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## DEPTH OF STRATEGIC MEASUREMENT SYSTEMS AND PERFORMANCE OF MEDIUM SIZED SERVICE FIRMS IN KENYA

**Kenneth Otieno Gor**

PhD Student in Strategic Management, Jomo Kenyatta University of Agriculture & Technology, Kenya

**Dr. Agnes Njeru**

Lecturer, Jomo Kenyatta University of Agriculture & Technology, Kenya

**Dr. Esther Muoria**

Lecturer and Registrar, Academic Affairs, Jomo Kenyatta University of Agriculture & Technology, Kenya

**Abstract:** *In Kenya, medium sized service firms are major contributors of employment and economic development. However, low transition rate among medium sized service firms in Kenya has remained a major concern as more than 90% of these firms fail to transition to large firms as expected. This has been attributed to inadequate strategic capabilities resulting from use of inappropriately designed strategic measurement systems. Specifically, use of measurement systems, which lack adequate depth to elicit critical information for strategic decision-making. An in-depth performance measurement system is necessary for probing deeply to uncover new clues, open new dimensions and secure vivid, accurate and detailed accounts. This descriptive study examined the effect of depth of the strategic measurement systems on performance of medium sized service firms in Kenya. The target population for this study was 2,039 medium sized service firms registered by Nairobi City County, Kenya and the sample size was 323 firms selected by stratified random sampling design. A standardized questionnaire was used to collect primary data from the chief executive officers of the sampled firms. The study showed that depth of strategic measurement system has a weak but statistically significant positive effect on performance of medium sized service firms in Kenya. The findings further indicated that majority of the firms focus on measuring operational efficiencies of activities considered important across departments. The study also showed that majority of the firms do not use disaggregated measures and mostly set strategic priorities for managers and employees without empowering them to control factors influencing their performance. Moreover, reporting of performance measures was not as frequent in most firms as most reports were generated only once a monthly. The study recommends that managers of medium sized service firms should promote carefully balanced disaggregation of measures. Further, they should set strategic priorities for managers and employees based on factors they can control. Moreover, frequency of measurements should be increased to capture the emerging issues. However, managers of these firms should not focus so much on highly detailed measurement systems because too much emphasis on detail would only serve to prolong the implementation of the strategic measurement system with minimal marginal increase in performance. Instead, the management of medium sized service firms should focus on comprehensive and integrated measures, which covers all critical parameters of the organization.*

**Keywords:** *Depth, Firm Performance, Medium sized Firms, Service Firms, Strategic Measurement Systems.*

## Introduction

In Kenya, medium sized service firms are major contributors of employment and economic development (World Bank Group, 2016). However, low transition rate of medium sized service firms in Kenya has remained a major concern as more than 90% of these firms fail to transition to large firms as expected (KNBS, 2016). This has been attributed to inadequate strategic capabilities (Chimwani, et al., 2013). Empirical evidence shows that these inadequacies in strategic capabilities arise from use of inappropriately designed strategic measurement systems (Yuliansyah & Khan, 2015; Maduekwe & Kamala, 2016). Specifically, use of measurement systems, which lack adequate detail to elicit critical information for strategic decision-making (Hudson, Smart and Bourne, 2001). In-depth performance measurement systems target to expose detailed understanding on the effects of specific performance factors rather than the general characteristics of these elements. An in-depth performance measurement system not only measure at the scope of performance factors but probes deeply to uncover new clues, open new dimensions and secure vivid, accurate and detailed accounts (Moorthy & Polley, 2010). Thus, deep measurement systems are characterised by measures that are less aggregated; provide clear guidance on strategic priorities to middle and lower level managers based on factors they can control; and are frequently reported (Bento & White, 2006).

Nonetheless, as emphasis on depth may work well for large firms with adequate resources, it may prove counter-productive for small and medium sized firms as focusing on too much detail may end up tying up resources the smaller firms may not have but need to propel their growth (Bäumel, 2014). Further, unlike the large firms, medium sized firms also face inadequacies in management and employee capabilities (Hudson, Smart, & Bourne, 2001). Moreover, lengthy and highly formal procedures for gathering and use of large, complex, long-term measurement data associated with advanced strategic measurement systems are not in tandem with the medium sized service firms' preference of informality, personalized engagement, flexibility, responsiveness and continuous innovation. Thus, the extensive use of advanced strategic measures may in fact impede growth in small and medium sized enterprises. Nevertheless, medium sized service firms still adopt traditional strategic measurement systems such as the balanced score card, total performance score card and sustainable performance measurement systems, albeit with modifications in designs to try fit their contextual circumstances. Even so, little empirical evidence currently exists, which fully describe the extent of detail of the strategic measurement systems used by medium sized service firms in Kenya and the actual effect of this level of detail on performance.

In order to clearly understand the complexities involved in designing strategic measurement systems and to offer appropriate recommendations for organizations on design and use of strategic measurement systems, it is imperative that rigorous studies be conducted to determine the actual effects of the depth of strategic measurement systems on performance. To this effect, several studies have been conducted. However, there still lack consensus on the actual effect of the depth of strategic measurement systems on firm performance (Moorthy & Polley 2010, Zizlavsky, 2014, Wasniewski, 2017). Unless addressed, persistence of this knowledge gap will continuously hamper effective implementation of strategic measurement systems, thus limiting the development of firm strategic capabilities, competitiveness and sustainability, leading to low transition rate and potential economic loss directly attributed to these firms in Kenya (KNBS, 2016). This descriptive research sought to fill the knowledge gap by examining the

depth of the strategic measurement systems and how the level of detail actually effect firm performance. Use of sustainable competitive advantage was adopted as a measure of firm performance.

### **Study Objectives**

The objective of the study was to evaluate the effect of depth of strategic measurement system on performance of medium sized service firms in Kenya.

**Ho:** Depth of strategic measurement system has no significant effect on performance of medium sized service firms in Kenya

**Ha:** Depth of strategic measurement system has a significant effect on performance of medium sized service firms in Kenya

### **Literature Review**

#### **Theoretical Review**

The study was based on decision-making theory. According to this theory, decision-making process assumes presence of goals, complete information, and the cognitive capacity of a rational individual to analyse a problem and come up with alternative solutions from which a solution with the highest possible gain or lowest possible loss under the circumstance is selected for implementation (Novicevic, Clayton, & Williams, 2011). That is, the process of rational decision-making or perfect rationality place utilities on each of the alternatives during the “choice” phase and the alternativewith the highest utility or maximum subjective expected utility is selected(Turpin & Marais, 2004) with the goal of optimisingoutput from the choice selected. The study argues that detailed a strategic measurement system provides the right and complete information for making sound strategic decisions. Otherwise, a too shallow strategic measurement system focusing on high-level strategic objectives alone may not capture in-depth operational objectives, which have a direct influence on the short-term and long-term performance of the organization.

#### **Empirical Review**

A study by Hudson, Smart and Bourne (2001)evaluated the appropriateness of strategic measurement system’s development processes for small and medium enterprises (SMEs). The study identified limited focus on detail by SMEs and concluded that sound performance measurement systems must provide reasonable detail, which shows how measures should look like and provide a useful development process. Further, despite managers being fully aware of the importance of detail on effectiveness of strategic measurement systems, none of the organizations had initiated redesigning of the systems probably due to limited resources and the more dynamic and emergent strategy styles found in SMEs. However, the study had some major weaknesses in that it utilized a case study approach that focusedon qualitative data and was based on a very small sample size of eight SMEs. Similarly, while acknowledging rarity of the use of measurement systems with appropriate level of detail, a study by Bourne, Kennerley and Franco-Santos(2005)used a case study on a UK based company providing repair servicesto examine the use of performance measures and how performance measurement systems affect performance. The study showed that the manner in which data is acquired, analysed,

interpreted, communicated and acted upon has an impact on business unit performance. The study further showed that application of most strategic measurement systems is often simplistic and the intensity of engagement and interaction is inadequate. However being insightful, the study was based on a case study of one organization with different business units. This raises concerns on implications for wider validity.

Another study by Rompho and Boon-itt (2012) based in Thailand sought to identify what managers involve in the design of performance measurement systems. The findings suggest that success of performance measurement systems lies on the adequacy of its detail, completeness, validity, and accountability. The study recommends not too few or too many measures. Even though the study was comprehensive by including all major sectors of the economy, the firm size was not defined. Konjer (2015) examined alignment between strategy and performance and concluded that balanced score card should be updated to follow the strategy without giving too much operational detail. Based on 7 cases, the study revealed that strategic measurement systems mostly lack crucial detailed information to help enhance performance.

Kaminskaite (2017) examined the factors that influence performance of SMEs. The study identified use of inaccurate metrics, particularly measures whose application lack depth. The study was based on qualitative research method using a case study of one start-up company in Helsinki. This limits the extent to which the findings can be generalised. As similar study by Wasniewski (2017) investigated properties of performance measurement system suitable for small and medium enterprises. The study concludes that small and medium establishments should not use deep performance measures, because they focus on just a few aims and prolong the implementation of the system. However, the studies shed light on the effect of strategic measurement system's depth on performance, their analysis has shown varied methodological weaknesses. Further, most of these studies were based in the developed economies, raising concerns on wider validity. Particularly to the developing economies such as Kenya and in the service sector. The study therefore sought to evaluate the effect of depth of strategic measurement system on performance of medium sized service firms in Kenya.

## **Methodology**

The study was descriptive. The study population comprised of 3,058 registered medium sized (50-100 employees) service establishments in Kenya (KNBS, 2016). The target population was 2,039 medium sized service firms registered by Nairobi City County (NCC), Kenya (NCC, 2018). The study adopted stratified random sampling technique to sample 323 firms to participate in the study. The firms were selected proportionately from the transport and warehousing sub-sector (19.7%), tourism and hospitality (60%), finance and insurance (8.6%), professional services (2.5%), Education (1.9%), Health (1.9%) and arts and entertainment (2.5%). A standardized questionnaire was used to collect primary data from chief executive officers of the firms between April and August 2018. Data collection involved drop and pick strategy. Frequencies, means, standard deviations and percentages were used to present the descriptive statistics. Regression analysis was used to show strength and direction of the relationship between the study variables.

## Results and Discussions

### Descriptive Statistics

The study achieved 46% response rate. The study sought to establish the depth of strategic measurement systems by evaluating the key focus of measurement systems, areas measured, extent of measures application, measurement disaggregation, managers' level of control and frequency of measurement. First, the respondents were asked to indicate the key focus of the performance measurement systems, activities measured and the extent of implementation of performance measurement systems in their organizations. The findings are in Table 1.

**Table 1: Focus of Measurement Systems**

Measure	Category	Percentage (n=150)
Key focus of strategic measurement systems	Operational Efficiency	65%
	Overall annual business performance	23%
	Long term goals	12%
Areas Measured	Performance of some operational activities	19%
	Performance of important operational activities	68%
	Performance of all operational activities	13%
Extent of strategic measurement systems application	In sections of some departments	7%
	Only in some departments	15%
	Across all departments/units	78%

Table 1 shows that majority of the firms focused on measuring operational efficiencies (65%) of activities considered important (68%). Further, majority of the firms indicated that they apply measures across all their departments (78%). The study further investigated the level of strategic measurement system's depth with regard to the level of measures aggregation, managers' level of control and frequency of measurement. The respondents were asked to indicate the extent to which employees', operational and market outputs are disaggregated. Table 2 illustrates the findings.

**Table 2: Level of Measurement Disaggregation**

Measures	Category	Disaggregation	Count	Percentage
Employee outputs	Employee work attendance	Total Man hours worked in a month	2	1.3%
		Total Man days worked in a month	148	98.7%
	Employee effectiveness	Complaints per customer served	32	21.3
		Total customer complaints per month	118	78.7%
	Revenue per employee	Average sales per day	55	36.7%
Total sales revenue per month		95	63.3%	
Operational outputs	Work schedule targets	Hourly	3	2%
		Daily	5	3.3%
		Weekly	44	29.3%
		Monthly	146	97.3%
		Quarterly	88	58.7%
		Semi-annually	56	37.3%
Market outputs	Sales targets	Annually	34	22.7%
		Customer demographics	11	7.3%
		Time of day	7	4.7%

Employee	78	52.0%
Customer Level of spending	16	10.7%
Service line	141	94.0%
Region/store	89	59.3%
Company totals	148	98.7%

Table 2 shows that majority of the firms use aggregated monthly man-days (98.7%) instead of productive hours (1.3%) in evaluating employees' performance. Table 2 also shows that majority of the firms use total customer complaints (78.7%) instead of complaints per customer (21.3%) in assessing employee effectiveness. Further, majority of the firms use total sales per month (63.3%) instead of average sales per day (36.7%) in estimating revenue per employee. These findings show most firms use aggregated measures, which are less informative such as aggregated report of number of days, total complaints and total revenue, which do not highlight in-depth information on employee productivity per hour, per customer complaints and average sales per day respectively.

Table 2 also shows that the firms use a mix of targets for operational efficiency measurements. For majority of the firms, measures of operational outputs have monthly targets (97.3%), while only 29.3% of the firms disaggregate their targets to weekly outputs, 3.3% to daily targets and 2% to hourly outputs. This illustrates focus on aggregated monthly outputs with reduced frequency of conducting measures. Thus, for majority of the firms the measurement systems are not disaggregated to elicit in-depth information about hourly, daily and weekly operational performances.

Table 2 further indicates that the firms use various levels of sales revenue disaggregation. Majority report aggregated company outputs (98.7%), while 94% report disaggregated sales revenue by service lines, 59.3% by region/store and 52% by employee outputs. However, few firms disaggregate revenue by customer level of spending (10.7%), time of sale (4.7%) and customer demographics (7.3%). This shows that for most firms, the focus is mainly at the company-aggregated output level other than disaggregation of results to customer level indicators. This high level of aggregation shows lack of in-depth investigation. This would hamper collection of in-depth information, which is critical for market segmentation, and targeted niche marketing.

The study also explored the level of employee control over implementation of strategic priorities. The respondents were asked to indicate who controls daily allocation of resources for operational tasks. The results are illustrated in Figure 1.

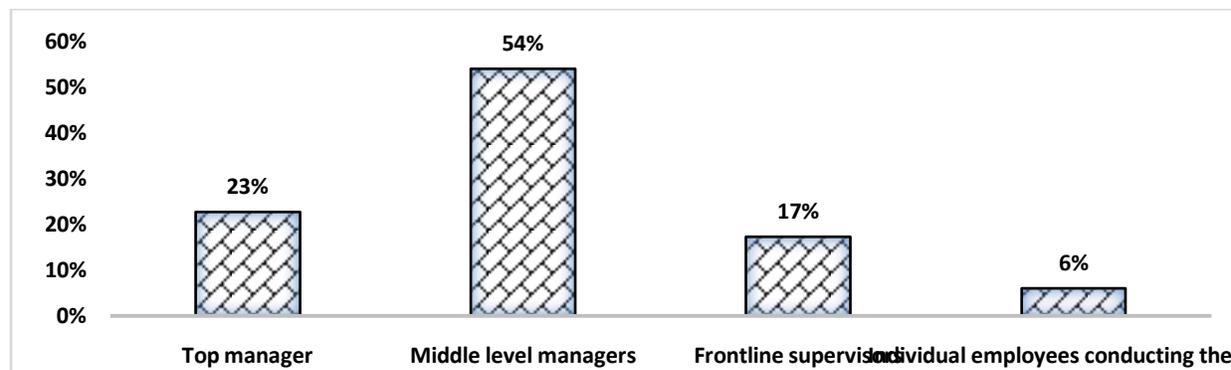


Figure 4.1: Manager/Employee Task Control Level

Figure 1 indicates that for most firms, the control for daily allocation of resource for daily tasks rests with the middle level managers (54%) and top managers (23%). It is only in 17% of the firms where frontline supervisors have control on daily allocation of resources and in 6% where individual employees conducting the tasks have control over daily allocation of resources. This shows centralized organizations where lower level managers and employees do not have full control on their work scheduling and task implementation. Hence, very few firms set strategic priority targets for employees based on factors the employees can control.

The study then evaluated the relationship between depth of strategic measurement systems and firm performance. On a five point Likert scale of 1= strongly disagree, 2= disagree, 3=somewhat agree, 4=agree and 5= strongly agree, the respondents were asked to describe performance measurement in their organizations. Table 3 shows the findings.

Table 3: Depth of Strategic Measurement System

Depth	Strongly disagree (1)	Disagree (2)	Somewhat agree (3)	Agree (4)	Strongly agree (5)	Mean	Std. Dev.
<b>Aggregation (n=150)</b>							
Clearly define operational objectives	0.6%	22.0%	45.3%	25.3%	13.3%	3.5	0.69
Measure all operational objectives in all departments	2.2%	11.3%	53.3%	20.0%	13.3%	3.3	0.71
Concentrate on important operational objectives	1.1%	19.3%	40.0%	19.3%	20.0%	3.4	0.66
<b>Aggregate score for OP</b>	<b>1.3%</b>	<b>17.5%</b>	<b>46.2%</b>	<b>21.5%</b>	<b>15.5%</b>	<b>3.4</b>	<b>0.69</b>
<b>Focus(SM) (n=150)</b>							
Only measure the general business performance	5.3%	6.7%	38.5%	31.3%	17.9%	3.5	0.92
Measure performance of different departments	3.3%	19.3%	46.0%	19.3%	12.7%	3.2	0.72
Practical implementation of the performance system	2.0%	21.3%	51.3%	22.0%	7.3%	3.2	0.73
<b>Aggregate score for SM</b>	<b>3.5%</b>	<b>15.8%</b>	<b>45.3%</b>	<b>24.2%</b>	<b>12.6%</b>	<b>3.3</b>	<b>0.79</b>
<b>Aggregate score</b>	<b>2.4%</b>	<b>16.7%</b>	<b>45.8%</b>	<b>22.9%</b>	<b>14.0%</b>	<b>3.4</b>	<b>0.74</b>

Table 3 indicates that on average the respondents agreed that the measurement systems have clearly defined operational objectives ( $M=3.5$ ,  $SD=0.69$ ), somehow agreed that all operational objectives ( $M=3.3$ ,  $SD=0.71$ ), and important operational objectives ( $M=3.4$ ,  $SD=0.66$ ) are measured. Table 3 also shows that on average the respondents agreed that the measurement systems collect data on more than just the general business performance ( $M=3.5$ ,  $SD=0.92$ ); somehow agreed that performance of different departments ( $M=3.2$ ,  $SD=0.72$ ) and practical implementation of the performance measurement systems ( $M=3.2$ ,  $SD=0.73$ ) are measured.

In summary, findings in Table 3 show that on average the respondents somehow agreed that the systems measure operational and strategic outputs. Table 1 also showed that most firms measure operational efficiencies of activities considered important across all departments. However, Table 2 and Figure 1 indicate that majority of the firms do not use disaggregated measures; do not empower staff to be in control of strategic priority targets; and do not frequently measure outputs as suggested by Bento and White (2006) for in-depth measurement systems. This indicates that the systems do not frequently report disaggregated results for in-depth evaluation of firm performance. The findings are in line with suggestions by Wasniewski (2017) that SMEs should not use deep strategic measurement systems, as too much detail will only serve to prolong the implementation of the system at the expense of delivery. The findings are consistent with literature which recommends shallow strategic measurement systems for SMEs (Wasniewski, 2017). However, as alluded by Prieto and Carvalho (2011), strategic measurement system that optimizes detail helps in transforming strategic objectives into operational measures with relatively high effectiveness. Further, sound strategic measurement system must provide reasonable detail, which shows how measures should look like and provide a useful development process (Hudson, Smart & Bourne, 2001). Hence, the findings that majority of the medium sized firms in Kenya adopt measurement systems with inadequate depth would affect generation of critical in-depth information for deployment of right strategies for sustainable competitive advantages.

### **Inferential Statistics**

To test the study hypotheses, linear regression analysis was conducted. An index for each construct was constructed by averaging the mean scores for the test items. Hypothesis testing used 95% confidence level for drawing conclusions. Diagnostic analysis was conducted to establish the suitability of the data for conducting linear regression analysis. Table 4 shows an overall Cronbach's alpha of 0.627, which was considered adequate as recommended by Field (2013). Table 4 also shows an insignificant Shapiro-Wilk test values ( $SW(150) = 0.982$ ,  $p=0.62$ ). This indicated that the regression residual/error terms did not significantly deviate from the normal distribution. Firm size was used to compare group means (test for linearity) and the results in Table 4 show that the probability of the  $F$ -statistic was less than the set alpha level of 0.05 ( $F(1, 19) = 50.69$ ,  $p < 0.00$ ) indicating linearity of the relationship between the depth



of the strategic measurement system and firm performance. Table 4 further indicates that Levene’s test (test for Homoscedasticity) was insignificant ( $F(4, 145) = 1.620, p = 0.172$ ). Thus, the assumption of homoscedasticity was confirmed. In addition, Table 4 indicates that the Durbin-Watson (DW) value (1.942) was within the recommended range of  $1.5 < DW < 2.5$ .

**Table 4: Hypotheses Testing**

Goodness of Fit	df	Test Statistics	SE	Sig.
R-Squared		.251	.40282	
Adjusted R <sup>2</sup>		.246	.40282	
F-Statistic	(1,148)	49.652		.000
Shapiro-Wilk test (Normality)	(150)	0.983		.062
Test for linearity (F)	(1,19)	50.69		.000
Levene’s Test (Homoscedasticity)	(4,145)	1.620		.172
Durbin-Watson (Autocorrelation)		1.942		
Cronbach’s Alpha (n=6)		0.627		

Multiple Linear Regression Results					
Dependent Variable= Firm Performance	Unstandardized Coefficient		Standardized Coefficient	t-statistics	Sig.
	B	SE	Beta		
Constant	1.643	.202		8.124	.000
Depth	.372	.053	.501	7.046	.000

Linear regression analysis was used to test if the depth of strategic measurement system significantly predicted firm performance. The regression results indicated in Table 4 show that the depth of the strategic measurement systems explained 24.6% variance in firm performance (adjusted  $R^2 = 0.246, F(1, 148) = 49.652, p < .001$ ). It was found that the depth of the strategic measurement system significantly predicted firm performance ( $\beta_1 = 0.372, p < .001$ ).

The linear regression model is presented below.

$$Y = 1.643 + 0.372 X + \epsilon$$

Where: Y is the firm performance

X is the depth of the strategic measurement system

$\epsilon$  is the error term

In summary, the study objective sought to evaluate the effect of depth of strategic measurement system on performance of medium sized service firms in Kenya. The corresponding research null hypothesis proposed that depth of strategic measurement system has no effect on performance of medium sized service firms in Kenya. The linear regression model estimated revealed that the effect of depth of strategic measurement system on performance is statistically significant at  $\beta = 0.372; t(145) = 7.046; p < .001$ . Hence, at 95% level of confidence, depth of strategic measurement system has a significant positive effect on firm performance. These results illustrates that holding all other factors constant, a unit increase in depth of strategic measurement system corresponds to an average of 0.372 unit increase in firm performance. The

study therefore, concludes that there is a significant positive effect of depth of strategic measurement system on performance of medium sized service firms in Kenya. However, the effect was weak (only 24.6% of variance of performance was explained). The conclusion of the study is consistent with other researchers such as Bourne, Kennerley and Franco-Santos (2005); Rompho and Boon-itt (2012); and Konjer (2015) to the effect that depth of strategic measurement system has a positive effect on firm performance.

The conclusion also agrees with decision-making theory's propositions that rational decision-making requires complete information and the cognitive capacity of a rational individual to analyse a problem and come up with alternative solutions from which a solution with the highest possible gain or lowest possible loss under the circumstance is selected for implementation (Novicevic, Clayton, & Williams, 2011). This means that detailed strategic measurement system provides the right and complete information for making sound strategic decisions. Otherwise, too shallow strategic measurement system focusing on high-level strategic objectives alone may not capture operational objectives, which have a direct influence on the short-term and long-term performance of the organization.

Empirical studies on the effect of depth of strategic measurement system on performance by Hudson, Smart and Bourne (2001); Bourne, Kennerley and Franco-Santos (2005); and Rompho and Boon-itt (2012) were based on case studies in developed countries. Use of case studies raises concerns on wider validity of the findings. Findings from this study therefore, add to the existing body of literature by providing empirical evidence on the effect of depth of strategic measurement system on performance of medium sized firms in Kenya.

### **Conclusions and Recommendations**

The study concludes that depth of strategic measurement system is a statistically significant predictor of performance of medium sized service firms in Kenya, showing a positive effect of depth of strategic measurement system on performance of medium sized service firms in Kenya. However, the study showed that this effect was weak. The study further concludes that medium sized service firms in Kenya do not use deep (detailed) strategic measurement systems. That is, while strategic measurement systems used by majority of the medium sized service firms in Kenya focus on measuring operational efficiencies of activities considered important across departments, majority of the firms do not use disaggregated measures. Further, majority of the firms do not empower their lower level managers and employees to be in control of the implementation of their strategic priority targets. Moreover, majority of the firms do not use frequently reported measures.

The study recommends that while managers of medium sized service firms should promote carefully balanced disaggregation of measures; setting of strategic priorities for managers and employees based on factors they can control; and having frequently reported measures, they should not focus so much on highly detailed measurement systems. This is because the study has shown that depth creates just minimal effect on performance. Moreover, too much emphasis on detail would only serve to prolong the implementation of the strategic measurement system with minimal marginal increase in performance. Instead, the management of medium sized service firms should focus on comprehensive and integrated measures, which covers all critical parameters of the organization.

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