



Impact of responsibility accounting on evaluating performance of industrial enterprises in Sudan

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Abstract: This study has tackled the theme of responsibility accounting impact on evaluating performance of the Sudanese industrial enterprises. The study specifically investigated how to apply the responsibility accounting system on industrial enterprises and its impact on evaluating the performance as well as comparing the actual performance to the planned performance by using planning budget system. The importance of the study stems from the role of accounting of responsibility in detecting deviations and identifying those responsible along with preparing reports for taking sound decisions. The aim of this study is to figure out the impact of responsibility accounting system on evaluating performance of the Sudanese industrial enterprises, finding the relationship between them and the efficiency of the performance of the Sudanese industrial enterprises, as well as the relationship between responsibility accounting and planning budgets in the optimal use of resources available in the Sudanese industrial enterprises. The study followed both the deductive approach, the inductive method, the historical approach, as well as the theoretical descriptive approach in its theoretical and applied study. The study end up with several conclusions, the most important of which is that responsibility accounting assists industrial enterprises to upgrade their efficiency and effectiveness in exploiting their resources by dividing them into responsibility and supervision centers. The study also provides appropriate methods for measuring and evaluating performance, a matter which increases efficiency of performance. One of the most important recommendations of this study is the need to use responsibility accounting as an audit tool to evaluate performance of industrial enterprises, and the need to figure out deviations and analyze them to determine the causes of their occurrence for taking the necessary measures to correct them in a timely manner.

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1. Introduction and literature review

The main issue of this study is represented in how to apply responsibility accounting system in industrial enterprises and its impact on performance evaluation, which in turn leads to figuring out the size and type of actual performance. This study problem can be addressed through raising the following questions: Is there a relationship of abstract denotation between the administrative information systems and the responsibility accounting in upgrading production efficiency in the Sudanese industrial enterprises?. Moreover, Is there a significant relationship between accountability and efficiency of performance in the Sudanese industrial enterprises?.

The importance of the research lies in the role of responsibility accounting and its effect on the evaluation of the performance of industrial enterprises through the measures it takes under which the actual implementation is followed up within the framework of the planned performance in order to detect

deviations and identify those responsible of them towards taking decisions and actions necessary to correct them in a timely manner and then identify the reasons of their occurrence, as well as preparing reports on them to be submitted to the various administrative levels for making perfect decisions.

The most important previous studies in this topic can be summarized as follow:

Ibrahim Ali Ahmed Umshahr, (2006): The problem of the study was to identify the extent to which the Libyan oil companies take into consideration responsibility accounting system and its impact on performance. The main hypotheses that the study sought to test are the following: application of responsibility accounting leads to the efficiency of the performance of the Libyan oil companies. The basic elements of the responsibility accounting system help to evaluate the performance of the Libyan oil

companies. The responsibility accounting system helps to evaluate the performance of the responsibility centers in the Libyan oil companies. The researcher followed the deductive approach, the inductive method, the historical approach and the descriptive analytical method. The most important recommendations of the study are: viable outcomes must be reached in assessing performance of companies, employees should participate in laying down appropriate standards, more attention is to be accorded to responsibility accounting system and activating it to benefit from it so that it can be used as a tool for planning, control and performance evaluation and responsibilities and to help companies assess their performance, Employees should contribute in choosing the appropriate method for internal and external transfers prices. The researcher believes that this study highlights the importance of the oil sector and the extent of the need for this sector to draw up sound planning and effective control so that it can achieve its objectives efficiently and effectively, while this research tackled the role of responsibility accounting in evaluating performance in industrial facilities.

Mirghani Ibrahim Suleiman, (2011): The problem of the study was represented in the fact that many enterprises, whether public shareholding companies with huge financial potential, which aim to realizing profit or service enterprises, which are non-profit organizations, suffer from lack of appropriate information to enable them make appropriate decisions related to different fields, on which such decisions are taken, a matter that made these facilities face difficulty in decisions making process. The study adopted the following hypotheses: Implementing a responsibility accounting system assists management in activating the performance of its various administrative functions responsibility accounting affects the process of making and taking administrative decisions, and the information provided by responsibility accounting assists in achieving high quality of administrative decisions.

The approaches adopted by the researcher are: the deductive approach to determine research axes and the laying down hypotheses, descriptive approach to use the method of case study to figure out the bases and rules used in decision making in Petrodar Petroleum Operations Company, the inductive method to test the validity of hypotheses and the historical method to track previous studies related to the subject of research. The study came up with several conclusions, these are: The application of responsibility accounting system assists the management in the performance of its functions, decision-making centers are more effective when implementing responsibility accounting system, the

good audit system performs its role efficiently due to the adoption of the responsibility accounting system in the case in point company, the planning is based on the data provided by the responsibility accounting system. Among the recommendations the study concluded with are the following: Working on training more cadres to carry out the planning functions in conformity with responsibility accounting system, more use of historical data to upgrade the ability of managers to predict and make better decisions, The management is to increase the knowledge of individuals of the principle of management by objectives to achieve the aspired for objectives and increase the awareness of managers of the importance of information produced by responsibility accounting system in their decisions. The researcher thinks that this study discussed the role of responsibility accounting in decision-making, the information provided by accountability in the decision-making process, and the quality and nature of decisions that rely on responsibility accounting.

Masaid, (2013): This study has aimed at shedding the light on the importance of accounting for social responsibility and its objectives for the Jordanian industrial shareholding companies, and to highlight the role of accounting for social responsibility in the Jordanian industrial companies. The researcher used the questionnaire method to collect information, using descriptive methods (mean, frequencies and percentages), and study sample is composed of corporate managers, financial managers and accountants and human resources in the Jordanian industrial joint stock companies, and external accounting auditors were selected in a random way by a percentage of more than (50%). The researcher came up with a proposed model for the implementing social responsibility accounting in the Jordanian industrial share-holding companies. The researcher has also come to the conclusion that there is a relation of statistical denotation for the dimensions of accounting of social responsibility relationship (environmental control, agents, human resources, quality, product safety and the local community) in the social return in Jordanian Industrial Joint Stock Companies. According to these results the researcher concluded with a set of recommendations, top of which is re-doubling attention by the Jordanian industrial joint stock companies to their social responsibilities, and the need to develop a clear vision with regards to social responsibility as well as including it in their strategic objectives, and the need to exert more effort in social responsibility activities towards customers, and hold Conferences and workshops by Jordanian industrial companies as a means of communicating with people and building an advanced reliable evaluation system related to the social responsibility

activities to be used for periodically evaluating their performance of social responsibility activities, a matter which will enhance the possibility of continuous improvement in their social obligations to mitigate the burden of obligations through the effective management of this area, as well as the need for the public shareholding companies to adopt the findings of the search and make them a pivot of attention and generalizing them after knowing their importance and their role in contributing to the development of society towards responding to the desires of its customers through applying the findings of scientific research.

Garbou, (2006): This study aimed to figure out the extent of applying gauging and accountability in the accounting of social responsibility in the financial statements in the companies of Gaza Strip. It was an exploratory study of the opinions of financial managers and heads of accounting departments of the public shareholding companies in Gaza Strip in Palestine industrial companies. The researcher has designed a questionnaire based on previous studies and theoretical framework, to achieve the objectives of the applied side of the study. The questionnaire was distributed to 70 financial managers and accountants of Palestinian companies.

Meadh, (2003): The study aimed to outlining the role of responsibility accounting in providing information that will help the administration in the planning and control process, and supplying them with the reports and data necessary to assist it with decision-making. The researcher used the methodology of the questionnaire, whereby he distributed it to all public shareholding companies listed in Amman financial market for the year 2001 totaling 89 companies, and the response rate was 100%, and the study concluded with a number of findings top of which is that 34% of companies do not apply responsibility accounting system for not being able to possess the element of its application. It was found from the results of the study that accounting of social responsibility was not accorded a great attention from the part of the professional associations of accounting and auditing in Palestine. The findings have also showed that the general framework of social responsibility is a framework of undefined features and its dimensions are not agreed on up to date in a decisive manner. The study has also showed that Accounting for the social responsibility of these projects is an activity that can be codified by defining its categories, areas, objectives and its variables, and thus it is possible to determine the means of measuring it and disclose its results objectively. The researcher presented a set of recommendations that will help companies comply with the laws and regulations to protect the environment from pollution and the damage caused by practicing of its various activities

towards avoiding the penalties that would imposed on it if it violates the obligation to implement these laws and also the need to disclose the activities carried out by these companies Which have social impacts such as education, health of workers, pollution of the environment and consumption of resources.

Research Scope: Samples of Sudanese Industrial Enterprises and Al Sirouj Company for Marble & Stones. Ltd. (Makkawi Marble Factories), Amipharama Co., Ltd. Modern Factory for refrigerators (for bedazzled), confectionary Factory and Abokliwa Toothpaste Factory were used in this study.

The research aims were to:

- Study and figure out the effect of the responsibility accounting system on performance evaluation in the Sudanese industrial enterprises and the problems facing some policies and working towards solving them in conformity with the scientific standards, in light of which judgment of performance efficiency is made.

- Figuring out the existence of a relationship of significant spiritual denotation between the responsibility accounting and the efficiency of performance in the Sudanese industrial enterprises and the existence of a significant relationship between the responsibility accounting and planning budgets in the efficiency of resources use in the Sudanese industrial enterprises and also the existence of a significant relationship between responsibility accounting and administrative information systems in raising productivity efficiency In the Sudanese industrial enterprises.

2. Material and methods:

To achieve the objectives of the research, the following assumptions were formulated:

The first hypothesis: There is a relationship of spiritual denotation between the responsibility accounting and efficiency of performance in the Sudanese industrial enterprises. The second hypothesis: There is a relationship of spiritual denotation between responsibility accounting and the system of planning budgets in the efficient use of available resources in the Sudanese industrial enterprises.

I. Research approach:

To achieve the objectives of this research, the researcher adopted a number of research methods these are:

1. Deductive approach to identify the nature of the problem and lay down inductive assumptions to test the validity of hypotheses.

2. Historical approach is used to review the previous studies related to the theme of the research.

Analytical descriptive approach is used whereby the descriptive is used for the theoretical study and analytical one is used for applied study.

Sources and Tools of Data collection:

- Primary Sources: Questionnaire form.

- Secondary Resources: Includes books, periodicals, reports, the Internet and bulletins.

Total of (100) questionnaires were distributed and (94) valid responses were used in the analysis as follows:

Table (1). Distributed and returned questionnaires

Particulars	the number	The percentage
Questionnaires returned after they are fully completed	94	94%
Questioners not returned	6	6%
Total distributed questionnaires	100	100%

It is very clear from Table 1. that the response rate is 94% of the distributed questionnaires and 6% of the questionnaires have not been returned. This rate is a very good rate in the applied studies. The researcher relied on the Likert scale (Likert Scale), which ranges from (strongly agree to strongly disagree), and the scale used in the study has been corrected as follows:

- The total score of the scale is the sum of the individual scores ascribed to the phrases.

- Each grade of the five-dimensional Likert scale is given a probable weight as follows: Strongly agree (5), OK (4), Neutral (3), Disagree (2), strongly disagreeable (1).

Third- The method of statistical analysis used in the study:

The researcher coded the questionnaire questions and then emptied the data collected through the questionnaire using the statistical package program for social sciences (SPSS) Statistical Package for Social Sciences" And then analyzed it through a set of statistical methods appropriate to the nature of data and type the variables of study, to achieve the objectives of research and test hypotheses of the study, by using the following statistical tools:

- Stability test (Reliability Test (For the questionnaire questions consisting of all the data using the "Alpha Cronbach" factor) Cronbach's Alpha).

- Descriptive statistical methods: To describe the characteristics of the items of the study samples through making repetitive tables, including the frequencies, percentages and diagrams of the variables of (age, qualification, field of specialization, years of experience and current job), to identify the general trend of the sample items for each variable separately and the standard deviation to specify The amount of dispersion in the responses of the respondents subject to the research for each phrase from the arithmetic mean. Also calculating the weighted average of the

sample responses using the five-digit Lycart scale to measure the trend of respondents' opinions.

- Methods of deductive statistics: to test the hypotheses of the study and these methods are represented in the use of test of (Chi square).

This test was used to test the statistical deduction significance of the hypotheses of the study at the abstract level of 5%, this means that if the square value of Kai calculated at a significant level of less than 5% the null hypothesis is rejected and have alternative hypothesis (search hypothesis) shall be true. "If the square value of k stands at a significant level greater than 5%, this means accepting the hypothesis of null and therefore the alternative hypothesis (hypothesis) of research is incorrect.

Measurement tools are evaluated and tested using the following measures:

(1). Stability of the gauge (questioner):

The stability measure is used "the factor of Cronbach, s Alpha), Which takes values ranging between zero and one, and if there is no stability in the data, the value of the parameter is equal to zero, and conversely if there is complete consistency in the data, the value of the parameter is equal to one. In other words, increasing the alpha-Cronbach factor means increasing the reliability of the data in reflecting the sample results on the study population. The researcher took into account the checking the stability of the scale which he built before using it in the study by re-testing on 30 individuals and calculating the " Alpha-Cronbach "Cronbach, s Alpha), on the phrases of the study, which represent the four hypotheses, whose value amounted to (0.86), which is a very high value.

(2). Criteria for validity of the questionnaire:

The validity test (Validity) For the questionnaire phrases used in data collection, is conducted by calculating the square root of the alpha-Cronbach coefficient as shown below:

Table (2). The veracity of the test for the phrases of the questionnaire

Assumption	Number of Phrases	Stability coefficient	Veracity coefficient
Initial Hypothesis	10	0.77	0.87
The second hypothesis	10	0.79	0.89
Total phrases	20	0.84	0.91

Table (2) shows that the validity of the 40 phrases is limited to 0.85-0.89, which is very large, which means that the questionnaire is valid for measuring what is being measured.

Statistical description of the study sample according to personal characteristics

a. Distribution of the sample by age:

The majority of the sample individuals are over the age of 41 years whereby their percentage amounted to (35.1%) of the respondents, while the percentage of those aged (31-40) years stood at (26.7%). The percentage of the sample members who are under the age of 20 years stood at (9.6%) in the sample.

b. Distribution of members of the sample by scientific qualification:

The study included all the academic qualifications, but it concentrated on university degree holders (high diploma, master's degree, doctorate)whereby their percentage amounted to 56.4% of the respondents, while the percentage of university education holders stood at 25.5%.andthe percentage of holders of secondary education and intermediate diploma in the sample amounted to (18.1%)thus we can say that the sample of the study is one of the scientifically qualified samples "and this will lead to obtaining objective opinions on the subject of research.

c. Distribution of members of the sample by scientific specialization:

Scientific specialization of the majority of the sample was accounting and costs accounting whereby their percentage stood at 50%, while the percentage of the specialists in business administration stood at (30.9), and the specialists in economy of statistics amounted to (13.8%) The percentage of the other specializations in the sample stood at (5.3%).

d. Distribution of the sample by professional qualification:

The percentage of (38.3%) of respondents are from the holders of professional qualifications of whom (3.5%)are holders of the Sudanese Fellowship and a percentage of (2.1%) are holders of the British Fellowship, (6.4%)are holders of American Fellowship, (9.4%)are holders of the Arab Fellowship

While the percentage of those who are not holding a professional qualification stood at (61.7)%.

e. Distribution of the sample according to the status:

The majority of respondents were accountants and internal auditors whereby their percentage stood at (39.4%) while the percentage of heads of departments stood at (11.7%). The sample included 36.2% of departments' managers and their deputies, while the other jobs accounted for 2.1%.

f. Distribution of sample members according years of experience:

The majority of the sample members has more than 16 years of experience, whereby their percentage accounted for 42.5% while the percentage of those who have 11-15 years' experience amounted (19.1%), and the members of the sample who have less than 5 years of experience stood at 17 %).

3. Statistical Analysis:

The researcher tackles in this study the analysis of the basic data of the study in order to be able to know the extent of their representation of the study community. The researcher has summarized the data in tables showing the values of each variable to explain the main parameters of the sample in the form of numbers and percentages of the phrases of study, in addition to discussing and interpreting the results of the field study. Table in the results section showed the results of statistical analysis of data as well as the results of statistical analysis of hypotheses tested. The researcher was discussed and interpreted the outcome of each hypothesis separately with the aim of judging its validity or non-validity basing on "The general statistical analysis.

4. Results and Discussion

Analysis of the first hypothesis tested

There is a significant relationship between responsibility accounting and efficient performance of the Sudanese industrial enterprises.

First: "The repetitive distribution of the first hypothesis phrases"

The following is the frequency distribution of the responses of the units subject to research for all the phrases of the first hypothesis:

Table (3) frequency distribution of the responses of the individuals who are members of the study sample on the first hypothesis

Phrase	I totally agree		I agree		neutral		disagree		Strongly Disagree	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
1. The division of the establishment into responsibility centers helps to raise the level of efficiency of performance.	81	86.2	13	13.8	0	0	0	0	0	0
2 - Providing appropriate methods to measure and evaluate performance increases the efficiency of performance.	56	59.6	36	38.3	2	1.1	0	0	0	0
3 –responsibility accounting helps the company to raise efficiency and effectiveness in utilizing its resources by dividing the company into centers of supervision and responsibility.	65	69.1	26	27.7	1	1.1	1	1.1	1	1.1
4. A system of good control depends on the of responsibility accounting in order to perform its role more efficiently. Effectiveness.	47	50	44	46.8	1	1.1	2	2.1	0	0
5. Monitoring requires follow-up and study based on specific objectives, responsibilities and budget to " measure the results of the performance	44	46.8	42	44.7	5	5.3	3	3.2	0	0
6 - The importance of evaluating the performance immediately after the completion of implementation and involves the determination of the nature of deviations in the performance of the work on the planned design and the degree of deviations, location and importance.	41	43.6	43	45.7	5	5.3	3	3.2	2	2.1
7 - The existence of an accounting information system and a fair system of incentives material and moral helps to raise the efficiency of performance in industrial companies.	57	60.6	32	34	2	2.1	3	3.2	0	0
8 - The existence of a sound organizational chart so as to clarify the general objectives and the lines of authority and responsibility clearly at each level of management helps to assess performance and raise productivity efficiency.	52	55.3	25	26.6	9	9.6	3	3.2	5	5.3
9. Responsibility accounting is a relatively recent method of “analyzing and presenting information. This approach is particularly appropriate “to evaluate performance and increase productivity.	38	40.4	39	41.5	5	5.3	4	4.3	8	8.5
10. responsibility Accounting contributes to the efficiency of the establishment through standards that are the guidelines through which the duties entrusted to managers are performed	49	52.1	35	37.2	3	3.2	5	5.3	2	2.1
Total phrases	530	56.4	335	35.6	33	3.5	24	2.6	18	1.9

Table (3) shows the following:

1. The majority of the respondents agree that the division of the establishment to the responsibility centers helps to raise the level of efficiency of performance, where they reached (100%), while the percentage of non-approved (0%). The respondents, who did not show specific answers, reached 0%.

2. The majority of the sample individuals agree that the availability of appropriate methods for measuring and evaluating the performance increases the efficiency of performance, their percentage stood at (97.9%), while the percentage of those who do not agree amounted to (0%). The respondents who did not show specific answers amounted to 2.1%.

3. The majority of the respondents agree that responsibility accounting helps the company to raise its efficiency and effectiveness in exploiting its resources by dividing the company into supervision and responsibility centers whereby their percentage reached 96.8% while the percentage of those who disagree reached 2.2%. The respondents, who did not show specific answers, reached 1.1%.

4. The majority of the respondents agree that a good control system depends on the system of responsibility accounting to perform its role more efficiently and effectively and their percentage stood at (96.8%) while the percentage of who don't agree is (2.1%). The respondents, who did not give specific answers, reached 1.1%.

5. The majority of the sample agrees that control requires follow - up and study that depend on specific goals, responsibilities and budget towards reaching measuring the results of performance, whereby their percentage stood at (91.5%) while the percentage of those who disagree reached (3.2%). The sample members who did not give specific answers percentage amounted to (5.3%).

6. The majority of the sample agree that the importance of evaluating performance comes immediately after the completion of implementation and involves determining the nature of the deviations in the performance of work from the planned performance and the degree of deviations, their location and importance and their percentage stood at (89.3%) while the percentage of those who disagree on that is (5.3) %. The respondents who did not give specific answers stood at 5.3%.

7. The majority of the sample individuals agree that the existence of a system of accounting

information and a fair system of moral and material incentives assists in upgrading performance efficiency of industrial companies where their percentage stood at (94.6%), while the percentage of those disagreeing reached (3.2%). The respondents who did not give specific answers were 2.1%.

8. The majority of the respondents agree that the existence of a sound organizational chart so that the general objectives and the lines of authority and responsibility are clearly indicated at each level of management helps to evaluate performance and increase productivity efficiency, whereby their percentage reached (81.9%) while the percentage of those who disagree on that is (8.5%). The respondents, who did not give specific answers, reached 9.6%.

9. The majority of the sample agree that responsibility accounting is a relatively new method of "analysis and presentation of information and this method is appropriate" in particular, to assess performance and raise production efficiency, and their percentage is (81.9%) while the percentage of those disagreeing on it is (12.8%). The respondents who did not give specific answers were 5.3%.

10. The majority of the sample agree that the responsibility accounting contributes to raising the efficiency of the facility through the criteria which are considered as the instructions and guidelines through which the implementation of the duties assigned to the managers is conducted reaching percentage of (89.3%), while the percentage of disagreeing on that is (7.4%). The respondents, who did not give specific answers, reached 3.2%.

11. The majority of the respondents agree with all the phrases of the first hypothesis (the hypothesis of the first study), where their percentage reached (92%), while the percentage of those who do not agree is (4.5%). The respondents, who did not give specific answers, reached 3.5%.

Second:" descriptive analysis and test of differences of the phrases of the first hypothesis:

The following is estimating the average and standard deviation for all axes of the study to determine the trend of the study sample and for testing the existence of statistically significant differences between the numbers of approvers and neutrals and non- approvers of the results of the above test (k - square) was used to denote differences. The following is a table showing the results of descriptive analysis of hypothesis phrases.

Table (4). Descriptive statistics and test of differences of the phrases of the first hypothesis

Phrases of Hypothesis	Average	Interpretation	Standard deviation	The value of square	Level of sign.
1. The division of the establishment into responsibility centers helps to raise the level of performance efficiency.	4.86	I strongly agree	0.347	49.1	0.000
2. Availability appropriate methods to measure and evaluate performance increases performance efficiency.	4.57	I strongly agree	0.538	47.5	0.000
3 - Responsibility accounting helps the company to raise efficiency and effectiveness in utilizing its resources by dividing the company into centers of supervision and responsibility.	4.62	I strongly agree	0.671	166.8	0.000
4. A system of good control depends on the responsibility accounting in order to perform its role more efficiently. Effectively.	4.42	I strongly agree	0.725	82.5	0.000
5. Monitoring requires follow-up and study that is based on specific objectives, responsibilities towards reaching " measurement of performance results t	4.32	I strongly agree	0.845	64.8	0.000
6 - The importance of evaluating the performance comes immediately after the completion and implementation of work and it involves the determining the nature of deviations in the performing of the work from the planned performance and the degree of deviations, their location and importance.	4.25	I strongly agree	0.866	95.7	0.000
7 - The existence of information accounting system and a fair system of material incentives and moral helps to raise the efficiency of performance in industrial companies.	4.49	I strongly agree	0.826	88.3	0.000
8 - The existence of a sound organizational chart so that the general objectives and clear lines of power and responsibility are clearly reflected at each level of management helps to assess performance and raise productivity efficiency.	4.23	I totally agree	1.10	89.1	0.000
9. Responsibility accounting is a relatively modern method of "analyzing and presenting information, which is particularly appropriate "to assessing performance and improving productivity.	4.01	I agree	1.18	69.2	0.000
10. Responsibility accounting contributes to upgrading the efficiency of the facility through standards that are guidelines and through which the duties assigned to managers are implemented.	4.32	I totally agree	0.929	100.8	0.000
Total	4.40	I strongly agree	0.238	85.3	0.000

Table (4) shows the following findings:

1. The average value of the members of the study sample for the first phrase has totaled (4.86) with standard deviation of (0.347) while the value of chi square amounted to (49.1) with an abstract I level of (0.000), and this value is less than the abstract level of (5%) Therefore, it indicates that there are significant differences of statistical induction between the responses of the individuals of the sample in favor of those who strongly agree that the division of the

enterprise into responsibility centers helps to raise the performance efficiency.

2. The value of the average for the members of the study sample for the second phrase amounted to (4.57) with standard deviation of (0.538) while the value of chi square is (47.5) with an abstract level of (0.000) and this value is less than the level of abstract (5%) Therefore, it indicates that there are differences of statistical denotation between respondents and those who strongly agree that the availability of appropriate

methods for measuring and evaluating performance increases performance efficiency.

3. The total average value of the members of the study sample for the third phrase reached (4.62) with a standard deviation of (0.671) while the value of chi square is (166.8) with an abstract level of (0.000). This is less than the level of abstract value of (5%) Therefore, it indicates that there are significant differences of statistic denotation between the responses of the respondents and those who strongly agree that responsibility accounting helps the company to raise its efficiency and effectiveness in utilizing its resources by dividing the company into supervisory and responsibility centers.

4. The total average value of the members of the study sample for the fourth phrase reached (4.42) with standard deviation of (0.725) while the value of chi square is (82.5) with an abstract level of (0.000). This is less than abstract level of (5%) Therefore, it indicates that there are significant differences of statistic denotation between the responses of the sample and those who strongly agree that a good system of control depends on responsibility accounting to perform its role more efficiently and effectively.

5. The total average value of the members of the study sample is (4.32) with standard deviation (0.845) while the value of chi square is (64.8) and abstract level of (0.000). This is less than the level of abstract value of (5%) Therefore, it indicates that there are significant differences of Statistical denotation between the responses of the sample and those who strongly agree that supervision requires follow-up and study based on specific objectives, responsibilities and budget to " measure the results of performance.

6. The total average value of the members of the study sample for the sixth phrase is (4.25) with standard deviation of (0.866) while the value of k-square is (95.7) with an abstract level of (0.000). This is less than the level of abstract value of (5%) Therefore, it indicates that there are significant differences of statistical denotation between the responses of the sample members and those who strongly agree that the importance of evaluation of performance comes immediately after the completion of the implementation and involves determining the nature of the deviations in the performance of the work from the planned performance and the degree of deviations.

7. The total average value of the members of the study sample in seventh phrase is (4:49) with a standard deviation of (0.826) while the value of k-square is (88.3) with an abstract level of (0.000). This is less than the level of abstract value of (5%) Therefore, it indicates that there are significant differences of statistical denotation between the

respondents and those who strongly agree that the existence of an information accounting system and a fair system of material and moral incentives helps to raise the efficiency of performance in industrial companies.

8. The total average value of the members of the study sample of eighth phrase is (4.23) with standard deviation of (1.10) while the value of chi square is (89.1) with abstract level of (0.000), and this value is less than the abstract level of (5%) Therefore, it indicates that there are significant differences of statistical denotation between the respondents and those who strongly agree that the existence of a sound organizational chart so that the general objectives are clear and the lines of authority and responsibility are clearly stated at each level of management helps to evaluate performance and increase production efficiency.

9. The total average value of the members of the study sample of the ninth phrase is (4.01) with a standard deviation of (1.18) while the value of chi squared is (69.2) with an abstract level of (0.000) this value is greater level of the abstract value of (5%) Therefore, this indicates that there are no differences of statistical indication between the responses of the sample members and those who agree that responsibility accounting is a relatively recent method of "analyzing and presenting information and is considered appropriate " in particular to evaluate performance and increase productivity efficiency.

10. The total average value of the members of the study sample for the tenth phrase is (4.32) with standard deviation of (0.929) while the value of k - squared is (100.8) with an abstract level of (0.000) This is less than the level of abstract value of (5%) Therefore, it indicates that there are significant differences of statistical indication between the responses of the respondents and those who strongly agree that responsibility accounting contributes to the efficiency of the facility through the criteria that serve as guidelines and instruction through which the duties assigned to the managers are carried out. The average value of the sample of the study sample for all the phrases of the first hypothesis is (4.40) with a standard deviation of (0.238) and the value of k square is (85.3) at an abstract level of (0.000). This value is less than the abstract level of (5%) Accordingly, it indicates a statistically significant difference between the responses of the sample and in favor of those agreeing that (the existence of relation of abstract indication between the responsibility accounting and the efficiency of the performance in the Sudanese industrial facilities.).

The following table summarizes the results of the first hypothesis:

Table (5). Summary of the results of the first hypothesis

The hypothesis of the first study	Approval rate	General average	Interpretation	The value of k square	Level of abstract
There is a relation of abstract indication between responsibility accounting and efficient performance in the Sudanese industrial enterprises.	92%	4.40	I strongly agree	85.3	0.000

• We conclude that the hypothesis of the first study, which states that (there is a relationship of abstract indication between responsibility accounting and efficiency of performance in the Sudanese industrial enterprises.) Has been achieved in all the phrases of the hypothesis and as stated above with an approval rate of (92%).

• **Analysis of the second hypothesis data**

There is a relationship of statistical indication between the of responsibility accounting and the system of planning budgets in the effectiveness of utilizing the available resources in the Sudanese industrial enterprises.

Phrases

The following is the frequency distribution of the responses of the units subject to the research for all the phrases of the hypotheses:

Table (6).The frequency distribution of the phrases of the second hypothesis

Phrase	I totally agree		I agree		neutral		disagree		Strongly Disagree	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
1. Standard costs provide the basis for developing the plan and judging the efficiency of actual performance and identifying deviations from the laid down plan.	37	39.4	46	48.9	5	5.3	4	4.3	2	2.2
2. Specifying Planning systems based on laying down an estimated budget for each responsibility center for the purpose of evaluating the performance of those responsible for the centers	24	25.5	45	47.9	16	17	7	7.4	2	2.2
3. The combination of standard cost systems and planning budgets is an effective tool in achieving total control and controlling the economic activity of the unit.	36	38.3	40	42.6	8	8.5	7	7.4	3	3.2
4- The system of planning budgets is	39	41.5	48	51.1	5	5.3	1	1.1	1	1.1

Phrase	I totally agree		I agree		neutral		disagree		Strongly Disagree	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
used as a performance for the comprehensive control over all aspects of activity in the economic unit										
5- The planning budget enables coordination between the different objectives, programs and policies of the Economic Unity Center, which helps in detecting weaknesses and indicating those responsible	23	24.5	52	55.3	7	7.4	8	8.5	4	4.3
6. Planning Budget is an essential means to translate the objectives of the economic unit and its. means /methods into a quantitative and financial data which are coordinated and indexed.	29	30.9	45	47.9	8	8.5	6	6.4	6	6.4
7. The planning budget is considered a performance of the control by comparing the results achieved at the end of the period with the targets set in advance "	30	31.9	49	52.1	8	8.5	2	2/1	5	5.3
8. Most performance measures are based on internal achievement instead of the "external opportunities.	34	36.2	34	36.2	14	14.9	11	11.7	1	1.1
9. Planning budgets provide managers with a way that makes their planning efforts formal.	25	26.6	43	45.7	15 th	16	7	7.4	4	4.3
10- Planning budgets reveal underlying or expected bottlenecks before they occur.	31	33	46	48.9	2	2.1	6	6.4	9	9.4
Total phrases	308	32.8	448	47.7	88	9.4	59	6.3	37	3.9

Table (6) shows the following:

1. The majority of the respondents agree that the standard costs provides the basis for drawing up the plan and judging the efficiency of the actual performance and identifying the deviations from the laid down plan as they reached a percentage of (88.3%) while the percentage of those who do not agree reached (6.4%). The respondents, who did not give specific answers, reached a percentage of 5.3%.

2. The majority of the respondents agree that the planning systems are determined based on the establishment of an estimated budget for each center of responsibility for the purpose of evaluating the performance of the responsible officials of the centers whereby their percentage amounted to (73.4%) while the percentage of those who do not agree stood at (9.5%). The percentage of the respondents who did not show specific answers stood at (17%).

3. The majority of respondents agree that the combination of standard cost systems and planning budgets is an effective tool for achieving total control and controlling the activities of the economic unit whereby their percentage amounted to (80.9%) while the percentage of those who do not agree reached (10.6%). The respondents, who did not show specific answers, reached a percentage of 8.5%.

4. The majority of the respondents agree that the system of planning budgets is used as a tool for total audit of performance for the overall control of all aspects of activities of the economic unit, where they reached a percentage of (92.6%) while the percentage of those who agree (2.2%). The respondents who did not show specific answers were 5.3%.

5. The majority of the respondents agree that the planning budget enables coordination between the different objectives, programs and policies of the Economic Unity Center, which helps in detecting weaknesses and indicating the officials responsible, where they reached a percentage of (79.8%) while the percentage of those who agree (12.9%). The respondents, who did not show specific answers, reached a percentage of (7.4%).

6. The majority of the respondents agree that the planning budget is an essential means to translate the objectives of the economic unit, its means and methods, into a set of quantitative coordinated and indexed financial data, whereby their percentage reached 78.8% while the percentage of those who

disagreed on that reached 12.8%. The respondents, who did not show specific answers, reached 8.5%.

7. The majority of the respondents agree that the planning budget is considered a tool of control by comparing the results achieved at the end of the period with the predefined goals whereby their percentage reached (84%) while the percentage of those who do not agree stood at (7.4%). The respondents, who did not show specific answers, reached a percentage of 8.5%.

8. The majority of the sample agree that most of the performance measures are based on internal achievement rather than "external opportunities where their percentage reached (72.4%), while the percentage of those who disagree on it is (12.9%). The sample members who did not show specific answers reached a percentage of 14.9%.

9. The majority of respondents agree that planning budgets provide managers with a way to make their planning efforts formal, with a percentage that accounted for (72.3%) while the percentage of those who disagree on it is (11.7%). The respondents, who did not show specific answers, reached a percentage of (16%).

10. The majority of respondents agree that the planning budgets reveal the potential or expected bottlenecks before they occur, as they reached a percentage of (81.9%) while the percentage of those who do not agree stood at (15.8%). The respondents who did not show specific answers were 2.1%.

11. The majority of the sample agree on all phrases of the axis (the hypothesis of the second study), where their percentage reached (80.5%) while the percentage of those who disagree with that stood at (10.2%). The respondents, who did not show specific answers, reached a percentage of 9.4%.

Secondly" descriptive analysis and test of differences of the phrases of the second hypothesis:

The following is an estimation of the average and the standard deviation for all axes of the study to determine the trend of the study sample and for testing the existence of statistically significant differences between the numbers of approvers and neutrals and non -approvers of the results of the above test and afterwards the use of k squared) to denote differences. The following is a table showing the results of descriptive analysis of hypothesis phrases.

Table (7). Descriptive statistics and test of differences for the phrases of the second hypothesis

Phrases of Hypothesis	Average	Interpretation	standard deviation	The value of k square	Abstract level
1. Standard costs provide the basis for developing the plan and judging the efficiency of actual performance and identifying deviations from the laid down plan.	4.19	I agree	0.883	93.7	0.000
2. Specifying Planning systems based on the establishment of an estimated budget for each center to determine the responsibility for the purpose of evaluating the performance of those responsible for the centers	3.87	I agree	0.951	60.7	0.000
3. The combination of standard cost systems and planning budgets is effective in achieving overall control and control of the economic activity of the unit.	4.05	I agree	1.03	66.5	0.000
4. The system of planning budgets is used as a tool of total control on all aspects of activity in the economic unit	4.30	I totally agree	0.718	110.8	0.000
5. The planning budget enables coordination between the different objectives, programs and policies of the Economic Unity Center, which helps in detecting weaknesses and indicating officials	3.87	I agree	1.01	84.8	0.000
6. Budget planning is an essential means to translate the objectives of the economic unit and its means and methods and into a set of quantitative and financial data coordinated and indexed.	3.90	I agree	1.02	65.6	0.000
7. The planning budget is considered a performance control by comparing the results achieved at the end of the period with the targets set in advance "	4.03	I agree	0.988	86.5	0.000
8. Most performance measures are based on internal achievement rather than "external opportunities.	3.95	I agree	1.04	45.8	0.000
9. Planning budgets provide managers with a way to make their planning efforts formal.	3.82	I agree	1.04	53.02	0.000
10. Planning budgets reveal underlying or expected bottlenecks before they occur.	3.89	I agree	1.21	76.1	0.000
Total	3.99	I agree	0.155	74.4	0.000

Table (7) shows the following:

1. The value of the average of the members of the study sample of the first phrase has amounted to (4.19) with standard deviation of (0.883) while the value of Chi squared is (93.7) with an abstract level of (0.000). This is less than the level of abstract value of (5%) Therefore, it indicates that there are significant differences of statistical denotation between the responses of the sample members and those who agree that the standard costs provide the basis for developing the plan and judging the efficiency of the actual

performance and identifying deviations from the set plan.

2. The value of the average of the members of the study sample of the second phrase reached (3.87) with standard deviation of (0.951) and the value of Chi squared is (60.7) with abstract level of (0.000). This is less than the level of abstract value of (5%) Therefore, it indicates that there are significant differences of statistical denotation between the responses of the sample members and those who agree that planning systems are determined based on laying down an

estimated budget for each center of responsibility in order to evaluate performance of those responsible for the centers.

3. The total average value of the members of the study sample for the third phrase reached (4.05) with standard deviation of (1.03) while the value of Chi squared is (66.5) and abstract level of (0.000). This is less than the level of abstract value (5%) Therefore, it indicates that there are significant differences of statistical denotation between the responses of the sample members and those who agree that the method of combining the standard cost systems with the planning budgets is an effective tool to achieve comprehensive control and control of the activities of the economic unit.

4. The value of the average of the members of the study sample for the fourth phrase is (4.30) with standard deviation of (0.718) while the value of Chi squared is (110.8) with abstract level of (0.000). This is less than the level of abstract value (5%) Therefore, it indicates that there are significant differences of statistical denotation between the responses of the sample members and those who agree that the system of planning budgets is used as a tool for comprehensive control over all aspects of activity in the economic unit.

5. The value of the average of the members of the study sample stood at (3.87) with standard deviation of (1.01) while the value of Chi squared is (84.8) and abstract level of (0.000). This is less than the level of abstract value of (5%) Therefore, it indicates that there are significant differences of statistical denotation between the responses of the sample members and those who agree that planning budget enables coordination between the different objectives, programs and policies of the Economic Unity Center, which helps in detecting weaknesses and indicating officials responsible.

6. The value of the average of the members of the study sample for the sixth phrase reached (3.90) with standard deviation of (1.02) while the value of Chi squared is (65.6) and abstract level of (0.000). This is less than the level of abstract value of (5%) Therefore, it indicates that there are significant differences of statistical denotation between the responses of the sample members and those who agree that the planning budget is an essential means to translate the objectives, methods of the economic unit into a set of quantitative and financial data.

7. The value of the average of the members of the study sample for the seventh phrase is (4.03) with a standard deviation of (0.988) while the value of Chi

squared is (86.5) and abstract level of (0.000). This is less than the level of abstract value of (5%) Therefore, it indicates that there are significant differences of statistical denotation between the responses of the sample members and those who agree that planning budget is a tool of the control by comparing the results achieved at the end of the period with the goals set in advance.

8. The value of the average of the members of the study sample for the eighth phrase is (3.95) with standard deviation of (1.04) while the value of k - squared is (45.8) and abstract level (0.000). This is less than the level of abstract value of (5%) Therefore, it indicates that there are significant statistical differences between the answers of the respondents of the sample in favor of those who agree that most of performance metrics are based on internal achievement rather than "external opportunities.

9. The total average value of the members of the study sample for the ninth phrase is (3.82) with standard deviation of (1.04) while the value of Chi squared is (53.02) and abstract level (0.000). This greater level than abstract value of (5%) Therefore, this indicates that there are no differences of statistical indication between the responses of the sample members and those agreeing that the planning budgets provides managers with a method that makes their planning efforts formal.

10. The total average value of the members of the study sample for a tenth phrase is (3.89) with standard deviation of (1.21) while the value of Chi squared is (76.1) and abstract level of (0.000), and this value is less than the moral level of (5%) Accordingly, it refers to the existence of significant differences of statistical denotation between the responses of the sample and those who disagree with the planning budgets reveals the potential or expected bottlenecks before they occur.

11. The total average value of the members of the study sample for all second hypothesis phrases is (3.99) with standard deviation of (0.155) while the value of k - squared is (74.4) with an abstract level of (0.000). This is less than the level of abstract value of (5%) Therefore, it indicates that there are differences of statistical significance between the responses of the sample members and those who agree that (there is a relationship of significant denotation between the responsibility accounting and the system of planning budgets in the effectiveness of the use of available resources in the Sudanese industrial enterprises).

The following table summarizes the results of the second hypothesis:

Table (8) Summary of the results of the second hypothesis

The hypothesis of the second study	Approval rate	General average	Interpretation	The value of kai squared	Abstract level
There is a relationship of abstract denotation between responsibility accounting and the system of planning budgets in the effectiveness of the use of available resources in the Sudanese industrial enterprises	80.5%	3.99	I agree	74.4	0.000

From the foregoing study we conclude that the second hypothesis, which stipulates that there is a significant relationship of abstract denotation between responsibility accounting and the system of planning budgets in the effective use of available resources in the Sudanese industrial facilities) have been achieved in all hypothesis phrases by an approval percentage amounting to (80.5%).

Conclusions and recommendations

After the theoretical and field study, the researcher concluded with the following results:

- Responsibility accounting helps the company to raise its efficiency and effectiveness in the exploitation of its resources by dividing the company into supervisory and responsibility centers.
- The availability of appropriate methods for measuring and evaluating performance increases the efficiency of performance.
- A good control system which is based on responsibility accounting performs its role more efficiently and effectively.
- The existence of an accounting information system and a fair system of material and moral incentives helps to raise the efficiency of performance in industrial companies.
- These results prove the validity of the first hypothesis, which states (There is a significant relationship between responsibility accounting and efficiency of performance in the Sudanese industrial enterprises).
- Standard costs provide the basis for setting the plan, judging the efficiency of actual performance and identifying deviations from the set plan.
- Specifying planning systems based on the laying down an estimated budget for each center of responsibility to evaluate the performance of those responsible for the centers.
- The method of combining the standard cost systems and planning budgets is an effective tool for achieving comprehensive control and judging the economic unit's activity.
- The planning budget enables coordination between the various objectives, programs and policies of the Economic Unit Center, which helps in

uncovering weaknesses and indicating those responsible.

• These results confirm the validity of the second hypothesis, which states (There is a significant relationship of abstract denotation between the responsibility accounting and the system of planning budgets in the effectiveness of the use of resources available in the Sudanese industrial enterprises).

Recommendations:

Through the findings concluded by the researcher, he recommends the following:

- The industrial facility is to implement decentralized decision-making system because it improves performance.
- Use of responsibility accounting as a supervisory tool to evaluate the performance of Sudanese industrial companies.
- Activating the system of performance reports at the centers of responsibility in the industrial companies in order to help the administrative levels in the selection of goals and develop plans to achieve them, as well as evaluating the performance of various activities.
- The application of encouragement incentive system to all personnel in the economic unit because of its impact in raising and increasing productivity efficiency.
- According a greater importance to the function of planning as it works on laying down the general objectives of each responsibility center and the need to involve the staff in the planning process, which helps to achieve the goals efficiently and effectively, and in turn contributes to the application of responsibility accounting system.
- The different administrative levels of the industrial establishment are to detect deviations, which need to be analyzed to determine the reasons for them until appropriate remedial measures are taken.

Recommendations for future studies:

- Role of responsibility accounting in the efficient use of enterprise resources.

- The audit role of responsibility accounting and its effect in increasing production efficiency of industrial enterprises.

- The role of accounting responsibility in strengthening the internal control system for industrial projects.

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References

1. Adil Dirar Ali Bushara. Role of Responsibility Accounting in Evaluating the Performance of the Sudanese Industrial facilities, master degree message, college of postgraduate studies, Nilein University, 2009.
2. Ahmed Mohamed Basiouni Hashim, Administrative Accounting, Theoretical Framework, scientific approach (Mousil, Province of books house for printing and publishing), 1988.
3. Ahmed Mohamed Basiouni Hashim, Administrative Accounting, Theoretical Framework, scientific approach, Mousi University, Province of books house for printing and publishing, 1988.
4. Al maseed Fiad. A proposed model for applying social responsibility accounting, in the Jordanian shareholding industrial companies, unpublished master degree thesis, Jerash University, 2013.
5. Ibrahim Ali Ahmed Amshar, Responsibility Accounting System & the Extent of Compliance with them by the Libyan Petroleum Companies, unpublished master degree message, Nilein University, College of Postgraduate Studies, 2006.
6. Ibrahim Omer Midat, study of responsibility accounting system in the Jordanian Industrial Public Share-holding Companies.
7. Jarbo Yousif, Extent of applying measurement and accountability in accounting on social responsibility with financial statements in the companies in Gaza strip. Magazine of the Islamic University College of Commerce volume fifteen, first edition, 2006.
8. Mirgani Ibrahim Suleiman. Role of Responsibility accounting in Decision making, unpublished master degree message on accounting and financing. Sudan University for Science & Technology, College of Postgraduate Studies, 2011.
9. Mohamed Hussein Al Jidawi & others. Studies on administrative accounting (Dubai Al Qalam House for publishing and distribution), 1987.
10. Mohammed Abu Nassar, Management Accounting (Amman: Wael Publishing House), 2003.
11. Muayed Mohamed Al Fadul and Abdulnasir Nour. Administrative accounting (Aman Al Maisra House for publishing and distribution), 2002.
12. Muneer Mahmoud Salim and Ahmed Mohamed Yousif. Standard costs (Cairo- University of Cairo Center for open education), 1998.
13. Ray Mond, Glos, Richhard and D. Steaed Jane R. Lowery, Business: its nature and encironment 9th ed (USA, Ohioi with South mestem Publishing Company), 1980.
14. Saeed Mahmoud Al Halabawi and Tahani Mahmoud Al Nashar. Advanced Administrative Accounting, introduction of cost management, college of commerce, Tanta University, 2011.