



Clarifying the role of actor network theory (ANT) for the accounting of information system in Iran

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Abstract. In this research is paid to clarify the role of actor network theory (ANT) for the accounting of information system in Iran with the aim of the determining of the human and non-human actors effective on the accounting information systems, the analysis of relationships between the human and non-human actors on the net and to determine the effective factors on the accounting information systems in terms of types of actors for the first time in Iran. In this research which is done in the audit companies in Iran in the 1394, 9 hypotheses has been studied to investigate the role of human actors and their characteristics by identifying the main actor of the accounting information system of Iran. The results of the analysis of 9 hypotheses showed that has exist a significant relation between the familiarity level of respondents, the years of service of respondents, the organizational position of respondents, the education field of respondents, between the ages group of respondents, the usage level of respondents, the background and experience of the middle management post of respondents, the background and experience in the senior management post of respondents and the identifying of the main actor of information accounting system of Iran (technical, organizational, economic, political-social and technology actor), but has not exist a significant relation between the sexuality of respondents and the identifying of the main actor of information accounting system of Iran (technical, organizational, economic, political-social and technology actor).

Keywords: Actors network theory, information accounting system, active

1-INTRODUCTION

With the increased of technology and the volume of transactions is added on the importance of accounting information system. Therefore, to identify the benefits of this system and its role and also the importance of interaction between people with this information system finds the great importance. In this research was deal to review how the social network analysis helps to evaluate the users of these systems and also the items which can be examined them.

Since has not reported the case of the use of actor network analysis according to the actor network theory (ANT) in the accounting research of country and this is represented the new and innovative nature of this matter and also a lack of knowledge of the accounting society of country with the actor network analysis according to the actor network theory (ANT). The items which researchers are provided in connection with the use of these networks in this research only insisted from the perspective of the social networks on the research information systems. According to the presented topics in this research it is recommended that the accounting researchers have more attention to the relationship between the various components and the effective different factors on the accounting information system according to the actor network theory (ANT).

Usually is available two approaches in the using of the information systems.

The first approach: This approach is focused exclusively to the inherent capabilities of the computer and the information technology and this how can use in the improve performance.

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The second approach: This approach is focused on the strengths and the opportunities ahead the organization and the assessing of how the use of information technology. In the use of the existing conditions. This approach is considered the power empowerment of information technology. The potential information systems have the presentation of three types of benefits to the organization: 1) the improving of productivity 2) the improving of effectiveness 3) the competitive advantage.

The improving of productivity: The improving of productivity when happens which can do more work with the same resource or less. In the organizations, the improving of productivity happens to improve business processes. The improving of effectiveness: The effectiveness the ability of an individual or an organization is in doing things which should be done. The manager who forecasts the conditions which may be problem and to check out causes before the problem arises is more effective than manager who continuous should solve the problems which been prevented of them. The competitive advantage: The organization which has been improved itself by using the productivity information systems and the effectiveness will have this potential which can be changed the competition organization method.

2- THE TYPES OF INFORMATION SYSTEMS

Information systems have different kinds and can be classified them of different phases. The organization information systems are included:

Operational level systems: The systems of this level supports the operation managers by keeping the main activities. The main and basic objective of systems in this level is that is answered to the routine and usual questions of organization and the transaction flows is followed by organization.

The management level systems: The systems of this level are designed to cover the monitoring and to control the decision and the executive activities of the middle managers. The management level systems instead of the instantaneous information relating to the operations insists on the periodic reports. The preparation of reporting indicating the units which their financial expenses and actual costs is beyond the budget is followed by the management level systems. Most of these systems reports the unusual decisions.

The knowledge level systems: The systems of this level supports the knowledge and data of human resources in the one organization. The objective of the systems is that helps to the company's business to proceed the new knowledge in the business and helps to control the organization in the flow of work.

The strategic level systems: The systems of this level helps to top managers to cope the strategic discussions and the long-term trends both inside the company and outside the company. Their main focus is on the combination of changes in the external environment due to the available ability of the organization. These systems are related to the unstructured decisions and have created a dynamic and more generally environment instead of the special ability and the fixed capabilities.

3- ACCOUNTING INFORMATION SYSTEM (AIS)

The accounting information systems has the important role in helping the organization to adapt and maintain a strategic position. The achieving of a good opportunity by helping the activities requires that the data related to each activity be collected in a good way. Then, these data are transformed to the information which can being used in the process of management decisions and this activity have more coordination with each other. These information should be reliable and always available which is used in the decision process.

Therefore, an accounting information system which has been designed as well is necessary to achieve a sustainable strategic position. The accounting information systems is the subsidiary organizational structure of the companies and the organizations which is protected and supported the performance of an organization's value chain activities. One of the ways that the accounting information system increases the value of commercial firm and organization is the providing of correct and timely information to run the various activities of chain.

4- THE ACTOR NETWORK THEORY (NSHK) AND ITS PROCESS

The actor network theory unlike the other old theories of the innovation publishing like Rogers publishing theory which suggests the discovering of pre-existing hidden truths. And as usual is based on the individual explorer innovative or heroes is related to the making the truth (black boxes, technologies and innovations). In the traditional theories when the truth appears is published in the society mysteriously and has derived to forward intact and unchanged by its obviously power.

The main focus of the activist network when used in the specific fields is trying to explain the process which through it is created the proportional fixed networks of the allies and is continued or is looking for the explanation of why such networks to stay behind the activity. The successful networks is organized of stakeholders. And is formed with the membership with adequate housing of the allies/benefiting and the interpretation of their interests, so that these actors are willing to participate in the way of thinking and a specific action which is followed the purpose of durability of network.

The actor network theory views the construction of reality as a black box. This black box when is created which the interests of human and non-human actors is regulated in the single set and the network is formed as relative reliability.

Therefore, these beliefs are transmitted constantly over the time and place with the expansion of the human network and other. Hence, the publishing of information does not depend on the special belief of an individual and in the other words the consequence of the decision of an actor is not isolated rather depends on the decisions of other actors in time and space and the ultimate reality of any claim is determined in this way.

The researchers of the actor network theory know the process of formation of the network of actors called interpret includes four stages: 1) to found problem 2) member access 3) accept member 4) equip and mobilize members.

Furthermore of interpretation, the making role process (impressment) leads to the stamp of ideas about the related technologies. These technologies are published in a particular field, in this special field the relation is established and are helped to achieve the technical-social stability. Lator describes the making of role in the process of creating technical artifacts which human interest is latent in it. The roles is included posts like journal articles, promotional articles of seminars, earlier designs and inventions, pictures, data base and etc. which have focus in the knowledge affairs.

5-1- The types of actors

Eskriber (2002) is believed that can be divided the actors which by providing the information and technology are involved in the decision making of managers about the innovation to the social, economic and general actors. Family, neighbors and the other social association with managers are among the social actors. The actors involved in the economic transactions with the managers, market factors, the processed of goods and the consumers are among the economic actors. State institutions like the research, promotional and market institutions can be considered as the general actors.

The knowledge networks is included more or less stable and organized interactive and the communication patterns between the social actors which deal to the exchange of information with each other and as a result is achieved the efforts to create the relation between the actors. In the one knowledge network people with the diverse characteristics deal to exchange the information, therefore the social networks is specified that in the society knows who and what. The social network is focused on the individuals and their position among the available relations between them in the specified time.

Research hypotheses:

This research which is done among the 120 people of the auditors of audit firms of Iran in 2015 has a main hypothesis and 9 particular hypotheses as follows:

The main hypothesis: Between the type of characteristics of respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political-social and technology actors) has exist a significant relationship.

9 particular hypothesis:

The first particular hypothesis: Between the familiarity level of respondents with the accounting information system and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political-social and technology actors) has exist a significant relationship.

The second particular hypothesis: Between the sexuality of respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political-social and technology actors) has exist a significant relationship.

The third particular hypothesis: Between the work experience of respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political-social and technology actors) has exist a significant relationship.

The forth particular hypothesis: Between the organizational position and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political-social and technology actors) has exist a significant relationship.

The fifth particular hypothesis: Between the education field of respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political-social and technology actors) has exist a significant relationship.

The sixth particular hypothesis: Between the age group of respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political-social and technology actors) has exist a significant relationship.

The seventh particular hypothesis: The using period of time of respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political-social and technology actors) has exist a significant relationship.

The eighth particular hypothesis: Between the background and experience of work in the middle management post of respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political-social and technology actors) has exist a significant relationship.

The ninth particular hypothesis: Between the background and experience of work in the top management of respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political-social and technology actors) has exist a significant relationship.

Hypotheses test:

The main hypothesis: Between the type of characteristics of respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political-social and technology actors) has exist a significant relationship.

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1-Between the familiarity level of respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political-social and technology actors) has exist a significant relationship.

The analysis variance test

This test has been designed to compare the average related to a variable in more than two independent groups.

Table 1. The analysis variance test.

Variable	F statistics test	Variable
0.01	138.62	Technical actors
0.01	194.02	Political-social actors
0.01	126.23	Organizational actors
0.01	149.78	Economic actors
0.01	190.69	Technology actors

According to the table number 1, in the 95 percent confidence level the achievement of significant level for variables is compared with the amount of 0.05 with regarding to that this amount for the all variables is lower than the intended error coefficient (0.05), the H0 hypothesis based on the same significance between the groups is rejected about these variables. As a result between the familiarity level of respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political-social and technology actors) has exist a significant relationship.

2-Between the sexuality of respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political-social and technology actors) has exist a significant relationship.

The T2 test of independent variable

This test has been designed to compare the average related to one variable in the two independent variables. The review hypotheses in it is as follows:

{H0: $M1=M2$

{H1: $M1 \neq M2$

Table 2. The test of comparing the average of two independent variables.

The name of variable	The average of difference	The standard deviation of difference	The T statistics test	The significant level	95 percent confidence interval	
					Lower bound	Higher bound
Technical actors	0.16	0.151	0.108	0.915	-0.282	0.315
The political-social actors	-0.52	0.167	-0.311	0.757	-0.384	0.281
The organizational actors	0.167	0.167	1.005	0.317	-0.162	0.498
The economic actors	-0.35	0.218	-0.164	0.870	-0.468	0.396
The technology actors	0.72	0.229	0.314	0.754	-0.382	0.527

According to the table number 2, because the significant level of this test for the each 5 indexes is higher than 0.05, therefore the H0 hypothesis is not rejected in the error level of 0.05. Namely the average of this variable between the two groups of men and women has not a significant difference with each other. However because the lower and higher bounds of 95 percent confidence interval for the average of differences one is positive and one is negative, therefore is resulted which the average difference of this variable is zero in the society and with regarding to the definition and formation of these variables is resulted that between the sexuality of respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political-social and technology actors) has not exist a significant relationship.

3-Between the work experience of respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political-social and technology actors) has exist a significant relationship.

The variance analysis test:

This test has been designed to compare the average related to the one variable in the more than two independent groups.

Table 3. The variance analysis test.

variable	F statistics test	Significant level
Technical actors	333.45	0.001
Political-social actors	312.22	0.001

0.001	234.89	Organizational actors
0.001	387.69	Economic actors
0.001	357.15	Technology actors

According to the table number 3, in the 95 percent confidence level of the obtained significant level for the variables is compared to the amount of 0.05 with regarding to that this amount for the all variables is lower

than the intended error coefficient (0.05), the H0 hypothesis based on the same importance between the groups is rejected about these variables. As a result, the average level between the different groups has a significant difference. As a result between the work experience of respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political-social and technology actors) has exist a significant relationship.

4-Between the organizational position of respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political-social and technology actors) has exist a significant relationship.

Variance analysis test:

This test has been designed to compare the average related to the one variable in the more than two different groups.

Table 4. Variance analysis test.

Variable	F statistics test	Significant level
Technical actors	144.08	0.001
Political-social actors	122.03	0.001
Organizational actors	108.27	0.001
Economic actors	188.50	0.001
Technical actors	135.19	0.001

According to the table number 4, in the 95 percent confidence level of the obtained significant level for the variables is compared to the amount of 0.05 with regarding to that this amount for the all variables is lower than the intended error coefficient (0.05), the H0 hypothesis based on the same importance between the groups is rejected about these variables. As a result, the average level between the different groups has a significant difference. As a result between the organizational position of respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political-social and technology actors) has exist a significant relationship.

5-Between the education field of respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political-social and technology actors) has exist a significant relationship.

Variance analysis test:

This test has been designed to compare the average related to the one variable in the more than two different groups.

Table 5. Variance analysis test.

variable	F statistics test	Significant level
Technical actors	54.21	0.001
Political-social actors	87.06	0.001
Organizational actors	40.32	0.001
Economic actors	74.58	0.001
Technical actors	69.09	0.001

According to the table number 4, in the 95 percent confidence level of the obtained significant level for the variables is compared to the amount of 0.05 with regarding to that this amount for the variables is compared to the amount of 0.05 with regarding to that this amount for the all variables is lower than the intended error coefficient (0.05), the H0 hypothesis based the same importance between the groups is rejected about these variables. As a result, the average level between the different groups has a significant difference. As a result between the education field of respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political-social and technology actors) has exist a significant relationship.

6-Between the age group of respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political-social and technology actors) has exist a significant relationship.

Variance analysis test:

This test has been designed to compare the average related to the one variable in the more than two different groups.

Table 6. Variance analysis test.

variable	F statistics test	Significant level
Technical actors	137.17	0.001
Political-social actors	135.41	0.001
Organizational actors	80.68	0.001

According to the table number 4, in the 95 percent confidence level of the obtained significant level for the variables is compared to the amount of 0.05 with regarding to that this amount for the variables is compared to the amount of 0.05 with regarding to that this amount for the all variables is lower than the intended error coefficient (0.05), the H0 hypothesis based the same importance between the groups is rejected about these variables. As a result, the average level between the different groups has a significant difference. As a result between the age group of respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political-social and technology actors) has exist a significant relationship.

7-Between the time using of respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political-social and technology actors) has exist a significant relationship.

Variance analysis test:

This test has been designed to compare the average related to the one variable in the more than two different groups.

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Table 7. Variance analysis test.

variable	F statistics test	Significant level
Technical actors	255.34	0.001
Political-social actors	227.93	0.001
Organizational actors	179.82	0.001
Economic actors	281.06	0.001
technology actors	231.13	0.001

According to the table number 4, in the 95 percent confidence level of the obtained significant level for the variables is compared to the amount of 0.05 with regarding to that this amount for the variables is compared to the amount of 0.05 with regarding to that this amount for the all variables is lower than the intended error coefficient (0.05), the H0 hypothesis based the same importance between the groups is rejected about these variables. As a result, the average level between the different groups has a significant difference. As a result between the time using of respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political-social and technology actors) has exist a significant relationship.

8-Between the background and the experience of working in the middle management post and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political-social and technology actors) has exist a significant relationship.

Variance analysis test:

This test has been designed to compare the average related to the one variable in the more than two different groups.

Table 8. Variance analysis test.

Variable	F statistics test	Significant level
Technical actors	255.34	0.001
Political-social actors	227.93	0.001
Organizational actors	179.82	0.001
Economic actors	281.06	0.001
technology actors	231.13	0.001

According to the table number 4, in the 95 percent confidence level of the obtained significant level for the variables is compared to the amount of 0.05 with regarding to that this amount for the variables is compared to the amount of 0.05 with regarding to that this amount for the all variables is lower than the intended error coefficient (0.05), the H0 hypothesis based the same importance between the groups is rejected about these variables. As a result, the average level between the different groups has a significant difference. As a result between the background and the experience of working in the middle management post in respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political, social and technology actors) has exist a significant relationship.

9-Between the between the background and the experience of working in the top management post in respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political, social and technology actors) has exist a significant relationship.

Variance analysis test:

This test has been designed to compare the average related to the one variable in the more than two different groups.

Table 9. Variance analysis test.

Variable	F statistics test	Significant level
Technical actors	29.85	0.001
Political-social actors	44.61	0.001
Organizational actors	17.48	0.001
Economic actors	33.77	0.001
Technology actors	30.91	0.001

10-According to the table number 4, in the 95 percent confidence level of the obtained significant level for the variables is compared to the amount of 0.05 with regarding to that this amount for the variables is compared to the amount of 0.05 with regarding to that this amount for the all variables is lower than the intended error coefficient (0.05), the H0 hypothesis based the same importance between the groups is rejected about these variables. As a result, the average level between the different groups has a significant difference. As a result between the background and the experience of top management of respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political, social and technology actors) has exist a significant relationship.

About the research main hypothesis which between the type of property of respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political, social and technology actors) has exist a significant relationship has been used the 9 particular hypotheses which their analytical results shows that according to the results of variance test between the familiarity of respondents with the accounting information system and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political, social and technology actors) has exist a significant relationship.

About the relation between the sexuality of respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political, social and technology actors), the research results according to the independent T2 test shows that between these two variables has not exist a significant relation, according to this, the sexuality factor in the choosing of the type of actors is ineffective in the accounting information system of Iran.

The results of variance analysis test shows that between the experience working of respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political, social and technology actors) has exist a significant relationship. According to this the increasing of individuals' experience is effective on the type of decision and the choosing of the main actors of the accounting information system of Iran.

The results of variance analysis test shows that between the organizational position of respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political, social and technology actors) has exist a significant relationship. Namely the individuals according to the type of organization position which are working are choosing the type of different main actor.

Also the results of variance analysis test shows that between the education field of respondents, the age group of respondents, the using time of respondents, the background and the experience of working in the middle management post of respondents, the background and the experience of working in the top

management post of respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political, social and technology actors) has exist a significant relationship. According to this surely be related of the education field with the accounting information system, the time using of respondents of the accounting information system, the background and the experience of working in the middle and top management posts as an effective factors on the choosing of actors are known effective on the accounting information system of Iran from the respondents and the ability to plan and study will be possible according to them to achieve higher goals of each organization.

8- CONCLUSION

According to the results of this research is specified that the actor network theory has the ability to review and explanation as one of the leading theories of sociology science in the accounting information system of Iran. So that its components as a human and non-human actors are the effective factor in creation, implementation and successful performance of accounting information system of Iran.

According to the obtained results in this research between the familiarity of respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political, social and technology actors) has exist a significant relationship. To assess this relation is used the 9 particular hypotheses. The results of analysis these 9 hypotheses shows that between the familiarity of respondents, the working experience of respondents, the organizational position of respondents, the education field of respondents, the age group of respondents, the time using of respondents, the background and the experience of working in the middle management post of respondents, the background and the experience of working in the top management of respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political, social and technology actors) has exist a significant relationship. But between the sexuality of respondents and the identifying of the main actor of the accounting information system of Iran (technical, organizational, economic, political, social and technology actors) has not exist a significant relationship.

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