

## **Participation in Performance Measurement Systems and Level of Satisfaction**

**Majdy Zuriekat**

Assistant Professor of Accounting

German Jordanian University

Talal Abu-Ghazaleh Graduate School of Business Administration

E-mail: majdy.zuriekat@gju.edu.jo

**Rafat Salameh**

Assistant Professor of Accounting and Head of Accounting Department

Al-Balqa' Applied University

Assalt, Jordan

E-mail: dr\_rafats@yahoo.com

**Salah Alrawashdeh**

Assistant Professor of economics and Head of economics and finance Department

Al-Balqa' Applied University

Assalt, Jordan

E-mail: alrawashdeh32@hotmail.com

### **Abstract**

The aim of this study was to investigate the use of variety of financial and non-financial performance measures identified in performance measurement systems literature. Based on survey responses from 87 Financial Managers, performance measurement diversity explains how participation leads to a greater level of system satisfaction. Furthermore, the results using structural equation modeling indicate that performance measurement diversity is associated with the satisfaction of performance measurement system. These outcomes show that companies benefit from performance measurement systems that incorporate a wide range of financial and non-financial performance measures. Finally, this study has verified further research opportunities that could enrich the understanding of performance measurement systems.

**Keywords:** Performance measurement diversity, employees' participation in decision making, satisfaction of performance measurement system

### **1. Introduction**

Performance measurement systems are considered information systems that are used to evaluate both individual and organizational performance. Until recently, companies concentrated on the use of financial performance measures as the foundation of performance measurement and evaluation purposes. As such, management accounting researchers (e.g. Otley, 1999; Norreklit, 2000) have criticized relying solely on financial performance measures. As a result, companies started to include key non-financial measures within their performance measurement systems to provide managers with the appropriate information about their overall company situation (Ittner and Larcker, 2001; Speckbacher et al., 2003). Interestingly, researchers are engaged in studying performance measurement systems, especially performance measurement frameworks and strategic performance measurement systems.

Research on performance measurement has investigated the impact of participation on performance and satisfaction (Luft and Shields, 2003). The participation in decision making provides the base for a comprehensive framework of performance measurement systems (Burney and Matherly, 2007). In general, management accounting researchers have examined the relationship between employees' participation in decision making and level of satisfaction (Burney and Matherly, 2007a). To investigate the case of Jordanian manufacturing companies, the current study proposed a theoretical model combining diversity of financial and non-financial performance measures, employees' participation and satisfaction of performance measurement system. This study relies on structural equation modeling to examine the study constructs. Similar to expectations, the study shows that employees' participation in decision making is associated with a greater level of satisfaction. Moreover, using variety of financial and non-financial performance measures results in more benefits to organizations. These results however, reveal that linking employees' participation in decision making to a variety of financial and non-financial performance measures leads to a better satisfaction of performance measurement systems. The importance of this study arises from the fact that, performance measurement research remains a fruitful area in the Jordanian environment. Moreover, employees' participation in decision making should be considered by companies as an influential factor to achieve the desired effectiveness.

The remainder of this paper is organized as follows. Section 2 provides an overview of the performance measurement systems. Section 3 introduces theoretical model and hypotheses development relying on relevant literature. Section 4 describes research methodology. The results of the study are then presented in Section 5. Section 6 discusses the findings of this study. Finally, Section 7 presents the limitations of this study and directions for future research opportunities.

## **2. Performance Measurement Systems**

Performance measurement systems play a key role as a source of information about financial outcomes and the internal operations shown in the financial statements (Yeniyurt, 2003). This type of information is useful for decision making process (i.e. planning, directing and controlling). The selection of performance measures depends on organization's objectives, a clear calculation method to compare, and these should be selected through people who are involved in the organization (Neely, 1999). According to Drury (2008, p. 404), allowing employees to participate in the setting of performance targets has the following advantages: (1) Employees are more likely to accept the targets and be committed to achieving it when they are part of target setting process. (2) Participation can reduce the information asymmetry gap that applies when standards are imposed from top management. (3) Imposed targets can encourage negative attitudes and result in demotivation and poor performance.

The management accounting literature has examined several streams of research such as the relationships between financial and non-financial performance measures. This stream of research supported the idea that non-financial performance measures can be indicators for current or future financial performance (e.g. Ittner and Larcker, 1998; Hughes, 2000). Consequently, it is still necessary to address how non-financial performance measures are related to the achievement of profit enhancement and organizational outcomes. The literature has shown consistent evidence suggesting that using more non-financial performance measures is associated with the adoption of manufacturing practices like total quality management and just in time manufacturing (Chenhall, 1997). In contrast, linking non-financial performance measures to managerial performance evaluation and reward system needs more investigation (Berrah et al., 2006).

The fact that different results were obtained from several studies may be explained by considering the different determinants of non-financial performance measures used. Thus, further research should attempt to explain the objectives of using non-financial performance measures. The inadequacies of traditional financial performance measures have led organizations to concentrate on the adoption of non-financial performance measures, but these measures also have disadvantages. They relate to the variety of non-financial performance measures, and the problem arising from choosing the appropriate measures given that there is no optimal mix of performance measures. Moreover, measuring organizations' financial performance is implicitly simple, because there are rules and guidelines to determine the financial measures. In contrast, non-financial performance measures cannot be related to the same rules or guidelines. However, the establishment of non-financial performance measures should be linked to target settings, and reward and incentives also need to be considered (Otley, 2001).

The choice of appropriate performance measures, however, is likely to be influenced by the several contextual factors identified in the contingency-based research (Chenhall, 2003). In response to the debate relating to the advantages and disadvantages of considering financial or non-financial performance measures and the appropriate choice of measures, some empirical evidence indicates that financial and non-financial measures are not substitutes, but that non-financial measures are used as additives to financial measures. However, effective frameworks of performance measures that integrate both financial and non-financial measures have emerged. These frameworks are based on the fact that management accounting information systems cannot rely on financial information alone (Berrah et al., 2006). A combination of financial and non-financial information is essential to give a more balanced impression of the overall performance of the organization (Hoque and James, 2000; Laitinen, 2002). Although, there are so many fields of performance measurement research, an important field of research is related to the influence of individuals' behaviour on their level of satisfaction and thus on the long-term success of companies (Otley, 1999). This field of research is considered a valuable objective to achieve the desired organizational outcomes (Chenhall, 2003).

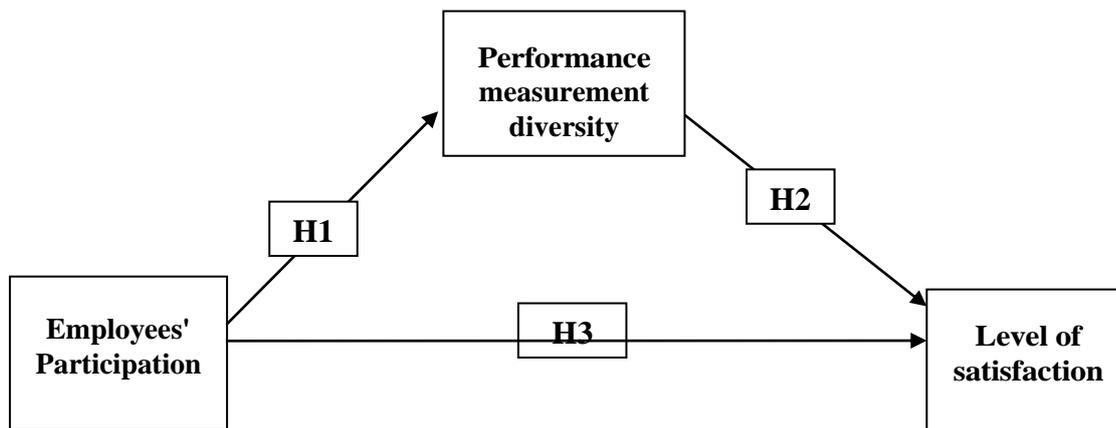
Finally, participation in decision-making has been investigated by several researchers as a means of making tasks more challenging and giving employees a greater responsibility. Drury (2008) argued that the empirical studies on the usefulness of participation have presented conflicting results in the management process in terms of leading to better attitudes and improved performance. Moreover, participation should be used selectively in suitable circumstances to encourage the commitment to organizational objectives, improving attitudes towards achieving targets and increasing subsequent performance.

Based upon the aforementioned overview of the literature, it is clear that the extent of usage of performance measures is not fully understood. Therefore, this study contributes to our understanding of how companies are using financial and non-financial performance measures. Moreover, it maintains the focus on managers' participation in selecting performance measures and the reflection on system satisfaction.

### 3. Theoretical Model and Hypotheses

Academic research concerning the implications and practices of performance measures and employees' participation in decision making were identified. In this section, these literatures provide the foundation to develop our model through including the level of satisfaction of performance measurement systems. Figure 1 depicts the theoretical model based on previous management accounting literature.

Figure 1 The theoretical research model



#### 3.1 Performance measurement diversity

A growing body of literature in management accounting concentrates on studying performance measurement. This is supported by the large number of research papers that investigated the role and importance of performance measures. The examination of the performance measurement systems literature showed that many management accounting scholars (e.g. Malina and Selto, 2001; Laitinen, 2002; Drury, 2004; Elg and Kollberg, 2009) asserted on incorporating non-financial performance measures as an essential part of management information system. Thus, one of the most important arguments in this study is that management accounting researchers advocate using performance measurement diversity in order to provide managers with appropriate non-financial information about the overall organization situation. Many research studies (Fisher, 1998; Burney and Matherly, 2007) have analyzed the selection and use of financial and non-financial performance measures in organizations and suggested the need to focus on employees' participation in performance measurement system (Adler and Reid, 2008). Although, participation will enhance the quality of performance measurement system by better understanding the system through selecting a range of performance measures that will best reflect user requirements. Thus, we hypothesized that:

**H1: Employees' participation in performance measurement system to be positively associated with using a diversity of performance measures.**

#### 3.2 Level of satisfaction of performance measurement system

The study of organizational effectiveness (i.e. level of satisfaction) has been at the core of management accounting research. However, real issues still exist concerning the definition and measurement of organizational outcomes. Researchers (e.g. Hoque and James, 2000; Kauhanen and Piekkola, 2006) argue that companies achieve higher performance when they use a diversity of non-financial performance measures. Recently, Maltz et al. (2003) indicate that little empirical testing has been performed to test and validate the measurement of organizational outcomes. Although not explicitly in the management accounting research that employees' participation in decision making report significant association with organizational effectiveness measured by the level of satisfaction of the system (Edwards et al., 2008). However, Ittner et al., (2003) examined the relationship between performance measurement system satisfaction, economic performance and the two approaches to strategic performance measurement. Their findings showed that companies making more use of non-financial performance measures have higher satisfaction and stock market returns than companies with similar strategies or value drivers. Thus, we hypothesized that:

**H2: Performance measurement diversity to be positively associated with the level of satisfaction of the performance measurement system.**

### 3.3 Employees' participation in decision making

According to Lau and Tan (2003), research in employees' participation is based on psychology and management, which provide evidence on positive organizational outcomes when employees participate in decision making process. This kind of participation can affect employees' work environment positively when it is linked to an appropriate rewarding system (Burney and Matherly, 2007). Employees' participation in decision-making has been investigated heavily by management accounting researchers and resulted in two streams of research (Luft and Shields, 2003; Moriarty, 2010). The first stream of research has investigated the relationship between employees' participation in decision making and performance (e.g. Chong et al., 2005). The second stream of research has explored the relationship between employees' participation in decision making and job satisfaction (e.g. Lau and Tan, 2003; Chong and Chong, 2002). The outcomes from previous participation research lead us to hypothesize that:

**H3: Employees' participation to be positively associated with the level of satisfaction.**

**H4: Employees' participation to be positively associated with the level of satisfaction through using a diversity of performance measures.**

### 4. Research Method

The hypotheses were tested in the Jordanian manufacturing companies using all the manufacturing companies listed in Amman Stock Exchange. Letters requesting participation in this study were delivered with a copy of the questionnaire to the financial managers of 112 companies. These companies were identified through the database available in Amman Stock Exchange. As a result, 87 questionnaires out of 112 were returned completed, which provided response rate of 77%. All variables were measured using multiple item questions. For the diversity of performance measures variable, several performance categories were utilized based on their importance in the management accounting literature. It includes financial and non-financial performance measures. Scale questions were extensively used in this study to collect attitude and beliefs data. In general, the most common approach is the Likert scale in which the researcher asks the respondents how strongly they agree or disagree. According to Hussey and Hussey (1997, p. 171), the Likert scale is one of the more frequently used types. They do not need much space and are easy to complete by the respondents. The issue of determining the length of Likert scale is controversial. In this context, Sekaran (2003) indicated that a five-point scale is just as good as any, and that an increase from five to seven or nine points on a rating scale does not improve the reliability of the ratings. Therefore, five-point Likert scales were used throughout the questionnaire to provide a greater opportunity to respondents to answer the questionnaire.

It is important at this stage to consider the issue of non-response bias in questionnaire surveys. We conducted two tests (i.e. Chi-square and Mann-Whitney) for non-response bias. First, a comparison of the profile of respondents against known characteristics of a sampled population. Second, a comparison of the characteristics (e.g. geographical location, type of qualification) of respondents with non-respondents from the sample. The results indicated that there were no significant differences in the responses ( $P$ -value  $> 0.05$ ) thus indicating that the limitation of a non-response bias is unlikely to apply.

#### 4.1 Variables definitions

The variables in our model were adapted from relevant literature on performance measurement system, which provided reliable and valid constructs.

##### *Performance measurement diversity*

This study measures the diversity of performance measures by using seven performance categories identified from management accounting research. These categories include: financial, customer, operational, innovation, employee, supplier and quality. These categories are drawn from the literature review of performance measurement systems (e.g. Hoque and James, 2000; Ittner et al., 2003). The respondents were asked to identify: (1) the extent to which these indicators are used to evaluate managerial performance, (2) the extent to which these indicators are linked to the financial reward system, (3) the extent to which these indicators are used to identify problems and improvement opportunities and developing action plans, (4) the extent to which these indicators explain the information reflected in it, and finally, (5) the extent to which strategic goals are set for these indicators. Thus, the extent of performance measurement diversity is the average standardized rating for each of the seven performance categories (financial and non-financial) across all uses.

##### *Level of satisfaction*

Many measures are available to assess organizational outcomes. Tosi and Slocum (1984) have identified three dimensions to measure organizational outcomes: efficiency, preference of organizational members and general social dimensions.

This study assesses organizational outcomes from using performance measurement diversity by the level of satisfaction. Following Ittner et al., (2003), managers' satisfaction with the performance measurement system is used. Three questions are used to measure company's satisfaction with its measurement system: (1) how well the performance measurement system meets expectations; (2) how well the system compares to the manager's concept of an ideal system; (3) overall satisfaction with the performance system. The rationale for this definition is to allow the researchers to compare the results with other studies in the literature.

#### ***Employees' participation in decision making***

According to Drury (2008), participation relates to the extent that employees are able to affect the figures incorporated in their budgets. This study measures employees' participation in decision making by asking the respondents about their employees' involvement in the performance measurement system. According to Kren (1992), management accounting researchers always measure this construct as a continuum between no system involvement to high involvement. However, our study adapts a measure developed by Burney and Matherly (2007) to evaluate employees' participation in decision making. This measure asks respondents to indicate the extent to which they agree or disagree with the following items: (1) involvement in selecting performance measures during the system's design; (2) involvement in system implementation; (3) involvement in assessing organizational performance; (4) involvement in recommending changes to the system; (5) involvement in setting and revising budgetary targets.

#### **4.2 Reliability and construct validity**

Content validity was achieved in this study by the procedures that are used to develop the study variables, which are examining and reviewing the related literature related to this study, upon which the operationalization for each variable was developed by using multiple item questions. Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were used to assess the construct validity of each variable in this study. EFA was performed to test the unidimensionality of each variable to test the degree to which the items were tapping the same concept. It has been recommended that CFA, derived from structural equation modeling (SEM), is a more rigorous test of unidimensionality (Garver and Mentzer, 1999, p. 40). Thus, CFA was also utilized to confirm or refine the unidimensionality of measures that resulted from the EFA. To assess the EFA, four commonly used assumptions were followed (Field, 2000; Hair et al., 1998): sampling adequacy (Kaiser-Meyer-Olkin measure greater than 0.5); the minimum Eigen value for each factor to be one; considering the sample size, factor loading of 0.40 for each item was considered as the threshold for retaining items to ensure greater confidence; and varimax rotation was used since it is a good general approach that simplifies the interpretations of factors (Field, 2000, p. 449).

Statistical Package for Social Sciences (SPSS) showed which variables 'clump together'. To assess the CFA, goodness of measurement model fit using SEM were followed (Chau, 1997, p. 318): Chi-square ( $P \geq 0.05$ ); goodness-of-fit index ( $GFI \geq 0.90$ ); adjusted goodness-of-fit index ( $AGFI \geq 0.80$ ); normed fit index ( $NFI \geq 0.90$ ); non-normed fit index ( $NNFI \geq 0.90$ ); comparative fit index ( $CFI \geq 0.90$ ); standardized root mean-square residual ( $SRMR \leq 0.08$ ); and root mean square error of approximation ( $RMSEA < 0.10$ ). Factor loadings are the correlations of the variables with the factor, the weighted combination of variables which best explains the variance. Higher values (e.g. more than 0.40) making the variable representative of the factor (Hair et al., 1998, p. 106).

Tables 1, 2, and 3 show the results of EFA for the study variables. An index of Kaiser's measure of sampling adequacy (overall MSA) and Bartlett's test of Sphericity ( $p \leq 0.000$ ) for each variable suggested that factor analysis is appropriate for analyzing our data. Further, based on the eigen values greater than 1, one dimension is extracted for each variable which explains performance measurement diversity = 59%, level of satisfaction = 86%, and employees' participation in decision making = 60% of the total variance, respectively. After examining the pattern matrix of the EFA, all items had loadings greater than 0.4 and communalities greater than 0.5. As shown in Tables 1, 2, and 3, results of EFA indicate that there is empirical evidence to support the unidimensionality of each variable.

To confirm and validate the findings that emerged from EFA, each of the study variables was evaluated by CFA using EQS 6.1 software. The measurement model of the CFA relates the observed variables to their latent variable. Tables 1, 2, and 3 show the measurement model of each variable and a summary of the model goodness-of-fit. Measures of goodness-of-fit were met for all variables. The results of CFA supported the findings that emerged from EFA and all items loadings well exceeded the cut-off point value; 0.60 with significant factor loading. Finally, convergent validity was also examined by using the Bentler-Bonett normed fit index (NFI) (Bentler and Bonett, 1990). All of the variables have NFI values above 0.90.

Furthermore, as shown in Tables 1, 2, and 3, indication of the measures' convergent validity was provided by the fact that all factor loadings were significant and that the scales exhibited high levels of internal consistency. In addition to evidence derived from the CFA analysis, the resulting measures were also reliable. As Tables 1, 2, and 3 show, the composite reliabilities for performance measurement diversity = 0.82, level of satisfaction = 0.89, and employees' participation in decision making = 0.83 indicating good level of reliability (Hair et al., 1998).

**Table 1 Exploratory and confirmatory factor analysis results for employees' participation**

Item	Employees' participation in decision making	EFA Results			CFA Results		
		Factors Loadings	Eigen Value		Factors Loadings	Composite Reliability	
Q1	Involvement in selecting performance measures during the system's design	0.69	2.51		0.61	0.73	
Q2	Involvement in system implementation	0.75			0.66*		
Q3	Involvement in assessing organizational performance	0.81			0.76*		
Q4	Involvement in recommending changes to the system	0.80			0.77*		
Q5	Involvement in setting and revising budgetary targets	0.80			0.76*		
Sampling adequacy (Kaiser-Meyer-Olkin measure greater than 0.5) = 0.84							
Model goodness of fit indices: Desired Level	$\chi^2$ $P \geq 0.05$	GFI $\geq 0.90$	AGFI $\geq$ 0.80	NFI $\geq 0.90$	CFI $\geq 0.90$	NNFI $\geq 0.90$	RMSEA < 0.10
Model indices	6.27, P = 0.17	0.98	0.94	0.96	0.98	0.96	0.06

**Table 2 Exploratory and confirmatory factor analysis results for level of satisfaction**

Item	Level of satisfaction	EFA Results			CFA Results		
		Factors loadings	Eigen value		Factors loadings	Composite reliability	
Q1	How well your performance measurement system currently meets expectations	0.92	2.66		0.88	0.89	
Q2	How well your performance measurement system compares to your understanding of the concept of "ideal" system	0.93			0.88*		
Q3	The overall satisfaction with your performance measurement system	0.94			0.92*		
Sampling adequacy (Kaiser-Meyer-Olkin measure greater than 0.5) = 0.84							
Model goodness of fit indices: Desired Level	$\chi^2$ $P \geq 0.05$	GFI $\geq 0.90$	AGFI $\geq$ 0.80	NFI $\geq 0.90$	CFI $\geq 0.90$	NNFI $\geq 0.90$	RMSEA < 0.10
Model indices	2.24, P = 0.26	0.99	0.98	0.97	0.99	0.99	0.01

**Table 3 Exploratory and confirmatory factor analysis results for performance measurement diversity**

Item	Performance measurement diversity	EFA Results		CFA Results			
		Factors Loadings	Eigen Value	Factors Loadings	Composite Reliability		
Q1	Financial (e.g. annual earnings, return on assets, cost reduction)	0.84	2.57	0.60	0.82		
Q2	Customer (e.g. market share, customer satisfaction, customer retention)	0.74		0.80*			
Q3	Operational performance (e.g. cycle time, productivity, safety)	0.61		0.82*			
Q4	Innovation (e.g. new product development success, development cycle time)	0.64		0.66*			
Q5	Employee (e.g. turnover, employee satisfaction, workforce capabilities)	0.73		0.78*			
Q6	Supplier (e.g. on-time delivery, input into product design)	0.69		0.69*			
Q7	Quality (e.g. defect rates, quality awards)	0.70		0.68*			
Sampling adequacy (Kaiser-Meyer-Olkin measure greater than 0.5) = 0.84							
Model goodness of fit indices: Desired Level	$\chi^2$ P ≥ 0.05	GFI ≥ 0.90	AGFI ≥ 0.80	NFI ≥ 0.90	CFI ≥ 0.90	NNFI ≥ 0.90	RMSEA < 0.10
Model indices	16.7, P = 0.11	0.96	0.92	0.95	0.99	0.98	0.03

**5. Results and Discussion**

This section has two parts. The first part reports the descriptive statistics related to the performance measurement diversity. The second part presents results related to hypotheses testing.

**5.1 Descriptive statistics**

Table 4 shows the descending means and the relative weight placed on these performance measures, which reflects the use of each of them to evaluate managerial performance, linking the measures to the rewarding system and the use of the performance categories for identifying problems and improvement opportunities and developing action plans.

Table 4 Descending means and weights placed on performance measurement diversity

Performance measures	Mean	Standard deviation	% Rating 1&2	% Rating 3	% Rating 4&5
Financial	4.85	0.64	0.00	3.2	99.8
Customer	4.68	0.78	6.5	12.9	88.7
Operational	3.96	0.82	19.4	16.1	74.5
Innovation	3.56	0.93	22.6	16.1	61.6
Quality	3.74	1.02	29.1	6.5	71.8
Supplier	2.82	1.19	45.2	25.8	36.0
Employee	2.64	1.24	42.0	38.7	28.3

As shown in Table 4, financial measures are the most important category used to evaluate managerial performance, reward managers and to identify problems and improvement opportunities and developing action plans. In terms of non-financial performance measures, the results show that the customer measures are the only non-financial measures that are significantly used to evaluate managerial performance, reward managers and to identify problems and improvement opportunities and developing action plans. The results also show that on average, operational, innovation and quality tend to be moderately used to evaluate managerial performance, reward managers and to identify problems and improvement opportunities and developing action plans. Finally, supplier and employee performance measures tend not to be used extensively in the management accounting processes.

### 5.2 Hypotheses testing

The theoretical model of this study, shown in Figure 1, was empirically tested using structural equation modeling (i.e. path analysis). As shown in Figure 2, the analysis included both direct and indirect paths. The first direct path was run from employees' participation to performance measurement diversity. The second direct path was run from employees' participation to level of satisfaction. Third direct path was run between performance measurement diversity and level of satisfaction. The first indirect path was run between employees' participation and level of satisfaction via performance measurement diversity.

**Figure 2 The empirical research model**

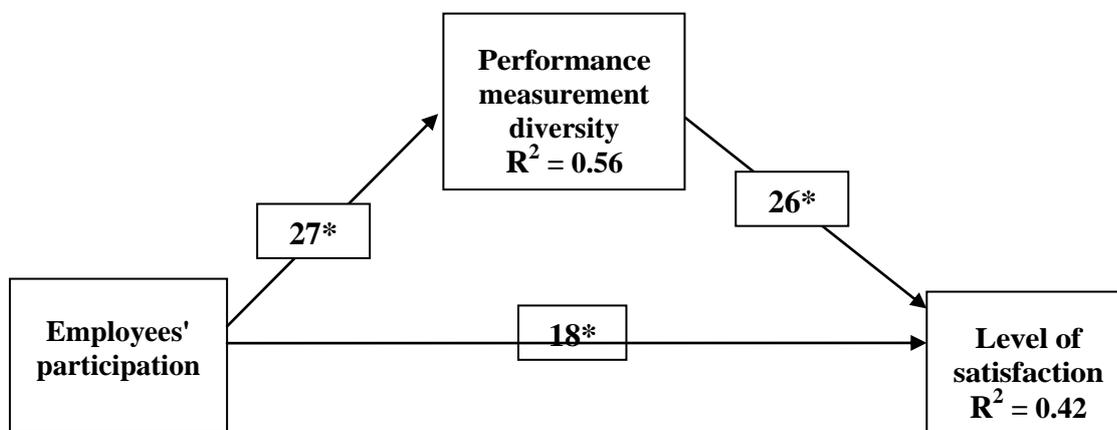


Table 5 shows the structural path model goodness of fit measures and the structural paths' results. As shown in Table 5, the goodness-of-fit measures indicated that the model had an excellent fit to the data. All hypotheses were supported.

**Table 5 Summary of structural Path**

H1-H4	Structural path	Beta	t-Value	Hypotheses results			
H1	Participation → Performance measurement diversity	0.27*	15.22*	Supported			
H2	Performance measurement diversity → Satisfaction	0.26*	14.73*	Supported			
H3	Participation → Satisfaction	0.18*	9.86*	Supported			
H4	Participation → Satisfaction via Performance measurement Diversity	0.15*	7.48*	Supported			
* Significant at P < 0.05							
Model goodness of fit indices	$\chi^2$	GFI	AGFI	NFI	CFI	NNFI	RMSEA
	4.24, P = 0.19	0.98	0.98	0.96	0.97	0.98	0.04

Employees' participation in decision making had a positive and significant influence on performance measurement diversity (Beta = 0.27, t = 15.22) and level of satisfaction (Beta = 0.18, t = 9.86). Further, performance measurement diversity had a positive and significant influence on level of satisfaction (Beta = 0.26, t = 14.73). The structural path model findings also showed that employees' participation in decision making had a positive, indirect and significant effect on level of satisfaction via performance measurement diversity (Beta = 0.15, t = 7.48).

Finally the output of structural equation modeling shows  $R^2$  results for performance measurement diversity and level of satisfaction.  $R^2$  indicates the extent of variation in one variable caused by the effect(s) of other variable(s). Most noticeable to this study was the fact that the  $R^2$  result of 0.56 indicated the 56% of variation in performance measurement diversity was caused by employees' participation in decision making. On the other hand,  $R^2$  result of 0.42 indicated that 42% of variation in level of satisfaction was caused by both employees' participation in decision making and the performance measurement diversity. Such results underline that, while the model's variables affect each other to a certain extent, other factors, not addressed by the model, seem to affect performance measurement diversity and level of satisfaction such as the contextual factors suggested in the management accounting contingency theory literature.

## **6. Conclusion and Discussion**

Prior literature on performance measurement systems provides evidence on the need to incorporate both financial and non-financial performance measures. These studies provided the motivation for developing the study theoretical model and the hypotheses. The theoretical model of this study includes interrelated parts, which are participation in decision making, the diversity of performance measures (i.e. financial and non-financial), and the level of satisfaction. The arguments and justifications that explain the rationale of constructing the study theoretical model are primarily forwarded based on previous theoretical and empirical research in performance measurement systems and through the theoretical gaps that emerged from the literature review.

A growing body of literature in management accounting concentrates on studying performance measurement systems. This is supported by the large number of articles that investigate the role and importance of performance measures.

In terms of using financial and non-financial performance measures in performance measurement and evaluation purposes, the results indicate that financial and operational performance measures are the only performance categories that have been used by the responding companies in all performance measurement and evaluation purposes (i.e. managerial performance evaluation, financial rewards and the identification of improvement opportunities and development of action plans), setting strategic goals and considering these performance measures to be of a high quality. Customer and quality performance measures are used by the responding companies in the following performance measurement and evaluation purposes (i.e. managerial performance evaluation and identification of improvement opportunities and development of action plans), setting strategic goals and considering these performance measures to be of a high quality. Employee and supplier performance measures are used by the responding companies in the following performance measurement and evaluation purposes (i.e. identification of improvement opportunities and development of action plans), setting strategic goals and considering these performance measurements to be of a high quality.

The results also show a clear indication that the use of all performance measures in all performance measurement and evaluation purposes, setting strategic goals and the level of quality of these performance measures are significantly correlated. Even when there are significant correlations, these results might give indication on the measurement gap between the corresponding use, setting strategic goals and the level of quality of these performance measures. This gap indicates that the use of performance measures for one purpose does not imply that the measures are used for other managerial purposes. These differences are consistent with the measurement gaps identified in several empirical studies (e.g. Stivers et al., 1998). Thus, it can be concluded that financial performance measures continue to be an important aspect of performance measurement system. These measures are supplemented with several non-financial performance measures. However, the type of non-financial performance measures used by the companies depends on the perceived usefulness of the information that may result from using these measures in performance measurements and evaluation.

In consistent with our hypotheses, the findings of this study imply that participation has a significant impact on the diversity of performance measures used by companies. It was argued in the literature that the increasing use of non-financial performance measures is relatively high when companies allow employees to participate in the decision making process (Moriarty, 2010). In other words, it is expected that employees and managers will select and use a diversity of non-financial performance measures if they participate in designing their performance measurement systems. An interpretation of the diversity use of non-financial performance measures could be that different companies experience different sets of managers' decisions to adopt and use non-financial performance measures (Gosselin, 1997). Further, participation in the performance measurement systems might provide employees and managers access to relevant information required to complete tasks and make decisions. In consistent with our hypotheses, the diversity of performance measures seems to contribute to higher level of satisfaction of performance measurement system in companies. This finding indicates that greater performance measurement diversity contributes to organizational output measured by level of satisfaction.

However, this result may be justified based on the idea that the diversity of performance measures provides a comprehensive view of organizational functions. Thus, a more diversity in performance measures helps explaining how participation provides employees and managers with more level of satisfaction of their performance measurement system. The literature on performance measurement systems supports the results in which participation is necessary to make employees and managers satisfied with their performance measurement system. This finding demonstrates that giving employees and managers the rationale to participate when selecting performance measures appears to enhance their outcomes through the provision of system satisfaction.

In common with this study, previous empirical studies have found that participation was a significant variable to increase the level of satisfaction of employees and managers. Moreover, a broader set of financial and non-financial performance measures might give employees and managers more information to achieve their jobs than are routinely available (Burney and Matherly, 2007). The access to more information might lead to improve performance on the organizational and individual levels.

### **7. Limitations and further research agenda**

This study is subject to a number of limitations and these might be explored in future research. The study adopted the quantitative approach to test the study theoretical model, thus limiting the choice of methodology to a cross-sectional survey, which is only concerned with employing quantitative methods of data collection. Despite the advantages of using structural equation modeling, the causal relationships between variables should be treated with caution due to the cross-sectional methodology of this study. Thus, it may be preferable not to draw any fixed conclusions about the directions of relationships being applicable to specific individual companies, because in reality, this analysis does nothing more than test the relations among the aggregation of the variables as they were assessed. Therefore, this method cannot overcome the limitations associated with non-experimental data gathered in a single session (Hoyle, 1995). In addition to the above limitations, a potential limitation in this study relates to the level of variance  $R^2$  explained by the variables. Thus, the presence of other variables incorporated in the study theoretical model does not provide a complete explanation of the results. Thus, there is an opportunity for future research to identify and examine the impact of other variables within the management control system. This study measured the diversity of performance measures by using seven performance categories, thus future studies might introduce a coherent measure of performance measurement diversity. Another potential research might link performance measurement to contingency-related variables (i.e. environment, size and culture). Despite the aforementioned limitations, this study has provided several important insights into issues relating to performance measurement system. Hopefully, this study will encourage researchers to conduct further studies about the implications of performance measurement systems.

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