



REVIEW ARTICLE

**AN EMPIRICAL ANALYSIS OF THE RELATIONSHIP BETWEEN COST ACCOUNTING SYSTEMS
STRUCTURE AND COST REPORTING ATTRIBUTES: EVIDENCE FROM SYRIA**

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ARTICLE INFO

Article History:

Received 07th April, 2014
Received in revised form
23rd May, 2014
Accepted 15th June, 2014
Published online 20th July, 2014

Key words:

Cost accounting systems,
Cost systems structure,
Costing report attributes.

ABSTRACT

To be useful for decision making, costing reports produced by the cost accounting system should be characterized by various attributes (relevance, summarization, accuracy, etc.). This paper aims at exploring the associations between cost systems and the quality of costing reports attributes, specifically the cost accounting systems structures in terms of level of details, level of disaggregation, variances calculation, and frequency of reporting. It also intends to explain the variance in report attributes. Data collected from Syrian Corporations listed in the Syrian Commission of Financial Markets & Securities using the survey strategy. Questionnaires were sent by email and data was collected during the first three months in 2014. The empirical analysis supported the theoretical argument between cost accounting systems structure and costing report attributes. However, explaining the variance in report attributes by cost systems structure has not yet been studied in management accounting literature, which is the main contribution of this study. It is believed that managerial reporting has not got sufficient attention comparing with financial reporting by accounting researchers.

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INTRODUCTION

In the face of changing market conditions and shrinking profit margins resulting from intense competition in the contemporary business environment, useful cost information is crucial for managers within organization in order to make their tactical and strategic decisions (Chan and Lee, 2003). A major issue in managerial accounting literature is to evaluate the ability of cost accounting systems to provide useful information to assist in decision-making process (Cohen and Kaimenaki, 2011). A considerable amount of contingency-based research has been undertaken relating to management control systems (MCSs) (Chenhall, 2003). "Little attention, however, has been given to identifying the factors that explain the content of cost management systems" (Chenhall, 2003). This is surprising considering the vast amount of publicity given to developing more sophisticated cost management systems (CMS) (Kaplan and Cooper, 1998). This paper examines the relationships between cost systems structure and cost accounting quality. More specifically, the study explores whether specific cost systems structures associates with specific attributes of information content presented by costing reports and communicated for the purpose of decision making. The second objective of this study is to explain the variance in Managerial reporting attributes by cost systems structure. This research goes beyond previous studies that focused on system

design and system use (e.g. Chenhall and Morris, 1986; Tillema, 2009). Whatever the system design is, it should have a specific structure that enable an enterprise to collect and process data, and then generate information. We expect that structure of cost accounting systems has associations with costing report attributes. We also expect that this structure could explain the variance in report attributes between business organizations. The study is organized as follows: Section 2 presents the previous studies, Section 3 discusses the development of the research hypotheses, Section 4 describes the methodology employed, and Section 5 presents and discusses the results.

Literature Review

Nicolaou (2003) states that: cost accounting systems (CAS) are an important component of management control systems. Management control systems are formal information-based systems that are used by managers to provide information with regard to a firm's strategic domain and boundary, as well as information about the attainment of a firm's intended strategies. Since cost management systems can be used to maintain or alter patterns in organizational activities, that is, assist in implementing a firm's strategy, they are considered information-based control systems which have an effect on managerial behaviour. As a result, a CAS is defined as a narrower concept than management control systems and as one that provides cost information used in strategic and operating

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decision-making including sourcing, product pricing and mix, and customer profitability decisions, as well as in operating decisions, including process improvement, product design, and performance measurement and evaluation decisions. Considerations of interest to designers and researchers of CAS include the extent to which the systems provide information, and; the degree of use; the usefulness of the information or the beneficial nature of the cost systems; the importance in making operational decisions and whether they are helpful to the organization, and satisfaction with the systems (Chenhall, 2003).

According to Gupta and Gunasekaran (2005), prior literature places emphasis on management accounting systems' role in relation to providing information useful for planning and control decisions which ultimately adds value to the enterprise. Cost accounting system structure is defined by four dimensions. These dimensions are: the level of detailed information, the level of disaggregation of costs according to: behavior; object; area of control; and decision making, the extent to which variances calculated, and the frequency of providing information decision makers (Pizzini, 2006; Cohen and Kaimenaki, 2011). The first dimension, the level of detail, refers to the aggregation of information around periods of time or of interest such as responsibility centers or functional areas. The level of disaggregation, the second dimension, refers to the classification into various classes. For example, a cost can be classified as variable or fixed by observing the relationship between its behavior and changes in the measure of activity. Cost can be classified according to the production function as either output costs or non-output costs. For internal management decision making, it may be useful to classify costs as incremental costs, sunk costs and opportunity costs. Knowing the incremental costs involved is essential when making decisions about producing more or less of an output. Decisions to decrease outputs should take into account only those costs which would change as a result of the decision, that is, costs that could be avoided if the output was dropped or reduced. Sunk costs, those items which are already committed and cannot be avoided, are irrelevant to future financial decisions.

For performance evaluation purposes, costs may be classified as being controllable or uncontrollable. For the purpose of output costing, the manner in which costs are consumed by outputs, activities or cost centers, determines whether they will be classified as direct costs or indirect costs. Identifying as many resources as possible as direct costs can improve the accuracy and relevance of total output costs by reducing arbitrary cost allocation. A costing system can be designed to cost financial information in various ways. It is important for both users and providers of cost information to understand the cost terminology and classification for the different objectives of cost accounting. This is because the method of cost classification affects the choice of costing process. The third dimension is the analysis of differences between standards and actual costs, which detects the preferable and non-preferable variances. The fourth dimension relates to the frequency of reporting (Cohen and Kaimenaki, 2011), that is, regular basis and upon request.

More functional cost accounting systems are those that can provide more detailed information, wider cost classification, more variances calculated, and more frequent reporting. The other concept is the cost information qualities, expressed by costing report attributes, that serve as measurements of MAS (management accounting system) effectiveness. Usefulness is the key indicator of cost information qualities, which refers to the degree to which managers rely on cost information to make their decisions (Pizzini, 2006). Baird et al. (2004) found that a high level of cost information decision usefulness is positively associated with the use of more sophisticated MAS. Pizzini (2006) found that cost accounting systems that are better, compared to other systems, at supplying details and classifying costs provide more relevant and useful information, which in turn leads to better financial performance. Gupta and Gunasekaran (2005) emphasize MAS's role in providing information that is useful for decisions, which adds value to the firm. Information leads the user to an action. To be useful, therefore, reports must have information content. Their value is the effect they have on users. This is expressed in two general reporting activities: (1) to reduce the level of uncertainty, and (2) to influence the decision maker's behavior in a positive way (Hall, 2011). Reports that fail to accomplish those objectives lack information content and have no value. Accordingly, cost accounting systems that unable to support the information content would lead to dysfunctional behavior.

To be effective, costing reports must possess the following attributes: relevance, summarization, exception orientation, accuracy, completeness, timeliness, and conciseness (Hall, 2011). Relevance means that each element of information must support the manager's decision. Reports should also be summarized according to the level of management. Accuracy refers to information that free of material errors. Completeness means that no piece of essential information to the decision should be missing from the report. Exception orientation relates to control reports that should identify activities that are at risk of going out of control and should ignore activities that are under control. Timely information that is sufficiently complete and accurate is more valuable than perfect information that arrives too late. Therefore, the system must provide managers with timely information. Finally, conciseness refers to presenting information in the report as concisely as possible. Notwithstanding, the literature has not yet provided an evidence in terms of cost systems structure and report attributes. However, studies have shown that changes in technology, increased product diversity, regulatory innovations, and increased competition indicate a need for a more sophisticated cost accounting system (Cugini et al., 2013).

Hypotheses Development

Level of detailed information

The level of detail of cost information refers to the extent to which information is presented in various forms depending on the criterion selected for analysis such as customer level, or product level, or geographical level, or the cost center level. It is expected that the higher the level of detail the greater the quality of costing report attributes.

Cost disaggregation

The second characteristic of cost systems structure is its ability to disaggregate costs according to: behavior (fixed/variable), object (direct/indirect), performance evaluation (controllable/uncontrollable), decision making (incremental/sunk/opportunity) costs. It is expected that better classification of costing enhances the quality of report attributes.

Variations calculations

The third dimension of cost systems structure is the extent to which variances are calculated. Variance analysis allows continuous monitoring of the degree to which budgeted cost and revenue targets are realized. It is expected that variances calculations between standards and actual costs increases the quality of report attributes.

Frequency of reporting

The frequency dimension deals with the degree at which information is provided in a regular basis and whether it is available upon request. It is expected that when the information that is available to users is frequent and upon request it will support the quality of report attributes.

- H1: There is a positive relationship between the existence of detailed information and the quality of report attributes.
 H2: There is a positive relationship between cost disaggregation and the quality of report attributes.
 H3: There is a positive relationship between variances calculations and the quality of report attributes.
 H4: There is a positive relationship between reporting frequency and the quality of report attributes.
 H5: More detailed information, cost disaggregation, variances calculations, and reporting frequency lead to a greater quality of report attributes.

Research Design

In order to test research hypotheses, empirical data was collected from all Syrian Corporations listed in the Syrian Commission on Financial Markets and Securities (SCFMS) using the survey strategy. These corporations operate in various industries such as banking, insurance, transportation, and food processing. 46 firms, with the exception of six companies that were out of service during the time of collecting data, were sent a questionnaire by email. The collection of data was lasted for three months during 2014. The questionnaire was addressed to the Chief Financial Officer of each firm. A total of 42 questionnaires were fully completed and returned.

Variables Measurement

Following Pizzini (2006), two questions were used to quantify the existence of detailed cost information (see Q1.1 and Q1.2 in the appendix). In Q1.1 respondents were asked to indicate the extent to which the cost accounting system allows the analysis of costs at several levels: customer, product, cost center, activity, and geographic region (DET_1). In Q1.2

respondents were asked to specify the degree to which the cost accounting system allow the development of customized reports based on user specifications (DET_2). The level of cost disaggregation (DISAGG) was measured using Q2, based on Pizzini (2006). Respondents were asked to indicate the extent to which the cost accounting system could distinguish direct and indirect costs, fixed and variable costs, controllable and uncontrollable costs, sunk and incremental and opportunity costs. The latter category was added due to its importance in the decision making process. The level of variance analysis (VAIR) was measured using Q3, based on Cohen and Kaimenaki (2011). Respondents were asked to specify the degree to which the cost accounting system calculates a number of variances: direct material price variances, direct material quantity variances, direct labor rate variances, direct labor efficiency variances, variable overhead variances, fixed overhead variances, and activity cost variances.

Based on Chenhall and Morris (1986), two questions were used to measure the frequency at which cost information is provided to users (Q4.1 and Q4.2). Respondents were asked to indicate the degree to which the cost accounting system provides frequent reports on a systematic basis (FREQ_1), while the second question aimed at capturing the timeliness of the system (FREQ_2). In order to quantify the costing report attributes, Q5 was designed to capture the qualities of cost system reporting. Respondents were asked to indicate the extent to which the costing reports possess the following attributes: relevance, summarization, exception orientation, accuracy, completeness, timeliness and conciseness. A five-point Likert-type scale was used for all questions with anchors of 1 "not at all" and 5 "to a very great extent".

Findings

Pearson correlation was used to examine the associations between each dimension of cost accounting system structure and costing report attributes. The results are as follows:

- Correlation is significant at the level of 0.01 between detail of information (DET_1 and DET_2) and report attributes.
- Correlation is significant at the level of 0.01 between cost information disaggregation and report attributes.
- Correlation is significant at the level of 0.01 between variances calculation and report attributes.
- Correlation is significant at the level of 0.01 between reporting at a regular basis (FREQ_1) and report attributes, but it is not significant between reports on request (FREQ_2) and report attributes.

In conclusion, cost accounting systems structure has a positive relationship with report attributes, however, when frequency was expressed in two questions, one on regular basis and the other upon request, it was found that correlation was not significant for the information provided upon request. For the purposes of explaining the variance in report attributes, regression analysis (simple and multiple) was used. The results are as follows:

- Variable 1 (DET_1) explains 0.456 of the variance in report attributes.
- Variable 2 (DET_2) explains 0.156 of the variance in report attributes.
- Variable 3 (DISAGG) explains 0.606 of the variance in report attributes.
- Variable 4 (VARIA) explains 0.633 of the variance in report attributes.
- Variable 5 (FREQ_1) explains 0.917 of the variance in report attributes.
- Variable 6 (FREQ_2) explains 0.017 of the variance in report attributes.

Despite the significant correlation between cost system structure and report attributes, variance in report attributes was explained mainly by variable 5 (FREQ_1), Variable 4 (VARIA), Variable 3 (DISAGG), and variable 1 (DET_1). That is to say that detailed information at various levels, cost disaggregation, frequent reporting on a regular basis, and variances calculations lead to a higher quality in costing report attributes. Multiple linear regression was conducted to test whether the combined variables (the four characteristics of cost accounting systems structure) would explain better the variance in costing report attributes. The result indicate that explanation power has increased to .953, which means that the structure of cost accounting system leads to a higher quality of costing report attributes.

Conclusion

This paper has intended to examine the associations between cost accounting structure (expressed by the level of detailed information, the level of cost information disaggregation, the extent to which variances calculated, and the frequency of reporting) and costing report attributes (represented by relevance, accuracy, exception orientation, timeliness, summarization, completeness, and conciseness). It has also intended to explain the variance in these attributes by introducing the four dimensions mentioned above as independent variables. In order to test the research hypotheses, data collected from 42 Syrian Corporations listed in the Syrian Commission of Financial Markets and Securities (SCFMS) using the survey strategy. In general, the data provided supportive evidence for the positive associations between cost accounting system structure and costing report attributes. However, when frequency dimension expressed by two variables, the first related to reporting on a regular basis and the second related to reporting upon request, the second variable was not found to be significantly associated with report attributes. Based on simple linear regression, only four variables (detailed information when expressed by level of analysis, disaggregation, variances calculation, and frequency when expressed by reporting at a regular basis) were able to explain the variance in report attributes. However, when multiple linear regression was used to examine the explanation power of the variables in combination this explanation power increased. Therefore, it can be concluded that the structure of cost accounting leads to a higher quality of costing reporting attributes. Our findings support the theoretical argument in management accounting literature that more functional accounting systems provide a better reporting quality. For

example, Cohen and Kaimenaki (2011) support this argument, although they found that detailed information, as measured by the extent to which costs are analyzed by cost center, product and activity, is negatively associated by relevance. On contrary, Pizzini (2006) suggests that cost systems that supply more detailed information and classify costs to a greater extent provide more relevant and useful data, and assist managers to make decisions. Similarly, Al-Omiri and Drury (2007) found a positive relationship between the importance given to cost information and the level of cost system sophistication.

In Cohen and Kaimenaki's (2011) study Pearson's correlation coefficients for combinations of all variables demonstrate significant associations between cost systems structure dimensions and information quality properties in the expected direction. A similar picture is presented in relation to Spearman's correlation coefficients. The correlations among the structure features of the cost accounting systems are all positive and strong in terms of statistical significance, which implies that these features even though they correspond to different characteristics they share positive relationships within a cost accounting system. Management accounting literature has not yet studied the variance in report attributes in business organizations using the structure dimensions as predictors for these attributes. Therefore this study has an implication on management accounting literature and on the management accounting profession. If more evidence was collected in the future, report attributes and hence the decision making process can be evaluated relying on the structure characteristics. Other implication for this study is the collection of data from various industries (e. i., banking, insurance, transportation, manufacturing) which means that results would be generalizable on different industries. It is important to integrate different features of cost systems (whatever the costing system adopted by companies) in a group of dimensions which represent the structure of cost accounting systems, therefore, various costing systems in different industries would be studied and compared when necessary. Finally, in line with Johnson and Kaplan's (1987) claim that "external reporting influences managerial accounting information", accounting literature should increase its interest on cost accounting systems and internal reporting qualities.

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Appendix

Level of detail of cost accounting information

- Q1.1: Identify to what extent the cost accounting system provides data that allow you to analyze costs by (1: not at all, 5: to a very great extent):
- Customer
 - Product
 - Cost center
 - Activity
 - Geographic region

- Q1.2: Identify to what extent the cost accounting system allows the preparation of customized reports according to user specifications (1: not at all, 5: to a very great extent)

Ability to disaggregate costs according to behavior

- Q2: Identify to what extent the cost accounting system categorizes costs into (1: not at all, 5: to a very great extent):

- Direct and indirect
- Fixed and variable
- Controllable and non-controllable
- Incremental, sunk and opportunity

Extent to which variances are calculated

- Q3: Identify to what extent the cost accounting system calculates the following variances (1: not at all, 5: to a very great extent):

- Direct materials price variances
- Direct materials quantity variances
- Direct labour rate variances
- Direct labour efficiency variances
- Variable manufacturing overhead variances
- Fixed manufacturing overhead variances
- Non-manufacturing overhead variances
- Activities cost variances

Extent to which cost information is communicated

- Q4.1: Identify to what extent the cost accounting system provides reports frequently on systematic, regular basis (1: not at all, 5: to a very great extent)

- Q4.2: Identify to what extent the cost accounting system provides information upon request (1: not at all, 5: to a very great extent)

Extent to which costing report possesses various attributes

- Q5: Identify to what extent you costing reports possess the following attributes (1: not at all, 5: to a very great extent):

- Relevance
- Summarization
- Exception orientation
- Timeliness
- Accuracy
- Completeness
- Conciseness
