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Study of Influencing Factors in Successful Implementation of Accounting Information Systems (AIS) on listed Companies of Tehran Stock Exchange (TSE)

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Abstract

In this research we study the influencing factors that have direct effect on successful AIS implementing. According to other researches, we specified some factors that are most efficacious ones, and categorized them through three main hypotheses of human recourses, technical characteristics of AIS and management strategies. To study various dimensions of these groups we determined some other factors as subsidiary hypotheses. Results of this study showed that all of the main and subsidiary have direct effect on successful implementing of AIS and among the main hypotheses human recourses as placed as the most influencing factors.

Keywords: Successful Implementation, Accounting Information Systems, Human Recourses, Management Strategies, Direct Effect, Decision Making.

1- Introduction

Today's organization are operating and competing in an information age .Information has become a key resource of most organizations, economics, and societies. Indeed, an organization's basis for competition has changed from tangible products to intangible information .

Software bustling and today's fast upheaval on management science and its impacts on accounting and reporting to equities have had authority to detect some solutions in order to move toward development and growth. So, managements' decisions that have been made have a great impact on this movement. and, the availability of appropriate data[1] can help management on this serious decision making. In addition, according to today's economical relationships between enterprises, that have been complex and rival, being of an enterprise is at pawn of having information .

Until using automated systems on management and accounting, having accurate and timeliness information on various company was costly and difficult. Indeed, because of impossibility of collecting information in handing manner, large companies have referred to information systems. However, organizations need to an information system according to their organizational structure goals. So, managers should have to discover the use of appropriate automated information system. Before using of such systems it's important to note that if these systems are useful. Indeed it must be studied that the information systems are implemented properly .

2- Literature review
2-1- Implementing Accounting Information Systems (AIS)

An AIS is a system of collecting and processing transaction data and disseminating financial information to interested parties. AIS data is processed to external stakeholders-stockholders and government agencies - in addition to its internal use. One of the most important stage among installation AIS stages in order to achieving proper IS, is implementing. It so, many organizations have been challenged with implementing new accounting systems. This stage has included many stages such as installation or training, but choosing appropriate AIS is behind them. The term implementation is given a variety of meanings in the literature. According to Nutt[2] implementation is a procedure directed by a manager to install planned change in an organization. According to Klein and sorra[3], implementation is the process of gaining targeted organizational members' appropriate and committed use of an innovation .

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[1] . Appropriate data means data that with characteristics of accuracy, timeliness and relevancy
[2] . P.C. Nutt, (1986)," Tactics of implementation", Academy of Management Journal 29(2)
[3] . K.J. Klein, J.S. Sorro, (1996), "The challenge of innovation implementation", Academy of Management Review 21(4), pp. 1055-1088

As a general rule of thumb, a firm should have implemented its AlS rapidly. Some firms make a selection in six to twelve months and then spend as much as two years implementing the system. Training software users is deemed to be the most challenging stage. A firm must provide a comprehensive training program focusing on its system design and requirements. Also, firms tend to underestimate the amount of training time required, especially due to time constraints and costs. It is not unheard of training to exceed that the actual software. Is needed.

Users training and their skill in using software and hardware have known as influencing factors on successful implementation of information systems. In reviewing the influencing factors, it could be concluded that there are immense amount of factors. Some of the following are more important

2-2- User's Perceived Task Complexity

User's perceived task complexity relates to how well users can adopt to the system and negative around it. Some studies of system diffusion suggested that the simpler the innovation is to understand the more quickly it is adopted. For instance, a simple application is fully integrated into the organization's business processes; it could become a complex operation that could affect implementation. In short, one could argue that perceived task complexity is found to be negatively related to implementation and can greatly impact upon the user's .

2-3- User's Resistance to Change

The most common reaction to technological implementation in organizations is resistance to change. To people at work new technology can spell all kinds of trouble. It can mean loss of jobs, disruption to know procedures, the need to learn new skills or the further dehumanization of the work itself. New technology means change and change can be disadvantageous and difficult. It may also bring a better quality of working life opportunities to become more proficient etc, but the most common reaction is to expect the worst .

2-4- User Training and Project Champion

User training refers to the provision of hardware and software talents adequate to enable interaction with the system under consideration. Untrained users would not be productive or motivated, as those who are trained. They would be unable to effectively deal with change because their skills are specific and not catered for the change .

Lack of project champion can be one of the most frequent causes of IS implementation failure. These champions are so important on decision making about project. They also have a vital part to play in helping to derive user need analyses, and could be seen as a user who could greatly plays significant role in the implementation process .

2-5- Senior Executive Awareness and Support

Senior executive awareness and support are important parts of implementing process. Because they have direct impact on thinking of users and their participating and helping on rapidly implementing of an information system. On the other hand , senior executive awareness can show some solutions to subordinate parts about new system that they are trying to adopt with and being aware about a system and being in choosing and installation stages could be as a successful criteria of AIS implementing .

There are some other viewpoints about influencing factors in success of AIS implementation :

According to Mac[1], factors that affect the implementing are nature of the business, the size of the firm, volume of data, and the informational demand that management and others place on the system .

3. Research Hypotheses

To study influencing factors on successful implementing of AIS, we choose some factors that have direct effect on implementing according to other researches and essay them throughout following three main hypotheses :

1) Human recourses have a direct effect on successful implementing of AIS .
2) Technical characteristics of AIS have a direct effect on successful implementing of AIS .
3) Management strategies have a direct effect on successful implementing of AIS .

To study and testing various dimension of these hypotheses, some subsidiary hypotheses were expressed. Human recourses was broken into four subsidiary hypotheses user participation, user resistance to changes, knowledge of AIS users[5], user previous experience on implementing. Technical characteristics of AIS was broken into system flexibility according to organizational need and appropriate hardware structure. Management strategies were studied through these four subsidiary hypotheses: management commitment, project management, training quality of users and organization time budget . All of these subsidiary hypotheses were expressed in the form of three main and according to these subsidiaries, main hypotheses were tested .

3.1. Sample and Data Collection Procedure

In this study population has been chosen from top financial managers of companies quoted in Tehran Stock Exchange, which their main office was in Tehran. According to Tehran Stock Exchange companies was 332 on April 2007. According to following sampling

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[1] . Mack. Erica, (2000)." Implementing a Secure Accounting Information Systems ", Journal of accountancy

formula 178 firms were selected and on basis of random sampling, questionnaires were distributed among firms but number of reliable questionnaire that returned were 142 .

$$ n = \frac{N(Z)^2 pq}{(N-1)d^2 + (Z)^2 pq} = \frac{332(1.96)^2 \times 0.5 \times 0.5}{(332-1) \times 0.05^2 + (1.96)^2 \times 0.5 \times 0.5} = 178 $$

3.1.1. Data Collection Method

In this study a questionnaire was used to collect data. The questionnaire was presented in three sections. On section one, a prologue was used to prepare persons was going to answer to questionnaire. To increase the return percentage of questionnaire, persons were insured that their answers are published on statistics and are not detectable to everyone. On section two a recipe was expressed and information about answering to questions was shown. On section three questions were expressed on three parts. On part A, general questions about their working antecedent, degree and education specialty were represented. On part B, 38 questions about subsidiary hypotheses and successful implementation of AIS were questioned. Answers should have been rated among 0 to 100. Answers closer to 100 expressed more success on implementing AIS. On part c persons could essay their causes about their numbering to questions. Table 1 shows the relationships among hypotheses and questions .
5 Users knowledge on IS, IT, accounting and AIS were on our scope.

Table1. Relationships among hypotheses and questions of questionnaire

First Main Hypothesis: Human recourses	
Subsidiary Hypotheses	**Questions**
User Participation	Users Participation on software choosing Users Participation on provisions, changes and development of on using comportment Users Participation on system running Users Participation on improving and graduating system work
User resistance to changes	Tasks complexity panic Users resistance against increasing internal controls because of entering new system Preceding place loosing feeze Users fright about increased tasks pro system implementation
Knowledge of AIS users	Organizational processes knowing Knowing about nature of AIS Acquaintance about software in market Working system processes knowledge Having Accounting or IT education
User previous experience on implementing	Having experience in improving organizational processes Preceding experience on using accounting software Previous failure experience in implementing stage

Table 2.

Subsidiary Hypotheses	Questions
Second Main Hypothesis: Technical characteristics of AIS	
System flexibility according to organizational need	Having software technical development possibility in order to future organization plans Having some facilities that would cover organizational probable oncoming needs Including various working processes on primary structure of system according to probable variable needs of organization Software conduction ability organizational objectives availability
Appropriate hardware structure	A appropriate hardware for using software Replacing with other hardware's to improving rapidity and potency of new system processing. The ability of connecting various hardware to the system to easing data entry.

Table 3.

Subsidiary Hypotheses	Questions
Third Main Hypothesis: Management strategies	
Management commitment	Organization commitment for changing and improving plans Management accepts that AIS improvement can improve organization Knowing importance of using and nature of AIS by management
Project Management	Allowing enough and adequate period of time for implementing processes Implementing processes happens on a period that firm doesn't have much work to do Having time planning for each of installation, implementing and training stages Creating a plan in which best learning period of users is specified and assigned this time to training new software to users
Training quality of users	Existing of adequate controls on didactic period Using motivated factors to encouraging users in order to learning the system Training working and systematic processes to users Training software facilities to users
Organization time budget	Management supervision and pursuit on implementing process Planning suitable working strategy to new system implementing Using permanent staff to increasing completion of implementing process prospecting needful contrivances at oncoming system developing to preventing from breaks happening on firm operating procedure

3.2 Statistical Techniques

Descriptive methods such as mean, median, mode and standard deviation used to explain data. In table 2 you see descriptive characteristics of hypotheses and confidence interval for each of them. In addition, to testing hypotheses binominal test and for ranking them on different level of main hypotheses and subsidiary hypotheses one-way ANOVA[6] were used. Binominal test was used at %95 level of significance. So, statistical hypotheses are as follow :

Ho: p7 $\geq$ 0.5
HI: P<0.5

Table 4. Descriptive characteristics of hypotheses

Research hypotheses	median	mode	mean	std	/95confidence interval
User participation	68.75	71	68.2	9.65	64.4-71.64
User resistance to changes	65	71	64.29	12.52	59.59-68-98
Knowledge of AIS users	73	76	71.32	12.54	66.61-76.2
User previous experience	73.33	73	71.13	11.1	66.96-75.29
Human recourses	69.6	67	68.68	8.86	65.35-71.99
System flexibility	57.5	64	56.36	11	52.23-60.48
Appropriate hardware structure	53.33	53	53.69	9.95	49.95-57.41
Technical characteristics of AIS	55.73	54	55.04	8.87	51.71-58.36
Management commitment	68.33	73	67.07	13.55	61.98-72.14
Project management	57.5	51	57.59	11.04	53.44-61.73
Training quality of users	60	56	59.76	7.54	56.93-62.59
Organization time budget	66.25	74	65.38	11.21	61.17-69.58
Management strategies	63.23	66	62.47	7.03	59.84.65.11

As you see in table 2 by 95% level of confidence, human recourses hypothesis with lower confidence limit of 65.35 is even greater than upper confidence limit of next main hypothesis (management strategies). It means that human recourses among %65.35 to %71.99 is efficacious on successful implementing of AIS at %95 level of significance and Technical characteristics of AIS with lower confidence limit of 51.57 and upper confidence limit of 58.36 is at the last place. Among subsidiary hypotheses, Knowledge of AIS users hypothesis with confidence interval of 66.61 to 76.02 and appropriate hardware structure with confidence interval 49.95 to 57.41 are on top and end, respectively.

Six analysis of Variance , it refers to sample proportion .

4. Research Finding, Conclusion and Suggestions

In this study all of 10 subsidiary hypotheses were tested with binominal test at %95 level of significance: Results showed that all these hypotheses have had direct effect on successful implementing of AIS. As you see in table 3, all of our subsidiary hypotheses are accepted. Main hypotheses were tested too and results showed that, these three main hypotheses were efficacious in implementing AIS, as you see in table 4. Having known about expressed influencing factors, through these 13 hypotheses, we used one-way ANOVA to ranking these hypotheses. As you see in table 5 and 6 according to one-way ANOVA, among subsidiary hypotheses, knowledge of AIS users has placed on top and among main hypotheses, human recourses because of its mean difference with Technical characteristics of AIS and management strategies has placed on the top of most influencing expressed factors on successful implementing of AIS .

Table 5. Subsidiary hypotheses and statistical results

Subsidiary hypotheses	NO	z-value	Accept	
User participation	142	10.74	Accept	Human recourse
User resistance to changes	142	7.88	Accept	
Knowledge of AIS users	142	10.4	Accept	
User previous experience	142	10.74	Accept	
System flexibility	142	5.87	Accept	AIS characteristics
Appropriate hardware structure	142	4.19	Accept	
Management commitment	142	9.73	Accept	Management strategies
Project management	142	8.22	Accept	
Training quality of users	142	10.23	Accept	
Organization time budget	142	9.89	Accept	

As you see in table 3 and 4, all of hypotheses are accepted, it's because our hypothesis testing is a left-tailed test and the calculated statics for each hypotheses are greater than contingency table Z-Value and aren't placed on critical region so there isn't any causes to reject Ho and influencing each of those factors on successful implementing of AIS are acceptable .

Table 6. Main hypotheses and statistical results

Subsidiary hypotheses	NO	Contingency table z- value	Calculated z – Value	Accept or reject
Human recourses	142	-1.645	10.9	Accept
Technical characteristics ALS	142	-1.645	5.37	Accept
	142	-1.645	10.47	Accept

To rank hypotheses, we use one-way ANOVA. To do this, first of all we study if the hypotheses' mean factor are different. Table 5 and 6 shows on significant column that calculated statistic is lower than 0.05, so Ho of ANOVA are acceptable .

Table 7 Inequality of subsidiary hypotheses means' ANOVA

Descriptions	Sum of squares	Df	Mean squares	F	Sig
Between groups[1]	50114.351	9	5568.261	44.961	000
Within groups	174622.6	1410	123846		
total	224737.0	1419			

All of the subsidiary hypotheses means' were unequal and according to this inequality we could rank them 1 to 10. Table 8 shows the means differences and Table 9 shows the ranking of research subsidiary hypotheses .

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[1] . Groups: subsidiary hypotheses

As you see in table 8 all of the subsidiary hypotheses are compared to each others. According to this table we can rank the subsidiary hypotheses to determine which one is the most influencing factor on successful implementing AIS. Subsidiary hypotheses precedence is shown in table 9.

Table 8 Differences among subsidiary hypotheses means multiple comparisons LSD

(I)Variable	(J)Variable	Mean difference(I-J)	Std.error	Sig.
User participation	User resistance to change	3.7324*	1.3207	.005
	Knowledge of AIS users	-3.3032*	1.3207	.012
	User previous experience	-3.1070*	1.3207	.019
	System flexibility	11.6637*	1.3207	.000
	Appropriate hardware structure	14.3342*	1.3207	.000
	Management commitment	09537	1.3207	.470
	Organization time budget	10.4313*	1.3207	.000
	Training quality of users	8.2570*	1.3207	.000
	Project management	2.6408*	1.3207	.046
User resistance to change	User participation	-3.7324*	1.3207	.005
	Knowledge of AIS users	-7.0356*	1.3207	.000
	User previous experience	-6.8394*	1.3207	.000
	System flexibility	7.9313*	1.3207	.000
	Appropriate hardware structure	10.6018*	1.3207	.000
	Management commitment	-2.7787*	1.3207	.036
	Organization time budget	6.6989*	1.3207	.000
	Training quality of users	4.5246*	1.3207	.001
	Project management	-1.0915	1.3207	.409
Knowledge of AIS users	User participation	3.3032*	1.3207	.012
	User resistance change	7.0356*	1.3207	.000
	User previous experience	.1962	1.3207	.882
	System flexibility	14.9669*	1.3207	.000
	Appropriate hardware structure	17.6374*	1.3207	.000
	Management commitment	4.2569*	1.3207	.001
	Organization time budget	13.7345*	1.3207	.000
	Training quality of users	11.5602*	1.3207	.000
	Project management	4.9440*	1.3207	.000

*.the mean difference is significant at the 0.05 level

Table 8 Differences among subsidiary hypotheses means

(I)Variable	(J)Variable	Mean difference(I-J)	Std.error	Sig.
User previous experience	User participation	3.1070*	1.3207	.019
	User resistance to change	6.8394*	1.3207	.000
	Knowledge of AIS users	-.1962	1.3207	.882
	System flexibility	14.7707*	1.3207	.000
	Appropriate hardware structure	17.4412*	1.3207	.000
	Management commitment	4.0607*	1.3207	.002
	Organization time budget	13.5383*	1.3207	.000

	Training quality of users	11.3640*	1.3207	.000
	Project management	5.7478*	1.3207	.000
System flexibility	User participation	-11.6637*	1.3207	.000
	User resistance to change	-7.9313*	1.3207	.000
	Knowledge of AIS users	-14.9669*	1.3207	.000
	User previous experience	-14.7707*	1.3207	.000
	Appropriate hardware structure	2.6705*	1.3207	.043
	Management commitment	-10.7100*	1.3207	.000
	Organization time budget	-1.2324	1.3207	.351
	Training quality of users	-3.4067*	1.3207	.010
	Project management	-9.0229	1.3207	.000
Appropriate hardware structure	User participation	-14.3342*	1.3207	.000
	User resistance to change	-10.6013	1.3207	.000
	Knowledge of AIS users	-17.6374	1.3207	.000
	User previous experience	-17.4412	1.3207	.000
	System flexibility	-2.6705	1.3207	.043
	Management commitment	-13.3805	1.3207	.000
	Organization time budget	-3.9029	1.3207	.003
	Training quality of users	-6.0772	1.3207	.000
	Project management	-11.6934	1.3207	.000
Management commitment	User participation	-.9537	1.3207	.470
	User resistance to change	2.7787*	1.3207	.036
	Knowledge of AIS users	-4.2569*	1.3207	.001
	User previous experience	-4.0607*	1.3207	.002
	System flexibility	10.7100*	1.3207	.000
	Appropriate hardware structure	13.3805*	1.3207	.000
	Organization time budget	9.4776*	1.3207	.000
	Training quality of users	7.3.33*	1.3207	.000
	Project management	1.6871	1.3207	.202

Table 8 Differences among subsidiary hypotheses means

(I)Variable	(J)Variable	Mean difference(I-J)	Std.error	Sig.
Organization time budget	User participation	-10.4313*	1.3207	.000
	User resistance to change	-6.6989*	1.3207	.000
	Knowledge of AIS users	-13.7345*	1.3207	.000
	User previous experience	-13.5383*	1.3207	.000
	System flexibility	1.2324	1.3207	.351
	Appropriate hardware structure	3.9029*	1.3207	.003
	Management commitment	-9.4776*	1.3207	.000
	Training quality of users	-2.1743	1.3207	.100
	Project management	-7.7905*	1.3207	.000
Traing quality of users	User participation	-8.2570*	1.3207	.000
	User resistance to change	-4.5246*	1.3207	.001
	Knowledge of AIS users	-11.5602*	1.3207	.000
	User previous experience	-11.3640*	1.3207	.000
	System flexibility	3.4067*	1.3207	.010

	Appropriate hardware structure	6.0772*	1.3207	.000
	Management commitment	-7.3033*	1.3207	.000
	Organization time budget	2.1743	1.3207	.100
	Project management	-5.6162*	1.3207	.000
Project management	User participation	-2.6408*	1.3207	.46
	User resistance to change	1.0915	1.3207	.409
	Knowledge of AIS users	-5.9440*	1.3207	.000
	User previous experience	-5.7478*	1.3207	.000
	System flexibility	9.0229*	1.3207	.000
	Appropriate hardware structure	11.6934*	1.3207	.000
	Management commitment	-1.6871	1.3207	.202
	Organization time budget	7.7905*	1.3207	.000
	Training quality of users	5.6162*	1.3207	.000

*.the mean difference is significant at the 0.05 level

Table 9 Ranking of subsidiary hypotheses of research

Rank	subsidiary hypptheses	Beling to
1	Knowledge of AIS users	H[1]
2	User previous experience	H
3	User participation	H
4	Management commitment	M[2]
5	Project management	M
6	User resistance to change	H
7	Training quality of users	M
8	Organization time budget	M
9	System flexibility	T[3]
10	Appropriate hardware structure	T

Table 10 Inequality of main hypotheses means ANOVA

Descriptions	Sum of squares	Df	Mean squares	F	Sig
Between Groups[4]	13296.838	2	6648.419	92.208	.000
Within Groups	28930.529	423	68.394		
Total	42227.368	425			

After knowing that the main hypotheses means' are unequal, the main hypotheses were compared to each other one by one according to their means on basis of ANOVA. Table 11 shows these differences. We use these differences to determine the precedence of each hypothesis .

[1] . Human Rrecourses
[2]. Management strategies
[3] . Technical characteristics of AIS
[4] . Groups: main Hhypotheses

Table 11 Differences among main hypotheses means Multiple Comparisons LSD

(I)Variable	(J)Variable	Mean difference (I-J)	STD. Error	Sig
Human recourses	Technical characteristics of ALS	13.6678*	0.9815	.000
	Management strategies	6.2401*	0.9815	.000
Technical characteristics of ALS	Human recourses	-13.6678*	0.9815	.000
	Management strategies	-7.4277*	0.9815	.000
Management strategies	Human recourses	-6.2401*	0.9815	.000
	Technical characteristics of ALS	7.4277*	0.9815	.000

.*The mean difference is significant at the 0.05 level.

Main hypotheses are compared to each others to specifying the most influencing factor on implementing of AIS. As you see in table 11 the mean difference of human recourses against technical characteristics of AIS and management strategies is a positive amount and the mean difference of technical characteristics of AIS against other main hypotheses is a negative amount. So, human recourses are placed on the top of influencing factors of implementing AIS and management strategies and technical characteristics of AIS are placed, respectively.

According to results we've achieved in this study, the following suggestions are purposed:

Study about influencing factors on successful implementing of AIS according to other stock exchanges .

1) Investigating about quality of implemented systems .
2) Research about completion of implementing process. Because it's important to know when implementation is ended and system training is begun.

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