

# A Study into the Reasons of Underdevelopment of Computerized Accounting Information Systems (CAIS) in Manufacturing Firms in Boushehr Province

\* Hossein Heidari<sup>1</sup>, Javad Moradi<sup>2</sup>, Mohammad Ghahramanizady<sup>3</sup>, Mehrdad Heidari<sup>4</sup>

<sup>1,3</sup> Master of Accounting, Islamic Azad University, Marvdasht Branch, Marvdasht, Iran

<sup>2</sup> PhD, Assistant Professor of Accounting Department, Faculty of Humanities, Islamic Azad University, Marvdasht Branch, Marvdasht, Iran

<sup>4</sup> Shahreza High Education Center (SHEC) Computer Engineering Department

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## ABSTRACT

This study has investigated the Reasons of Underdevelopment of Computerized Accounting Information Systems (CAIS) in manufacturing firms of Boushehr province. Thus, the eight factors (managers' use of information system data in decision-making, managers' IT knowledge, managers' accounting knowledge, managers' obligation to use accounting information system, establishment costs, accountants' computer skills, the existence of a good designer to design the system and using experts) have been studied as the factors affecting the development of computerized accounting systems in manufacturing firms of Boushehr province, all of these factors have been tested in the form of a hypothesis at the confidence level of 95%. This study is descriptive-survey. The data have been collected using questionnaires from 90 companies selected through a random sampling method.

The study results suggest that non-using of system outputs by the managers, low IT knowledge of the managers, low accounting knowledge of the managers, lack of managers' obligation to use accounting information system, low computer skills of accountants, problems associated with finding competent designers and not using (internal and external) experts have blocked development of computerized accounting information systems, but the high cost of implementation has not been an obstacle to development of these systems. The results also showed that low IT knowledge of the managers and non using advisory resources have been respectively ranked first and second among the Reasons of Underdevelopment of CAIS.

**KEYWORDS:** Accounting information systems, computerized accounting systems, managers' contact with the accounting information system, Reasons of Underdevelopment of computerized accounting information systems.

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## 1. INTRODUCTION

In today's highly competitive environment, information is critical for organizational success (Fowzia & Nasrin, 2011: 3). Using information systems helps organizations achieve the optimal point; since effective use of these tools will lead to the identification of competitors as well as to other competitive advantages (Malin, 2004). It is essential to have an effective information system for long-term success of an organization, since organization's quality of performance cannot be assessed without a proper monitoring tool. In order to make decisions, the manager requires information that is generally provided by the accounting information systems (Heidari, 2006). Accounting information systems (AIS) are critical for all organizations (Muhammad Sori, 2010: 36). Accounting reports are the main source of information for managers (Ismail & Mat Zin, 2009: 1). The companies' owners and managers require update, correct and ontime accounting information in order to survive in the market (Amidu et al., 2011: 146). Information at the accounting information system is considered a tool for management in decision making and it has been created and developed to help managers. If managers do not use it, for any reason, that information will have no value (Bahramfar and Rasouli, 1998). One of the main reasons the managers do not use information is that the data does not have the required quality. It is very desirable for financial information to have all the qualitative characteristics, but qualitative characteristics and especially two characteristics of "relevancy" and "reliability" are often inversely correlated. Thus, increasing one will decrease the other one and that has led to the fact that all qualitative characteristics of accounting information cannot be gathered together at same time (Meshki and Moghaddam, 2004). The computer is a tool that helps accounting information having both characteristics of relevancy (providing information on time) and reliability (accuracy) at the same time (Ismail & Mat Zin, 2009).

IT advancements have resulted in develop and improvement of computers (Dalci & Naci Tanis, 2003: 45-46). Today, almost all organizations use computers in their daily commercial activities. Day by day the computers get smaller, faster, cheaper and easier to use and computerization of the accounting activities will be developed. The organizations which previously performed their accounting activities manually, can now perform them more effectively and efficiently than before via computers (Fowzia & Nasrin, 2011: 2). The continuous evolution of Information Technology (IT) has a significant impact on the accounting information system (AIS) (Dalci & Naci Tanis, 2003: 45-46).

Accounting systems play a critical role in the success or failure of today's commercial institutions (Amidu et al., 2011: 146). Good accounting information systems can help evaluating the performance of the organization and its managers.

The companies with a good and desirable accounting system are more successful in attracting the positive attention of investors (Amidu *et al.*, 2011: 155). AIS and specially computerized AIS, is critical as a primary source of information to create on time and relevant information in order to help organizations manage their business (Ismail & Mat Zin, 2009: 1). Computerized AIS accelerates preparation of financial statements and overcomes the human weaknesses in data processing (Muhammad Sori, 2010: 36). Despite the importance of the computerized accounting systems and wide use of them, relatively little research has been done in this area. Many authors in different countries have similar views about lack of research about AIS (Amidu *et al.*, 2011: 146). Therefore, this study can help to fill this gap.

In some systems, almost all reports generated for production managers will never be read. These reports are regarded as worthless, and are full of figures with no effect on the process of decision-making or analysis (Arab Mazar Yazdi, Fathollahi and Kamrani, 2007: 42). Managers of companies and institutions are not aware of importance and role of information provided by computers in taking logical and correct decisions (Pajoohi and Arab Mazar Yazdi, 1993: 48). According to financial managers of Iranian companies, financial decision making is not important enough to necessitate providing financial information by the computers (Ibid). Most owners or managers of small and medium-sized enterprises are not aware of the value of accounting information and do not use this information in their decisions (Ismail & Mat Zin, 2009: 6) (hypothesis 1).

Low IT knowledge of the owner or the manager, low accounting knowledge of the owner or the manager, lack of financial resources, high costs, non-using of advisory services by accounting companies and absence of an appropriate software in the market are the most important Reasons of computerized accounting information systems underdevelopment in small and medium-sized non-manufacturing firms in Malaysia (Ismail & Mat Zin, 2009: 4). In Australia, lack of IT knowledge and skills is one of the main Reasons for small companies' managers and owners who do not use CAS (Breen *et al.*, 2003: 9). Senior managers are those who have understood organization's goals and directions. If they have a high level of accounting knowledge, they will better understand information requirements of the organization. Also, if they have a high level of IT knowledge, they will provide the proportionate software for information requirements of the organization, since they are familiar with new technologies (Ismail and King, 2007: 4). IT knowledge level of owners or managers, level of education and the ability of the owner or manager to working with the computer, are among the important and influential Reasons of adoption of computerized accounting systems in small companies (Breen *et al.*, 2003: 3) (hypotheses 2 and 3). Obligation and association of directors is an important factor contributing to the success of information systems (Sajjadi and Janjany, 2009: 64). If senior managers have a long-term commitment to the organization's activities, efforts to develop information systems will increase (Dall, 1985). If information systems projects support by managers at various levels, it is more likely that this process is viewed positively both by the end users and by the technicians of information systems and their personnel (Sajjadi and Janjany, 2009: 6).

Management support ensures that adequate budget and resources are available for successful implementation of the system. Changes in processes and work habits, and the organizational changes which are associated with new system will be accepted by the users when supported by the management (Iaudon & Iaudon, 2002). In companies where the owners and managers have high levels of commitment, the alignment between the computerized accounting information systems and information requirements of the organization is greater than the companies where the owners and managers do not have this attribute (Ismail and King, 2007: 4) (Hypothesis 4).

Some information systems act very well, but their implementation costs are much higher than the determined budget. Sometimes, the completion of some systems may be very expensive with no cost-benefit (Arab Mazar Yazdi, Fathollahi and Kamrani, 2007: 44) (Hypothesis 5).

Sufficient condition for a proper and appropriate computer-based accounting information system to be produced is that the computer expert has generally experienced the accounting knowledge in advance and the accounting expert with whom consultation is done be familiar with computer systems. Otherwise, the result may be appropriate but not much favorable (Sajjadi and Tabatabayyi Nezhad, 2008). The staff of the company has a critical role in the standardization of systems and the skill and knowledge of this group is very essential. These skill and knowledge are developed through education and training (Malian, 2004) (hypotheses 6 and 7).

Full-time accounting staff in organization can help managers and owners of companies understand organization's information requirements better. However, an IT staff can also help managers provide the software proportionate to organization's information requirements (Ismail and King, 2007, p. 5) (hypothesis 8).

Given the above notes, the following hypotheses will be presented in this study:

1. Not using outputs of the system by the managers in rational decision making, leads to Underdevelopment of computerized accounting information systems.
2. Low IT knowledge of managers leads to underdevelopment of computerized accounting information systems.
3. Low accounting knowledge of managers leads to underdevelopment of computerized accounting information systems.
4. The managers' lack of obligation leads to the underdevelopment of computerized accounting information systems.
5. The high cost of implementing the system leads to underdevelopment of computerized accounting information systems.
6. Low computer skills of accountants, leads to underdevelopment of computerized accounting information systems.
7. The problems related to finding competent designers leads to underdevelopment of computerized accounting information systems.
8. Not using (internal and external) experts leads to underdevelopment of computerized accounting information systems.

## 2. METHODOLOGY

The present study is an applied qualitative research with a descriptive-survey methodology. This study has been currently carrying out (in 2011) and its scope is limited to manufacturing firms of Boushehr province.

The independent variables in this study include the use of the system outputs by the managers, IT knowledge of managers, accounting knowledge of managers, managers' commitment, system costs, accountants' computer knowledge, lack of competent designers and advisory resources. The dependent variable is the development level of computerized accounting information systems.

In this study, five-option Likert scale is used to measure the study variables (very low= 1, very high= 5). In the Likert spectra, the researcher provides the items. That is, he (she) chooses the sentences he speculated to be in connection with the studied subject. The respondents will be provided with the items and they will be asked to express their level of agreement with each item based on a spectrum. After collecting the questionnaires, the mentioned spectrum will be scored 1 to 5 respectively for very low to very high, in order to analyze the responses.

**The indices of the research hypotheses**

No.	Index	Variable	Hypothesis
1	The managers' use of the balance sheet data	Using the system outputs by the managers	The first hypothesis
2	The managers' use of income statement	Using the system outputs by the managers	The first hypothesis
3	Timely income tax return	Using the system outputs by the managers	The first hypothesis
4	Using the capabilities of the existing financial system	Using the system outputs by the managers	The first hypothesis
5	Using the cash flow statement and cash budget	Using the system outputs by the managers	The first hypothesis
6	The managers' trust in the information provided by the financial department	Using the system outputs by the managers	The first hypothesis
7	Emphasis on the intra-organizational reports such as budgets	Using the system outputs by the managers	The first hypothesis
8	The manager's interest in comparing the information of the company with other companies	Using the system outputs by the managers	The first hypothesis
9	Timely substantial financial statements	Using the system outputs by the managers	The first hypothesis
10	Timely information needed by the organizations such as social security organization and Ministry of Economic Affairs and finance	Using the system outputs by the managers	The first hypothesis
11	Sales of goods and products through the Internet	The managers' IT Knowledge	The second hypothesis
12	Promoting products by email	The managers' IT Knowledge	The second hypothesis
13	The managers' awareness of the capabilities of the accounting software packages available on the market	The managers' IT Knowledge	The second hypothesis
14	The managers' familiarity with the ICDL Skills	The managers' IT Knowledge	The second hypothesis
15	The use of Internet in line with financial objectives	The managers' IT Knowledge	The second hypothesis
16	The managers' level of knowledge regarding ABC	The managers' accounting knowledge	The third hypothesis
17	The managers' level of knowledge regarding kaizen and just in time production	The managers' accounting knowledge	The third hypothesis
18	Required trainings to use financial information	The managers' accounting knowledge	The third hypothesis
19	The overall level of the managers' financial accounting knowledge	The managers' accounting knowledge	The third hypothesis
20	Familiarity with accounting processes and the capabilities of the existing financial system	The managers' accounting knowledge	The third hypothesis
21	Contribution to the system design and information requirements definition	The managers' commitment	The fourth hypothesis
22	Contribution to the selection of the system hardware and software	The managers' commitment	The fourth hypothesis
23	Contribution to the system implementation stage	The managers' commitment	The fourth hypothesis
24	Contribution to the planning for IT development in the future	The managers' commitment	The fourth hypothesis
25	The amount of the implementation costs	The costs of system implementation	The fifth hypothesis
26	The ratio of the implementation costs to the total costs of the organization	The costs of system implementation	The fifth hypothesis
27	The managers' viewpoint	The costs of system implementation	The fifth hypothesis
28	Non-using of a proper information system	The costs of system	The fifth hypothesis

		implementation	hypothesis
29	Necessity of changes in the financial system	This is a control question	The fifth hypothesis
30	The ability to work with the popular applied accounting program; Excel	The accountants' computer skills	The sixth hypothesis
31	The ability to work with Microsoft Word software	The accountants' computer skills	The sixth hypothesis
32	Necessary training on computer	The accountants' computer skills	The sixth hypothesis
33	Ability to work with the applied software	The accountants' computer skills	The sixth hypothesis
34	Ability of existing computer and financial systems to meet financial needs	Problems of finding competent designers	The seventh hypothesis
35	Level of using accounting techniques in design of the applied systems	Problems of finding competent designers	The seventh hypothesis
36	Designers' accounting knowledge	Problems of finding competent designers	The seventh hypothesis
37	Removing problems of system by designers	Problems of finding competent designers	The seventh hypothesis
38	Understanding managers' information requirements by designers	Problems of finding competent designers	The seventh hypothesis
39	Financial managers' perspective	This is a control question	The seventh hypothesis
40	Employing full-time accounting staff	Advisory resources (experts)	The eighth hypothesis
41	Employing full-time IT staff	Advisory resources (experts)	The eighth hypothesis
42	Use of advisory services of accounting firms	Advisory resources (experts)	The eighth hypothesis
43	Use of advisory services of designers of computerized systems	Advisory resources (experts)	The eighth hypothesis

The statistical community of the study includes a set of experts and financial managers of manufacturing firms in Boushehr. At the moment, there are 676 industrial units in Boushehr province (2011). According to the subject of the study, the statistical community is required to have special features. The features of being active and having a computerized accounting information system, have limited the number of the manufacturing firms from 676 to 227 companies. The mentioned community has been selected so that it would have the required comprehensiveness to be generalized to all the similar companies. In order to increase the likelihood of the computerized companies and the companies using accounting information in their strategic decisions in the sampling, very small firms (with fewer than 20 employees) have been excluded from this study.

In this study, the estimation error and the confidence interval have been respectively considered to be 8% and 95%. Moreover, the initial estimates regarding the confirmation of the hypotheses by observations have been considered to be 0.5. In addition, the selected sample is equal to 227.

Stratified Random Sampling method has been used in this study. So the statistical community has been divided into 9 industries (categories). Then, the number of sample in each industry has been determined according to the number of members in each industry to the total number of the community.

At the next stage, the number of the specified sample has been randomly selected from among each industry. The number of the companies that are included in the statistical sample is presented in the table below separated by the industry type.

**Distribution of the community included companies and the statistical sample**

No.	Type of industry	Community		Sample	
		Total	Percent	Total	Percent
1	Food industries	51	0.22	20	0.22
2	Non-metallic minerals	35	0.15	14	0.15
3	Metallic minerals	15	0.07	6	0.07
4	Machine-building industry	4	0.02	2	0.02
5	Textile	8	0.03	3	0.03
6	Chemical industries	60	0.26	23	0.26
7	Electricity	10	0.04	4	0.04
8	Propulsion	32	0.14	13	0.14
9	Cellulose	12	0.07	5	0.07
<b>Total</b>		227	100	90	100

The data collection method in this study is a combination of library and field research approaches. In the library approach, the research background and literature as well as a framework for the subject were provided through library studies, including books, weekly and monthly magazines, educational and executive organizations and institutions, academic

theses, and searching through the electronic data bases such as the Internet. In the field approach of the research, the data required to confirm or reject the research hypotheses were collected through questionnaires.

The questionnaires should have the required reliability and validity. Thus, in this study, the attempt has been made to give more validity to the research tool (questionnaire) by constructing the questions based on the theoretical principles of the research and confirming the viewpoints of professors and experts. In order to determine the reliability of the questionnaire, Cronbach's alpha coefficient analysis (Cronbach, 1951) has been used among various methods of estimating the reliability coefficient. To evaluate the reliability, 20 questionnaires were first distributed and collected among the respondents. Then, the Cronbach's alpha was calculated 0.9203 through SPSS software. The obtained percentage suggests that the questions have been aligned and the respondents have answered to the questions very accurately and patiently. In other words, the questionnaire has a high reliability and dependability.

To verify the hypotheses, 90 managers or senior financial experts of the manufacturing firms in Boushehr province have been asked to respond to the presented questions, as samples randomly selected at the statistical community. In this study, the hypotheses have been investigated and analyzed through T-test. To confirm or reject the hypotheses, the subjects' answers will be compared with 3. The mentioned figure has been evaluated as the average score in the distributed questionnaire designed based on the Likert scale. The average score of the community will be compared with 3 and the validity of the research hypotheses has been analyzed at the error level of 5%. After designing the questionnaire and collecting the subjects' answers to the questions, we should analyze the obtained data.

Both descriptive and inferential statistical methods are used to analyze the collected data. At the inferential part, the research has been investigated and tested using appropriate tests, such as student's T-test and Friedman's ordinal Chi-square test.

### 3. RESULTS AND DISCUSSION

Descriptive statistics of the study, which is provided using SPSS software, include gender, position, degree, field of study, experience and the number of employees in the company. In terms of gender, the majority of respondents (83.3%) are men. In terms of position, most examinees (56.7%) are financial managers and 18.9% of them are accountants. Most respondents (56.7%) have a bachelor's degree.

Most examinees (68.9%) have studied accounting. In terms of work experience, 43.3% of respondents have more than 15 years and 38.9% have 6-15 years of experience. The majority of manufacturing firms (85.6%) have less than 150 employees. Therefore, according to the definition of Ismail and King (2007)<sup>1</sup>, 85.6% of manufacturing firms in Boushehr, are small and medium-sized companies.<sup>2</sup>

#### Inferential statistics

Statistical analysis will be performed using t-test, Friedman test at error level of 5%.

#### The first hypothesis testing: the managers' not using the system outputs in their rational decision making leads to lack of development of computerized accounting information systems.

**Statistical hypotheses:** Null hypothesis, i.e. the equality of the mean with 3 at the level of 5%, is rejected. Therefore, the mean is significantly different from 3. Also, since the difference between mean and 3 is a negative value, the mean of responses is less than average. So, it can be concluded that the managers' not using the system outputs in their rational decision-making leads to the lack of development of computerized accounting information systems.

Results of testing the first hypothesis

T-test results									
Variable	N	Mean	t	df	sig.	Mean difference	Standard error	At confidence level of 95%	
								Lower boundary	Upper boundary
Managers using the system outputs	90	2.548	-6.714	89	0.000	-0.451	0.0671	-0.5846	-0.3176

The constituents of hypothesis 1 are presented in the attached table. One of indicators showing that managers do not use system outputs is the fact that the basic financial statements and information related to organizations, such as social security organization and Ministry of Economic Affairs and Finance, are not prepared in time. The average score of these indicators in questions 9 and 10 are respectively 2.96 and 2.65. A signal showing that managers do not use the system outputs is the fact that managers often do not use the cash flow statement and cash budget. The average score of this indicator in question 5 is 1.94, which is the lowest average score among the first hypothesis questions. The results also show that although the managers have trust and confidence in the information provided by the financial department (the average score of this index is 3.389, which is the highest average score among the first hypothesis questions), they usually do not use the balance sheet data and income statement. The average score of these indices in questions 1 and 2 are respectively 2.31 and

<sup>1</sup> Ismail and King (2007): the companies with 20 to 150 employees are small and medium companies.

<sup>2</sup> There are some other bases to measure companies, such as annual sales revenue, but since there was no information about the companies' sales revenue in the Bureau of Industry and Mines, the number of employees has been considered the basis for measuring companies.

2.63. The results also suggest that managers do not use capabilities of existing financial system. The average score of this index is 2.12 and highest score of the subjects' answers to this question is 3.

### Testing the second hypothesis: low IT knowledge of managers, leads to underdevelopment of computerized accounting information systems.

**Statistical hypotheses:** the equality of the mean with 3 at the level of 5% is rejected. Therefore, the mean is significantly different from 3. In other words, since the difference between mean and 3 is a negative value, the mean of responses is less than the average. So, it can be concluded that low IT knowledge of managers lead to underdevelopment of computerized accounting information systems.

**Table (12-4): Results of testing the second hypothesis**

T-test results									
Variable	N	Mean	t	df	sig.	Mean difference	Standard error	At confidence level of 95%	
								Lower boundary	Upper boundary
The managers' IT Knowledge	90	2.091	-15.17	89	0.000	-0.908	0.0598	-1.0279	-0.7899

The constituents of hypothesis 2 are presented in the attached table. It seems that low IT knowledge of the managers is one of the main obstacles in development and evolution of computerized accounting information systems. The average score of this hypothesis' questions is 2.091, which is the lowest average score among all the hypotheses and is ranked first among the barriers to development (Friedman ranking). Managers did not advertise the company's products through email. The average score of this question is 1.8 among the second hypothesis questions, which is the lowest average score among the second hypothesis questions. Results also show that managers do not use Internet to achieve their financial goals and objectives or to sell the company's products and goods. The average score of these two indices in questions 11 and 15 are respectively 2.14 and 1.82. The respondents also believe that managers are unaware of the capabilities of the accounting software packages available in the market (the highest score of the subjects' answers to question is 3) and are not familiar enough with ICDL Skills.

### Testing the third hypothesis: low accounting knowledge of managers leads to Underdevelopment of computerized accounting information systems.

**Statistical hypotheses:** The significance level is less than 5% ( $0 < 5\%$ ), therefore, null hypothesis, i.e. the equality of the mean with 3 at the level of 5% is rejected. Therefore, the mean is significantly different with 3. In other words, since the difference between mean and 3 is a negative value, the mean of responses is less than the average. So, it can be concluded that low accounting knowledge of the managers leads to underdevelopment of computerized accounting information systems.

**Results of testing the third hypothesis testing result**

T-test results									
Variable	N	Mean	t	df	sig.	Mean difference	Standard error	At confidence level of 95%	
								Lower boundary	Upper boundary
The managers' accounting IT Knowledge	90	2.217	-17.65	89	0.000	-0.782	0.0443	-0.8703	-0.6942

The statistical results presented in the attached table shows that the managers of the companies that are included in the sample are relatively a little familiar with modern management accounting techniques such as Activity Based Costing (ABC) and Just In Time (JIT) Production. The average scores of these indicators in questions 16 and 17 are respectively 2.07 and 2.2. The highest score that the subjects have given to these questions is 3. The results also suggest that the managers are not familiar with the accounting processes and capabilities of the existing financial systems and have not been under necessary training to use the financial information and their general financial accounting knowledge is low.

### Testing the fourth hypothesis: managers' lack of obligation leads to underdevelopment of computerized accounting information systems.

**Statistical hypotheses:** Based on the T-test, since the significance level is less than 5% ( $0 < 5\%$ ), Null hypothesis, i.e. the equality of the mean with 3 at the level of 5% is rejected. Therefore, the mean is significantly different from 3. In other words, since the difference between mean and 3 is a negative value, the mean of responses is less than the average. So, it can be concluded managers' lack of obligation leads to underdevelopment of computerized accounting information systems.

**Results of testing the fourth hypothesis**

T-test results									
Variable	N	Mean	t	df	sig.	Mean difference	Standard error	At confidence level of 95%	
								Lower boundary	Upper boundary
The managers' commitment	90	2.288	-10.57	89	0.000	-0.711	0.0672	-0.8448	-0.5775

The constituents of the fourth hypothesis are presented in the attached table. The statistical results show that the managers of the companies included in the sample have a relatively low contribution to the stage of system design and information needs definition. The average score of this index is 2.45 which can be also a proof to confirm the third hypothesis (the managers have a low accounting knowledge, thereby; they do not understand the information needs and have poor contribution to the design stage). Results also show that managers have poor contribution to the system hardware and software selection, system implementation and planning for IT development. This can be also evidence confirming the second hypothesis (since managers have a low IT knowledge and are not familiar with software and systems, they do not contribute to this process).

**Testing the fifth hypothesis: High implementation costs lead to underdevelopment of computerized accounting information systems.**

**Statistical hypotheses:** Based on the T-test, since the significance level is less than 5% ( $0 < 5\%$ ), Null hypothesis, i.e. the equality of the mean with 3 at the level of 5% is rejected. Therefore, the mean is significantly different from 3. In other words, since the difference between mean and 3 is a negative value, the mean of responses is less than the average. So, the research hypothesis is rejected. It means that high costs of system implementation **do not** lead to underdevelopment of computerized accounting information systems.

**Results of testing the fifth hypothesis**

T-test results									
Variable	N	Mean	t	df	sig.	Mean difference	Standard error	At confidence level of 95%	
								Lower boundary	Upper boundary
The costs of system implementation	90	2.005	20.90	89	0.000	-0.994	0.0475	-1.0890	-0.8999

The constituents of the fifth hypothesis are presented in the attached table. The statistical results show that the implementation costs do not lead to underdevelopment of computerized accounting information systems. One reason to confirm this is the fact that the ratio of implementation costs to organization’s total costs is very little. The average score of this index is 1.34, which is the lowest average score among the fifth hypothesis questions. Another reason to confirm this issue is financial managers’ viewpoint showing that the financial managers **do not regard** costs as a barrier to development of information systems. The average score of this question is 2.17.

**Testing the sixth hypothesis: low computer knowledge of the accountants leads to underdevelopment of computerized accounting information systems.**

**Statistical hypotheses:** Based on the t-test, since the significance level is less than 5% ( $0.019 < 5\%$ ), Null hypothesis, i.e. the equality of the mean with 3 at the level of 5% is rejected. Therefore, the mean is significantly different from 3. In other words, since the difference between mean and 3 is a negative value, the mean of responses is less than the average. So, it can be concluded that low computer knowledge of the accountants, leads to underdevelopment of computerized accounting information systems.

**The Results of testing the sixth hypothesis**

T-test results									
Variable	N	Mean	t	df	sig.	Mean difference	Standard error	At confidence level of 95%	
								Lower boundary	Upper boundary
The accountants’ computer knowledge	90	2.858	2.38	89	0.019	-0.1417	0.0595	-0.2599	-0.0234

The constituents of the sixth hypothesis are presented in the attached table. The statistical results show that although the accountants are somehow able to work with the applied software (the average score of this index is 3.41), but they have not been trained enough about computer, so that the average score of this index is 2.33, which is the lowest score among the sixth hypothesis questions. The highest score given to this question by the subjects is 4. The results also show that the accounting personnel are not able to work with standard applied accounting programs Excel and Word. The average score of these indices are respectively 2.85 and 2.83.

**Testing the seventh hypothesis: The problems related to finding qualified designers, lead to underdevelopment of computerized accounting information systems.**

**Statistical hypotheses:** based on the T-test, since the significance level is less than 5% ( $0 < 5\%$ ), Null hypothesis, i.e. the equality of the mean with 3 at the level of 5% is rejected. Therefore, the mean is significantly different with 3. In other words, since the difference between mean and 3 is a negative value, the mean of responses is less than the average. So, it can be concluded that the problems related to finding qualified designers lead to underdevelopment of computerized accounting information systems.

### Results of testing the seventh hypothesis

T-test results									
Variable	N	Mean	t	df	sig.	Mean difference	Standard error	At confidence level of 95%	
								Lower boundary	Upper boundary
The problems related to finding qualified designers	90	2.395	-12.39	89	0.000	-0.604	0.0487	-0.7013	-0.5076

The constituents of the seventh hypothesis are presented in the attached table. Statistical results show that the respondents believe that designers have a low accounting knowledge (the average score of this index is 2.67) and they could not well understand information needs of managers (the average score of this index is 2.12). Moreover, the results suggest that designers have not been successful in solving system problems, the average score of this index in question 37 is 2.06, which is the lowest score among the seventh hypothesis questions. The results also showed that existing computer and financial systems cannot meet financial needs of the organization (the average score of this question is 2.28).

### Testing the eighth hypothesis: Not using (internal and external) experts leads to underdevelopment of computerized accounting information systems.

**Statistical hypotheses:** Based on the t-test, since the significance level is less than 5% ( $0 < 5\%$ ), Null hypothesis, i.e. the equality of the mean with 3 at the level of 5% is rejected. Therefore, the mean is significantly different with 3. In other words, since the difference between mean and 3 is a negative value, the mean of responses is less than the average. So, it can be concluded that not using (internal and external) experts leads to underdevelopment of computerized accounting information systems.

### Results of testing the eighth hypothesis

T-test results									
Variable	N	Mean	t	df	sig.	Mean difference	Standard error	At confidence level of 95%	
								Lower boundary	Upper boundary
Experts (internal and external)	90	2.127	-14.91	89	0.000	-0.872	0.0584	-0.9884	-0.7560

The constituents of the eighth hypothesis are presented in the attached table. Statistical results show that although the sample companies have somehow managed to employ full-time accountants according to needs of the organization (the average score of this index is 3), but they have failed to employ full-time IT personnel, according to their needs and activities (the average score of this index is 2). The results also show that manufacturing firms of Boushehr province do not use advisory services of computer and accounting companies. The average scores of these indices are respectively 2 and 1. The highest score given to this question by the subjects is 3. Therefore, it seems not using (internal and external) experts is one of the main reasons for underdevelopment of computerized accounting information systems in Boushehr province. This variable is ranked second among the Reasons of underdevelopment of computerized accounting information systems (Friedman ranking).

## 4. Conclusion

Given that seven hypotheses of the study were confirmed, and the overall mean of the responses is less than the average 3, it can be concluded that computerized accounting information systems in the manufacturing firms of Boushehr have not been developed properly. The study results showed that the ratio of the implementation costs to the total costs of the organization is very low and these costs do not hinder the development of computerized accounting information systems. In this respect, the survey results are not consistent with the results of the research conducted by Ismail and Mat Zin (2009). In addition, the study results support the studies conducted by Mr. Ismail and King (2007), Breen et al. (2003). Following these results, considering the following guidelines will be useful for the future research.

- Research into the factors affecting the alignment of the capabilities of available accounting software packages with the users' requirements.
- Identifying and ranking the barriers to the establishment of accounting information systems in various industries.

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**6. Appendix:**

The number of the questions and the description of indicators	The number of the sample	Mean	Median	Minimum	Maximum	Standard deviation
1- The managers using the balance sheet data	90	2.311	2	1	4	0.967
2- The managers using the income statement management	90	2.633	3	1	4	0.942
3 Timely income tax return	90	2.956	3	1	5	1.059
4- Using the capabilities of the existing financial system	90	2.122	2	1	3	0.776
5- Using the cash flow statement and cash budget	90	1.944	2	1	4	0.826
6- The manager's trust in the provided information	90	3.389	3	2	5	0.594
7- Emphasis on the intra-organizational reports such as budgets	90	2.100	2	1	4	0.794
8- The manager's interest in comparing the information of the company with other companies	90	2.411	2	1	4	0.959
9- Timely substantial financial statements	90	2.967	3	1	5	0.841

<b>10- Timely information needed by the organizations such as social security organization and Ministry of Economic Affairs and finance</b>	90	2.656	3	1	5	1.133
<b>The indicators and questions related to the second hypothesis</b>						
<b>11- Sales of goods and products through the Internet</b>	90	2.144	2	1	5	1.001
<b>12- Promoting products by email</b>	90	1.800	2	1	4	0.753
<b>13- The managers' awareness of the capabilities of the available accounting software</b>	90	2.322	2	1	3	0.684
<b>14- The managers' familiarity with the ICDL Skills</b>	90	2.367	2	1	4	0.661
<b>15- The use of Internet in line with financial goals and objectives</b>	90	1.822	2	1	4	0.743
<b>The indicators and questions related to the third hypothesis</b>						
<b>16- The managers' level of knowledge regarding ABC</b>	90	2.078	2	1	3	0.674
<b>17- The managers' level of knowledge regarding kaizen and just in time production</b>	90	2.200	2	1	3	0.706
<b>18- Required trainings to use financial information</b>	90	2.156	2	1	3	0.598
<b>19- The overall level of the managers' financial accounting knowledge</b>	90	2.289	2	1	3	0.691
<b>20- Familiarity with accounting processes and the capabilities of the existing financial system</b>	90	2.367	3	1	4	0.771
<b>The indicators and questions related to the fourth hypothesis</b>						
<b>21- Contribution to the system design and information requirements definition</b>	90	2.456	3	1	5	0.996
<b>22- Contribution to the selection of the system hardware and software</b>	90	2.433	2	1	4	0.875
<b>23- Contribution to the system implementation stage</b>	90	2.244	2	1	4	0.798
<b>24- Contribution to the planning for IT development in the future</b>	90	2.022	2	1	4	0.861
<b>The indicators and questions related to the fifth hypothesis</b>						
<b>25- The amount of costs of the current system</b>	90	2.511	3	1	5	0.902
<b>26- The ratio of the implementation costs to the total costs of the organization</b>	90	1.344	1	1	3	0.501
<b>27- The financial managers' viewpoint</b>	90	2.178	2	1	3	0.758
<b>28- Non-using of a proper information system</b>	90	1.989	2	1	3	0.695
<b>The indicators and questions related to the sixth hypothesis</b>						
<b>30- The ability to work with the normal applied accounting program of Excel</b>	90	2.856	3	1	5	0.829
<b>31- The ability of the accounting personnel to work with Microsoft Word software</b>	90	2.833	3	1	5	0.783
<b>32- Necessary training on computer</b>	90	2.333	2	1	4	0.561
<b>33- Ability to work with the applied software</b>	90	3.411	3	2	5	0.616

<b>The indicators and questions related to the seventh hypothesis</b>						
<b>34- Ability of existing computer and financial systems to meet financial needs</b>	90	2.289	2	1	4	0.811
<b>35- Level of using accounting techniques in design of the applied systems</b>	90	2.822	3	2	4	0.488
<b>36- Designers' accounting knowledge</b>	90	2.678	3	1	4	0.615
<b>37- Removing problems of system by designers</b>	90	2.067	2	1	3	0.731
<b>38- Understanding managers' information requirements by designers</b>	90	2.122	2	1	4	0.747
<b>The indicators and questions related to the eighth hypothesis</b>						
<b>40- Employing full-time accounting staff</b>	90	3	3	1	5	1
<b>41- Employing full-time IT staff</b>	90	2	2	1	4	1
<b>42- Use of advisory services of accounting firms</b>	90	2	2	1	4	1
<b>43- Use of advisory services of designers of computerized systems</b>	90	1	1	1	3	1