the application of modern technologies to be further investigated among the employees from various units in the organization.
4. A) According to the positive convenient relationship between the two variables of intentions to use IT and organizational agility it is recommended that the factors effective on the employees’ intentions to use modern technologies in future should be identified and enhanced more effectively.

Appendix

Figure 5: the blending model of Davis’s information technology acceptance and A.T.Kearney institute



Relations regarding the formulae (3)

$\bar{X} = \frac{\sum_{i=1}^n xi}{n}$	$\bar{XY} = \frac{\sum_{i=1}^n xiyi}{n}$
$\bar{Y} = \frac{\sum_{i=1}^n yi}{n}$	$\bar{X}^2 = \left(\frac{\sum_{i=1}^n xi}{n}\right)^2$
$[\bar{X}^2] = \frac{\sum_{i=1}^n (xi)^2}{n}$	$\bar{Y}^2 = \left(\frac{\sum_{i=1}^n yi}{n}\right)^2$
	$[\bar{Y}^2] = \frac{\sum_{i=1}^n (yi)^2}{n}$

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