THE EFFECT OF USING ACCOUNTING INFORMATION SYSTEMS TO IMPROVE THE VALUE CHAIN IN BUSINESS ORGANIZATIONS - EMPIRICAL STUDY

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ABSTRACT: *The study aims to introduce the conceptual framework of the value chain as an analytical method for business organizations, and the analysis of the role of accounting information systems and the effect of their use in improving the value chain of the business organizations. The two researchers developed a study tool (questionnaire) based on the theoretical framework and previous studies. 64 questionnaires have been distributed to a sample of the study population, which consists of employees in the finance department of public shareholding industrial companies in the Kingdom of Bahrain. 50 questionnaires have been adopted and 14 were excluded due to their incompatibility with the analysis. Using the appropriate statistical analysis tools for the study data (arithmetic mean, standard deviation, and testing of T-test One Sample) the researchers found a deficiency in the level of the availability of the basic components of accounting systems and the level of the quality of accounting information required to improve the value chain of business organizations in public shareholding industrial companies in the Kingdom of Bahrain in general. According to the results of the analysis the researchers recommended the need to work on improving the level of the basic components of accounting systems to improve the quality of accounting information, in order to improve the value chain of public shareholding industrial companies in the Kingdom of Bahrain; specifically in regards to the existence of clear and specific work procedures in the accounting system, the level of the effectiveness of internal control measures, clear definition of responsibilities and authority, and management's attention in training and continuing education programs for employees.*

KEYWORDS: Value chain, Accounting, Information, System, Decision Making

INTRODUCTION

The need for accounting systems increases in its regard as a mean which derives its importance and necessity from its level of contribution in improving the value chain of business organizations, it helps in providing the needs from various resources and optimally allocating them under conditions of risk and uncertainty surrounding the business environment. The accounting system is considered as one of the most important information systems that contribute to the rationalization and support of economic decisions which affect the resources and wealth of communities and hence on the welfare of individuals. The accounting system also involves a close relationship with relevant administrative process which involves several tasks and functions; thus contributing in the improvement of the value chain of business organizations and increasing the level of goal achieving performance. The accounting systems are also used as the basis of evaluating the efforts made in various administrative levels to accomplish tasks and achieve goals.

On the other hand, the industrial sector in the Kingdom of Bahrain constitutes a pillar of support and development to the national economy, therefore there has to be research efforts available and a provision of scientific and field studies that contribute to the growth of this vital and continuing sector; these studies should constitute of scientific and practical evidence, guiding board members and ands decisions-makers to accomplish tasks and achieve goals efficiently and effectively.In this study researchers are trying to shed light on the role of accounting systems and their impact on improving the value chain to business organizations.

Statement of the Problem
The industrial sector suffers from many economic and administrative risks and difficulties, which requires a lot of effort to solve the problems and overcome the crisis. The company's management bears full responsibility for planning objectives, monitoring their implementation, and decision-making. The researchers believe that the success of these efforts depends, among other factors, on the availability of appropriate accounting information that can be relied upon to accomplish tasks and achieve goals.

The problem of the study is portrayed by answering the following questions:
1.   What is the nature of the relationship between the basic components of accounting systems and the level of the quality of accounting information needed to improve the value chain in the public shareholding industrial companies in the Kingdom of Bahrain?
2.   What is the impact of using accounting systems to improve the value chain in public shareholding industrial companies in the Kingdom of Bahrain in the planning, control and decision-making areas?

Aim of the Study
This study seeks to achieve a set of objectives, which are as follows:
1. Examine the relationship between the basic components of accounting systems and the level of the quality of accounting information needed to improve the value chain in the public shareholding industrial companies in the Kingdom of Bahrain.
2. Statement and analysis of the impact of the use of accounting systems to improve the value chain in the public shareholding industrial companies in the Kingdom of Bahrain in the planning, control and decision-making areas.

The Importance of the Study
The importance of the study is portrayed theoretically as:
-       Seeks to define the areas of the use of accounting information, and the extent to which the improvement of the value chain in business organizations is beneficial.
-       This study contributes to the support and development of scientific research efforts in the framework of designing accounting systems and increasing their efficiency to provide the necessary information to improve the value chain.
Practically, this study contributes in:
-       Statement of the nature of the relationship between the basic components of accounting systems and the level of the quality of accounting information needed to improve the value chain of the business organizations in the public shareholding industrial companies in the Kingdom of Bahrain.
-       Statement and analysis of the impact of the use of accounting systems to improve the value chain in the public shareholding industrial companies in the Kingdom of Bahrain.

Hypothesis of the Study

This study seeks to measure the achievement of the above objectives through the following assumptions:

1. There were no statistically significant differences between the basic components of accounting systems and the level of the quality of accounting information needed to improve the value chain of the public shareholding industrial companies in the Kingdom of Bahrain.

2. There is no statistically significant relationship in the impact of the use of accounting systems to improve the value chain of the public shareholding industrial companies in the Kingdom of Bahrain.
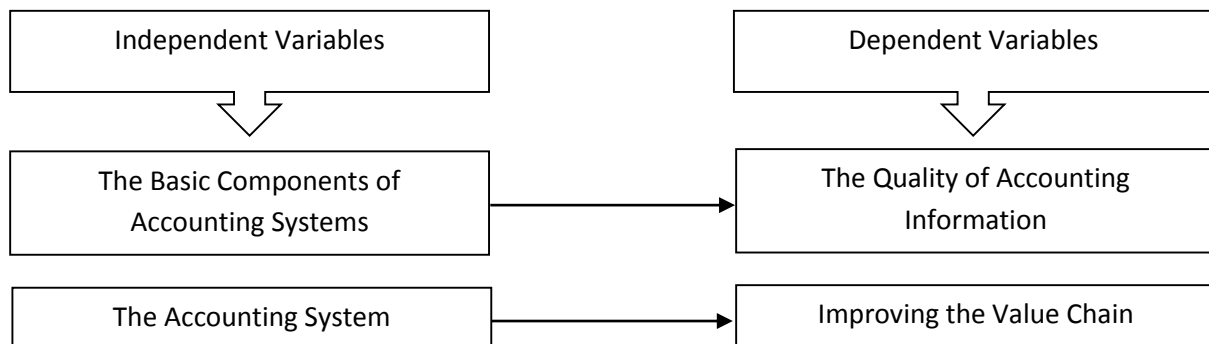
The Study Model

Figure (1) variables of the study

Methodological framework of the study

The concept of the value chain appeared in 1985 where Michael Porter first noted in his book "Competitive Advantage" the value chain as a system for performance analysis, evaluation of all activities of the organization, and its operations to identify competitive position.The concept of the value chain has been developed as an integrated analytical method for the activities of the organization. It has also been used as a strategic planning tool for business organizations. The conceptual framework of the value chain is based on the fact that the organization includes a range of compatible activities to maximize the business value to the upper limit and lower costs to the lowest possible level. In accordance with the value chain model as developed by Porter, the accounting systems are part of the infrastructure of the organization's activities, as one of the supporting activities that form the basis necessary to achieve the efficiency and effectiveness of the organization.

According to the general model for the analysis of the value chain as defined by Porter, the activities of business organizations have been divided into two basic types, namely:

1. Primary activities: which are the activities related to the production process and that contribute to add value directly to the organization, and include the following activities:

• Inbound logistics: includes all activities related to the receipt of raw materials from suppliers and their storage.

• Operations: includes all activities relating to the production of goods and services, and the conversion of raw materials into a finished product.

• Outbound logistics: includes all activities relating to the distribution of the product and its delivery to consumers.

• Marketing and sales: includes all activities relating to the marketing and offering of products to consumers.

• Service: includes all activities related to the additional services that are granted to consumers after receiving the product, such as maintenance and warranty.

2. Support activities: which are secondary activities that are an essential foundation to achieve efficiency and effectiveness of the organization, and include the following activities:

• Infrastructure: include all relative activities.

• Human Resources Management: includes all activities related to staff recruitment, assessment, and training.

• Technology Development: includes all activities related to obtaining the appropriate technology or the production process, and its development.

• Procurement: includes all activities relating to the purchase of raw materials, ensuring their quality, and relationship with suppliers.
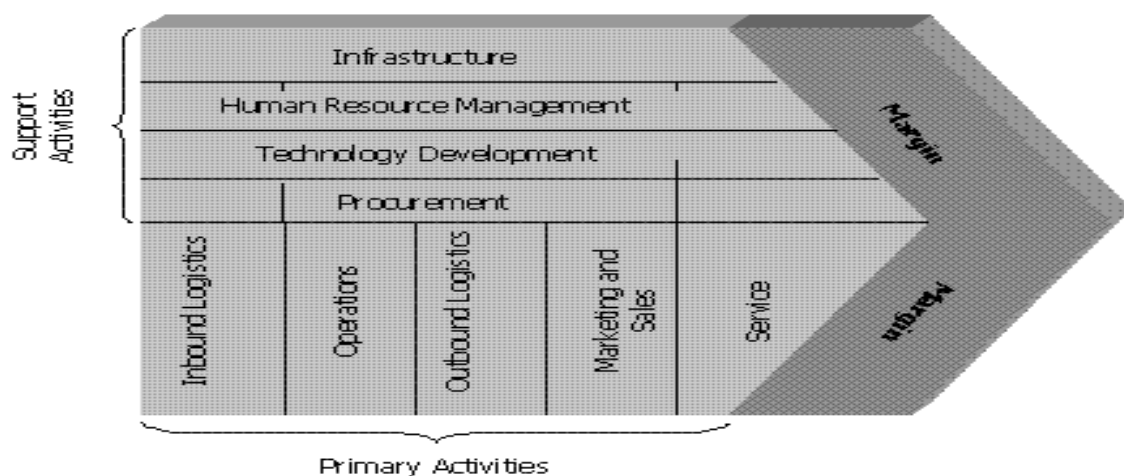
Source: Porter (1985)

On the other hand, accounting systems represent a form of interactive systems that are connected to the surrounding environment by mutual relations, where accounting systems work in a changing dynamic atmosphere imposed by the surrounding environment (Barry & Marshal: P5).

The study and analysis of environmental factors affecting the level of efficiency and effectiveness of accounting systems is considered one of the mechanisms used in the evaluation of these systems and their suitability, where the evaluation of information technology systems using direct benchmarks and indicators such as: (efficiency, effectiveness, benefit / cost, improved productivity, competitive advantage , ... etc.). (speech, 2002)

In a study by researchers (Salem, Ahmed, 2013) about the role of the qualitative characteristics of accounting information in raising the efficiency of planning and control in Sudanese financial institutions, the researchers pointed out that the degree of the accounting information appropriateness affects in a positive way the process of good prediction in the future, the ability to place an estimated budget to achieve the organizations objectives, and the ability of establishing regulatory standards to follow the plans drawn. The study, conducted by researchers (Mousawi, Mohammed, 2009) have pointed out that the information systems significantly affect managerial, job, financial and marketing performance in insurance companies in Algeria.

It has been pointed out (Romney & Stinbart, 2015) that the accounting systems add value to business organizations by providing accurate information in a timely manner, as it contributes to:

1.   Improve quality and reduce costs for products or services.
2.   Improve efficiency through the adoption of efficient systems for production, storage and others.
3.   Knowledge sharing through improved channels of communication between all users of the accounting system.
4.   Improve the efficiency and effectiveness of the supply chain by reducing cost of sales and selling expenses.
5.   Improve the internal control structure and internal audit.
6.   Contribute to the rationalization and support of administrative decisions.

THE FIELD STUDY

The Study Methodology
In the preparation, the researchers adopted a descriptive and analytical approach in the collection and analysis of the study data, testing the hypothesis, the formulation of an intellectual framework, and previous studies on the subject of accounting systems and their relationship to the value chain in the public shareholding industrial companies in the Kingdom of Bahrain.

The Study Population and Sample
The study population consists of the public shareholding industrial companies in the Kingdom of Bahrain (23 companies). The researcher has chosen a sample of workers in auditing firms. 60 questionnaires have been distributed to a sample of employees in the companies, which amounted to 50 valid questionnaires for the purpose of this study; that is, 83% of the questionnaires distributed.

Data Collection Method
In the practical part, the study adopted a descriptive analytical method by using a questionnaire designed by the researchers to collect field data relating to public shareholding industrial companies in the Kingdom of Bahrain, as well as published research's and studies on the subject of the study to formulate the conceptual framework and cognitive aspect of the study.

Data Analysis Methods
The researchers used the Statistical Package for the Social Sciences (SPSS) to analyze the study data, where they used the measures of central tendency and measures of dispersion in order to present the results of the study, and describe the results by finding the arithmetic mean and standard deviation. The researchers adopted the Likert Quintet measure to determine the degree of the relative importance of each item in the questionnaire, with adopting the center-pivot by three degrees to (60%) to be the borderline in the interpretation of the results as shown in Table (1). The researchers also used the T-test to check the hypotheses of the study.

Table (1) degrees of materiality according to the measure of the Likert Quintet

Degree	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Relative weight	5	4	3	2	1
Percentage	More than 80%	60%-80%	60%-40%	20%-40%	Less than 20%
Statistical Significance	Very High Significance	High Significance	Medium Significance	Low Significance	No Significance

Internal Consistency and Reliability of Study Tool
The researchers calculated the internal consistency of the questionnaire through the correlation coefficients between each item of the questionnaire and the total score of the same item, in the following manner:

Table (2) the correlation between each axis of the questionnaire and the total score of the questionnaire

Questionnaire Axis		Total Score
First Axis	Correlation Coefficient	0.892
	Significance	0.000
Second Axis	Correlation Coefficient	0.942
	Significance	0.000

** The correlation function at a significance level of 0.01

It is evident from Table 2 that the correlation coefficient values for each axis of the questionnaire is positive and statistically significant at the level of 0.01 or less, suggesting that questionnaire items have a good degree of sincerity which can be relied upon to perform the research.

Given that Table (3) shows that the questionnaire has a high stable coefficient, where the degree of stability ranges between (0.973, 0.786), while the total Alpha Cronbach's coefficient for all axis (0.871) which is high and appropriate to use the research tool as a method to collect the necessary information to answer all the study questions.

Table (3) the stability of the questionnaire using Cronbach's alpha coefficient

Axis	No. of Items	Cronbach's Alpha Coefficient
First Axis	7	0.948
Second Axis	7	0.876
Total Questionnaire	14	0.912

First: The Demographic Characteristics of the Study Sample
The following table (4) shows the personal characteristics of the study sample, where tables data indicate that 76% of the total study sample are individuals who hold a university degree (BA) or below, while the percentage of master's holders is 18%, which can be considered as an negative indication which shows a low level of employees qualification in pharmaceutical

companies and medical industries, it must be rectified by improving the level of their qualification.

The age group of the study sample was centered between (30-40 years) with a percentage of 50%, which is an age group that fits the department and the nature of work.With regard to the years of experience, 60% of employees have less than five years of experience, which is considered as a negative indicator that does not achieve high efficiency in the management of information systems, in spite of the presence of 25% of the respondents with experience in the field of expertise.

Finally, the fact that 54% of the study sample have been employed at the company for less than five years indicates the presence of job insecurity and is a negative indicator of the employment policy of these companies.

Table (4) personal characteristics of employees in financial department of the public shareholding industrial companies in the Kingdom of Bahrain (study sample)

		Frequency	%
Educational Qualification Accounting - Auditing	Diploma	8	16
	Bachelors	30	60
	Masters	9	18
	Doctorate	3	6
Total		50	100
Age	Less than 30 years	14	28
	30 – 40 years	26	52
	41 - 50 years	7	14
	More than 50 years	3	6
Total		50	100
Years of Experience Accounting - Auditing	Less than 5 years	30	60
	5 – 10 years	9	18
	10 – 15 years	8	16
	More than 15 years	3	6
Total		50	100
Term of Employment	Less than 5 years	27	54
	5 – 10 years	14	28
	More than 10 years	9	18
Total		50	100

Display and Analysis of the Data and Testing the Hypothesis
The First Hypothesis: "There is no statistically significant relationship between the basic components of accounting systems and the level of quality of accountinginformation needed to improve the value chain of business organizations in the public shareholding industrial companies in the Kingdom of Bahrain."

Table shows (5) the arithmetic means and standard deviations for the responses of the study sample relating to the relationship between the basic components of accounting systems and the level of the quality of information needed to improve the value chain of the business.

No.	Items	Arithmetic Mean	Standard Deviation
1	The company uses efficient accounting programs and systems which contribute to improving the quality of accounting information and reports	3.166	0.697
2	The company provides the suitable hardware that is required to operate the accounting programs and software which contributes to improving the quality of accounting information and reports	3.211	0.489
3	The employees in the company's finance department have the competent level of educational qualification to perform the work which contributes to improving the quality of accounting information and reports	3.108	0.716
4	The work procedures in the accounting system are clear and defined so as to facilitate their application and contributes to improving the quality of accounting information and reports	2.781	0.644
5	The accounting systems includes internal control which reduce the cases of fraud in the accounting data which contributes to improving the quality of accounting information and reports	2.658	0.561
6	The company's management is concerned with training and continuous education programs for employees in the finance department which increase their level of qualification and in turn contributes to improving the quality of accounting information and reports	2.335	0.743
7	The company's policies include specific and clear responsibilities and authorities for all employees in the finance department which contributes to improving the quality of accounting information and reports	2.694	0.810
Total		2.850	0.665

As it can be seen from the table that the arithmetic mean of the responses from the study sample is 2.580 which is less than the average test by Likert scale, indicating a low level of availability of the basic components of accounting systems and the level of the quality of accounting information needed to improve the value chain of the business organizations in the public shareholding industrial companies in the Kingdom of Bahrain. In particular with regard to the existence of clear and defined work procedures in the accounting system, the effectiveness of internal control system, clear definition of responsibilities and authorities, and management attention to training and continuing education programs for employees. It also shows the standard deviation of the total of the responses is 0.665, indicating compatibility and lack of dispersion in the opinions of the sample. This confirms the hypothesis of the One sample T-test according to the schedule number (6).

Table (6) T-Test

Test Value = 3					
t	df	P value (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
				Lower	Upper
1.946	50	0.081	3.638	0.137	0.491

the value of t for the arithmetic mean for responses reaches (1.946) which is a value that is not statistically significant at (P less than 0.05), where the calculated value of P reached (0.081), a relatively high value, which refers to the lack of the basic components of the accounting systems needed to improve the value chain of business organizations in public shareholding industrial companies in the Kingdom of Bahrain. This calls for the acceptance of the nihilism hypothesis H0: "There were no statistically significant differences between the basic components of accounting systems and the level of the quality of accounting information needed to improve the value chain of business organizations in public shareholding industrial companies in the Kingdom of Bahrain" .

The Second Hypothesis: "There is no statistically significant relationship effect of the use of accounting systems to improve the value chain of the business organizations in public shareholding industrial companies in the Kingdom of Bahrain ".

Table (7) shows the arithmetic mean and standard deviations for responses of the study sample on the effect of the use of accounting systems to improve the value chain of the business organizations in public shareholding industrial companies in the Kingdom of Bahrain.

No.	Items	Arithmetic Mean	Standard Deviation
1	The accounting systems applied by the company contribute in improving the quality and type of products and services	2.582	0.726
2	The accounting systems applied by the company contribute in reducing production and additional costs	3.218	0.442
3	The accounting systems applied by the company contribute in improving efficiency by adopting efficient systems for production, storage, etc.	3.985	0.653
4	The accounting systems applied by the company contribute in knowledge sharing through improved communication channels between all users of the accounting system	2.215	0.514
5	The accounting systems applied by the company contribute in improving the adequacy and effectiveness of the supply chain by reducing cost of sales and sales expenses	2.317	0.847
6	The accounting systems applied by the company contribute in improving the internal control structure and internal auditing	2.893	0.762
7	The accounting systems applied by the company contribute in the rationalization and support of administrative decisions	3.328	0.883
Total		2.934	0.691

As it can be seen from the table that the total arithmetic mean of the responses of the study sample is 2.934 which is less than the test average by Likert scale, indicating a weak contribution by accounting systems in improving the value chain of business organizations in

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public shareholding industrial companies in the Kingdom of Bahrain. In particular with regard to improving the quality of products and services, the extent to which the applied accounting systems contribute in achieving knowledge sharing and improving communication channels between all users of the accounting system, improving the efficiency and effectiveness of the supply chain, as well as improving the internal control structure and internal audit. The standard deviation of the responses is 0.691 and it shows compatibility in the responses of the study sample and a lack of dispersion.

According to table (8) the One Sample T-Test confirms the weak contribution of accounting systems to improve the value chain of business organizations in public shareholding industrial companies in the Kingdom of Bahrain. The value of t of arithmetic means of responses is (2.683), a value that is not statistically significant at (P less than 0.05). The calculated value of P is (0.063), a relatively high value indicating a weak contribution of accounting systems to improve the value chain of business organizations in public shareholding industrial companies in the Kingdom of Bahrain. This calls for accepting the nihilism hypothesis H0: "There is no statistically significant relationship effect of the use of accounting systems to improve the value chain of the business organizations in public shareholding industrial companies in the Kingdom of Bahrain".

Table (8) T-Test

Test Value = 3					
t	df	P value (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
				Lower	Upper
2.683	50	0.063	3.417	0.226	0.574

RESULTS AND RECOMMENDATIONS

In light of the previous display of data, the researchers have reached the set of following results:
1.   The level of availability of basic components in accounting systems and the level of the quality of accounting information needed to improve the value chain of business organization in public shareholding industrial companies in the Kingdom of Bahrain have declined , especially with respect to the existence of clear and defined work procedures in accounting systems, the effectiveness of the internal control structure, the clear definition of responsibilities and authorities, and managements concern with training and continuing education programs for employees.
2.   The weak contribution of accounting systems in improving the value chain of business organizations in public shareholding industrial companies in the Kingdom of Bahrain. In particular with regard to improving the quality of products and services, the extent to which the applied accounting systems contribute in achieving knowledge sharing and improving communication channels between all users of the accounting system, improving the efficiency and effectiveness of the supply chain, as well as improving the internal control structure and internal audit.

In light of previous results the researchers recommend the following:
1.   Public shareholding industrial companies in the Kingdom of Bahrain need to contribute to providing the infrastructure relating to the suitable hardware and software that is required to operate the accounting system, which in turn contributes to improving the quality of accounting information and reports.

2.   Administrative policies must include clearly defined responsibilities and authorities to all jobs within the finance department of the company, which contributes to improving the quality of the accounting information and reports.

3.   The need for clear and specific work procedures which could be easily applied, which contributes to improving the quality of the accounting information and reports.

4.   Work on improving the internal controls structure to limits the occurrence of cases of fraud in the accounting data, which contributes to improving the quality of the accounting information and reports.

5.   The need to recruit people who have the competent qualifications and the practical experience necessary to do tasks, which contributes to improving the quality of the accounting information and reports.

6.   The management of public shareholding industrial companies in Bahrain needs to concentrate on training and continuing education programs for employees in the finance department, and increase their efficiency at work, which improves the quality of the accounting information and reports.

7.   The need to improve the level of the basic components of accounting systems to improve the quality of accounting information required to improve the value chain of business organizations in public shareholding industrial companies in the Kingdom of Bahrain.

REFERENCES

Moscove, Stephen and Mark G. Simkin, Accounting Information Systems: Concepts & Practice for Effective Decision Making, Mars Publishing, Riyadh, 2000.

Al Fudaily, Salah and Hassan Abdullah Abbas, Information Technologys Privacy from the Utility Theory Perspective, Arab Journal of Administrative Sciences, Vol. 8, No. 3, 2001, pp. 347-368.

Speech, Abdel Nasser, "The analysis of the factors affecting the efficiency, instructions, and effectiveness of accounting information systems in the Jordanian commercial banks", unpublished Master Thesis, Al-Albayt University, 2002.

Huda bin Mohammed, Abdel-Nour Mousawi, The Impact of the Use of Information Systems on the Performance of Economic Institutions: Case study on insurance companies in Algeria, study submitted to the Second Conference of the College of Business at the University of Jordan, "the pressing issues of the emerging economies in the modern business environment." 14/15/4 / 2009

Salem, Badr Al-Din, Ahmed, Nasr al-Din (2013), The Role of the Qualitative Characteristics of Accounting Information in Increasing the Efficiency of Planning and Control of Financial Institutions in Sudan, Economic Sciences Magazine, June 2013 Vol 14 (01)

Porter, M. E. (1996), What is strategy? Harvard Business Review, November-December, p 61-78.The value chain

Porter, Michael E. (1985). Competitive Advantage: Creating and Sustaining Superior Performance. New York.: Simon and Schuster. Retrieved 9 September 2013.

Barry , Cushing E, Accounting Information System and Business Organization , 3rd Edition, Wesly Publishing co. , California , 1982 , p 230.

Boock Holdt, J.L, Accounting Information Systems, 5th Edition, Irwin, Mc Graw – Hill, USA, 1999, p 2-3.

Romney B. Marshall, Steinbart, Paul John, (2015)Accounting Information systems, 13th Edition ,Prentice Hall