

## *Full Length Research Paper*

# Accounting information system's barriers: Case of an emerging economy

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Accepted 29 December, 2012

The current study aims to investigate the barriers of implementing accounting information system in Iran by postulating six hypotheses of accounting information system (middle managers, human resources, organizational structure, environmental factors, financial issues and organizational culture) in companies listed in Tehran Stock Exchange. In order to collect data, a questionnaire was designed and developed about the subject of the study. The statistical society includes all listed companies in Tehran Stock Exchange. Collected data were analyzed by parametric statistic tests. The results of the study confirmed the six postulated hypotheses. From the study, it can be concluded that giving reward to managers and staffs and encouraging staff to use the new system will help in justifying that the establishment of this system would be to their advantages; by the lever of reward, staff will be encouraged to compete in learning and work, which can therefore accelerate performance and system implementation. The main problems in data transferring were solved, and running instructions became clear.

**Key words:** Accounting information systems, corporate accounting system, financial system of average companies.

## INTRODUCTION

Accounting information systems (AIS) are a tool, which when incorporated into the field of Information and Technology systems (IT), are designed to help in the management and control of topics related to firms' economic-financial area. However, the stunning advance in technology has opened up the possibility of generating and using accounting information from a strategic viewpoint. Since this is important for all firms, it is more important even for medium-sized and small ones that need this information to deal with a higher degree of uncertainty in the competitive market. The most important features of it are: high speed data processing, extremely high accuracy, high speed access to information, current, the possibility of electronic exchange of information, high quality, very cheap and declining price. On the other

hand, the study has the development of operation volume and complication of affairs. By considering these factors, there will be no need to justify the use of IT in today's world (Salehi et al., 2010a). In addition, accounting has to use and apply all or some of the new techniques in their services and obligations. So, providers of information especially accountants, should provide advanced and high-quality information so that their services can be bought in high prices. Otherwise, in the future they will not have any place (Sutton, 2000). AIS is developed between one or two or more units of a company to achieve a specific goal (Salehi et al., 2010b; Salehi and Alipour, 2010). It contains small sub-systems that support larger systems, and includes people, methods, information and software and information technology infrastructures (Lautier 2001). System consists of a set of incorporated components that are affiliated to achieve one or several particular goals in a way that, if one or more input can go into it, one or more output can exit

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(Frederick, 1984). AIS is a completely designed system for the production, collection, organization (processing), storage, retrieval and dissemination in an institution, organization or any other defined areas of society. AIS can help business units especially small and medium companies to solve short-term problems of managers in the areas of final price, cost and cash flow by providing information to support and supervise medium and active companies in a dynamic and competitive environment. It can also help in the integration of these companies and the operational considerations and strategic programs in the long term (Mitchell et al., 2000). Progress in the fields of accounting, information technology and information systems during the past two decades suggest conditions to consider the role of accounting information system. Examples include the evolution of active database technology, implementing new models, such as accounting resources and factors of planning resources and allowing accounting information to attract financial old data (Mauldin and Ruchala, 1999).

In another study by Bergeron et al. (2001), it was found that there is a relation between appropriate strategic orientation, organizational structure, management and administration of IT with company's performance. Available literatures show little evidence of developing AIS within medium companies. In fact, considerable evidences suggest that financial accountings in medium companies are the main source of information management (McMahon and Davies, 1994).

### **Advantages of JIT (just in time)**

The advantages of the JIT philosophy are numerous. Giunipero et al. (2005) say that JIT has led to several benefits which include lower production cost, higher and faster throughputs, better product quality, reduced inventory costs and shorter lead times in purchasing. According to an American study of U.S. manufactures, companies can expect improved performance in lead times, quality levels, labour productivity, employee relations, inventory levels and manufacturing costs (White et al., 1999).

Fullerton and McWatters (2001) summarised benefits into five categories: quality benefits, time-based benefits, employee flexibility, accounting simplification and firm profitability. The increase in performance is usually attributable to a decrease in inventory levels, smoother production flow, lower storage cost and ultimately a decrease in average cost per unit. Callen et al. (2005) reported that JIT plants have significantly less WIP than non-JIT plants. JIT plants also store fewer finished products and have lower variable and total costs than the non-JIT equivalent. Callen et al. (2005) further found that JIT plants are significantly more profitable than non-JIT plants, but are neither successful at minimising WIP and costs nor maximising profits.

It is possible to observe that traditional performance measurement system is inconsistent with JIT system benefiting from technological innovations at a maximum level and also that it prevents or hides broad-based effectiveness of new production methods. In this sense, the restrictions of traditional measurement system in JIT environment might be listed as follows:

(a) Continuous development in production process is basic element in JIT manufacturing environment. To reach this aim easily, it is intended to make flow of production possible with minimal parties and decreasing stock levels to a minimum. Yet, production and productivity measures of traditional understanding have shown that productivity is low when small-lot production is made (Drury, 1990). For this reason, traditional accounting system suggests increasing batch capacity rather than decreasing lot size, which leads to raising stock levels, long supply process, increasing cost and declining customer's satisfaction (Mcnaire et al., 1990).

(b) As in standard costing, appropriate operational control of traditional accounting system cannot be carried out in today's production environment (Allott, 2000; Cheatham and Cheatham, 1996; Ezzamel, 1992). Besides, due to the reliability and consistency of manufacturing processes in JIT environment, deviations do not exist or exist in quite low level and it leads to less use of deviation analyses.

(c) JIT manufacturing system changes will bring about changes in information requirements (Bowen et al., 2007). As it is known, normally, traditional performance reporting is prepared monthly or weekly and cannot detect on time real reasons of processes that are not realized as expected. Yet, in JIT production system there is a possibility of short production cycle; so it requires information for the problems coming out in accordance with one-day or "real time" principal.

Ahmad et al. (2004) presented potential benefits and performance improvements achieved through JIT implementation. Summary of the main benefits of JIT are listed as follows:

- (i) reduced process time, setup time and lead time;
- (ii) reduced raw material, WIP and finished goods inventory levels and lot size;
- (iii) improved machinery and reduced machine breakdowns and downtimes;
- (iv) minimised space requirement;
- (v) improved flow of products;
- (vi) lowered production costs;
- (vii) simplified production processes;
- (viii) improved quality;
- (ix) improved flexibility, multifunctional ability, motivation and problem solving capability of employees;
- (x) increased productivity and performance;
- (xi) improved consistency of production scheduling and
- (xii) increased emphasis on supplier integration.

## **THEORETICAL ISSUES AND REVIEW OF LITERATURE**

IT is a company's key infrastructure that includes physical information technology infrastructures, information technology of human resources (technical and managerial skills) and technology of irreplaceable resources (Bharadwaj, 2000).

An important problem in management accounting and concern about AIS decision-making in organization regarding the need for information is communication and control of accounting information system. Computer system is based on a process that supports financial data for decision-making tasks of managers within the frame of coordination and control of company's activities, which have been analyzed in the researches of different models, between accounting information system with technology organization, organization's structure and organizational environment (Mia and Chenhall, 1994).

AIS is an important mechanism of an organization that is vital for effective management decision-making in controlling organization (Zimmerman, 1995). Generally, AIS is classified in two categories: a) Effective decision-making for information that is largely for control of organization and b) facilitation of information that is mainly used for coordination of organization in decision-making are used (Kren, 1992).

Effectiveness of AIS to increase system integration is to improve internal communications throughout the organization (Huber, 1990).

Top management team with various planning and management information system influences strategic performance (Gil, 2009).

Behavioral changes following Joint development show AIS support and participation of users that has been influencing accounting information system development and improving financial performance, which eventually lead to successful troubleshooting cost accounting system, are based activities.

The productivity of information technology within the information systems in public accounting is about a small number of respondents of the technology components who are aware of the major component of respondents' information technology data, and not the information system accounting. The development and effects of information system accounting on organization, human resources management and knowledge of technology and acceptance of data were evaluated (Mohdshaari, 2008).

Comparative advantage is a significant effective research model of value accounting information systems for scholars, and it represents the financial and human resources as the two basic pillars of research and development for supplement industry based on information systems, where absolute accounting superiority ensures business operations (Alles et al., 2008).

Management that stresses on critical factors of success for implementing organizational resources planning

systems suggests that selecting appropriate time, completing project by one management, training personnel, superiority of project results to other projects, use of consultants, management interaction with users and use of project control committee bring about the difference between successful and unsuccessful projects (Bradley, 2008).

Test of textual factors and the impact of characteristics of technology on implementing auditing decisions are in such a way that the use of computer techniques by experienced auditors shows that companies which have experienced the ability of influencing implementation of new technology, using long-term budgets have assessed different courses through indirect control of the software (Curtis and Payne, 2008).

Intelligent business system and measuring of its effects alongside business processes and organizational performance is important, as information technology systems through specialized texts and literature is outstanding (Elbashir et al., 2008).

Testing the influence of international investors on the quality of accounting information demonstrates that the right choice of investment and increasing work quality of international investors have influenced Russian accounting companies (Bagaeva, 2008).

### **Current economic and the traditional model of accounting reports**

Challenges and opportunities ahead of AIS researches prove that the economy in real condition can accelerate measurement and evaluation of business. Decision-making processes as a new business model result in decrease of internal and hidden processes. Therefore, AISs together with research literature have been successful in development of new models to accelerate accounting processes (Vasarhelyi and Alles, 2008).

### **Organizational determining factors acceptance and implementation of information technology in mean companies**

Private and public companies show that limiting factors in the implementation and information technology include overhauling, reformation arrangement, changes, lack of qualified personnel to run the same technology and information systems.

### **Strategic planning of information systems**

Case study in financial service companies in Germany represents that there is lack of scientific literature on implementation of strategic information systems planning, and data transfer is not mainly due to scientific literature.

Although scientific literature is inspiring, in practice to run strategic planning, information system is not included. Professional characters of management and different resources are of scientific characters. Thus, there is need for more experience in the role of management in the information technology practice through the opinions of staff (Teubner, 2007). More regulatory practices in information technology function of information technology organizations and business sector common understanding of the goals are associated with information technology. Examples include active participation in the committee information technology, trade balance, decisions regarding technology information and understanding of strategic policies and administrative information technology in successful exploitation of information technology projects.

Appropriate review between designing of AIS and performance of commercial units by analyzing strategies explains that high performance of commercial units depends on a wide range of accounting information systems (Boulianne, 2007).

In studying the integrated information system literatures of management accounting by considering its existing strengths, new integrated information system of accounting results in more development and understanding of theatrical frameworks in this regard. It identifies research gaps and suggests using research opportunities with different patterns and methods.

Ranking of AISs on performance of medium companies in Malaysia after studying of 310 companies through electronic questionnaire showed that, a significant and important part of medium companies in Malaysia were placed in high rank, and only a limited number of medium companies were in low level of accounting information systems because of low organizational performance (Azizi and King, 2005). Factors of users' concentration, measurement, report making, quality of management information provided and reviewing and checking group work of outcomes affect the quality of accounting information. To develop and spread AIS a special team should be organized for designing input and output concepts and processing stored information so that company's decisions for main outputs and comparing them with computer information be made possible and achievable.

Future development of AIS in investment shows that the successes in avoiding risking the capital of companies are of five categories: 1) Clear and bright offers; 2) Internal changes in institution's investment; 3) The variety of variables and repeating information change; 4) More use of information for supportive decisions support; 5) world-wide impacts on investment. These evidences are good reasons for the judge and future research in the development of AIS.

Mistry (2005) found that, though JIT has been widely implemented, interest in documenting its impact on financial performance and productivity was just generated

in the last few decades. For example, Inman and Mehra (1993) established the link between JIT benefits and bottom line financial measures. Olsen (2004, cited in Swamidass, 2007) stated, "lean/JIT firms tend to have better return on equity, since lean/JIT is associated with low inventories". However, according to Fullerton and McWatters (2001), the use of financial performance measurement under the present competitive market conditions appears unsustainable due to various reasons. Therefore, performance measurement system of a corporate body using JIT production system should support basic variations such as increasing product or service quality, continuous development and reducing losses (Hendricks, 1994) (Figure 1).

## RESEARCH METHODOLOGY

The statistical society of this research is made up of the financial managers of the companies listed in Tehran Stock exchange (TSE). In order to determine the statistical society, the companies of TSE were listed on August 2010. For this purpose, a number of 442 companies were selected from TSE website. From the entire number of the selected companies, 36 companies were omitted from the list of listed companies of TSE following the session of Security Subscription Board. Eventually, the study was concentrated on 406 companies from 36 different industrial sectors.

The statistical community in this research could be all companies all over the country, but due to different directions, limitations of personal facilities and the study limited statistical community, 100 companies listed in TSE were selected.

Research data collection instrument is a questionnaire which has been standardized in the academic community; and in considering its validity, the opinions of specialized literatures and comments of expert managers in relevant areas were analyzed, and its validity was acceptable.

In order to determine the proper size of the specimen and calculate the Cronbach's Alpha coefficient a pre-testing process was conducted. The methodology of the process is as follows: A number of 13 questionnaires whose narration style had been confirmed were distributed by the researchers among the financial managers of the admitted companies of TSE, as an initial specimen. The original data showed that, on average, the affectivity of financial expense in order to establish an internet financial reporting was rated at 13.90, with standard deviation of 4 within the range of 5 to 25. In the society, in average comparison test, with the constant number of 15 (the middle point of the above range), and at least a number of 86 persons at 5% error rate provided 80.26% level of ability. In order to test the hypotheses, T-Test was employed in the study that fits the testing of the hypotheses.

## Research objectives

The followings are the main objectives of the study:

- 1) Identify barriers in the establishment of AISs in companies.
- 2) Provide strategies for the establishment of AIS in obstacles companies listed in TSE.

## Research hypotheses

First hypothesis: Middle managers prevent the establishment of AIS in financial units.

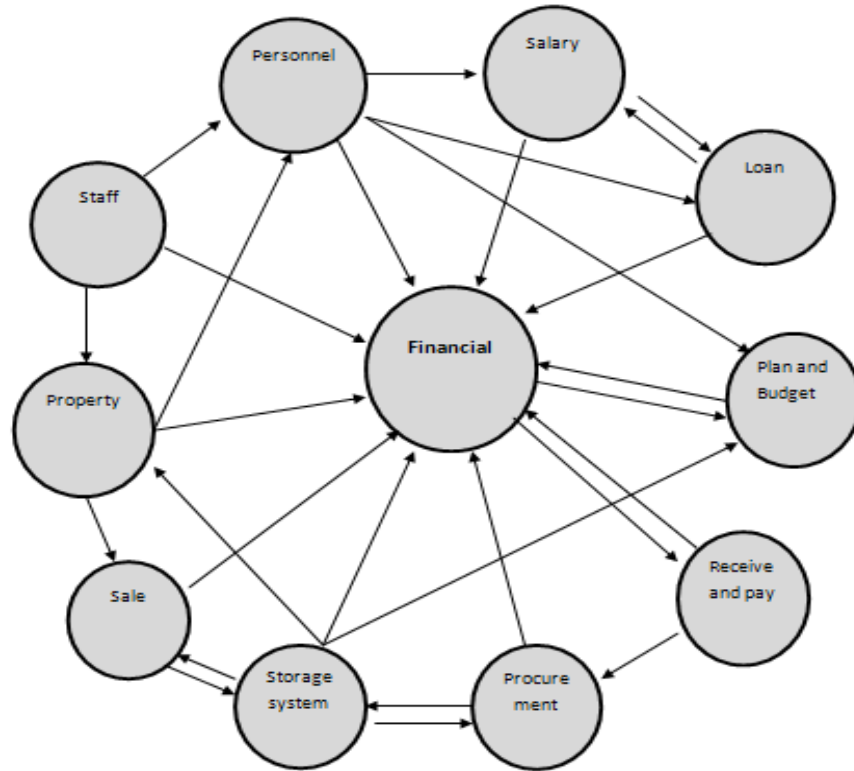


Figure 1. General plan of financial automation.

Second hypothesis: Organizational structure prevents the establishment of AIS in companies' financial units.

Third hypothesis: Organizational culture prevents the establishment of AIS in financial units.

Fourth hypothesis: Financial problems prevent the establishment of AIS in companies' financial units.

Fifth hypothesis: Labor prevents the establishment of AIS in financial units.

Sixth hypothesis: Environmental factors influencing AIS prevent the establishment of companies' financial units.

**DATA ANALYSIS**

In this section, demographic information of participants based on research experience, education, location, service and posting a separate organization is offered in Table 1.

**Testing of hypotheses**

First hypothesis: Middle managers prevent the establishment of information systems in companies' financial units.

SPSS software was used for the T-test of the above hypothesis. Confidence level of 0.95 is used and the results are demonstrated in Table 2.

H<sub>0</sub>: M = 20)  
(H<sub>1</sub>: = M> 20

H<sub>0</sub>: middle managers do not prevent the establishment of accounting information systems in financial units of companies.

H<sub>1</sub>: middle managers prevent the establishment of accounting information systems in financial units of companies.

Information in Table 2 shows the level of significance to be 0.001, and since the significant level is less than 0.005, it means the hypothesis is accepted; so H<sub>0</sub> is rejected and H<sub>1</sub> is approved.

Second hypothesis: Organizational structure prevents the establishment of accounting information system in companies' financial units.

For the above hypothesis, single- sample T-test with confidence level of 0.95 is used and the results are given in Table 3.

H<sub>0</sub>: M = 7)  
(H<sub>2</sub>: = M> 7

H<sub>0</sub>: organizational structure does not prevent the establishment of accounting information system in financial units of companies.

H<sub>2</sub>: organizational structure prevents the establishment of accounting information systems in financial units.

**Table 1.** General information of participants.

Item	Variable	Frequency	Percentage (%)
Educational background	Diploma	26	26.80
	B.A	59	60.80
	M.A	12	12.40
Field of the study	Accounting	59	60.80
	Management	38	39.20
Experience	Less than 5 years	62	63.90
	6-10 years	28	28.80
	11-15 years	7	7.20
Designation	Manager	11	11.30
	Deputy	7	7.20
	Expert	41	42.30
	Clerk	38	39.20

Source: Research findings.

**Table 2.** The results of testing first hypothesis.

Test value = 20			
First hypothesis	D.f	T	Sig.
Middle managers	96	16.735	0.001

Source: Research findings.

**Table 3.** The results of second hypothesis.

Test value = 7			
The second hypothesis	D.f	T	Sig.
Organizational structure	96	15.550	0.001

Source: Research findings.

Information in the table shows that the level of significance is 0.001, and since the significant level is less than 0.005, the hypothesis is accepted; so  $H_0$  is rejected and  $H_2$  is approved. Therefore, organizational structure is one of the barriers to the establishment of AIS in companies listed in TSE.

Third hypothesis: Organizational culture prevents the establishment of accounting information systems in financial units.

For the above hypothesis, single-sample T-test with confidence level of 0.095 is used and the results are given in Table 4.

$H_0$ :  $M = 12$   
 $(H_3: = M > 12)$

$H_0$ : organizational culture does not prevent the establishment of AIS in financial units.

$H_3$ : organizational culture system prevents the establishment of AIS in financial units.

**Table 4.** The results of testing third hypothesis.

Test value = 12			
The third hypothesis	D.f	T	Sig.
Organizational structure	96	68.246	0.001

Source: Research findings.

Information contained in Table 4 shows that the level of significance is 0.001, and since the significant level is less than 0.005, the hypothesis is accepted; so  $H_0$  is rejected and  $H_3$  is approved. Therefore, organizational culture prevents the establishment of AIS in companies' financial units.

Fourth hypothesis: Financial problems prevent the establishment of accounting information system in companies' financial units.

For the above hypothesis, single-sample T- test with confidence level of 0.95 is used and the results are given in Table 5.

$H_0$ :  $M = 6$   
 $(H_4: = M > 6)$

$H_0$ : financial problems do not prevent the establishment of AIS in financial units.

$H_4$ : Financial problems prevent the establishment of AIS in company's financial units.

Information contained in Table 5 shows that the level of significance is 0.001, and since the significant level is less than 0.005,  $H_0$  is rejected; therefore, financial problems prevent the establishment of AIS in companies listed in TSE.

**Table 5.** The results of fourth hypothesis.

Test value = 6			
The fourth hypothesis	D.f	T	Sig.
Financial problems	96	28.426	0.001

Source: Research findings.

**Table 6.** The results of testing fifth hypothesis.

Test value = 17			
The fourth hypothesis	D.f	T	Sig.
Labors	96	67.887	0.001

Source: Research findings.

**Table 7.** Results of testing sixth hypothesis.

Test value = 12			
The sixth hypothesis	D.f	T	Sig.
Environmental factors	96	105.102	0.001

Source: Research findings.

Fifth hypothesis: Labor does not prevent the establishment of AIS in financial units.

For the above hypothesis, single- sample T-test with confidence level of 0.95 is used and the results are given in Table 6.

$H_0: M = 17$   
 $(H_5: = M > 17)$

$H_0$ : Human resources do not prevent the establishment of accounting information system in companies' financial units.

$H_5$ : Human resources prevent the establishment of accounting information system in companies' financial units.

Information contained in Table 6 shows that the level of significance is 0.001, and since the significant level is less than 0.005,  $H_0$  is rejected and  $H_5$  is approved. Hence, we can say that issues related to human resources are barriers to the establishment of accounting information system in companies found in stock exchange.

Sixth hypothesis: Environmental factors affecting accounting information system prevent the establishment of accounting information system in companies' financial units.

For the above hypothesis, single- sample T- test using SPSS software with confidence level of 0.95 is used and the results are given in Table 7.

$H_0: M = 12$   
 $(H_6: = M > 12)$

$H_0$ : environmental factors affecting accounting information system do not prevent the establishment of AIS in companies' financial units.

$H_6$ : Environmental factors affecting accounting information system prevent the establishment of AIS in companies' financial units.

Information contained in Table 7 shows that the level of significance is 0.001, and since the significant level is less than 0.005, the hypothesis is accepted; so  $H_0$  is rejected and  $H_6$  is approved. Hence, one can say that environmental factors can also be regarded as barriers to the establishment of accounting information system in companies listed in stock exchange.

## DISCUSSION AND CONCLUSION

Middle managers prevent implementation of AIS in companies listed in TSE. Results of the above hypotheses using single-sample T-test with confidence level of 0.95 lead to the acceptance of these hypotheses of the research. It means that middle managers are barriers due to failure to implement accounting information system in the companies listed stock exchange. There is a meaningful relation between middle managers and implementation of accounting information system. Further, environmental factors prevent the implementation of AIS in listed companies in TSE. It shows that organizational structure is one of the barriers to the implementation of AIS in companies listed in TSE. There is a meaningful relation between organizational structure and implementation of AIS. By the way, the results reveal that organizational culture prevents the implementation of AIS in listed companies in TSE. The authors come to a conclusion, that are several barriers to the implementation of AIS in listed companies in TSE. In such a condition, it seems that without solving these problems the Iranian companies cannot enjoy the advantages of AIS, and may cause very big problems in near future. In order to solve these problems, everyone, from top managers to simple clerk should put their hand together and reduce at least these problems in this competitive world.

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