

# Performance Management Methods for Construction Management

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**Abstract-** Performance management and performance measurement has been subject to a considerable amount of research and attention over the last two decades. The inadequacy of traditional financially based performance measurement systems and the introduction of nonfinancial measures have been the triggers for much of this research. The purpose of this paper is to review the performance management methods and performance measurement systems. The contemporary performance measurement frameworks are reviewed, including the Performance pyramid, Balanced Scorecard and the European Foundation for Quality Management Excellence Model.

**Keywords-** Performance management, Performance measurement, balanced scorecard, benchmarking.

## I. INTRODUCTION

Performance management is a broad concept that involves understanding and acting on the performance issues at each level of organization, from individuals, teams and departments to the organization itself. These issues include leadership, decision making, motivation, encouraging innovation and risk taking among others. Performance management is a never ending process of identifying, counting and developing the performance of human resource and synchronizing performance with the strategic goals of the enterprise. It is the systematic way of analyzing employee's strengths and weaknesses. In the construction industry's present scenario, the systematic ways of performance measurement have influenced many construction firms, government sectors, public and private clients and other project stakeholders. Performance measurement is the regular collecting and reporting of information about the inputs, efficiency and effectiveness of construction projects. They use the performance measurement to judge their project performances, both in terms of the financial and non-financial aspects and to compare and contrast the performance with others, in order to improve programme efficiency and effectiveness in their organizations. Performance measurement is an essential element in the management of construction companies. It provides the necessary information for process control, and enables the establishment of challenging and

feasible goals. It is also necessary to support the implementation of business strategies.

According to PMBOK Guide (2007), the mostly used performance measures can be grouped into one of the following six general categories:

1. Effectiveness: A process characteristic which indicates the degree to which the process output (work product) conforms to requirements.
2. Efficiency: A process characteristic which indicates the degree to which the process produces the required output at minimum resource cost.
3. Quality: The degree to which a product or service meets customer requirements and expectations.
4. Timeliness: Measures whatever a unit of work was done correctly and on time. Criteria must be established to define what constitutes timeliness for a given unit of work. The criterion is usually based on the customer requirements.
5. Productivity: The value added by the process divided by the value of the labour and capital consumed.
6. Safety: Measures the overall health of the organization and the working environment of its employees.

## II. CONTEMPORARY PERFORMANCE MANAGEMENT METHODS

### A. Performance Pyramid:

The strategic measurement analysis and reporting technique (SMART) system (also known as the performance pyramid) was developed as a result of dissatisfaction with traditional performance measures such as utilization, efficiency, productivity and other financial variances (Cross and Lynch, 1988).

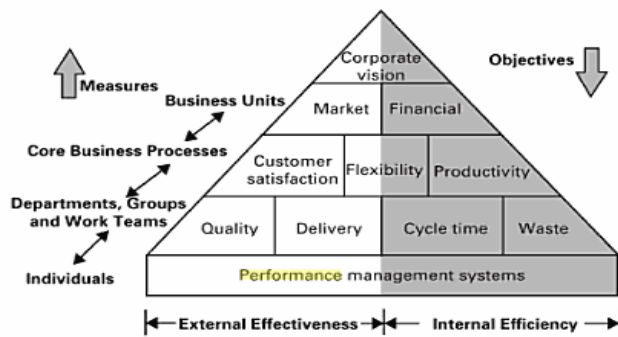


Fig.1- Smart System (Cross and Lynch, 1988)

The basic principle is a customer-oriented model linked to the company's overall strategy, with financial figures supplemented by several other key ratios of a non-financial nature (Olve et al., 1999). A representation of the SMART system is depicted in Figure 1. At the corporate vision or strategy level, management assigns a corporate portfolio role to each business unit and allocates resources to support them. At the second level, objectives for each business unit are defined in market and financial terms. At the third level, more tangible operating objectives and priorities can be defined for each business operating system in terms of customer satisfaction, flexibility and productivity. At the fourth level, being the department level; customer satisfaction, flexibility and productivity are represented by specific operational criteria in terms of quality, delivery, process time and cost.

## B. Balanced Scorecard:

The term BSC was coined in the 1990's. The balanced scorecard has evolved to be a management system (not only a measurement system) that enables organizations to clarify their vision and strategy and translate them into action. It provides feedback around both the internal business processes and external outcomes in order to continuously improve strategic performance and results. When fully deployed, the balanced scorecard transforms strategic planning from an academic exercise into the nerve center of an enterprise. Kaplan and Norton describe the innovation of the balanced scorecard as follows: "The balanced scorecard retains traditional financial measures. But financial measures tell the story of past events, an adequate story for industrial age companies for which investments in long-term capabilities and customer relationships were not critical for success. These financial measures are inadequate, however, for guiding and evaluating the journey that information age companies must make to create future value through investment in customers, suppliers, employees, processes, technology, and innovation."

This concept covers 4 perspectives:

1. **The Financial Perspective-** The aspect of financial performance has been the focus of previously followed methods of Performance measurement. This model does not disregard the traditional need for financial data. As per the BSC, timely and accurate funding data will always be a priority. But while the previous emphasis was only on financials, leading to an "unbalanced" situation with regard to other perspectives.
2. **The Learning & Growth Perspective-** This perspective encompasses the employee training and corporate cultural attitudes related to improvement of both individual and corporate. People are the primary resource in the service organizations of the construction industry. In this time and age of rapid technological development, it becomes a mandate for organizations to train and update their manpower on continual basis. Learning and growth is essential not only for the organization but also for the resource. Kaplan and Norton in their article 'Using the Balanced Scorecard as a Strategic Management system' emphasized that 'learning' is more than 'training'; it also includes things like mentors and tutors within the organization, as well as that ease of communication among workers that allows them to readily get help on a problem when it is needed. It also includes technological tools.
3. **The Business Process Perspective-** This perspective refers to internal business processes which allows managers to know how well their business is running, and whether its products and services conform to customer requirements. These metrics are unique to the company as it is dependent on the product and services that it provides.
4. **The Customer Perspective-** This perspective focuses on customer satisfaction. This metric also indicates the future trend of product & services. If customers are happy & satisfied, they would use the services again, else would migrate to competitors. In developing metrics for satisfaction, customers should be analyzed in terms of kinds of customers and the kinds of processes for which we are providing a product or service to those customer groups.

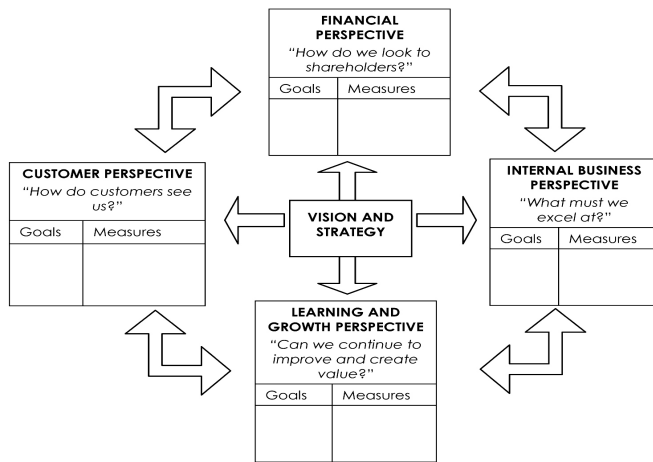


Fig.2- The Four "Balanced" Perspectives of the BSC

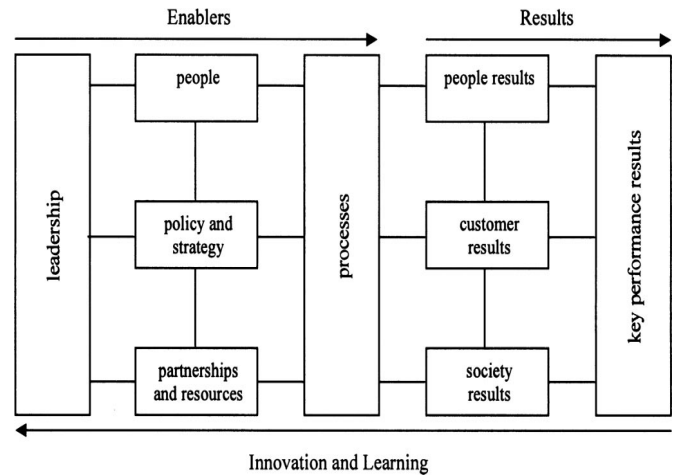


Fig. 3. The EFQM Excellence Model—2002

**C. The EFQM Excellence Model:**

The first European quality model was created in 1988 and first launched in 1991. Developed by fourteen leading European companies the objective was to promote corporate excellence as a response to the increasing competitive pressures of a global market place. The European Foundation for Quality Management's (EFQM) business excellence model highlights the necessity for a holistic approach to performance enhancement, (Open University, 2001). Its popularity has continued to grow and "by January 2003, EFQM membership had grown to around 800 organisations from most European countries and most sectors of activity," (EFQM, 2003).

The model is based upon eight fundamental concepts of sustainable excellence. They are:

1. Results Orientation
2. Customer Focus
3. Leadership and Constancy of Purpose
4. Management by Processes and Facts
5. People Development and Involvement
6. Continuous Learning, Innovation and Improvement
7. Partnership Development
8. Corporate Social Responsibility.

EFQM suggest that the "Excellence Model is a practical tool that can be used in a number of different ways:

- As a tool for self-assessment
- As a way to benchmark with other organisations
- As a guide to identify areas for improvement
- As the basis for a common vocabulary and a way of thinking
- As a structure for the organisation's management system'' (EFQM, 2006).

The model has nine criteria, broken down in to five enabling activities (leadership, people management, policy and strategy, partnership and resources and finally processes) which drive four areas of results (people results, customer results, society results and key performance results). The model also has feedback in the form of innovation and learning which stimulates leadership and the other four enablers which in turn drive results, producing more feedback and completing the continuous improvement loop. The EFQM Excellence Model is a 'live' framework where EFQM continually update the model to reflect changing business needs and management thinking.

**III. PERFORMANCE MANAGEMENT**

The objective of modern performance measurement techniques is to translate broader management ideals in to specific measurable achievements. Mainstream accounting procedures have been off-set against alternative mechanisms of key performance measurement, collectively known as Key Performance Indicators, (KPI's). It is noteworthy to comment that many companies have a large number of key performance measures of which only a few – and sometimes none – are actually adopted by management to measure performance. "It is not the number and reach of the measures that is most important. It is the relevance," (Roest, 1997). There is also a growing acceptance that for KPI's to be meaningful they need to be incorporated within a performance management system, (Beatham et al., 2004).

The word performance is widely used in all areas of management. According to Neely (2002), performance is:

- i. Measured by a number or an expression that allows communication (in management, performance is a concept multi-person)

- ii. accomplish something with a specific intent (to create value),
- iii. the result of an action (the value created, the content measured)
- iv. the ability to achieve or enhance the creation of an outcome (customer satisfaction seen as a measure of the organization potential for future sales)
- v. comparing a result, internally or externally, with some reference standard
- vi. a surprising result
- vii. a demonstration that includes both actions and operations results, as well as the observation of the performers by strangers.

Performance measurement is used as a working tool for evaluating management performance, including human resources, and formulating corporate strategy. The contemporary business environment highlights the importance of performance measurement in the expression: "If you can't measure it, you can't control it" (Niven, 2002). According to Neely et al. (1995) performance measurement is a topic which is often discussed but rarely defined. These authors state:

- Performance measurement can be defined as the process of quantifying the efficiency and effectiveness of action.
- A performance measure can be defined as a metric (or indicator) used to quantify the efficiency and/or effectiveness of an action.
- A performance measurement system can be defined as the set of metrics used to quantify both the efficiency and effectiveness of actions.

A performance measurement system can be examined at three different levels:

1. The individual performance measures;
2. The set of performance measures – the performance measurement system as an entity;
3. The relationship between the performance measurement system and the environment within which it operates.

#### IV. BENCHMARKING

The term benchmarking is the continuous process of measuring and comparing the products, services and practices with the strongest competitors or those companies recognized as industry leaders. Normally, the most successful competitors are used as a benchmark, although companies from other sectors of activity may also be used. The aim of benchmarking is, therefore, to encourage and facilitate organizational change and performance improvement through learning from others.

The definition of benchmarking includes some basic criteria that should be noted (AEP, 2006) are as follows:

- Systematic – Benchmarking is not a random method of collecting information, it is a systematic, structured step by step process that aim to evaluate the market working practices. The outputs of this process allow companies to compare their products, services and methods of working with organizations representing best practices.
- Continuous – Benchmarking is an improvement process that must be continuous to be truly effective. It can't be developed once and then neglected, thinking that the task is completed. It must be a continuous process, since the practices are continually changing
- Evaluation – The immediate objective of benchmarking is to evaluate a process and hence, necessarily, measurements are essential and constituent parts of this process
- Products, Services and Processes – Benchmarking can be applied to all business aspects. It can be applied to products and basic services, to the process to get those products and to all processes, methods and practices that constitute the support to reach the customer effectively
- Best Practices – Benchmarking process focuses on activities labelled as best practices, however, it should not be focused only in direct competitors. Benchmarking should be directed to those companies or business activities that are recognized as the best in the sector, for example, banks with regard to errors in data processing
- Improvement – Improving the organization is the ultimate goal of benchmarking. This process constitute a commitment to the principle of continuous improvement, since it allows the use of information compiled of different ways, to produce a significant effect on organizations processes.
- According to AEP (2006), the main benefits that an organization can obtain from the benchmarking process are:
  - Increase the probability of meeting the customer needs, by understanding them as a organization's process;
  - Establishment of effective objectives (targets) by forcing the organization to maintain a permanent focus on the external environment and ensuring their adaptation.
  - Achieve true productivity, through employees involvement from all levels in the resolution of the organization problems
  - Ensure competitiveness, by understanding and knowing competition and customers; v) enable implementation of best practices into processes, through learning the practices used in organizations that are recognized as the best

- Increase motivation by encouraging the organization to seek realistic goals and change existing work practices
- Facilitate internalization the need for change, by organization's human resources, giving a sense of urgency to improvement.

Moreover, benchmarking adds value to performance measurement because it allows companies to compare their data and a better decision making based on these comparisons (Beatham et al. 2004).

## V. CONCLUSION

It is generally accepted that the major goals in a construction project are cost, time and quality, although there are other more specific objectives, such as safety consideration and market entry, depending on the nature of the project and company. A variety of factors determine the success or failure of projects in terms of these objectives. The identification of the critical success factors (CSFs) for these objectives will enable limited resources of time, manpower, and money to be allocated appropriately.

The major findings of the research indicated that, construction industry is conceived to the new challenges of business environment in the pursuit of success and there is a considerable change in the perceptions of the construction companies. Traditional criteria of success such as finance and profitability which are short term yielded to long term strategic factors of success such as research and development activities, innovation capabilities, organizational learning, customer satisfaction thereby long term contributions of the individual projects to enhance the performance perspectives which have the ability to provide sustainability to the companies. Hence, a comprehensive and valid performance measurement tool can be used by construction companies to assess not only their current performance in means of retrospective terms but also to assess their future performance by prudential success factors which lead them to set strategies in the long term.

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