Effect of investment in information technology system on providing desired services of accounting information system

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ABSTRACT

Today, with advances in information and communication technologies and the emergence of information management system, using of these technologies in organizations is inevitable. Therefore, only managers who can invest in areas related to information technology and management system of information will be successful in enterprise management system. However, it is an important discussion that how these investments should be performed or how much it is invested? Moreover, managers must be aware of the effectiveness of using information technology and information management systems. Actually, Information Technology impacts necessary indicators for the success of today's organization. Therefore, this study investigates the application of IT systems (IT) and management information systems (MIS) on effectiveness of these systems based on users' view. Among the key indicators of information technology system, some indicators are selected as follows: increasing the speed of work performance, increasing accuracy of work performance, timely retrieval of information, more storage and faster access to information. In addition, the effect of these indices on providing good services in the financial reporting is investigated.

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Introduction

Use of Information Technology along with ، variety of information systems designed for different needs has been extended. Information technology enables managers establish more and better connections between the organization, environment and themselves. Only some of the effects of information technology and information systems on some organizations include: More participation in decision making, fast decision making, increased speed of identification of problems, reduced height of the organization pyramid, improved coordination and increased number of professional staff. Manager, who are constantly involved in the decision making to spend money or investment to incorporate technology in their organizations, should be aware of the impact of information technology on quality of product or service for customer service and improved communication and information. They should consider all these factors as primary parameters and requirements for success in today's organizations.

Theoretical background

According to one definition, information technology refers to an aspect of information technology systems including hardware, database, software, networks and other tools. In another definition of this term, information technology in addition to technological aspects of information systems is considered as several sets of information systems, users, and managers. (Turban, 2004).

Tansy and colleagues suggest that information technology is using of computer and communication teleport for collecting, processing, storing and dissemination of audio, video, textual and numerical information. (Tansey, 2003).

A comprehensive definition of communications technology is related to how to use equipment and also application of information technology for business processes, data collection and generate valuable information for managers. Deployment of high-level information technology, is the use of Internet so that the integrated financial system of company is directly connected to the Internet (this level is more considered). Users of accounting information anywhere in the world can visit the company web site every moment and observe or analyze financial statements and latest changes. Users can even manipulate their own version in order to achieve the desired report via using intelligent software, enterprise resource planning (ERP), the Hyper Text Mark Language (HTML), Expanded Mark language (XML) and Expanded Business Reporting Language (XBRL). Therefore, there is no need to print and distribute financial statements and it will not be just at the end or middle of fiscal year. This kind of financial report in which information (or its alternatives) will be always available, is called timely continuous financial reporting (2000, Sutton).

According to this fact that there is not long time that information technology is used for financial reporting, so limited researches are performed related to this issue, most of which are focused on Internet technology and its impact. Although these studies have not examined completely the impact of technology on the characteristics of accounting information; in some cases there are some references to these cases. In this section, we examine a number of investigations that are more relevant to the subject of the study. Ravlik and Khan, in two different and separate years, have conducted researches on the use of the Internet for online reporting. They reached a similar conclusion

and both stated that most important factor that can limit the use of the Internet for financial reporting is lack of reliability in online financial reporting. Dahl, Graham and Baldwin in 2003 stated that use of top relationship in the financial reporting could affect the judgment process. In other words, it impacts the relationships (Dull, 2003).

Ashbaugh, Johnston and Varfild, in a conducted survey, found significant changes about quality of financial reporting on Internet particularly in the quality of timely and effective financial reporting. They stated that the relative balance between the two most important characteristics of reliability and relevance of information is about emergence of the Internet. However, just as Internet financial reporting increases the scope of information (For example, what, when, and how information is disseminated) and related information (particularly timely information), risks associated with the reliability of entering data will increase. Also, lack of audit and non-secure websites are mentioned as other reasons for reduced reliability. Finally, they stated that Internet financial reporting enables companies to increase their Financial Disclosure through additional and separated disclosure of financial data in the company's website (Ashbaugh, 1999).

Lodhia, ALLam and Lymer, in their studies suggested that the most important reasons for not using the full potential of the Internet for financial reporting and its low tendency is lack of reliability and low IT skills(Lodhia, 2003).

American Leading Committee of Financial Standards Board, in a survey conducted in 2000, announced as its major findings that reporting Internet has changed from monthly, quarterly and annual reporting in to timely reporting. Therefore, by Internet reporting, not only information provided to managers, analysts and experts but also will be provided to all users with low cost, high speed and easy access. However, we cannot predict whether the information is complete or not. In addition, this research group observed great differences in content and method of distributing reports on the Internet and said that problems such as security, legal barriers, inequities in access to these technologies has limited using of these tools. Finally, the research group discovered that use of Internet for reporting is possible only if electronic display of information to be the same as printed method or performance of current regulations while Internet technology has created a situation outside the print paradigm. (FASB, 2000). Now in this research the main question is that, according to corporate finance staff, whether investment in information technology improves their performance or their department or not? In this regard, one main hypothesis and five sub-hypotheses have been examined each of which contains two variables (dependent and independent). In the present study, the independent variable is IT system that is separated into secondary hypotheses and the dependent variable is organizational efficiency.

Main hypotheses:

Information Technology system improves the quantity and quality of the function of accounting information system.

Sub- hypotheses

• Information Technology increases the speed of accounting information system.
• Information Technology increases the accuracy of accounting information system.
• Information Technology causes timely retrieval of information of the accounting information systems.

• Information technology causes more information storage in accounting information system.
• Information technology increases the speed of access to information of the accounting information system.

Methodology

Research Type

Because research findings can be used practically, this study is considered as a practical study. On the other hand, because researcher participates in the internal situation of the aforementioned organization and performs the study in such a situation, then it can be said that this study is a field study or generally it is considered as a survey.

Data collection tools

In the present study, in addition to the library method and review of documents and other databases, questionnaire is used to collect data in order to test hypotheses and assess the staff views. The first part of questionnaire designed to collect demographic information and asking questions such gender, age, education level, field of study, military service period, organizational posts and amount of service experience in the current post. Second part of the questionnaire designed for documentation of the type and amount of using information technology systems at different organizational levels. The third part of the questionnaire consisted 20 questions that introduced as Lickert Scale. In this part, the research questions introduced and the five sub-hypotheses were examined. In the third section of the questionnaire, respondents should answer questions about the situation before and after the application of information technology systems. The fourth section of questionnaires explores amount of the effects of using each improvements resulting from the application of information technology system on service quality in financial reporting. It is worth noting that in Cronbach's alpha (n = 20 samples) the amount of these effects calculated as 94%, indicating very high reliability and validity of the questionnaire. In the present study, for increased reliability, first literature review of the study was examined through books, dissertations and articles. Next, variables were identified and accordingly questions of the questionnaire were introduced. After the initial preparation of questionnaire and after collection and distribution of them among a limited number of social population (for insured unambiguous and understandable questionnaire), some consultations were made with university professors in this field. In the next step, after some corrections, the questionnaire was confirmed in terms of face and content validity.

Statistical population:

Statistical population of the study includes all staffs who work with the organization's information technology system. Total size of the statistical population in this study is 232 individuals working in organizational units of companies in Yazd province. In addition, according to performed sampling, the sample size was 79 individuals. However, for better results, 110 individuals were selected.

The following equation is used to calculate sample size (Amidi, 2000, p 86):

$$N_0 = \left(\frac{z_{1-\frac{\alpha}{2}} \cdot f}{r \cdot x} \right)^2 = \left(\frac{1.96 * 0.1533}{0.01 * 0.090811} \right)^2 = 121.6401723$$

$$n = \frac{N_0}{1 + \frac{N_0}{N}} = \frac{121.6401723}{1 + \frac{121.6401723}{232}} \cong 79$$

Descriptive and analytical findings

In this study, parametric test of paired observations (t test) is used for data analysis. In addition to the above test, Pearson's significance linear correlation test is also used. This test is also used to investigate the responses to questions related to the research hypotheses presented in the third and fourth parts of the questionnaire.

32% of the sample's individuals were women and 68% were men. Due to the higher number of female users than male users in the organization, (according to official statistics agency) it is tried to keep this ratio in chosen samples. According to the obtained results, one members of the sample was in 25-21 year age group, 27 patients in the 30-26 years age group, 33 people in 35-31 years age group , 20 people were in 40-36 years age group and 29 patients were older than 40. Therefore 7/29% of them were between 31 to 35 and only about 9/0% of them were 21 to 25. Because people older than 40 did not cause much skew in the sample, the distribution in samples is natural. As a result, more than half of the members were younger than 35 and this shows that we can educate, invest and plan in order to create desired culture of an organization in the related fields. 4/78% of individuals in the sample had master and higher degrees, 9% were diploma and 6/12% of them had associate degree .This means that their views are to a large extent accepted and trusted. The average work experience of individuals is over 11 years. Therefore, they have work experience of traditional methods and their views on working methods and processes are reliable.

Descriptive statistics related to the question before and after the application of information technology systems (in Table 1) shows an example of the situation before using information technology systems tend to be from moderate or more moderate to low choices. While in the status of the application of information technology systems, they more tend to intermediate to low choices. Central indexes such as the facade and the mean are also confirmed this result.

Contents of Table 2 refer to amount of the using of members in the samples from the existing systems.

According to contents of table 2, most tools used in the organization of information technology are: Word processing program, library software, Internet, intranet, statistical software such as Spss, Excel and electronic mail. First, second, third and fourth cases are used by more than 70% and fifth and sixth cases are used by more than 50% of the organization's employee. Descriptive statistics for variables included in the study are shown in Table 3.

After description of statistics, the study hypotheses and results will be investigated. It is worth mentioning that to carry out this part of study the test of pair observations was used that summary of its statistical results is presented in Table 4.

Hypothesis testing in this section for each above five calculations is as follows: The test statistic is as follows:

About five-cases in the above table, with comparing a p-value and alpha related to each case, we conclude that the hypothesis is accepted and rejected and it means a kind of significant difference between averages before and after the application of information technology. It is worth noting that in table 1, variables in rows number 4, 12, 15 and 19 are in a way that application of information technology on the contrary to other variables is questionable.

Therefore, their data are in the opposite direction of other variables. For example, considering the answers to the variable of space needed for archiving information due to application of information technology systems in comparison with its application shows a decreasing trend.

In this section, the research hypotheses will be examined separately using Pearson linear correlation test. More specifically, in the first phase we assess changes in indicators due to application of information technology systems. In the next part, effect of these changes on service quality in financial reporting is questioned. Finally, we have investigated the correlation between these two groups of data.

First sub-hypothesis: increased speed of working causes better performance of the organization
Above hypothesis can be formulated as follows:
Null hypothesis means:

Pearson linear correlation is not significant and this mean that there is no linear relationship between two variables (increased speed of work performance and effectiveness of organization).
And in an opposite hypothesis:

Pearson linear correlation is significant and this means that there is a significant linear relationship between two variables (increased speed of work performance and effectiveness of organization).Test table of Pearson linear correlation is as follows:

According to the results reported in Table 5, because the p-value is smaller than the alpha value, in 5% significance
 Level the null hypothesis is rejected, i.e., Pearson's linear correlation is statistically significant at 5% level. In other words, it can be concluded that:
"Increased speed of doing works causes better performance of the organization."

And because value of this coefficient is positive (2956/0), it can be said that these two variables are changed in one direction, i.e. increasing of one variable causes increased value of the other one and vice versa.

Second sub-hypothesis: increased accuracy in doing things the organization has cause better performance. Test table of the significance of Pearson linear correlation between is as follows:

According to the results reported in Table6, because the p-value is bigger than the alpha value, in 5% significance level the null hypothesis is not rejected, i.e., Pearson's linear correlation is not statistically significant at 5% level. In other words, it can be concluded that:
"Increased accuracy of doing works did not cause better performance of the organization."

On the one hand, control of users over the working process and their experience in providing services is based on traditional and manual and on the other hand, among main reasons of the rejection of this hypothesis at 95% level are some failures in computer systems, which have a negative impact on services, and incomplete familiarity of users with all capabilities of the existing systems.

Third sub-hypothesis: Timely retrieval of information causes better performance of the organization. Test table of the significance of Pearson linear correlation between is as follows in Appendix

Appendix
Table 1. Descriptive statistics related to questions before و and after an application of Information Technology in the organization.

| | | | Before application of Information Technology | | | | | Case Of Variable | After application of Information Technology | | | | | | |
Row	View	Average	Too high	High	Average	Low	Too low		Too high	High	Average	Low	Too low	View	Average
1	2	23/2	1	2	36	55	17	Transmission Information Rate	39	61	9	1	1	4	23/4
2	2	08/2	1	3	26	55	26	Keeping Reconstruction of Available Defects	17	66	24	2	2	4	85/3
3	4	81/3	10	77	17	7	0	Amount of Unnecessary Work formalities	1	8	22	61	19	2	19/2
4	2	15/2	0	4	31	54	22	Speed of Report Preparation Performance	33	57	19	2	0	4	9/4
5	2	29/2	0	4	39	54	14	Offering Feedback To User about Performed Work	16	72	21	2	0	4	92/3
6	3	41/2	1	4	50	41	15	Exact Storage of Information	43	61	5	1	1	4	29/4
7	2	22/2	1	1	35	59	15	Rate of Exact Processing of Data	33	69	8	1	0	4	2/4
8	2	46/2	3	7	42	45	14	Rate of Correction of Possible Mistakes	23	55	23	2	8	4	75/3
9	2	45/2	1	7	43	50	10	Amount of Offering Timely Information	26	71	12	1	1	4	08/4
10	2	23/2	1	3	37	50	20	Speed of the Extract of information	40	60	8	2	1	4	22/4
11	4	01/4	31	55	20	5	0	Speed of Time Retrieval Required time for Information retrieval	0	3	6	52	48	2	71/1
12	3	68/2	4	13	46	39	9	User-friendly and Convenient method of Information Retrieval	20	53	28	8	2	4	72/3
13	2	38/2	1	13	35	40	22	Coding System for Access To Information	22	55	24	6	4	4	76/3
14	4	4	25	66	16	3	1	Required time for Retrieval of Information in the System Archive	1	3	8	49	50	1	70/1
15	2	89/1	0	1	25	56	29	Ease of Information Exchange	38	62	8	1	2	4	2/4
16	2	46/2	1	5	28	52	25	Capacity Available For Information storage	66	39	3	1	2	5	49/4
17	2	24/2	0	7	32	51	21	Ease of Information storage	43	54	7	6	1	4	9/4
18	5	39/4	54	49	7	0	1	Space Available For Information Archive	2	3	3	41	62	1	58/1
19	2	05/2	3	1	19	64	24	Speed of Information storage	51	49	7	2	2	5	3/4
20	2	15/2	1	0	33	58	19	Capability of the Management of Files	38	59	9	1	4	4	13/4

Table 2. Percent of employees who are using information technology systems

Available Systems	Percent of Employees Usage
Secretariat System	21/7
Accounting System	31/6
Software\Personnel Soft	21/7
Roll call System	01/9
Legal and Wage System	41/5
Library Software	58/76
Store System	4 1/5
Word Processor Program	48/77
E-Archive	65/48
E - Letter	25/52
Videoconferencing	70/2
Internet	97/72
Intranet	27/70
Statistical applied Software like Spss Excel and Excel	95/54
Planning Program Microsoft Project such as Microsoft Project	91/9

Table 3. Descriptive statistics related to fourth section of the questionnaire

	Increasing the speed of work performance	Increasing the accuracy of work performance	Timely retrieval of information	More storage of information	Increasing the speed of access to information
Total	111	111	111	111	111
Average	03/18	17/18	17/18	55/18	74/18
Median	18	18	18	19	19
Total	2001	75/2016	5/2016	5/2059	2080
minimum	10	8	12	10	10
maximum	20	20	20	20	20
Domain	10	12	8	10	10
Variance	89/2	61/3	34/3	66/2	61/2
Standard Deviation	7/1	9/1	83/1	63/1	61/1
SD	16/0	18/0	17/0	15/0	15/0

Statistic Table 4. Statistical analysis of pair observations

	Difference of before and after testing	Statistics test (T)	Degree of freedom	Value of possibility	Results
Increasing of work performance	87/1	42/24	110	0001/0	Application of Technology Information System Have Had Significant Effect on Increased Speed of Work Performance.
Increasing of accuracy in work performance	69/1	47/23	110	0001/0	Application of Technology Information System Have Had Significant Effect on Increased Accuracy of Work Performance
Timely retrieval of information	74/1	27/20	110	0001/0	Application of Technology Information System Have Had Significant Effect on Timely Retrieval of Work Performance
More storage of information	27/2	65/30	110	00001/0	Application of Technology Information System Have Had Significant Effect on More Storage of Information.
Increasing speed of access to information	97/1	55/22	110	0001/0	Application of Technology Information System Have Had Significant Effect on Increased Speed of Access to Information.

Table5: Table of testing significant Pearson Linear Correlation for first sub- hypothesis

First Variable Second Variable	Difference between performance before and after using speed in work performance (Due to application of Information s Technology system)
Given score to core effect of increased speed of work performance on providing services(Due to application of Information Technology system)	= 2956/0r
	= 002/0 p-value

Table 6: Test table of the significance of Pearson linear correlation for Second sub-hypothesis

First Variable Second Variable	Difference between amount of accuracy before and after using speed in work performance (Due to application of Information Technology system)
Given score to core effect of increased accurate work performance on providing services(Due to application of Information Technology system)	= 1711/0r
	= 073/0 p-value

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