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# Accounting information system versus management information system

**Hosein Alikhani[1], Noushin Ahmadi[1], Mahdi Mehravar[2]**

**[1]Department of Accounting, Dolatabad Branch, Islamic Azad University, Isfahan, Iran; [2]Department of Accounting, Payame Noor University, Iran**

## Abstract

The role of information systems becomes more prominent with the growing development of technology and increasing in information needs. Although, information systems are not computers as most of people think, we need information systems to achieve our goals. But with the growth of technology, information systems obtain a more prominent role. In such circumstances, a better understanding of information systems can help organizations in achieving their goals. The main purpose of this article addressed the relationship between accounting information system and management information system by reviewing the literature on characteristics of both information systems. Moreover, the summary of results and findings of each case is presented.

**Keywords:** System, accounting information system, management information system, subsystem

## Introduction

Industrial revolution, the economy and business lead the communities to industrial economy and create dramatic changes. With the growing development of technology, the information needs increased quickly. So that, the current century is called the information century and the third revolution is named the information revolution. In this environment and with increasing in the volume and the velocity of information provided for people, the need for processing of these information with the same speed is increased as well. This is the responsibility of information system to process and analysis the gathered information in order to become more effective for using. Thus, despite the volume of information, the need for a good system to provide timely and relevant information for decision making, planning and control is required. Developing such a large system is impossible without the existence ofsmaller subsystems that are connected to each other. Thus, it is essential to know the systems and the relationships between them. Since, the systems can be better designed and used by knowing these systems and understanding the relationships between them.

The aim of this article is to investigate the relationship between management information systems (MIS) and accounting information systems (AIS) in order to gain a better understanding of each system. Therefore, in next sections the definitions and characteristics of AIS and MIS are explained and the relationships between these two information systems are investigated.

### *The Definition of System*

A system is a set of interacting components which are gathered to achieve a certain and common goal. The next feature of the system is the order in the relationships between the elements, which means that each element has a role (Sajjadi and Tabatabai-Nejad, 2006). As it is inferred from this definition, any system has components and these components are sometimes systems as well which are used to support the main system. Moreover, the components of a system interact with each other to achieve a certain goal (or goals). In fact, the main purpose of developing one system is to accomplish a specific target (Arab Mazar Yazdi, 2003).

**Corresponding author:** Noushin Ahmadi, Department of Accounting, Dolatabad Branch, Islamic Azad University, Isfahan, Iran. E-mail: Noushin_a1420@yahoo.com

### *The Definition of Accounting Information System*

Accounting is a system to record the financial events of the organization in order to report these financial activities to stakeholders. According to ASOBAT and GAAP, accounting system should provide information to assist management in planning and decision making (Wu, 1995). Therefore, accounting is as an information system which has two domains; external financial reporting and management reporting. The former is based on the accepted accounting principles and the latter is based on management preferences (Arab MazarYazdi, 2003).

Information systems process data but sometimes it is thought that what is happening in information systems of organizations include simply raw data processing of financial and non-financial events of the organization. But the fact is that managers in different levels involved with a variety of issues which has different degree of complexity in solving the problems. Also, the type of system that can help to solve this variety is positioned ina range of retrospective conventional database systems to prospective intelligent systems (Arab MazarYazdi, 2003).

Therefore, AIS changes the economic and financial activities to the form which is worthwhile for users (people who need information about economic activities for their decision making). Also, in another AIS definition, it is stated that AIS is an organized components which accumulate, classify, process, analysis financial information and provide these information for internal and external stakeholders for making decisions (Moscove, 1997).

### *Responsibilities of Accounting Information System*

An accounting information system is composed of people, practices and information technologies and in general it can be said that AIS has the following three main responsibilities:

1. Receiving and keeping data about the activities and transactions, so that the organization is able to assess what happened.

2. Converting data into information that is useful for decision making and helps management for planning, implementation and monitoring of activities.

3. Establishing the appropriate controls to preserve the assets of the organization as well as organizations' financial data. These controls ensure that data are available when they are needed and they are correct and also reliable.

Also, a properly designed AIS improves the effectiveness and efficiency of activities through the following ways:

1. Improving the quality and reducing the cost of production or services; For example, AIS can be used to control machinery in such a way that as soon as the operation was out of the range of acceptable quality, the operator will be noticed.

2. Improving efficiency; AIS can help to improve the efficiency of operations through providing more timely information. For example, just in time (JIT) approach requires ongoing, accurate and new information aboutthe inventory of raw materials and their whereabouts.

3. Improving decision making: AIS can improve the decision making by appropriately providing accurate information for the personnel.

4. Sharing of knowledge: a properly designed AIS could lead to knowledge sharing. With knowledge sharing, the operations are improved and a competitive advantage is created. For example, an audit firm will be able to transfer the experiences to the employees working in different departments by developing and using a network or system (Romney, 2000).

### *AIS subsystems*

In order to explain how accounting information system could achieve the mentioned goals, it is needed to classify organizations' activities into five main cycles which are the subsystems of AIS:

**1. Expenditure cycle** which consists of activities that involve the buying and paying for goods and services used by the organization.

**2. Production cycle** which includes activities which convert raw materials and labors to the finished products.

**3. Human resources cycle** which consists of activities that are involved in employing and paying staff salaries.

**4. Revenue cycle** which includes sales of goods or services or receiving the cash.

**5. Financing cycle** which includes activity that provides the funds needed for operations.

As shown in Figure 1, the main activities of each of the five cycles have the give and get relationships (e.g. the expenditure cycle is caused the loss of costs in order to gain goods and services or the revenue cycle is caused the loss of goods and services in order to obtain cash) and provide data to the ledger and reporting system which prepared information for internal and external users (Romney, 2000).

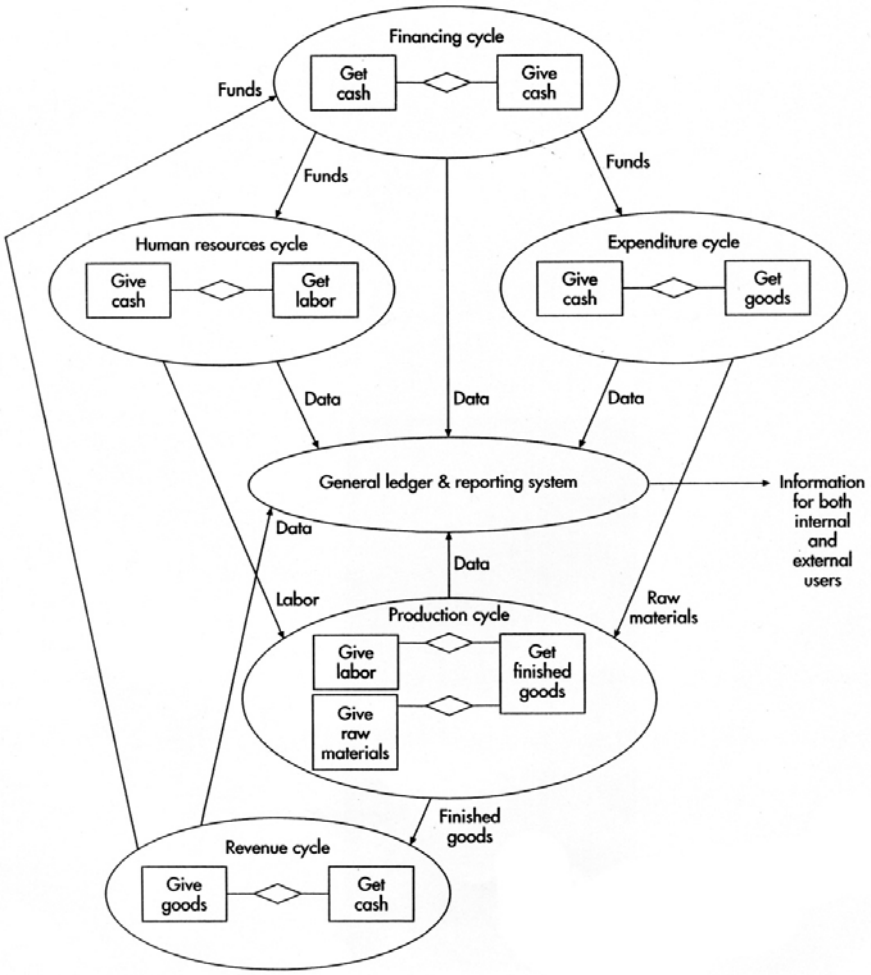


**Figure 1. AIS Subsystems**

### *Factors Influencing AIS*

There are three areas that specifically influence AIS; Behavioural Analysis, Quantitative Methods and Contemporary Management Concepts.

#### Behavioural Analysis

Accountant involves either with cost accounting system, budgeting system or implementing a new system, he must know that people are an important part of these systems. The best system on paper cannot be effective unless the system designer consider the needs of organizations' employees. Accountants do not have to be a psychologist, but they should know how to encourage people to perform according to positive performance of the organization. For example, accountants should know that when they assess the system for changes in the system, the number of employees may be upset about the proposed changes, even if these changes lead to achieving organization objectives. Therefore, to reduce resistance and encourage employees to the changes, they should be motivated by participating in the developing of the system.

## Quantitative Methods

The management science includes different quantitative techniques to aid managers in their decision making such as statistical analysis, linear programming, regression and etc.Accountants also use these tools to increase the effectiveness of information which are provided to management. For example, during the increase in sale or additional capacity for production, accountants will be asked to assist management in the decision making of whether to build a new manufacturing factory or the current one being developed.

For predict future costs and benefits of each alternative, accountants try to express their opinions. Due to this fact that the future is associated with uncertainty, if accountants use the theory of probability for their analyses, they will obtain the better results.

## Contemporary Management Concepts

Most of the tools and concepts of management science have effects on accounting information sys-

tem such as performance evaluation, planning and control techniques, and other concepts that are rooted in the organization theory. A new concept that is specifically associated with AIS is total quality management (TQM). TQM refers to the production of high quality products and achieving the customer satisfaction. The production sub-system of a manufacturing organization has the main responsibility for achieving high-quality goods and production.

The main role of the AIS in production quality is tojustify the level of quality from a financial standpoint that is desired by the management. AIS plays an important role in TQM environmentdue to the importance of the costs estimation. Accountants can calculate the quality costs and to determine whether the quality of products provides a positive margin or not.

Another concept that is associated with AIS is re-engineering. Re-engineering is defined simply as starting from the zero (nothing). For companies, it requires an understanding of the work processes and the goals and objectives of the organization, and drawingthe existing methods to redesign them. Managers are often engage in excessive detail and management crisis and in fact, they cannot see the forest due to existence of trees. Re-engineering helps the management to ask himself how he can improve a specific process or is it necessary that a process be in current situation or not? It is possible to re-engineering the accounting process as well as production process. For example, an ordering process is a good model for change. In some institutions a long time is spent in order to complete the order of each customer. This time can be reduced by using re-engineering the whole process of the production. For example, order processing consists of several separate steps in which the order form is transmitted from person to person. Each employee is doing a small part of the duties for each order. When an employee performs only a limited set of tasks, he becomes completely efficient. But it is true that although this will increase the efficiency, but on the other hand, it wastes the time during the transmission of order from individuals or groups of individuals toother individuals. By using the re-engineering of order process, it is possible to give the responsibility of processing a set of orders to one person from beginning to end. This is not only save the time but also identifying the responsible for each order is possible. Moreover, when a customer wants to control a specific order, there is just one responsible person for that order and that responsible person can identify the situation of specific order (Moscove, 1997).

### *The Definition of Management Information System*

Different authors do not agree on the definition of management information systems. Also, different names has been suggested for this kind of information system (IS) such as information processing system, information and decision making system, organization information system, computer data processing system, management reporting system and resources of information (Sagheb, 2001). In one definition, MIS describes as a consolidated reporting system which is designed specifically to assist managers in planning, implementing and controlling the activities of organization (Dugan, 2009).

In another definition, Davis (2010) is described MIS as an integrated system consisting of human and machine which is prepare in organization to produce valuable information for supporting operations, management and decision making in an organization. This system is a combination of computer software and hardware, databases and manual methods and models for analyzing, planning, controlling and also decision making (Judge Zadeh, 2008).

According to Peter keen (2006), MIS is designing, presenting and effective using of information systems in organization. In the above definition, the word organization is used and the word management has not considered. Therefore, the MIS topic is considered more general than the information system. It means, although this topic is related to the managers, but also involves all other members of the organization and the structure and design of the organization. The term organizational information systems may be more appropriate, but the term management information system is more used and accepted (Kroenke, 1992). Management information system is a set of data which is designed with minimal costs to provide timely and accurate information and consists of the following major sections:

1 - Information flow model which extends from the origins to certain specified purposes.

2 - The computer as a tool for information processing.

3 - Software for understanding data under different commands (Rngryz, 2009)

But the intersection of these definitions is that all the definitions consider MIS as an information systemwhich provides information for decision making.

### *MIS subsystems*

Similar to other systems, MIS is also consists of subsystems. Perhaps the most important set of subsystems in every corporation is a functional in-

formation system. These are called the functional information systems because they support the organization's key functions. While there are different types of functional information systems, but four developed systems in a manufacturing company include marketing, finance, human resources and production. The functional sub-systems of MIS with examples associated with the input data and output data are presentedin the following parts (Wilkinson, 1997).

**Table 1.MIS Sub-systems**

| Sub-system | data | information |
|---|---|---|
| Marketing | Sales, customer preferences, competitors' prices, market size | Analysing and forecasting sales |
| Financing | Cash balances, interest rates, different kinds of financial markets and the requirements of the bank | Cash flow forecasting, analysis of payments, accounts payable age analysis |
| Human resources | Total payments, awards lists, tables of salaries | Payment analysis, estimates of personnel needed |
| Production | Optimum level of materials, the standard costs for materials, labour and production rules | Tables of production, product cost analysis, material requirements to obtain productivity |

Although, above mentioned information systems are defined as MIS sub-systems, but the most part of these system's information is provided by the AIS and all other information should be obtained from the organization's environment. For example, in marketing information systems, the information of sales and costs are provided by AIS and information about products, competitors, customer characteristics and their preferences should be obtained from the environment (Bodnar, 1993). However, the role of MIS in an organization can be compared with the role of heart in body that information is like blood and MIS is like the heart. MIS also provides assurance that useful data are gathered and processed from different recourses and sent to specific sections to prepare needed information for individuals or group of individuals (Jawadekar, 2002).

### *The Relationship between AIS and MIS*

The relationship between MIS and AIS is complex and sometimes controversial and there are different opinions have been expressed in this regard. Regarding the above discussion about these two systems, the components of information systems in one company can be summarised as what presented in figure 2 (Wilkinson, 1997).

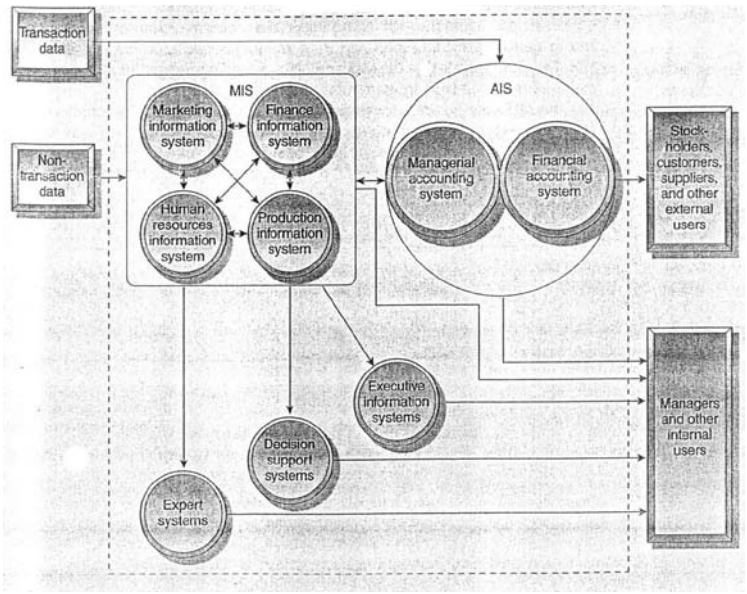


**Figure 2. Communications between MIS and AIS**

As the above figure represents various communications between MIS and AIS could be noted, the following section discusses the views expressed in this relationship.

First and foremost mentioned view is that AIS is one of the subsystems of MIS. The main reason for this relationship is that the AIS just provides financial information and processes the business transactions while the MIS encompasses a wider range and includes non-financial information (Gelinas, 1990). This relationship is represented in Figure 3 as well.

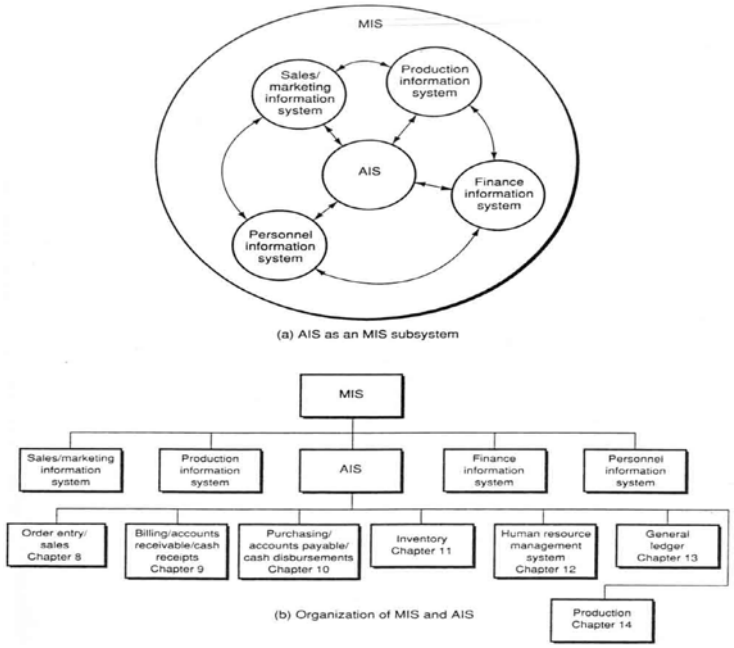


**Figure 3.The Relationships between AIS and MIS**

Another approach that has been proposed is that the AIS consists of both financial accounting system and management accounting system. Management accounting system just provides services for managers and other internal users and financial accounting system provides services for shareholders and other external users and AIS has more users. Therefore, it is concluded that MIS is a part of AIS since AIS will cover more users (Li, 1983). Figure 4 represents this relationship better.

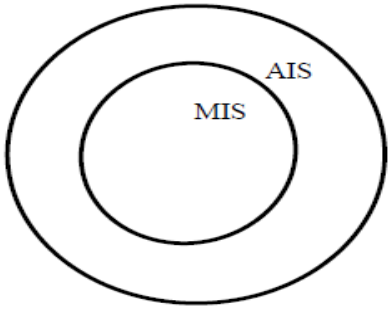


**Figure 4. Relationship between AIS and MIS**

But according to Figure 4 and previous discussion, another relationshipAIS and MIS also can be expected. The AIS and MIS have some common characteristics and in other words they have overlapping. The responsibility of MIS is to provide information to managers for decision making. This information could be financial in nature or information related to changes in the productivity or stock. It is clear that the economic information in the MIS is generally accounting information (Wilkinson, 1997). Figure 5 represents this relationship.

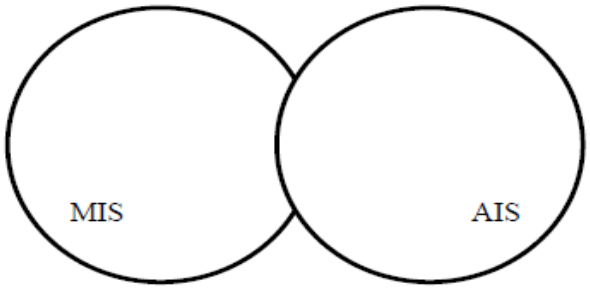


**Figure 5. Economic information in the MIS**

That part of AIS which is independent of MIS isthe financial accounting component placed out-

side of the MIS, because it essentially provides information to external stakeholders.

Another kind of relationship can be found in small organizations. In fact, in the small organization, AIS can be represents MIS (Wu, 1983). When the organization develops the AIS and for various reasons will not be able to develop MIS andonly relies on AIS for theneeded information, AIS can convert to MIS with some modifications (Li, 1983). Figure 6 represents this relationship.

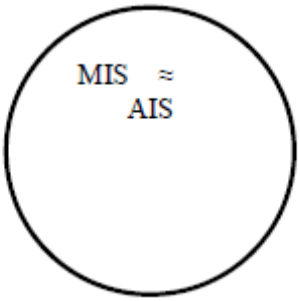


**Figure 6. The conversion of AIS to MIS**

## Conclusions

Different opinions about the relationships between MIS and AIS are explained in this article. But before explaining any kind of relationships, it is necessary to specify MIS and AIS definitions and set the range of each system. As it is explained, there are two completely different definitions about MIS. One of them is overall and involves all the organization and information systems in it and another one is a part of organization. Therefore, it can be said that if MIS involves all the organization, then AIS is a sub-system of MIS and the main goal of MIS is effective use of organization's information systems. But, if MIS is a system which is developed to provide information for managers, firstthe common features and differences between them should be listed and then determined the relationship between them. Table 2 represents the similarities and differences between MIS and AIS.

**Table 2. The Similarities and Differences between MIS and AIS**

| Similarities | Differences |
|---|---|
| Both systems are sets of human, machine and a set of procedures and these factors have the same effect on both systems. | In addition to managers and other internal users, AIS provides information for other external users so that it has more users. |
| Both systems are composed of subsystems that providing information in each of them requires the cooperation of MIS and AIS. | AIS uses financial data, but MIS uses non-financial data besides the financial data. |
| The aim of both systems is to provide information to improve decision making and increase the effectiveness and efficiency. | |
| Management accounting provides information directly to MIS and indirectly to other external users. | |
| Financial accounting provides information directly to external users and indirectly to the MIS. | |

Therefore, regarding the similarities and differences between MIS and AIS, it seems that the best expected relationshipbetween these two systems is the overlapping overview. The point that should be noted is that one overview cannot be eliminated until the fans support that point of view. In fact, different offered opinions are defendable by providers and advocators.

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