Basic Factors for Developing Standard Scorecard for Performance and Efficiency Measurement for Organisations

Dilip Kumar Gayen

Research Scholar of IGNOU and Industrial Engineering Consultant, New Delhi, India.

Email: ewisdelhi@yahoo.co.in

Abstract

This research study is framed for the purpose of developing suitable parameters for measuring the efficiency and performance of an organisation. Efficiency depends on how much inputs are used i.e. effective utilisation of resources through quality, process and managerial efficiency etc. to achieve the required output with customer's satisfaction with a method i.e. proper controlling and monitoring system. Performance is measured by how much or what percent of target is achieved. To develop the parameters of efficiency & performance, best worldwide practices, available literatures, and research publications are reviewed and verified by various industry experts to understand their views on correct measuring tools and validate these parameters. These parameters would assist the organisation to identify the improvement in the puny areas in the manufacturing & service sectors in process, operations, and supporting functions. There is a calculation procedures developed which would be different and it depends and differs from the manufacturing and services industries. The number of parameters for assessment also varies according to the process and operations of the organisation like automobile, engineering, SMEs, educational institutes, hospitals, power distribution organisation etc. For making the scorecard effective, the organisation would develop specific team for data collection, assessment, and scorecard-based departmental strategy making.

Keywords: Balanced Scorecard, Factors of Scorecard, Efficiency, Effectiveness, Performance Management Group (PMG), Generic Strategy, System Dynamics, MIS (Management Information System), SPC (Statistical Process Control), QC (Quality Circle), Kaizen, 6S, QM (Quality Maintenance), TQM (Total Quality Management), FTA (Fault Tree Analysis)

Introduction

Improvement in efficiency always focused on the reduction of losses, wastage i.e. non-value additions in the process & operations which improve productivity and efficiency an organisation. It has impact on the cost of production.

P (Profit) = Sales Price – Cost (Value added + Non Value added).

It has positive impact on profit. Efficiency scorecard also emphasizes the scores of business and customer's satisfaction with quality or customer drive strategy, price, delivery, and after sales services. Development of the standard scorecard is based on a business model which represents true leadership of an organisation focusing on continuous expansion and steady business development. A suitable scorecard could be used in internal self-scoring process as per the parameters. It emphasizes on not only a measurement process, but on an indicator of less and weak areas of a system for focus & improvements. The purpose of the literature review of the scorecard is to search the suitable parameters and implementation results in organisation and modifications. Newly developed scorecard includes employee satisfaction, organisation leadership & business environment relating to managerial competency, business growth and customer's satisfaction, inter-efficiency of process with external factors related to the business. Specialty of this new scorecard is its year-wise or quarter-wise review by data collection & data analysis. Any organisation may apply hypothesis testing & trend analysis through correlating the parameters and its numerical results by developing internal team or by customised software (Fig. 1).

Study and Research Objective

First, the objective of the literature review is to understand the factors which could help to develop the new parameters and also assist to added new valuable parameters to cover the major effective areas of performance of an organisation for this measurement scorecard.

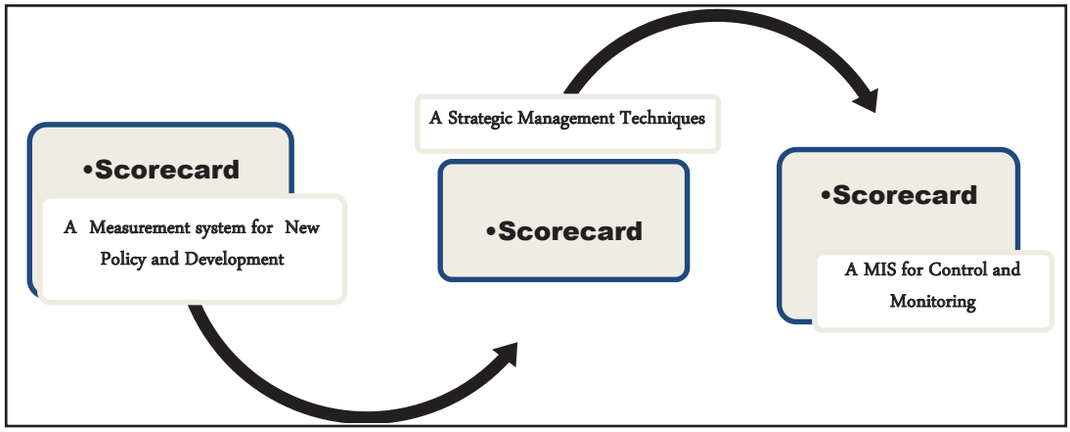

Fig. 1: Importance of Scorecard

Second, develop suitable measurement, calculation procedures and better improvement planning and strategy building by the top management. Third, it could be easily understandable process of calculations of the parameters and factors and its impact on output in an organisation can be understood with mutual impact of the parameters in the business growth & result. Fourth, it should cater to requirement of basic data or information for the measurement of performance which helps in the implementation of PDCA (Plan Do Check Act) cycle. Fifth, develop an analytical process i.e. indicator needed for measurement with periodic growth & development of an organisation. Sixth, better controlling and monitoring of important indicators through design of MIS (Management Information System) for easily identifying the variations and communicate the section or groups for corrective measures (Fig. 2).

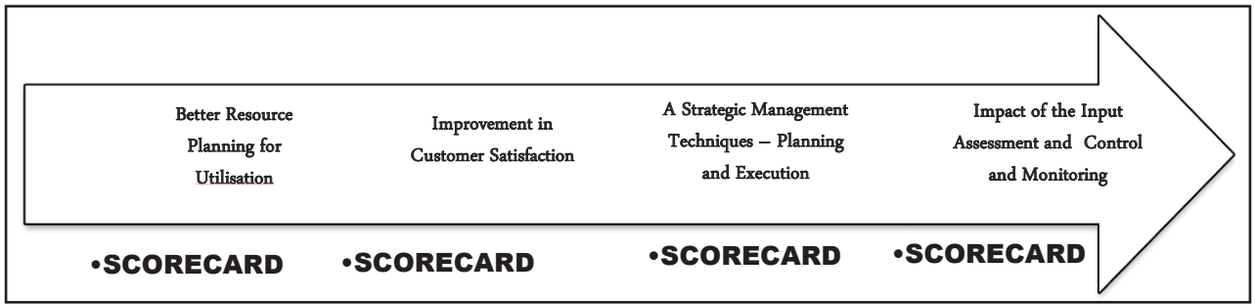

Fig. 2: Importance of Scorecard

Definition of the Scorecard

The scorecard is a management tool that provides stakeholders with a comprehensive measure of how the organisation is progressing towards the achievement of its strategic goals.

It is required for improving organisational performances in respect of cooperate mission and vision with stated target. Several models and technical tools are studied & reviewed which are internationally developed for assessment of organisational performance like BSC (Balanced Scorecard) developed by the Norton and Kaplan, Baldrige national quality programme and other organisation related studies like healthcare, community college, retail banking, insurance and call centres etc. in this study.

The perspective of the assessment scorecard (previously developed) for the organisation are various dimensions like financial results, customer satisfaction, quality of the products & services, business process, leadership, learning perspective etc..

In our study the perspectives are preferred to cover the profit/ financial result, quality, process & operation, market growth & constraints, customer and human resources and work culture of an organisation i.e. 3600 approach. For developing the scorecard and parameters we have followed the broad areas of business, customer, employee, culture, technology and leadership. Through this scorecard organisation could design the performance-

based incentive scheme which will be allocable to the employees. Use of scorecard should be multi-purpose and essential tools for the management (Chow-Chua, & Goh, 2002; Chow, Ganulin, Teknika, Haddad, & Williamson, 1998).

Constraint factors of an organisation are resources like manpower, plant & machinery, good method/ process, money and inputs/ materials. continuous improvement & sustenance areas are quality, process, business and performance which are basically controlling and monitoring of an organisation.

Various Studies on Scorecard and Organisation Efficiency

Balanced Scorecard

The balanced scorecard focuses on factors that create long-term value i.e. it identifies the factors that create long-term economic value in an organisation, for example customer focus: satisfy, retain and acquire customers in targeted segments; business processes: deliver the value proposition to targeted customers, innovative products and services. It also accounts for high-quality, flexible, and responsive operating processes, excellent post-sales support, organisational learning & growth, develop skilled, motivated employees, provide access to strategic information and align individuals and teams to business unit objectives.

Balanced scorecard must be driven from the top i.e. CEO/COO as sponsor and executive leadership team commitment. It is a clear sense of purpose which requires drive change, clarifies and gains consensus about strategy, builds a senior executive team, focuses the organisation, aligns programmes and investments, integrates cross-functionally, educates and empowers the organisation and a dynamics of the senior executive team will determine whether the scorecard becomes a strategic management system (Eccles, 1991; Hermann, Regner, Erikson, & Yang, 2000).

The Six Criteria for Measuring Organisational Performance

There is another concept. One of the first research-based, comprehensive conceptual frameworks for identifying measures of organisational performance was developed by Scott Sink and Thomas Tuttle in their 1989 book, Planning and Measurement in Your Organisation of the Future. The basis and framework includes the below criteria for measuring and evaluating organisational performance.

First: Effectiveness: It considers the "bottom line" of organisational performance for achieving the outcomes. **Second: Efficiency:** Organisational efficiency is concerned with the utilisation or consumption of resources to accomplish a task or produce an output or outcome. Resources can include personnel, materials, facilities, energy, time, and money. **Third Quality:** Quality means how closely your work and output conforms to specified requirement for "goodness." Quality could be distinct with internal and external quality. Internal quality are concerned with defective products made in production by the errors in a document, worker's low skills and mistakes which fails in completing a customer order & specifications. External quality indicates whether products and services meet customer requirements and demand. **Fourth: Timeliness:** There are three measures of timeliness in organisational performance. Cycle time is the amount of time involved in performing a specific activity. Producing a batch of goods for inventory, filling and shipping a customer order, responding to an emergency call, and resolving a client problem are examples of tasks that have cycle times. Waiting time is the time which is experienced by a customer waiting for a product or service. Completed on time has to do with whether a task is competed by a specified time, as in a due date or deadline. **Fifth: Finance:** There are many measures of financial performance. In the business world, finance focuses on measures related to profitability because it is essential to survival and growth. **Sixth: Workplace Environment:** Sometimes referred to as "organisational climate," the workplace environment includes the physical amenities in the workplace and the culture of the organisation. Physical amenities are aesthetics, employee conveniences, and safety and health conditions. The organisation's culture is made up of the values and beliefs shared collectively by personnel regarding acceptable and unacceptable behaviours in the workplace.

System Dynamics by Forrester

System dynamics is a methodology for studying and managing complex feedback systems, such as one finds in business and other social systems. System dynamics is a tool to help address complex issues involving delays, feedback, and nonlinearities.

All systems thinking approaches have to do with simplifying reality so we can deal with it more effectively.

System dynamics offers an approach in which the model resembles reality structurally, so we can review it for usefulness and consistency. Furthermore, it offers us a way to see the ramifications of that simplification through simulation, so we can test our hypotheses.

Industrial Dynamics: Forrester (1961) applied principles of cybernetics to industrial systems and system dynamics: Forrester's work has been broadened to include other social and economic systems. Relying on computer, system dynamics provides a framework in which to apply the idea of systems theory to social and economic problems.

Properties of dynamic problems contain quantities that vary over time; variability can be described causally and important causal influences can be contained within a closed system of feedback loops.

Understand Cause & Effect: Causal thinking is the key to organising ideas in a system dynamics study. Instead of 'cause', 'affect' or 'influence' can be used to describe the related components in the system. Some are logical (e.g. physics): food intakeà weight, money à happiness, fire à smoke. Some are not (e.g. sociology, economics), use of seatbelts à reduced highway fatalities, shortened daylight hours à increased suicide rates (Chow, Ganulin, Haddad, & Williamson, 1998).

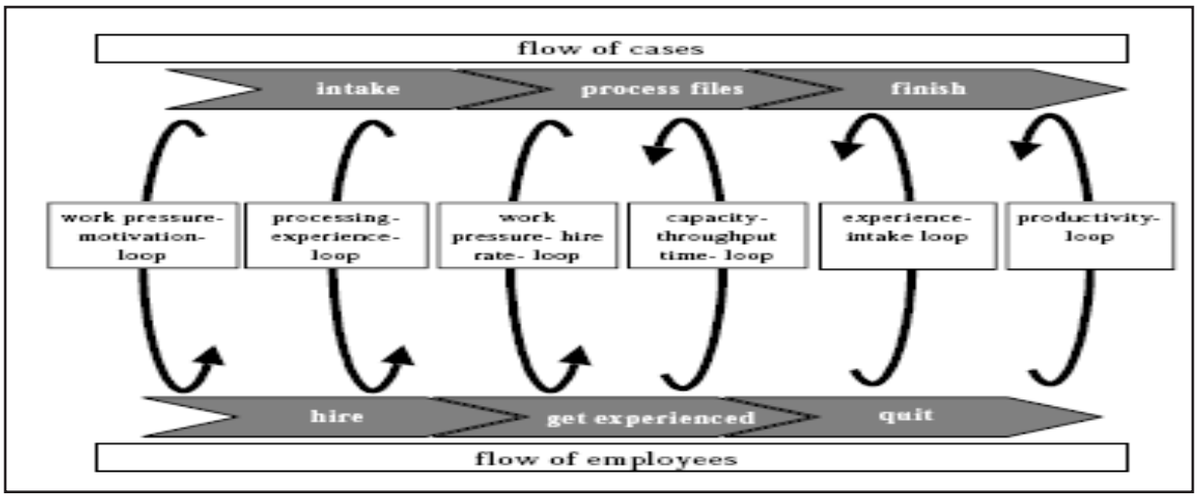

Fig. 3: Porter's Generic Strategies

Generic Strategy and the Five-Forces Model of Competition of Porter: Porter's Generic Strategies

If the primary determinant of a firm's profitability is the attractiveness of the industry in which it operates, an important secondary determinant is its position within that industry. Even though an industry may have below-average profitability, a firm that is optimally positioned can generate superior returns.

A firm positions itself by leveraging its strengths. Michael Porter has argued that a firm's strengths ultimately fall into one of two headings: cost advantage and differentiation. By applying these strengths in either a broad or narrow scope, three generic strategies result: cost leadership, differentiation, and focus. These strategies are applied at the business unit level. They are called generic strategies because they are not firm or industry dependent. Fig. 4 illustrates Porter's generic strategies:

Cost Leadership Strategy: Firms that succeed in cost leadership often have the following internal strengths. Access to the capital required making a significant investment in production assets; this investment represents a barrier to entry that many firms may not overcome. Skills in designing products for efficient manufacturing, high level of expertise in manufacturing are process engineering and efficient distribution channels (Edenius, & Hasselbladh, 2002).

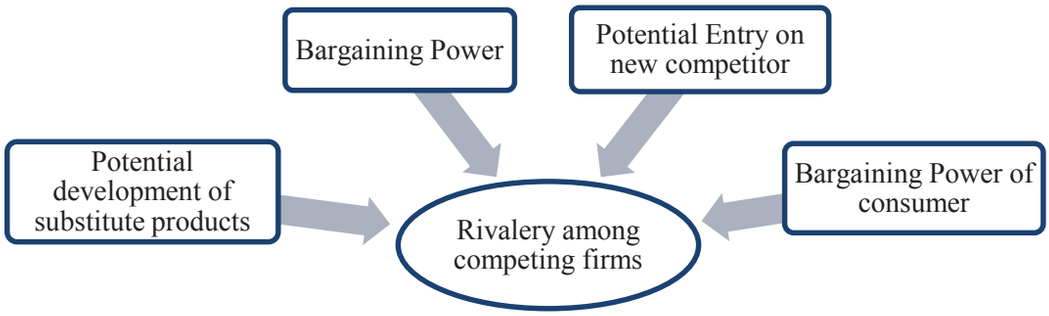

Fig. 4: The Five-Forces Model of Competition (Porter)

The Baldrige Model of Performance Excellence

The Baldrige National Quality Programme (BNQP) is a public-private partnership to improve the performance of U.S. organisations. BNQP manages the Malcolm Baldrige National Quality Award, named after Malcolm Baldrige, the 26th U.S. Secretary of Commerce. While it is most widely known for the award, BNQP also provides global leadership in promoting performance excellence and in the learning and sharing of successful performance practices, principles, and strategies. BNQP develops and disseminates the criteria for performance excellence, which is the basis for self-assessments, for giving feedback to award applicants, and for evaluating organisations for the award.

The criteria for performance excellence are the basis for granting awards and giving feedback to applicants. These are also a tool for understanding an organisation's strengths and opportunities for improvement. These are a set of expectations or requirements that define the critical factors that drive organisational success .

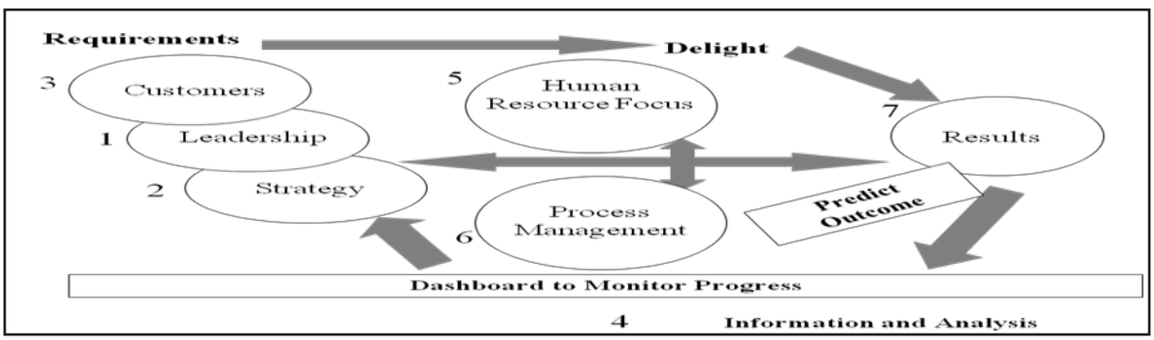

Fig. 5: Baldrige Integrated Management System

Baldrige core values and concepts are visionary leadership, customer-driven excellence, organisational and personal learning, valuing workforce and partners, agility, focus on the future, managing for innovation, management by fact, societal responsibility, focus on results and creating value, and systems perspective.

Five Points of Baldrige Performance Management Framework

First, the criteria for performance excellence provide a framework for improvement without being prescriptive. Organisations are encouraged to develop creative and flexible approaches aligned with organisational needs and to demonstrate cause-effect linkages between these approaches and their results. Second, the criteria are inclusive. While other approaches focus on a single aspect, such as leadership, strategic planning, or process management, the criteria describe an integrated management framework that addresses all the factors that define the organisation, its operations, and its results. Third, the criteria focus on common requirements, rather than procedures, tools, or techniques. Other improvement efforts (e.g., ISO, six sigma, lean manufacturing or

accreditation) may be integrated into the organisation's performance management system and included as part of a response to criteria requirements. Fourth, the criteria are adaptable. They can be used by large and small businesses, education and healthcare organisations, government and non-profit organisations, and organisations with one site or worldwide locations. Fifth, the criteria are at the leading edge of validated management practices. They are regularly improved to enhance coverage of strategy-driven performance, address the needs of all stakeholders, and accommodate important organisational needs and practices.

Baldrige has a true systems perspective – it looks at all components of an organisation with equal emphasis and focuses on how each part impacts and links with the others. It helps leaders align and integrate their leadership, strategy, customer & market focus, data analysis, knowledge management, workforce, and process management systems to produce the best overall results. Most other tools and management systems focus on one or a few of these components more than the rest. Other tools and management systems complement Baldrige and can provide more detailed guidance on how to implement the model. Using Baldrige as your management system will help you determine which of these tools will most benefit your organisation and when (Curtright, Stolp-Smith, & Edell, 2000; Eccles, 1991).

Some Research and Study Papers Published on Measurement on Performance and Efficiency

Identifying, Categorising, and Evaluating Healthcare Efficiency Measures Prepared for Healthcare Research and Quality1

The measurement of healthcare efficiency has lagged behind the measurement of healthcare quality. It provides payers, purchasers, consumers and regulators that all could benefit from the information on value for money in healthcare. Purchasers, particularly large employers have been demanding that health plans incorporate economic profiling into their products and information packages.

Despite the importance, there has not been a systematic and rigorous process to develop and improve efficiency measurement, as there has been for other domains of performance. Recognising the importance of improving efficiency measurement, the Agency for Healthcare Research and Quality (AHRQ) has sponsored this systematic review and analysis of available measures (Chow-Chua, C., & Goh, M. (2002).

Frontier Efficiency Methodologies to Measure Performance in the Insurance Industry[2]

Frontier efficiency methodologies measure the performance of a company relative to a "best practice" frontier, which (in the case of single input/ output) is determined by the most efficient companies in the industry. The efficiency score is usually standardised between 0 and 1, with the most (least) efficient firm receiving the value of 1 (0). The difference between a company's assigned value and the value of 1 can be interpreted as the company's improvement potential in terms of efficiency. Different types of efficient frontiers can be estimated. In the simplest case, a production frontier is estimated, assuming that companies minimise inputs conditional on given output levels (input- orientation) or maximize outputs conditional on given input levels (output-orientation).

Measuring the Efficiency of Service Delivery Processes: With Application to Retail Banking[3]

The Wharton Financial Institutions Centre provides a multi-disciplinary research approach to the problems and opportunities facing the financial services industry in its search for competitive excellence. The centre's research focuses on the issues related to managing risk at the firm level as well as ways to improve productivity and performance.

The efficiency of these processes is determined by using a variation of frontier estimation (DEA - Data Envelopment Analysis) techniques. The methodology is then applied to a particular service delivery process in retail banking.

[1] Identifying, Categorizing, and Evaluating Health Care Efficiency Measures Prepared for Agency for Healthcare Research and Quality, U.S. Department of Health and Human Services, 540 Gaither Road, Rockville, MD 20850

[2] Frontier Efficiency Methodologies to Measure Performance in the Insurance Industry: Overview, systematization, and recent developments, Martin Eling, & Michael Luhnen, a: Institute of Insurance Science, Ulm University, Helmholtzstra 22, 89069 Ulm, Germany, b: Institute of Insurance Economics, University of St. Gallen, Kirchlistrasse 2, 9010 St. Gallen, Switzerland

[3] Measuring the Efficiency of Service Delivery Processes: With Application to Retail Banking: by Frances X. Frei & Patrick T. Harker

The methodology allows one to address the question of how much inefficiency in a business process is due to the wrong process design, and how much is due to the right design, poorly executed. These are inputs and outputs for process efficiency measurement, the efficient banks set, the role of inputs and outputs on process efficiency, process design groups and individual bank analysis.

Efficiency of Research Performance of Australian Universities: Reappraisal using a Bootstrap Truncated Regression Approach[4]

In this paper, we analyse the technical efficiency of research performance of Australian universities for the period 2006-2009 using Simar and Wilson's (2007) DEA bootstrap procedure. In the first stage, bootstrapped DEA-variable returns to scale (VRS) model is employed to estimate the technical efficiency of research output in Australian universities. In the second stage, the bootstrap DEA scores are regressed against a set of environmental variables using a truncated regression analysis.

$$\hat{\theta}_i = \min\left\{\theta > 0 \middle| y_i \leq \sum_{i=1}^{n} y_i \lambda_i;\ \ \theta_x \geq \sum_{i=1}^{n} x_i \lambda_i;\ \ \sum_{i=1}^{n} \lambda_i = 1;\ \ \lambda_i \geq 0\right\},$$

$$i = 1, \ldots n\ firms$$

where y_i is a vector of outputs, x_i is a vector of inputs, and λ is a I x 1 vector of constants.

The value obtained for θ is the technical efficiency score for the ith university. A measure of θ = 1 indicates that the university is technically efficient, whereas it is inefficient if θ < 1. This linear programming problem must be solved n times, once for each university in the sample.

Efficiency in Healthcare5

It refers to the meaning, measuring and about its use for value-based purchasing.

Measure development strategy: It is to develop measures that relate to the desired output of healthcare: healthcare outcomes and the cost of the outcome. This is the preferred alternative to measuring units of service such as days of hospitalisation or numbers of visits. This will create incentives for the delivery system to create superior health outcomes rather than to manage units. Use a mix of local and top down approaches in measure development.

Methods of this study include developing more transparent physician attribution algorithms for fee for service or loosely managed network environments and for creating implementation rules for attribution and cost analysis so that all physician and hospital measures could be standardised to a common scale. Develop the accepted, standard methods for addressing cost outliers. It is for developing a crosswalk of measures used by presenters at this conference, including the AQA endorsed measures, and the RAND typology. It also to develop composite measure methods that is more reflective of multi-dimensional care than are the current single stand alone item measures and identifying the approaches to correlate reimbursement amounts to level of quality in a manner that is fair and equitable.

Measuring Efficiency in the Community College Sector[6]

Economic analysis of college operations is outputs of the community college system measured in terms of awards conferred and key assumptions about award-based outputs. College costs consist of student input, student tuition payments and scholarships, capital assets, regional price variations, inflation, expenditures unrelated to measured outputs, expenditures matched with outputs, cross-subsidies.

Measurement of the efficiency of community colleges through output, costs, output and efficiency trends, validity are the issues.

Managing and Measuring for Value: The Case of Call Centre Performance[7]

The following section summarises the findings of how the case study call centres measured their performance in each of these four areas: operational efficiency, customer

[4] Efficiency of Research Performance of Australian Universities: A Reappraisal using a Bootstrap Truncated Regression Approach, Boon L. Lee; School of Economics and Finance, Queensland University of Technology, GPO Box2434, Brisbane, QLD 4001, Australia (Email: bl.lee@qut.edu.au)

[5] Efficiency in Health Care: Prepared by Academy Health; Co-sponsored by the Agency for Healthcare Research and Quality and The Employer Health Care Alliance Cooperative (The Alliance)

[6] Measuring Efficiency in the Community College Sector: Clive R. Belfield. Queens College, The City University of New York: April 2012

[7] Managing And Measuring For Value: The Case of Call Centre Performance

satisfaction, service quality, employee satisfaction, as well as the overall approach they used.

Operational efficiency measures of all case study call centres tracked the classical operational efficiency measures. The most commonly measured efficiency indicators include number of calls, average talk time, average speed of answer and queuing time and abandonment rate. It measures on customer satisfaction, service quality, employee satisfaction, and measurement approaches.

Efficiency in Banking[8]

Banking technology and performance are for empirical measurement of banking technology and performance. The structural approach to bank efficiency measurement: cost minimisation, profit maximisation, and managerial utility maximisation, the non-structural approach to bank efficiency measurement with specifying outputs and inputs in structural models of production. Specifying capital structure in performance equations and Specifying output quality in the performance equation.

Applications of the structural approach is performance in relation to organisational form, governance, regulation, and market discipline and Uncovering evidence of scale economies by accounting for risk and capital structure.

Applications of the non-structural approach is for measuring the value of investment opportunities ("charter value"), measuring the performance of business and capital strategies, relationship of ownership structure to bank value and relationship of mergers and takeovers to bank value. Basis of developing efficiency parameters of developing the parameters is resource utilisation, financial strength/ result, effectiveness of products and services with efficient utilisation, evaluation of utilisation production, process, plant & machinery. In developmental and sustenance, it includes corporate leadership, organisational work culture, SWOT analysis, maintenance, corporate strategy and managerial efficiency.

Research Methodology

The methodology applied to develop the model could be called action research (fact findings to improve the quality of action) or exploratory research (getting more information on a topic) and comparative research (obtaining similarities and differences between methods, techniques etc.) employing well known and accepted theories and principles and study the target industries. Methodology used for this research study are selection of a research topic, definition of the study and research areas, literature review & reference collection, assessment of current status of the topic chosen, study and data collection on the research subject, validation and its testing of the parameters, study exploration and data analysis, interpretation of result and corrective action on it. For validation and justification of the parameters, suggestions and opinions are collected from Industry and from quality guru and management expert.

[8] Efficiency in Banking: Theory, Practice, and Evidence: Joseph P. Hughes: Rutgers University and Loretta J. Mester: Federal Reserve Bank of Philadelphia and The Wharton School, University of Pennsylvania; January 2008: Prepared for the Oxford Handbook of Banking

Table 1: Response sheet from the Executives from Industry about the Importance of Parameters

S. No.	FACTORS	Factors of Measurement	Measurement areas	Clarifications (Purpose/ Importance of this Measurement)	Response (ü)				
					Valid	Not Valid	If, not Valid		
							It is not understood	Data not available	Employee not Trained
1	Factor - X1	Corporate Leadership	New Business Initiatives	Continuous Growth and Progress of the Organisation and new Business areas					
			Customer's Satisfaction Level / Index	Feedback of the Products and Services with Improvement in Business or Operation or Activities					
			Employee Satisfaction Index	Employee Satisfaction about the Organisation and their Work					
			Business/ Operational Process Management	Strategy about Business/ Operational Improvements / Development of System					
			Corporate/ Organisational Values	Assessment of Brand Value with Level of Brand in Comparison with Competitor					

2	Factor - X2	Employee Development	Employees Performance Level	Most Important Calculation for Employee utilization with Cost					
			Motivation	For Better Performance of the Employee					
			Potentiality and Competency of Employee	To Assess and Improve the Performance – Departmental and Individual					
			Learning and Training perspective	For Better Performance and Improve Competency					
			Employee Development Policy	For Better work Culture					
3	Factor - X3	Organizational Work Culture	Employer Employee Relationship	Better Performance and Team Building					
			Internal Communication System	Better Performance and Execution					
			Quality Management Initiative	Quality in Output and Execution					
			Worker's/ Staff's Participation in Management	Better Feedback about the Execution and Problems, Improve in Performance in Working with Better Improvement Planning and Strategy					
			Knowledge Management	Better Employee Motivation					
			Performance Measurement System	Orgnisational Growth and Performance Monitoring					
			Incentive and Award Scheme	Employee Motivation					
4	Factor - X4	SWOT Analysis	Advantage of the Sector, Economies of Scale, Product Advn. / Disadvn. etc.	Better Business Planning with Strategy, Vision and Mission (Strength, Opportunity, Weakness and Threat)					
5	Factor - X5	Financial Strength	Analysis of P/L Account and Balance Sheet of Min. last 5 years / or available	Improvement in Business in Competitiveness with Advantage in Economy					
			Ratio Analysis	Assessment of Return from Shareholder's Money					
			Market Value and Market Capitalization	Growth and Trend in the Market					
			Operating Ratio	Control, Monitor and Reduction in Operating Cost					
			Gross Profit Ratio	Increase in Gross Profit in Comparison with Sales					
6	Factor - X6	Effective Products and Services	Market Survey and Analysis about the Products and Services	Feedback for Scope of Improvement in the Product's and Services					
			Customer/ Consumers' Satisfaction, Expectation and feedback	Improve in Customer's Choice					
			Product Diversification	Better Products launch in the Market with Better Option of the Products					
			Customer's awareness	Better Concept and wrathfulness about the Products and Organisation					
			Analysis of the Customer/ Consumers' Behavior	Purpose of Customer's choice of your Products and loyalty (if any)					

7	Factor - X7	Evaluation of Production, Process, Quality, Plant & Machinery	Adoption of new Technology	Improve Competitiveness, Efficiency, Capacity and More Production as per the Customers' Demand					
			Development of the Process and Methods	Use Value Engineering and Process Modifications					
			Quality and Inspection Procedures	For Quality Improvement and Customer's Satisfaction					
			Process Capacity Study	For Consistency in Quality and Output					
			Rate of Reduction of Production losses and Production Cost	More Reduction in Losses and Improvement in Efficiency					
			Process Modification and Process Reengineering	Improve in Process Capacity and Reduction in Cost and Better Delivery to the Customer					
			Improvement in Productivity	Productivity and Performance Improvement and Reduction in Cost					
			Maintain the Working condition	For Maintaining Level of Output					
			Maintenance of Plant and Machinery	Follow up and Improvement of the Plant Efficiency					
			Improvement Culture in the Plant - Innovations	Reduction Process Loss and Shop Floor Improvement					
8	Factor - X8	Corporate Strategy and Managerial Efficiency	Future Growth plan	Planned Investment and Growth Plan					
			Org. Quality Policy	Improvement in Quality in Work and Output					
			Re-Engineering Policy	Process Improvement in Capacity and Utilisation					
			Org. Efficiency Improvement	For Sustain in Business and Stability					
			Learning	Innovations and Better Value Addition					
			Planned HR Interventions	Better HR Practices for Employee Performance and Efficiency					

Table 2: Validation of the parameters of the Scorecard

S. No.	FACTORS	Name of the FACTORS	Literature References	Research Study References
1	Factor - X1	Corporate Leadership	Generic Strategy and The Five-Forces Model of Competition of PORTER System Dynamics By Forrester, 1961 Malcolm Baldrige Criteria for Performance Excellence, mid 1980s	
2	Factor - X2	Employee Development	Kaplan and Norton model (1996) Malcolm Baldrige Criteria for Performance Excellence, mid 1980s	Managing And Measuring For Value: The Case of Call Centre Performance By Bernard Marr and Andy Neely: Centre for Business Performance, Cranfield School of Management; Cranfield, Bedfordshire MK43 0AL, Great Britain
3	Factor - X3	Organizational Work Culture	Scott Sink and Thomas Tuttle in their 1989 book, Planning and Measurement in Your Organization of the Future	
4	Factor - X4	SWOT Analysis	Generic Strategy and The Five-Forces Model of Competition of PORTER Malcolm Baldrige Criteria for Performance Excellence, mid 1980s	

5	Factor - X5	Financial Strength, Economy in the Cost of Products and Services	Kaplan and Norton model (1996) Scott Sink and Thomas Tuttle in their 1989 book, Planning and Measurement in Your Organization of the Future	TECHNIQUES FOR MEASURING EFFICIENCY HEALTH SERVICES, Stuart Peacock, Chris Chan, Melvino Mangolini, Dale Johasen
6	Factor - X6	Effectiveness of Products and/ or Services	Kaplan and Norton model (1996) Scott Sink and Thomas Tuttle in their 1989 book, Planning and Measurement in Your Organization of the Future Malcolm Baldrige Criteria for Performance Excellence, mid 1980s	*MEASURING THE EFFICIENCY OF SERVICE DELIVERY PROCESSES: WITH APPLICATION TO RETAIL BANKING: B*y Frances X. Frei & Patrick T. Harker MANAGING AND MEASURING FOR VALUE: The Case of Call Centre Performance *By Bernard Marr and Andy Neely: Centre for Business Performance, Cranfield School of Management; Cranfield, Bedfordshire MK43 0AL, Great Britain*
7	Factor - X7	Evaluation of Manufacturing Or Primary Services	Kaplan and Norton model (1996) Scott Sink and Thomas Tuttle in their 1989 book, Planning and Measurement in Your Organization of the Future	
8	Factor - X8	Corporate Strategy and Managerial Efficiency	Generic Strategy and The Five-Forces Model of Competition of PORTER System Dynamics By Forrester, 1961 Malcolm Baldrige Criteria for Performance Excellence, mid 1980s	

Study Outcome on the Factors of the New Developed Scorecard

Factors are defined after study of the various models, theories and researches. The objectives of the factors are the developmental and sustenance i.e. continuous the growth and progress of the organisation, resources – inputs & manpower, maintenance – control and monitoring of the organisation. The number of sub factors or parameters is decided depending on the importance of the factors with all important areas related to the Factors.

Factor - X1: Corporate Leadership: This factor is related to the areas controlled by top management and planning & policy makers. These are new business initiatives, rate of growth and its progress of the organisation, customer's satisfaction level / index etc., feedback of the products and services with improvement in business or operation or activities etc.

Factor - X2: Employee Development: This factor relates employees' performance level, the most important calculation for employee utilisation with cost, motivation, potentiality and competency of employee, learning and training perspective, employee development policy for better work culture.

Factor - X3: Organisational Work Culture: The purpose of this factor is related to employer-employee relationship for better performance and team building, internal communication system for better performance and execution, quality in output and execution, better feedback about the execution and problems, improve in performance in working with better improvement planning and strategy, knowledge management, better employee motivation, performance measurement system, organisational growth and performance monitoring, incentive and award scheme, employee motivation.

Factor - X4: SWOT Analysis: Advantage of the sector, economies of scale, product advantage or disadvantage etc. for better business planning with strategy, vision and mission, improvement in business in competitiveness with advantage in economy.

Factor - X5: Financial Strength/ Result: Analysis of P/L account and balance sheet of min. last 5 years, ratio analysis, assessment of return from shareholder's money, market value and market capitalisation, growth and trend in the market etc. through operating ratio, gross profit ratio.

Factor - X6: Effective Products And Services: The purpose of this factor includes market survey and

analysis about the products and services, feedback for scope of improvement in the products and services, customer/ consumers' satisfaction, expectation and feedback, improve in customer's choice etc. Product diversification, customer's awareness, analysis of the customer/ consumers' behaviour etc. are the targets for these parameters.

Factor - X7: Evaluation Of Production, Process, Quality, Plant & Machinery: The purposes of this factor are improvement and assessment of the plant-related adoption of new technology, improved competitiveness, efficiency, capacity and more production as per the customers' demand, use of value engineering and process modifications, quality and inspection procedures, for quality improvement and customer's satisfaction, process capacity study, for consistency in quality and output, rate of reduction of production losses and production cost, more reduction in losses and improvement in efficiency, process modification and process reengineering, improvement in process capacity and reduction in cost and better delivery to the customer, improvement in productivity, productivity and performance improvement and reduction in cost, maintain the working condition, for maintaining level of output, maintenance of plant and machinery, follow up and improvement of the plant efficiency, improvement of culture in the plant – innovations, reduction process loss and shop floor improvement.

Factor - X8: Corporate Strategy And Managerial Efficiency: The purposes of this factor are future growth plan, planned investment and growth plan, orgainsational quality policy, improvement in quality in work and output, re-engineering policy, process improvement in capacity and utilisation, org. efficiency improvement, for sustain in business and stability, learning, innovations and better value addition, planned HR interventions, better HR practices for employee performance and efficiency.

Name Factors for Measurement of the Organisation Performance and Efficiency Scorecard

The above parameters are developed as a result of long term study experiences of various industries in the related areas, research studies, review of literatures and guidance from industrial experts and gurus (Fig. 6). The evaluation of manufacturing - production, process, plant & machinery is mentioned in Table 3.

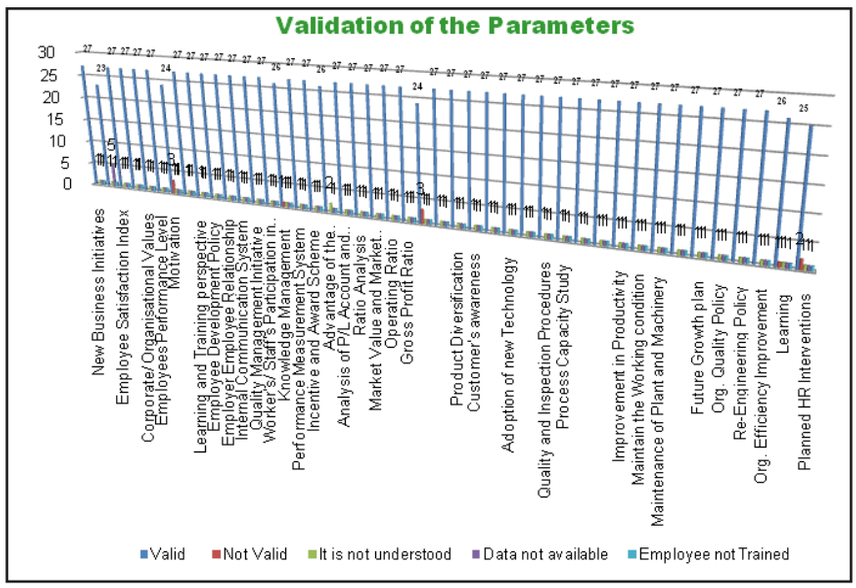

Fig. 6: Validation of the Parameters from various levels of Individuals in Industry

Table 3: Evaluation of Manufacturing - Production, Process, Plant & Machinery

S. No.	Name of the FACTORS	Measurement Areas	Areas Covered for an Organisation	% of Total Score
1	Factor - X1	Corporate Leadership	Managerial Efficiency	10%
2	Factor - X2	Employee Development	Resources – Utilisation of Manpower	11%
3	Factor - X3	Organisational Work Culture	Working Environment	15%
4	Factor - X4	SWOT Analysis	Business Environment and Competition	8%
5	Factor - X5	Financial Strength	Business Result or Performances	11%
6	Factor - X6	Effectiveness of Products and/ or Services	Manufacturing and Production Efficiency and Developmental aspects of an Organisation	11%
7	Factor - X7	Evaluation of Manufacturing or Primary Services	Customer Satisfaction and Service Efficiency	21%
8	Factor - X8	Corporate Strategy and Managerial Efficiency	Organisation Strategy and Maintenance	13%

Formulas of Calculation of the Factors' Efficiency in the Developed Model

$Y = F(X_1 + X_1 + \ldots + X_8)$

where Y = Output or Total Score Achieved, X = Factor of Assessment, Input Factors

Performance (Y) i.e. Output is the Combination / result of different Inputs of Internal Improvements.

a. Total Efficiency Score = ∑Factor X1 X ∑Factor X2 X ∑Factor X3 X ∑Factor X4 X ∑Factor X5 X ∑Factor X6 X ∑Factor X7 X ∑Factor X8

TOTAL PERFORMANCE SCORE = ∑Factor X1 + ∑Factor X2 + ∑Factor X3 + ∑Factor X4 + ∑Factor X5 + ∑Factor X6 + ∑Factor X7 + ∑Factor X8

b. Details of the Factors Scores

Total Score of Factor X1 (Corporate Leadership) = ∑(C1+C2+C3+C4+C5)

Total Score of Factor X2 (Employee Development) = ∑(ED1+ ED2+ ED3+ ED4+ ED5)

Total Score of Factor X3 (Organisational Work Culture) = ∑(OC1+ OC2+ OC3+ OC4+ OC5+ OC6+ OC7)

Total Score of Factor X4 (SWOT Analysis) = ∑(SW1 + SW2 + SW3 + SW4)

Total Score of Factor X5 (Financial Strength) = ∑(F1+ F2+ F3+F4 + F5)

Total Score of Factor X6 (Effectiveness of Products and Services) = ∑(P1+ P2+ P3+ P4+ P5)

Total Score of Factor X7 (Evaluation of Production, Process, Plant and Machinery) = ∑(E1+E2+ E3+ E4+ E5+ E6+ E7+ E8+ E9 + E10)

Total Score of Factor X8 (Corporate Strategy and Managerial Efficiency) = ∑(CS1+ CS2+ CS3+ CS4+ CS5+ CS6)

Name and Description of Factors for the Performance and Efficiency Measurement derived from the Study

Table 4: Format for Assessment of the Factors according their Importance

S. No.	Name of the Factors	Factors of Measurement	Factor's objective	Ranking Option - I	Ranking Option - II
1	Factor - X1	Corporate Leadership	Developmental and Sustenance		

2	Factor - X2	Employee Development	Resources		
3	Factor - X3	Organisational Work Culture	Developmental and Sustenance		
4	Factor - X4	SWOT Analysis	Developmental and Sustenance		
5	Factor - X5	Financial Strength	Resources		
6	Factor - X6	Effectiveness of Products and/ or Services	Resources		
7	Factor - X7	Evaluation of Manufacturing Or Primary Services	Resources		
8	Factor - X8	Corporate Strategy and Managerial Efficiency	Maintenance		

Table 5: Description of Factors for the Performance and Efficiency Measurement

S. No.	FACTORS	Factors of Measurement	Measurement areas	Parameter Code	Clarifications (Purpose/ Importance of this Measurement)	Measurement	Agency/ Group for Calculation with Source of Data and Information
1	Factor - X1	Corporate Leadership	New Business Initiatives	**C1**	Rate of Growth and it's Progress of the Organisation	Old / New Business areas or Additions of New Profitable Products or Services in the Calculative units	Internal PMG Group / Department
			Customer's Satisfaction Level / Index	**C2**	Feedback of the Products and Services with Improvement in Business or Operation or Activities	3rd Party Survey Result of Customer's Feedback (may be an Internal Process with Feedback Formulation)	From any External Agency
			Employee Satisfaction Index	**C3**	Employee Satisfaction about the Organisation and their Work	3rd Party or Internal Assessment Procedures	Third Party Assessment/ By Consultant
			Business/ Operational Process Management	C4	Strategy about Business/ Operational Improvements / Development of System	Increase in the Volume of the Business/ Activities (in comparison with the Market Growth). BPM - Business Process Management	Jointly Internal Group / Department
			Corporate/ Organisational Values	**C5**	Assessment of Brand Value with Level of Brand in Comparison with Competitor	Promotion of the Corporate Brand Name. Social Responsibility	External Agency
2	Factor - X2	Employee Development	Employees Performance Level	**ED1**	Most Important Calculation for Employee utilisation with Payment	Increase in the EPI - Employee Performance Index	Internal Assessment with PMG
			Motivation	ED2	For Better Performance of the Employee	Level of Motivation	External Agency with PMG
			Potentiality and Competency of Employee	**ED3**	To Assess and Improve the Performance – Departmental and Individual	Level of Competency	External Agency with PMG
			Learning and Training perspective	**ED4**	For Better Performance and Improve Competency	Learning and Training Initiatives, Competency Based Training to the Employees	Internal Departments
			Employee Development Policy	**ED5**	For Better work Culture	Improve in the HRD Climate	HR Department

3	Factor - X3	Organisational Work Culture	Employer Employee Relationship	**OC1**	Better Performance and Team Building	Works councils, Employee shareholders, Autonomous work groups, Team working etc.	Top Management with PMG
			Internal Communication System	**OC2**	Better Performance and Execution	Development in the Internal Communication and Feedback	HR Department
			Quality Management Initiative	**OC3**	Quality in Output and Execution	Application in QMS	External Agency with PMG
			Worker's/ Staff's Participation in Management	**OC4**	Better Feedback about the Execution and Problems, Improve in Performance in Working with Better Improvement Planning and Strategy	Organisation-wise Developmental Feedback. Like KAISEN scheme etc. Initiated by the Org.	Top Management with PMG
			Knowledge Management	**OC5**	Better Employee Motivation	Career Planning with Policy under HR Policy	HR Department
			Performance Measurement System	**OC6**	Organisational Growth and Performance Monitoring	Structured PMS in the ERP or in the Organisation System	External Agency with PMG
			Incentive and Award Scheme	**OC7**	Employee Motivation	Performance Linked Incentive and / or Employee Reward Scheme	HR Department
4	Factor - X4	SWOT Analysis	Advantage of the Sector, Economies of Scale, Product Advantage /Disadvantage etc.	**SW**	Better Business Planning as per the Strategy, Vision and Mission	SWOT Analysis of the Business and Industry and relates with Action Plan	External Agency with PMG
5	Factor - X5	Financial Strength	Analysis of P/L Account and Balance Sheet of Min. last 5 years / or available	**F1**	Improvement in Business in Competitiveness with Advantage in Economy	Business Prospect Analysis. New areas of Investment etc.	Fin. & Accounts Department
			Ratio Analysis	**F2**	Assessment of Return from Shareholder's Money	ROI from the Investment	Fin. & Accounts Department
			Market Value and Market Capitalisation	**F3**	Growth and Trend in the Market	Trend of Market Value of the Shares etc.	Fin. & Accounts Department
			Operating Ratio	**F4**	Control, Monitor and Reduction in Operation Cost	Net Profit from Business/ Sales or Revenue	Fin. & Accounts Department
			Gross Profit Ratio	**F5**	Increase in Gross Profit in Comparison with Sales	Gross profit to Sales	Fin. & Accounts Department
6	Factor - X6	Effective Products and Services	Market Survey and Analysis about the Products and Services	**P1**	Feedback for Scope of Improvement in the Product's and Services	Structured Market Survey with Trend Analysis	External Agency with PMG
			Customer/ Consumers' Satisfaction, Expectation and feedback	**P2**	Improve in Customer's Choice	Periodic Customer's Product's and Service's Feedback and Suggestions	External Agency with PMG
			Product Diversification	**P3**	Better Products launch in the Market with Better Option of the Products	Initiatives on Product Diversifications and Value additions	Business Dev./ Marketing Dept.
			Customer's awareness	**P4**	Better Concept and wrathfulness about the Products and Organisation	Product awareness among the customers	Internal Group - Business Dev./ Marketing Dept.
			Analysis of the Customer/ Consumers' Behaviour	**P5**	Purpose of Customer's choice of your Products and loyalty (if any)	Customer's Attitude to the Product's / Services	Internal Group - Business Dev./ Marketing Dept. with PMG

7	Factor - X7	Evaluation of Production, Process, Quality, Plant & Machinery	Adoption of new Technology	**E1**	Improve Competitiveness, Efficiency, Capacity and More Production as per the Customers' Demand	Technological - Change, Innovations and Adoption in the Organisation	Production Department with PMG
			Development of the Process and Methods	**E2**	*Use Value Engineering and Process Modifications*	Process Modification / Reduction in VA, BVA and NVA	External Agency with PMG
			Quality and Inspection Procedures	**E3**	For Quality Improvement and Customer's Satisfaction	Quality Improvement Procedures. No. of QC Tools are Implemented. Existing PPM level – KANBAN	Quality Department with PMG
			Process Capacity Study	**E4**	For Consistency in Quality and Output	Process Capacity Estimation Tools Application and Data Collection for Analysis. Use of Statistical Analysis Tools	Production/ Quality Department with PMG
			Rate of Reduction of Production losses and Production Cost	**E5**	More Reduction in Losses and Improvement in Efficiency	Reduction in the Wastages and Losses. Reduction in Cost of Production	Production/ Operation/ Quality Dept. with External Agency and PMG
			Process Modification and Process Reengineering	**E6**	Improve in Process Capacity and Reduction in Cost and Better Delivery to the Customer	Process Modification and Re-engineering/ BPR etc.	External Agency with PMG
			Improvement in Productivity	**E7**	Productivity and Performance Improvement and Reduction in Cost	Productivity and Performance Improvement, Production Norms etc.	Production Department with PMG
			Maintain the Working condition	**E8**	For Maintaining Level of Output	Cooperation among the Employees and Management – SMT (Self Management Team)	Production & Maintenance with PMG
			Maintenance of Plant and Machinery	**E9**	Follow up and Improvement of the Plant Efficiency	Plant Efficiency Level and OEE & OPE	Maintenance with PMG
			Improvement Culture in the Plant - Innovations	E10	Reduction Process Loss and Shop Floor Improvement	No. of Innovations by the Workers and Team Planned Implementation of the Effective Improvements Tools and Techniques like – 5S, Kaizen, Tools of 7QC Tools	Production & Maintenance with PMG
8	Factor - X8	Corporate Strategy and Managerial Efficiency	Future Growth plan	**CS1**	Planned Investment and Growth Plan	Market Based Growth Planning	Top Management
			Org. Quality Policy	**CS2**	Improvement in Quality in Work and Output	Application of TQM - Total Quality Management	Top Management with External Agency
			Re-Engineering Policy	**CS3**	Process Improvement in Capacity and Utilisation	BPM, Internal Business Process	Top Management with External Agency
			Org. Efficiency Improvement	**CS4**	For Sustain in Business and Stability	Improve in Effectiveness and Efficiency	Top Management with External Agency
			Learning	**CS5**	Innovations and Better Value Addition	Make the Org. As an Learning Organisation	Top Management
			Planned HR Interventions	**CS6**	Better HR Practices for Employee Performance and Efficiency	No. of Planned Interventions	Top Management with HR Department

The above mentioned areas could be customised before use by any organisation.

Conclusion

The best use of scorecard for an organisation would depend on many dimensions these are better controlling and monitoring of the departmental activities and performance. It is for better and efficient utilisation of internal resources like manpower, plant & machineries, input materials etc. Implementation of scorecard is for periodic assessment of your system which is for competitiveness and sustainability of the organisation as best performer. It focuses on reduction losses & wastages i.e. in non-value added activities in the process which could not be identified easily; low score in the assessment indicates management about the process loss which has direct impact on profit. It is a structural management information system of an organisation which connects other sections of department's performance of their MIS. This scorecard requires various data, records and use of statistical tools to analyse which enables the management for review, parameters trend, retrieve, process control i.e. process control - SPC for sustainability. This scorecard also includes the use of technical tools like QC, Kaizen, 6S, QM, TQM, FTA etc. for system improvement and practice which could make an organisation world class performer. To adopt the performance scorecard, top management of an organisation should be actively involved to improve low scored parameters, modify the system, and motivate internal people for their more engagement for betterment of their organisation. This scorecard also emphasizes on better quality, process reengineering and leadership quality other than most emphasis on financial results. For continuous improvement, customer driven quality, efficiency & sustainability, employee motivation for internal quality, practice quality on daily basis and continuous improvement, this scorecard could be useful for any business entity. There is more scope of research in future in these areas like minimising the number of parameters, better statistical analysis, and after score improvement planning.

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