

# **Use of Responsibility Accounting and Measure the Satisfaction Levels of Service Organizations in Bangladesh**

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*This study examines which type of responsibility accounting system is being practiced in different types of service organizations in Bangladesh and also focuses on the satisfaction level of responsibility accounting system. To achieve these purposes total eighty eight service organizations have been surveyed. Findings reveal that no service organization follows a unique type of responsibility accounting system among functional-based, activity-based and strategic-based responsibility accounting systems. The satisfaction levels regarding four elements of responsibility accounting system among five types of service organization are same except responsibility centre. Logit model is used to examine the influence of variables on the dichotomous dependent variable. The result indicates that satisfaction of overall responsibility accounting system is influenced by satisfaction of assignment of responsibility, performance measurement techniques and reward system. And the overall satisfaction levels of different types of service organization are in satisfied level.*

**Keywords:** Responsibility Accounting System, Service Organizations, Functional-based Responsibility Accounting System, Activity-based Responsibility Accounting System, Strategic-based Responsibility Accounting System.

**Field of Research:** Accounting.

## **1. Introduction**

At the outset, it is necessary to remember that responsibility accounting is not another branch of accounting like financial accounting or cost accounting. In fact, it is only a controlling device by which costs are traced to individual managers. In this sense, responsibility accounting is a supplementary cost control device.

Till recently, most cost accounting systems which were designed to accumulate costs for the main purpose of ascertaining the product cost, emphasized general cost control. With the available controlling devices, a sincere attempt was made to ascertain and control both product costs and period costs. The cost accounting system was thus directed towards the expenditure and worked well in showing what the expenditure was and where money was spent. However, the system did not pinpoint the individual who spent the money. As such, the system failed to fix individual responsibility for money spent.

Responsibility accounting seeks to overcome this limitation by shifting the emphasis from product costing to divisional performance measurement. The basic feature of responsibility accounting is that every manager is made responsible for the activities which are under his control and his actions are measured by the revenue results achieved by him. Accordingly, responsibility accounting may be defined as “a system

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designed to accumulate and report costs by individual levels of responsibility. Each supervisory area is charged only with the cost for which it is responsible and over which it has control” (Iyengar, 2000).

Responsibility accounting is a management control system based on the principles of delegating and locating responsibility. The authority is delegated on responsibility centre and accounting for the responsibility centre. Responsibility accounting is a system under which managers are given decisions making authority and responsibility for each activity occurring within a specific area of the company. Under this system, managers are made responsible for the activities of segments. One of the uses of management accounting is managerial control. Among the control techniques “responsibility accounting” has assumed considerable significance. While the other control devices are applicable to the organization as a whole, responsibility accounting represents a method of measuring the performance of various divisions of an organization (Venkatrathnam and Reddy).

The purpose of responsibility accounting is to establish and report cause and effect relationships between the activities of specific managers and the financial results of these activities. The accomplishment of this objective requires the application of two fundamental concepts. First, the responsibility accounting system must be designed to reflect the operating results of each organizational segment and product or service. This aims at establishing the responsibility centers throughout the organization. Second, all costs and revenues must be assigned to the specific responsibility center, which is based on the concept of controllability (Caplan, 1992).

There are much more studies relating to different aspects of responsibility accounting systems in both developed and developing countries. But no study is found before about the topic relating to types and satisfaction level of responsibility accounting systems in service organizations in the both developed and developing countries. This study would be of particular relevance to Bangladesh, because it would investigate which type of responsibility accounting system is being practiced in different types of service organizations and altitude about the satisfaction level of responsibility accounting system in service organizations of Bangladesh.

This study is organized into 9 sections. Section 1 and 3 deal with introduction and overview of prior studies relating responsibility accounting. Section 2, 4 and 5 illustrate why this study has been presented and which methodology has been applied. Section 6 is an overview of responsibility accounting system. Section 7 analyses the result of the findings. Sections 8 and 9 are about limitations of the study and concluding remarks.

## 2. Research Questions

This research paper will try to get the answers of the following questions:

- a) Whether the satisfaction level of the each element of responsibility accounting model regarding different types of service organizations in Bangladesh are different or not?
- b) Which elements have influence on the overall satisfaction of responsibility accounting system?

### 3. Literature Review

Though the issue “Responsibility Accounting” as a control device has got huge attention in last few decades, there is no doubt that most of the studies related to this issue were done in the context of the developed countries in the world. Very few studies were done related to the developing countries and especially in context of Bangladesh. In essence, there is no other study particularly relating to the types of responsibility accounting system. The application of responsibility accounting model and also types of responsibility accounting system was found at first in the prior studies of Bangladesh. Some of the prior studies relating to responsibility accounting are specified below.

Antle, R. and Demski, J.S.(1988) examined controllability: the notion a manager should be evaluated based on that which she or he controls. Authors embed the managerial evaluation problem in a principal-agent setting and asked whether the optimal agency solution bears any logical relation to a casual definition of controllability. It did not. More to the point, the agency framework compelled them to look at information content. This information content perspective, upon reflection, agreed with their intuition, with their anecdotal impressions of practice, and with the dictates of the principal-agent model. Moreover, there was a well-defined relation between information content and a notion of control. Thus, the information content perspective might be thought of as offering a precise definition of controllability.

Shih, Michael S. H.(1997) investigated how firms designed performance evaluation systems for plant managers. These managers could be evaluated primarily on cost control or profit. This suggested the following hypotheses: tendency to evaluate a plant manager primarily on profit rather than cost (1) decreases with the importance of marketing in stimulating sales, (2) increases with the importance of product quality in stimulating sales, (3) increases with the importance of customer service in stimulating sales; and (4) decreases with the extent to which the manager is evaluated on specific measures of product quality and customer service. Using a probit model, these hypotheses were tested with data collected from large Canadian manufacturing firms. The results were strongly supportive of the hypotheses.

Arya et al.( 1998) illustrated some subtleties related to responsibility accounting by studying two settings in which there were interactions among multiple control problems. In the first setting, two agents were involved first in team production (e.g., coming up with ideas) and then in related individual production (e.g., implementing the ideas). They provided conditions under which the agents were not held responsible for the team performance measure, despite each agent conditionally controlling it. In the second setting, they provided conditions under which an agent was held responsible for a variable he did not conditionally control.

In the study (Indjejikian et al. ,1999) a two-period sequentially optimal agency model was used to study the impact of the ratchet effect on the firm’s choice of responsibility assignment and incentives for motivating managers. Results revealed that the ratchet effect can be mitigated by using more aggregate performance measures and greater consolidation of responsibility. Moreover, consolidation responsibility for two activities for a single manager seems to be more efficient than a responsibility accounting structure.

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Z. Jun Lin and Zengbiao Yu (2002) introduced the responsibility cost control system installed at Han Dan Iron and Steel Company in the People's Republic of China. The Company adopted a series of management accounting techniques or procedures in its cost control system, including target costing, responsibility accounting, standard costing, flexible budgeting, internal transfer pricing, behavior motivation, performance evaluation, variance analysis, and so on. In particular, the system had integrated responsibility accounting and cost control by introducing market mechanisms to substantially reduce production costs and raise profitability. The successful experiment revealed that the responsibility cost control system is an effective tool for cost control under the changing Chinese business environment.

The findings of the study (Sarkar and Yeshmin, 2005) were-“33% organizations followed four responsibility centres where 30% followed three responsibility centres. The most common accounting tool used to evaluate performance is budget. Managers in revenue centers are also evaluated by using contribution income statement.”

The application of the controllability principle to eliminate external factors remains problematic in practice. A key issue concerns the fact that the manager may get some private pre-decision signal about this external environment and may use this information to mitigate or amplify its impact. The question is analyzed in a multitask agency model in which the agent has a limited liability, thus earns rents and is not indifferent to the task performed. Under certain conditions, it is proved that the optimal contract only selectively eliminates the impact of the environment. It does neutralize it if the agent reports a signal of low impact of the environment but does not filter it out if the agent reports a signal of high impact (Larmande, François and Ponsard, Jean Pierre ,2007).

Responsibility accounting (RA) is used to manage horizontal relationships among several responsibility center (RC) managers including those who work on committees or cross-functional teams. We find theory-consistent evidence that the goal-congruent design or redesign of accounting and participation practices in general, and of RA in particular, depends on the magnitude, scope, and speed of organizational process change. When there is a change in the magnitude, scope, and speed of organizational process change, we find that the measurability of RC managers' financial performance can change, and we also find that using RA to manage RC boundaries is an important mechanism for achieving goal-congruent behavior and avoiding dysfunctional behavior (Rowe, Casey et al.,2008).

The findings of the study (Ali and Fowzia, 2009) were all elements of responsibility accounting model are important for overall satisfaction of responsibility accounting system and the satisfaction of responsibility accounting system of listed banks in Bangladesh sustains in satisfactory level.

Findings reveal that most of the Non-Banking Financial Institutions (NBFIs) are using traditional criterion in responsibility accounting system. Only regarding assignment of responsibility and practice of responsibility center they prefer modern approach. In other factors such as benchmark for performance measurement, performance measurement technique and reward system they mainly follow traditional techniques. Factor analysis shows that responsibility center is the most effective factor followed by performance measurement technique, reward system, benchmark

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for performance measurement and assignment of responsibility regarding NBFIs (Fowzia ,2009).

In an unpublished study (Fowzia,2010) total sixty-eight listed manufacturing organizations under five categories have been surveyed on convenience basis. A structured survey questionnaire has been used for the purpose of collecting primary data. Data have been analyzed by using descriptive statistical tools such as percentage and mean. Findings reveal that no manufacturing organization follows a unique type of responsibility accounting system among functional-based, activity-based and strategic-based responsibility accounting systems. And the overall satisfaction levels of different types of manufacturing organization are in between neutral and satisfied level.

In another unpublished study (Fowzia,2010), total ninety-three listed organizations have been surveyed on convenience basis. Among those, forty-three manufacturing and fifty service organizations have been considered. A structured survey questionnaire has been used and data have been analyzed by using descriptive statistical tools such as percentage. Findings from the descriptive statistics reveal that the manufacturing and service organizations mainly follow the traditional criterion in responsibility accounting system, they also prefer modern criterion but its percentage is insignificant.

### **4. Objectives of the Study**

- a) To conceptualize the types of responsibility accounting system and responsibility accounting model.
- b) To assess the application level of different types of responsibility accounting system in various types of service organizations in Bangladesh.
- c) To examine whether the satisfaction level of the elements of responsibility accounting model regarding different types of service organizations in Bangladesh are same or not
- d) To find out the influential elements on the overall satisfaction of responsibility accounting system in service organizations in Bangladesh.

### **5. Research Method**

The type of research adopted for this study is exploratory in nature with survey method. Exploratory research is conducted into an issue or problem where there are few or no earlier studies to refer to. The focus is on gaining insights and familiarity for later investigation.

The target population for the purpose of the study is different types of service organizations of Bangladesh. In this study, total eighty-eight service organizations have been surveyed on randomly basis from July to September, 2010. Because a simple random sample is selected such that every object has an equal probability of being selected and the objects are selected independently – the selection of one object does not change the probability of selecting any other objects. The details of the sample size are described below:

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Types of service Organizations	No of Respondents	% of Respondents
Banks	25	28.409%
Leasing companies	15	17.045%
Non-government organizations	20	22.727%
Insurance companies	20	22.727%
Others ((3 mobile operators, 2 hotels, 2 hospitals and 1 ISP organization).	8	9.092%
Total	88	100%

Based on the research questions, to measure whether the satisfaction levels of five elements of responsibility accounting model separately among the different categories of service organizations are equal or not, five hypotheses have been developed and tested by using one-way ANOVA analysis. Each of the alternative hypotheses formulated is stated below:

Hypothesis-1:  $H_A$ = The satisfaction levels of assignment of responsibility are not equal for all types of service organizations.

Hypothesis-2:  $H_A$ = The satisfaction levels of performance measurement benchmark are not equal for all types of service organizations.

Hypothesis-3:  $H_A$ = The satisfaction levels of performance measurement techniques are not equal for all types of service organizations.

Hypothesis-4:  $H_A$ = The satisfaction levels of reward system are not equal for all types of service organizations.

Hypothesis-5:  $H_A$ = The satisfaction levels of responsibility centre are not equal for all types of service organizations.

Based on the second research question, the following alternative hypothesis is formulated to determine the influential element on the overall satisfaction of responsibility accounting systems by applying logistic regression model because the dependant variable is dichotomous type.

Hypothesis-6:  $H_A$ = There is no relation between the satisfaction of assignment of responsibility, performance measurement benchmark, performance measurement techniques, reward systems and responsibility centre and overall satisfaction of responsibility accounting systems.

## 6. Overview of Responsibility Accounting System

Management uses responsibility accounting as a control device. The aim of responsibility accounting is to help management in achieving organizational goals. It is an invaluable support to modern management. It contributes to the firm's management by providing relevant information on a continuous basis.

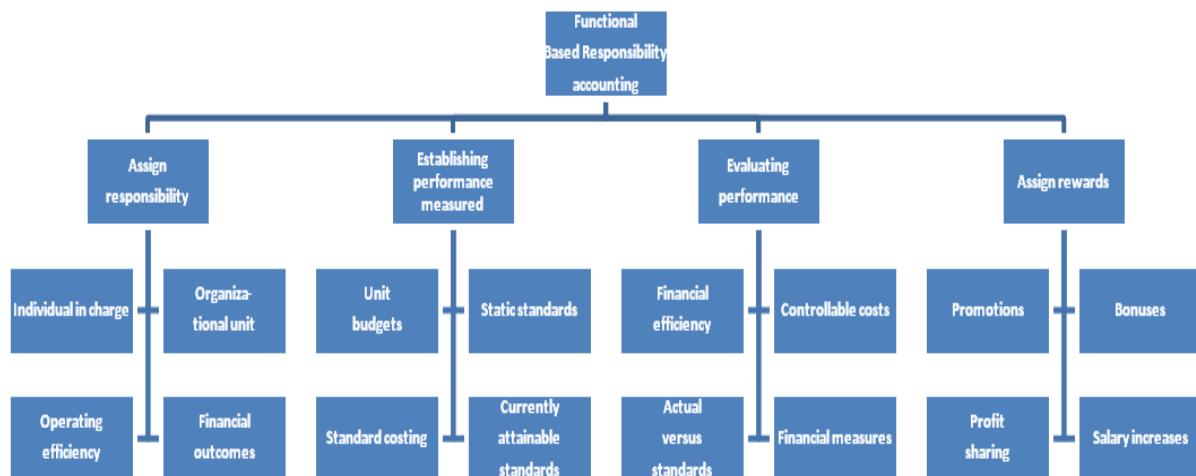
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David Fanning defines Responsibility Accounting as a system or mechanism for controlling the wider freedom of action “that executives - decision centre manager in other words - are given by senior management and for holding those executives responsible for the consequences of their decisions.”

Robert Anthony defines Responsibility Accounting as “that type of management accounting that collects and reports both planned and actual accounting information in terms of responsibility centres.”

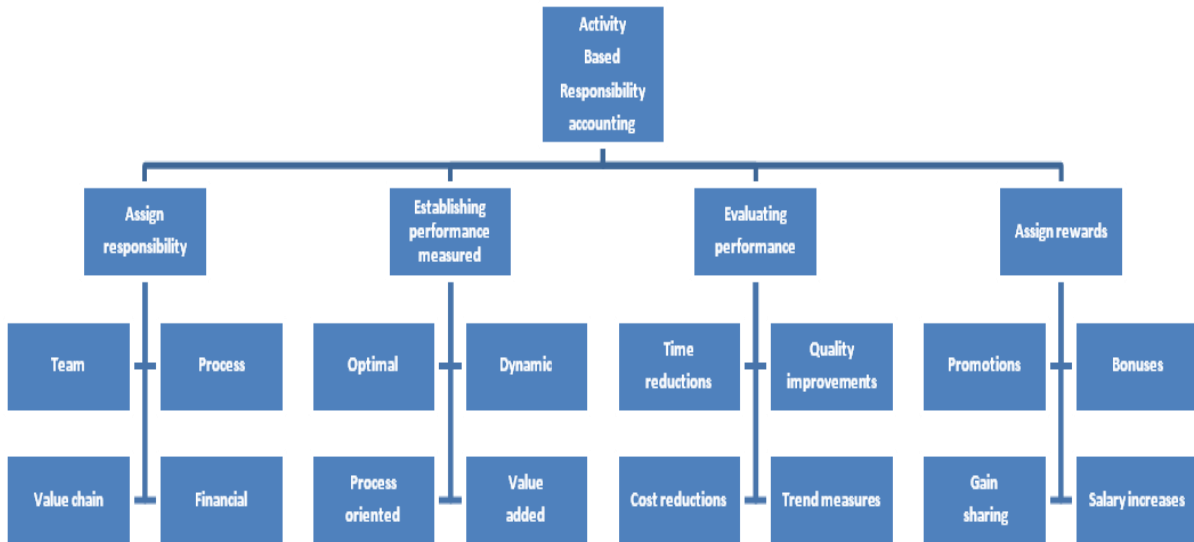
Charles T. Hongreen defines, “Responsibility Accounting is a system of accounting that recognizes various responsibility centres throughout the organization and reflects the plans and actions of each of these centres by assigning particular revenues and costs to the one having the pertinent responsibility. It is also called profitability accounting and activity accounting”.

According to Hansen and Mowen (2005), responsibility accounting model is defined by four essential elements which are: 1) Assigning responsibility 2) Establishing performance measures or benchmarks 3) Evaluating performance and 4) Assigning rewards. On the basis of these elements responsibility accounting system can be of three types- Functional-based, Activity-based and Strategic-based responsibility accounting systems.

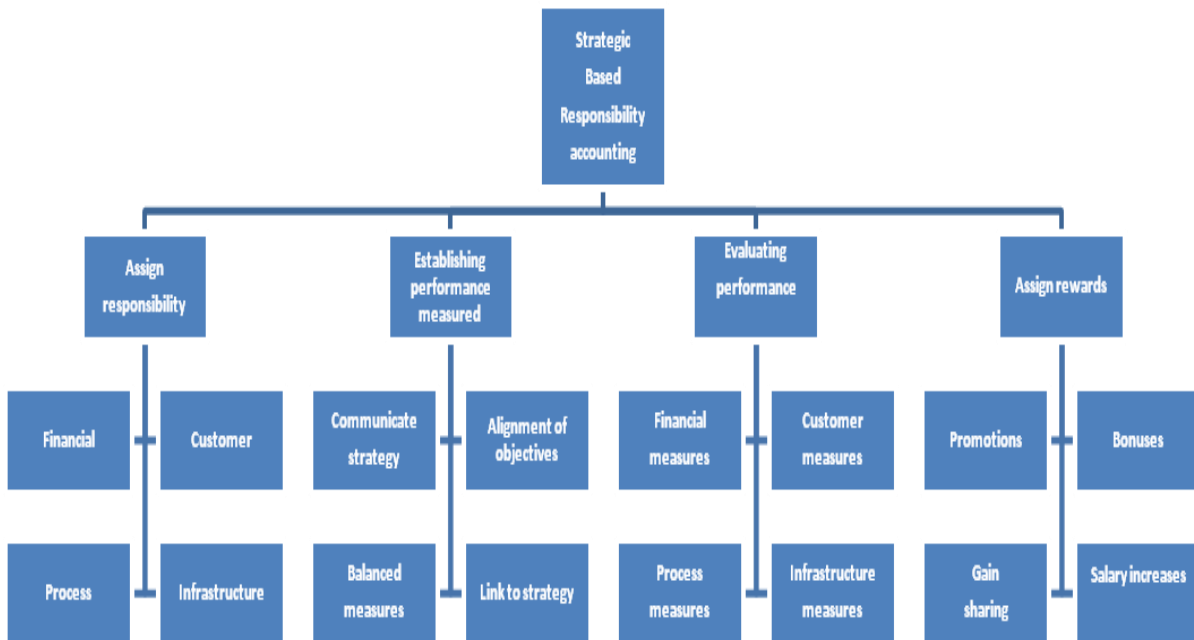


**Figure1: Functional-based responsibility accounting system**

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**Figure 2: Activity-based responsibility accounting system**



**Figure 3: Strategic-based responsibility accounting system**

As a control device, responsibility accounting emphasizes responsibility centres. A responsibility centre is a subunit of an organization under the control of a manager having direct responsibility for its activities. For control purposes there are mainly five responsibility centers: (a) *Cost center*: A responsibility center, the manager of which is accountable for the subunit's costs, (b) *Revenue center*: A responsibility center, the manager of which is accountable for the subunit's revenue, (c) *Profit center*: A responsibility center, the manager of which is accountable for the subunit's profit, (d)



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*Investment center:* A responsibility center, the manager of which is accountable for the subunit's profit and the capital invested to generate that profit, (e) *Contribution margin center:* A responsibility center, the manager of which is accountable for the subunit's contribution margin, i.e., revenue minus variable cost.

### 7. Research Results

On the basis of the responsibility accounting model there are three types of responsibility accounting systems. In four steps the elements are different for each step. In this study the most relevant area responsibility centre has been also added for gaining an overall scenario of the contemporary practice of responsibility accounting systems in different service organizations in Bangladesh.

The first step of the responsibility accounting model is assignment of responsibility. The result of the survey is below:

**Table 1: Comparative analysis regarding assignment of responsibility**

Types of service organizations	Functional-based		Activity-based		Strategic-based	
	Frequency	%	Frequency	%	Frequency	%
Banks	11	44	7	28	7	28
Leasing companies	12	80	3	20	5	33.33
NGO	9	45	8	40	7	35
Insurance companies	9	45	6	30	10	50
Others	1	12.5	5	62.5	3	37.5
Total	42	226.5	29	180.5	32	183.83

From the table it is found that most of the service organizations prefer traditional functional based responsibility accounting systems. Among the different service organizations leasing companies apply this type most. The second preference is on strategic responsibility accounting systems. The most user of this type is insurance companies. The last choice is activity based responsibility accounting systems. Amongst 29 companies, the user by and large is other category. Here, the number of service companies is more than sample size because some of the companies use more than one type responsibility accounting systems.

The second step of the responsibility accounting model is performance measurement benchmark. The outcome of the survey is below:

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**Table 2: Comparative analysis regarding performance measurement benchmark**

Types of service organizations	Functional-based		Activity-based		Strategic-based	
	Frequency	%	Frequency	%	Frequency	%
Banks	14	56	9	36	8	32
Leasing companies	7	46.67	8	53.33	5	33.33
NGO	9	45	2	10	12	60
Insurance companies	11	55	2	10	9	45
Others	6	75	1	12.5	1	12.5
Total	47	27 7.67	22	121.83	35	182 .83

This table shows that the functional based type is the mostly used responsibility accounting systems. Among the 47 companies 75% other companies prefer this type. The next choice is on strategic responsibility accounting systems. Leasing companies are using this type most. The third preferable type is activity based. NGO choose this type greatly

The third step of the responsibility accounting model is performance measurement technique. The end result of the survey is below:

**Table 3: Comparative analysis regarding performance measurement techniques**

Types of service organizations	Functional-based		Activity-based		Strategic-based	
	Frequency	%	Frequency	%	Frequency	%
Banks	7	28	10	40	9	36
Leasing companies	9	60	7	46.67	4	26.67
NGO	7	35	12	60	6	30
Insurance companies	9	45	8	40	12	60
Others	4	50	4	50	2	25
Total	36	218	41	23 6.67	33	177.67

This table illustrates that the differences among the three types of responsibility accounting systems are not significant. Most of the organizations are using activity based responsibility accounting systems. The prominent user is NGO. The second considered type is functional based responsibility accounting systems of which leasing companies occupy 60%. Strategic based responsibility accounting systems is third preferable type of which insurance companies absorb 60%.

The fourth step of the responsibility accounting model is reward system. If the manager of responsibility centre can achieve the performance measurement benchmark, he will be rewarded. The end outcome of the survey is below:

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**Table 4: Comparative analysis regarding reward system**

Types of service organizations	Promotion		Bonus		Profit sharing		Salary		Gain sharing	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Banks	15	60	18	72	5	20	12	48	2	8
Leasing companies	12	80	13	20	3	20	9	60	0	0
NGO	14	70	11	55	2	10	11	55	0	0
Insurance companies	17	85	11	55	2	10	6	30	1	5
Others	6	75	5	62.5	1	12.5	3	37.5	0	0
Total	62	370	58	264.5	13	72.5	41	230.5	3	13

From the types of responsibility accounting system, it was found that the reward systems are in case of activity-based and strategic-based system. In case of functional system it uses profit-sharing criteria instead of gain sharing like activity-based and strategic-based system. This table demonstrates that most common reward system is promotion followed by bonus, salary, profit sharing and gain sharing.

Many service organizations use more than one responsibility centre. The summarized final result of the survey is given below:

**Table 5: Comparative analysis regarding responsibility centre**

Types of service organizations	Cost centre		Revenue centre		Profit centre		Investment centre		Contribution centre	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Banks	4	16	5	20	17	68	4	16	0	0
Leasing companies	4	26.67	5	33.33	4	26.67	8	53.33	1	6.67
NGO	5	25	3	15	5	25	5	25	6	30
Insurance companies	6	30	8	40	6	30	6	30	3	15
Others	3	37.50	3	37.50	1	12.50	1	12.50	2	25
Total	22	135.17	24	145.83	33	162.17	24	136.83	12	76.67

This table provides that most frequent usage responsibility centre is profit centre. Second position goes to both revenue centre and investment centre. Cost centre is

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in third rank. The least common are contribution centre. It means all the responsibility centres are used commonly by the different types of service organizations.

The results of the satisfaction levels of five elements of responsibility accounting model separately among the different categories of service organizations are equal or not are as follows:

**Table 6: Test of the Equality of five elements of responsibility accounting system**

### ANOVA

		Sum of Squares	df	Mean Square	F	Sig.	Decision
Assignment of responsibility	Between Groups	.896	4	.224	.824	.513	Reject
	Within Groups	22.558	83	.272			
	Total	23.455	87				
Performance measurement Benchmark	Between Groups	4.495	4	1.124	2.012	.100	Reject
	Within Groups	46.368	83	.559			
	Total	50.864	87				
Performance measurement technique	Between Groups	1.486	4	.372	.478	.752	Reject
	Within Groups	64.468	83	.777			
	Total	65.955	87				
Reward system	Between Groups	2.625	4	.656	1.372	.251	Reject
	Within Groups	39.693	83	.478			
	Total	42.318	87				
Responsibility centre	Between Groups	6.175	4	1.544	2.555	.045	Accept
	Within Groups	50.143	83	.604			
	Total	56.318	87				

This table demonstrates that the satisfaction levels of different types of service organizations regarding the assignment of responsibility, performance measurement benchmark, performance measurement techniques and reward system are equal whereas in case of responsibility centre and overall responsibility system their satisfaction levels are different at the 5% level of confidence.

The study assumes that the important factors which affect the overall satisfaction level of responsibility accounting system are satisfaction levels of assignment of

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responsibility, performance measurement benchmark, performance measurement techniques, responsibility centre and reward system. Therefore, the model is specified as follows:

$$OS = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e$$

Where,

OS = Overall satisfaction level of responsibility accounting system

$\beta_0$  = Constant

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$  = Estimated coefficients for the given factors

$X_1$  = assignment of responsibility

$X_2$  = performance measurement benchmark

$X_3$  = performance measurement techniques

$X_4$  = reward system

$X_5$  = responsibility centre

e = error term

**Table 7: Omnibus Tests of Model Coefficients**

		Chi-square	df	Sig.
Step 1	Step	15.227	5	.009
	Block	15.227	5	.009
	Model	15.227	5	.009

**Table 8: Model Summary**

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	28.581	.099	.405

Table 8 illustrates the overall test for the model that includes the predictors. The test results show that the chi-square value is 15.227. The chi-square value is found significant ( $p < 0.0005$ ). It indicates that data fitted the model adequately. It tells us that this model as a whole fits significantly better than an empty model. The -2 log likelihood is (28.581) and the two measures of Pseudo R square such as Cox & Snell R Square (.099) and Nagelkerke R Square (.405) also shows about the model significance (Table 9)

**Table 9: Variables in the Equation**

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1(a)	ASSIGN	-2.691	1.455	3.422	1	.064	.068
	BENCH	.270	.671	.162	1	.687	1.310
	TECH	-1.196	.618	3.744	1	.053	.302
	REWARD	-1.704	.865	3.884	1	.049	.182
	CENTRE	1.222	1.044	1.369	1	.242	3.393
	Constant	13.356	6.950	3.693	1	.055	631695.117

The above table shows that among important five factors, i.e., satisfaction levels of assignment of responsibility, performance measurement benchmark, performance measurement techniques, reward system and responsibility centre factors, three factors such as satisfaction levels of assignment of responsibility and performance measurement techniques at 10% level of significance and reward system at 5% level of significance have significant influences on overall satisfaction level of responsibility accounting system.

## **8. Limitations of the study and Scope of Further Research**

This study is based on few structured questionnaire in survey and some secondary data. Only applications of responsibility accounting model and types of responsibility accounting systems have been considered but what are the reasons behind it have not been concentrated. If the study considered the activities of managers and also the qualifications of them, the finding might be different. May be the managers of different types of service organizations filled-up the questionnaire with a design to show that their organizations are following better option. This study lacks consideration of the quality of the activities of managers and also the qualifications of managers towards justification of their responses. Also merely Bangladesh perspective about responsibility accounting has been considered. Therefore, the global issues are absent in this article where some different result could be discovered. That prospect is kept open for further research.

## **9. Conclusion**

Responsibility accounting is one of the best tools of cost management which is used in large organization in case of decentralization or divisionalization to reduce the difficulty of managing the organization. This study would be of particular relevance to Bangladesh perspective, because it would help to assess the contemporary practice of responsibility accounting systems in different types of service organizations in Bangladesh. The overall findings reveal that all the organizations are limited to the three types of responsibility accounting systems, and also some organizations follow more than one type of responsibility accounting system regarding any element of responsibility accounting system .It means organizations follow responsibility accounting in integrated system, not any unique responsibility accounting system. As a developing country like Bangladesh these outcomes are more or less rationally suitable. But there is scope for further improvement to some extent.

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