Review

Understanding performance measurement through the literature

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Performance measurement has been defined and redefined over the years. Researchers have tried to explain this important area of management control with respect to their area of specialty. However, very few researches have tried to adopt a multi-disciplinary approach. This has resulted in a departure from a generalist understanding of performance measurement to a specialty focus. This study tries to build a general understanding of definition, characteristics and evolution of performance measurement through the review of literature. It also points out some of the issues in the more recently developed “integrated” performance measurement systems. The discussion is concluded by explaining briefly the need for empirical studies in the area and extension in focus from strategy to performance measurement at operational and lower level of the organization.

Key words: Performance measurement, frameworks, evolution, current issues.

INTRODUCTION

Garvin (1993) is of the opinion that if something cannot be measured, it cannot be managed. Lebas (1995) went to the extent to negate the existence of management without performance measurement. Businesses have to measure their performance to manage the activities of their organizations. Moreover, it is instrumental for businesses in providing feedback to employees, allocating resources, adopting a long-term perspective, continuously improving the organization, improving communication and motivating employees (Sinclair and Zairi, 1995).

Although the field of performance measurement has evolved over a long period of time to adjust to changes in the performance measurement needs of the business, it has attracted great interest in the last two decades (Taticchi et al., 2010). Performance measurement has its roots in accounting since the middle ages, when traders used it to settle transactions. After the industrial revolution, till late twentieth century, financial measures of performance were used. Changes in the global economy made businesses realize that in order to be successful in the highly competitive markets, they had to focus on strategy. Consequently, a shift in focus took place, changing the orientation from production to strategy. Organizations needed performance measurement system that was balanced and was derived from strategy.

In this context, a number of frameworks were suggested, which addressed the criticism made against the traditional measures. However, Tangen (2004) suggests that despite the traditional performance measurement system having a number of disadvantages, organizations still use it. This is intriguing to see such a behavior by organizations when criticism against traditional measures has been well documented.

The objective of the study is to understand performance measurement and its key characteristics, the development phases through which it has passed and most importantly, to identify the shortcomings in the integrated performance frameworks that have inhibited its adoption on full scale.

DEFINITION AND CHARACTERISTICS OF PERFORMANCE MEASUREMENT

Performance measurement has been defined from different perspectives by different researchers. Neely at el. (1995) defined it as “the process of quantifying the
efficiency and effectiveness of an action.” Otley (1999) defined it as an information system that helps managers performing their job and managing the behavior of the organization. Gates (1999) defined it as the procedure to implement strategy in an organization by translating business strategy into deliverable results. Bititci et al. (1997) defined it as an information system and a reporting process through which the employees are given feedback on the outcome of their actions. Bourne et al. (2003) defined it as a set of multi-dimensional performance measures used for planning and managing the business. Maisel (2001) defined it as a system that enables an organization to manage its performance and ensures that all the functions and activities are in line with the strategy to achieve the business results and create shareholder’s value. There is a lack of agreement on a single definition of performance measurement (Franco-Santos et al., 2007).

Although researchers could not agree on a single definition of performance measurement, there is ample literature which underscores the characteristics of performance measurement and performance measurement system. Bourne et al. (2003) explained that “performance measurement” means the following when referred to in literature and practice: 1) a set of multi-dimensional performance measures (financial/non-financial and internal/external) that quantify the performance that has been achieved and helps in forecasting the performance which is going to be achieved in the future; 2) performance measurement is relevant with respect to a reference framework against which the results of action can be judged. There is a consensus that the reference framework is the organization’s strategy; 3) it is part of a planning and control system which influences the behavior of individuals and groups with the organization; 4) performance measurement is not only concerned with measuring performance of the organization in terms of the efficiency and effectiveness of its actions but also the impact of its actions on its stakeholders.

In another study, Franco-Santos et al. (2007) reviewed and analyzed the performance measurement definitions from seventeen different studies in order to determine the key characteristics of performance measurement. The authors found consensus on two features of performance measurement system: 1) performance measures which can be defined as “a metric used to quantify the efficiency and/or effectiveness of action” (Neely et al., 1995), are necessary requirement for a performance measurement system. However, there is no consensus on the nature and design of the measures; 2) performance measurement system is implemented to achieve certain organizational goals and objectives, primarily strategic in nature. In recent times, strategic performance measurement systems are emphasized in which measures are linked to strategy; however, performance measurement system might exist in which measures achieve operational goals and not linked to the strategy.

The study goes on to define the roles of performance measurement system on which authors have consensus: 1) measuring performance of the organization by monitoring and evacuating performance; 2) strategic management of the organization by strategic planning, strategy formulation and implementation and making the organizational activities in alignment to the strategy; 3) ensure communication with both internal and external stakeholders; 4) influencing behavior of organizational units by rewarding and 5) providing feedback for learning and improvement.

**EVOLUTION OF PERFORMANCE MEASUREMENT**

The origin of performance measurement can be traced back to the late thirteenth century, when double-entry accounting was introduced to settle transactions among traders (Johnson, 1981). Although the origin of performance measurement is centuries old, early accounting systems research in the field has developed in two major phases during the late nineteenth and twentieth century. The first phases started in the late 1880s, which lasted for almost a century; while the second phase started in late 1980s (Ghalayini and Nobles, 1996).

Figure 1 explains the evolutionary stages of performance measurement over the years. The first phase started as a result of the industrial revolution in Europe and America (Williams, 2002; Taylor, 1911). This phase primarily had cost accounting orientation, in which managers emphasized on operating costs of the firm (Kurien and Qureshi, 2011). Cost variance analysis, standard costing and flexible budgets are some of the techniques that were used to measure performance in that era (Bourne et al., 2003). The factors that contributed to the development of the cost accounting performance measures were: the change from piece-work payments to wage system led to techniques that helped in determination of product cost and in motivating employees for better performance who were no more concerned with output (Johnson, 1981). Internal control systems were created to manage firms that had multi-operation production systems (Johnson, 1975, 1981), after the emergence of organizations with more than one manufacturing facilities, divisional and departmental budgets were introduced, in order to manage day-to-day operations and compare production and cost between the different divisions and departments (Johnson, 1978). This was the time when scientific management approaches and internal administrative processes were used to implement management control.

Later in the same era during 1940s and 1950s, when productivity concepts (quality control, variety reduction, standardization, etc.) emerged in manufacturing organizations, more emphasis was placed on financial indicators such as sales, production, efficiency, ROI and other ratios (Bititici, 2009). There onwards, financial measures for the most part were used to develop cost
Figure 1. Evolutionary stages of performance measurement (modified from Gomes et al., 2004).

and management control systems (Kaplan, 1983; Johnson and Kaplan, 1987; Keegan al at, 1989).

In late 1980s, after globalization of trade and the emergence of world economy, markets became competitive and customers were more demanding, the focus shifted from productivity to quality, time, cost, flexibility and customer satisfaction (Hayes and Abernathy, 1980; Slack, 1983; Kaplan, 1984). This was the time when researchers highlighted the deficiencies in the traditional financial measures and criticized it to be inappropriate for measuring business performance. Johnson and Kaplan (1987) were among the first to suggest a shift from cost accounting based performance measurement approach to a more integrated performance measurement approach. The criticisms that were put forward were called the traditional performance measures. They are as follows:

i. They are historically focused (Dixon et al., 1990, McNair et al., 1990) therefore they are lagged performance indicators.

ii. They are results rather than the cause of management action and organizational performance (Eccles and Pryburn, 1992; Hazell and Morrow, 1992).

iii. They have failed to integrate factors critical for the success of the business (Eccles, 1991).

iv. They are internally focused rather than external focused (Kaplan and Norton, 1992).

v. They encourage short-termism (Banks and Wheelwright, 1979; Hayes and Garvin, 1982).

vi. Ignore organization’s strategy (Skinner, 1974).

vii. They shift manager’s focus from improvement to variance minimization (Schmenner, 1988, Turney and Anderson, 1989).

viii. They are inapplicable in modern manufacturing (Drucker, 1990).

ix. They damage business and the economy (Hayes and Abernathy, 1980).

x. They encourage dysfunctional behavior (Fry and Cox, 1989).

xi. They provide limited and misleading information about organization performance (Tarr, 1995).

These shortcomings in traditional measures resulted in a performance measurement crisis, which led to a revolution in the existing performance measurement systems (Eccles, 1991; Neely, 1999). The emergence of balanced performance measurement frameworks marked the start of the second phase of performance measurement evolution. The term “balanced” refers to using measures that gives a holistic view of the organization (Kaplan and Norton, 1996). During this era, the need to use non-financial measures for monitoring performance and motivating employees was stressed (Santori and Anderson, 1987) because of the non-financial measure for being timely, measurable, precise, meaningful, an aid to continual improvement, consistent with company’s goal and strategies, and flexibility (Medori and Steeple, 2000).
Moreover, researchers accentuated the importance of aligning financial and non-financial measures with the organization’s strategy (McNair and Mosconi, 1987). A comparison of traditional and balanced measures has been shown in Table 1. Throughout 1990s, researchers were busy in developing models and frameworks, as a result of which a number of frameworks were developed such as Balanced Scorecard (Kaplan and Norton, 1992), the Performance Prism (Neely et al., 2002), SMART (Lynch and Cross, 1991), the Results and Determinants Framework (Fitzgerald et al., 1991), the Performance Measurement Matrix (Keegan et al., 1989) and Performance Measurement Questionnaire (Dixon et al., 1990) to name a few; these frameworks are further discussed.

### Performance measurement frameworks

In response to the criticism of traditional performance measurement and a call for a paradigm shift in the way organization performance was measured, new, better and balanced frameworks and methodologies were designed to help implement the balanced sets of measures. Some of the most well-known frameworks that have been developed over time are reviewed here.

Performance measurement matrix was the first performance measurement system that received acceptance as a balanced and integrated frame to measure business performance (Keegan et al., 1989). It categorizes performance measures into four different dimensions: cost, non-cost, internal and external (Figure 2). The structure of the framework reveals the need for a balanced system, while its simplicity reflects its ability to accommodate any measure of performance (Neely et al., 1995). However, it does not establish a link between the different performance dimensions (Neely et al., 2000).

Dixon et al. (1990) presented the performance measurement questionnaire. The questionnaire helps the organization to identify areas for improvement, to determine the effectiveness of existing performance measures and to improve the performance measures. The questionnaire is distributed into four parts, the first part collects general data about the company and the respondent, in the second part employees rate the importance of areas of the business that needs improvement in comparison to the effectiveness of the existing performance measures evaluates (Table 2), the third part is concerned with performance indicators and the final part asks the respondents to suggest performance measures that best evaluate their own performance. The responses are weighed up to determine alignment (evaluates the alignment of performance measure with the business strategy), congruence (evaluates the support provided by the performance measurement system to the business strategy), consensus (compares the responses from different functions/levels of the organization), and confusion (more detailed analysis of consensus analysis by determining level of disagreement).

Fitzgerald et al. (1991) developed the Result and Determinant Framework, after a study in service industry. The framework classifies measures into two categories: results (measures that are outcome of certain actions for example, competitiveness, financial performance) and determinants (measures that measure actions that lead to certain outcomes for e.g. quality, flexibility, resource utilization and innovation) (Table 3). The framework creates a link between present business performances as reflected by results with the business performance of the past as measured by the determinants. This helps in identifying the performance drivers of future desired future success.

The SMART (strategic management and reporting

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**Table 1. Comparison of traditional and non-traditional performance measures.**

<table>
<thead>
<tr>
<th>Traditional performance measure</th>
<th>Non-traditional performance measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Based on outdated traditional accounting system</td>
<td>Based on company strategy</td>
</tr>
<tr>
<td>Mainly financial measures</td>
<td>Mainly non-financial measures</td>
</tr>
<tr>
<td>Intended for middle and high managers</td>
<td>Intended for all employees</td>
</tr>
<tr>
<td>Lagging metrics (weekly or monthly)</td>
<td>On-time metrics (hourly, or daily)</td>
</tr>
<tr>
<td>Difficult, confusing and misleading</td>
<td>Simple, accurate and easy to use</td>
</tr>
<tr>
<td>Lead to employee frustration</td>
<td>Lead to employee satisfaction</td>
</tr>
<tr>
<td>Neglected at the shop floor</td>
<td>Frequently used at the shop floor</td>
</tr>
<tr>
<td>Have a fixed format</td>
<td>Have no fixed format (depends on needs)</td>
</tr>
<tr>
<td>Do not vary between locations</td>
<td>Vary between locations</td>
</tr>
<tr>
<td>Do not change over time</td>
<td>Change over time as the need change</td>
</tr>
<tr>
<td>Intended mainly for monitoring performance</td>
<td>Intended to improve performance</td>
</tr>
<tr>
<td>Not applicable for JIT, TQM, CIM, FMS, RPR, OPT, etc.</td>
<td>Applicable</td>
</tr>
<tr>
<td>Hinders continuous improvement</td>
<td>Help in achieving continuous improvement</td>
</tr>
</tbody>
</table>

Source: Ghalayini and Noble (1996).
Table 2. Section of part 2 of PMQ.

<table>
<thead>
<tr>
<th>Long-run importance of</th>
<th>Improvement area</th>
<th>Effect of current performance measures on</th>
</tr>
</thead>
<tbody>
<tr>
<td>improvement</td>
<td></td>
<td>improvement</td>
</tr>
<tr>
<td>None &gt;&gt;&gt;&gt; Great</td>
<td>Quality</td>
<td>Inhibit &gt;&gt;&gt;&gt; Support</td>
</tr>
<tr>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>1 2 3 4 5 6 7</td>
<td>Labour efficiency</td>
<td></td>
</tr>
<tr>
<td>1 2 3 4 5 6 7</td>
<td>Machine efficiency</td>
<td></td>
</tr>
</tbody>
</table>

Source: Dixon et al. (1990).

Table 3. Results and determinants framework (Fitzgerald et al., 1991).

<table>
<thead>
<tr>
<th>Results</th>
<th>Competitiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Financial performance</td>
</tr>
<tr>
<td>Determinants</td>
<td>Quality</td>
</tr>
<tr>
<td></td>
<td>Resource utilization</td>
</tr>
<tr>
<td></td>
<td>Innovation</td>
</tr>
</tbody>
</table>

technique) proposed by Lynch and Cross (1991) is a four level performance pyramid that links the corporate strategy with the operations through the hierarchy by translating objectives from the top and measures from the bottom (Figure 3). At the top of the pyramid is the company’s strategy which is translated into business unit objectives. At the second level, the business level objectives can be defined in terms of short term financial performance goals and long term market position and growth goals. At the third level, the business unit goals are linked to day-to-day operations of the business in term of customer satisfaction, flexibility and productivity. At the lowest level, department and work center operational criteria (quality, delivery, process time and cost) are used; which help the company to successfully implement its strategy.

Balanced scorecard which was developed by Kaplan and Norton (1992) is the most popular performance measurement system. It is a balanced performance measurement system that includes both financial and
The SMART system (Cross and Lynch, 1991).

non-financial measure. It views the business comprehensively from four different perspectives (financial, customer, innovation and learning, and internal processes) (Figure 4). The financial measures of performance are considered to be the lagged indicators of performance (that is, they are the results of action already taken) whereas the non-financial measures are leading measures of performance (that is, they are cause the business future performance). The balanced scorecard emphasizes translating the organization's strategy into a set of objectives for each of the perspective. Similarly, a performance measure is specified to achieve a specific objective. This approach allows the organization to align the business performance with its strategy, enabling it to be successful in the market place.

While presenting the Performance Prism, Neely et al. (2001) rejected the widespread belief that the performance measure should be derived from strategy and suggested that even as designing performance measurement system stakeholders should be taken into consideration before a company's strategy. The Performance Prism adopts a stakeholders-centric of performance measurement. It considers new stakeholders such as employees, suppliers, and intermediaries, which are often neglected in performance measurement.

The framework is organized around five interrelated perspectives: stakeholders satisfaction (who are our key stakeholders and what do they want and need?), strategies (what strategies do we have to put in place to satisfy the wants and needs of these key stakeholders?), processes (what critical processes do we need to operate and enhance these processes), capabilities (what capabilities do we need to operate and enhance these processes?) and stakeholder contribution (what contributions do we require from our stakeholders if we are to maintain and develop these capabilities?) (Figure 5). Answers to the question leads to a performance measurement system which can be used to create a hierarchy of measures. The business has to select a measure for each of the perspective as per its definition of the perspective.

CURRENT ISSUES IN PERFORMANCE MEASUREMENT

Despite performance measurement having undergone considerable changes which has resulted in a shift towards more integrated approaches, there remain issues in performance measurement that has hindered companies to exploit its full potential. Further discussion highlights some observations put against the integrated
The integrated performance measurement frameworks were developed with a premise that an organization's performance measurement system should be derived from its strategy. However, Neely et al. (2001) is of the opinion that performance measures should be based on stakeholder's needs and satisfactions rather than the company's strategy. This is because, if a company satisfies its multiple stakeholders (which includes investors, customers, intermediaries, employees, suppliers,
regulators, communities, pressure groups, alliance partners), only then could the long-term value of shareholders be protected.

In another study, Neely et al. (2000) criticized the different frameworks for having failed to give attention to the actual design and implementation of the performance measurement system. The advice provided by the authors with regard to the selection of measure, in his view is generic rather than specific. Nonetheless, he asserted that though the designing task is challenging, the implementation of the measures is even more challenging.

Medori (1998) is of the opinion that the frameworks give no or little consideration to the performance measurement system that may have been already in place in companies. Neely et al. (1994) claimed that managers rarely want the performance measurement system to be built from scratch; rather, they are more interested in improving the existing system.

Tangen (2004) appreciated the new frameworks for having academic and philosophical groundings; although they provide companies the guidelines to develop their unique performance measurement system but criticized these frameworks for rarely explaining the practical steps to be undertaken at the operational level.

Noci (1995) evaluated the integrated performance measurement system and noted that they lack the ability to objectively join the performance measures, they are not capable of providing timely information and they do not contribute towards creating shareholders value; therefore, they are less effective decisional tool.

Ghalayini and Noble (1996) summarized some of the limitations of the integrated performance measurement system as: 1) they are monitoring and controlling tools rather than improvement tools; 2) they do not give a mechanism to specify a time horizon to meet objectives; 3) they are not dynamic system that allows revision of performance measures, outcomes, decisions and critical areas; 4) they are concerned with present and not with future; 5) they do not provide mechanism to achieve optimization at the operational level; 6) they do not consider time to be an important performance measure and 7) they do not monitor, control and improve activates at the shop floor.

CONCLUSION

The need to measure business performance is not new but the field of performance measurement has acquired new importance, special interest and extraordinary development in the last two decades. Performance measurement systems have emerged as important management tools for implementing strategy and controlling the organization.

As performance measurement is common to many sub-areas, authors have tried to define it in relationship to their area of specialty. Even though no single definition can be agreed upon, there are certain characteristics of performance measurement on which there is a wide consensus among the authors and researchers. Performance measurement is characterized as a system which is based on multi-dimensional performance measures that are derived from organization strategy with the purpose to implement the strategy, evaluate business performance, provide feedback and ensure communication, help in creating learning environment and continuously improving the organization.

The development that performance measurement has achieved in the present era has resulted from a general discontent with traditional performance measures. Traditional measures have been criticized for being historic in nature and lagged indicators of performance that are short term oriented and ignore organization’s strategy. As a result of criticism and changes of global economy, integrated performance measurement frameworks were developed. The emergence of these frameworks was welcomed with much enthusiasm; but there are issues in them that need to be addressed to enable these frameworks to reach their full potential.

Despite the great interest in the field apparent from the number of publications, there is a lack of empirical research in the area. Most of the studies that are published are focused on development of different frameworks or qualitative analysis of the theoretical aspect of the various issues in the field. There is a great need for quantitative studies that aim to test the linkages between integrated performance measurement system and organizational performance. Businesses would venture to implement the integrated performance measurement system only if they are convinced that benefits they will achieve by implementing such a system would be more than the cost and effort that they put in designing the system. This can only be established by conducting empirical studies.

Moreover, the integrated performance measurement frameworks have much emphasis on the strategy and its implementation from the strategic managers’ point of view. The activities at the operational level and individual employee level have been ignored to a great extent. The activities at this level make it possible for the organization to achieve long term goals and create a competitive advantage. Researchers and authors have to come up with ways to cascade down the performance measures from strategy to operational level and employee level, so that organizations can measure the performance of the whole as well as in parts; thus making the performance more manageable.

REFERENCES


