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Conceptual Framework of Performance Evaluation

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ABSTRACT

In the ever changing business world performance evaluation is of immense importance to the managers. Performance evaluation of an organisation is a systematic process for obtaining valid information about the functional indicators which affect the objective of the organisation. In literature a number of evaluation methods are available. However, the quantitative methods relating the performance indicators of the objective with the indicators important at the departmental level are not many. In this paper a frame work has been suggested which not only takes care of the relationship between the functional indicators and the indicator at the organisation level but also the inter-relationship among the various measures.

Importance of performance and its Evaluation

Performance is of utmost importance to the directors, chief executives, managers, and supervisors of a company. The corporate world remains with improving the performance of a company continuously. With globalization of Indian economy, the business environment is changing fast exceedingly competitive. In such a changing scenario top level executives of public sector organizations are held responsible and accountable for the performance of their organizations. Rapidly increasing completion has forced the management to monitor the way their key personnel work and motivate their subordinates to play a deceive role in achieving excellence, so that the employees realize the significance of their contribution to the overall objective of the organization.

Objectives give direction to an organization. The performance of an organization has to be evaluated against its goal and objectives. Therefore, objectives must be set before any process of evaluation is initiated and implemented. The company objectives according to prominent authors, Drucker (1958), Humble (1966) Chritofer (1977), Forbes (1963), Ericson (1966) and Heath (1978) can be grouped in the following categories:

a. Profitability
b. Productivity
c. Market standing
d. Financial and physical resource utilization
e. Growth

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f. Innovation
g. Worker performance
h. Public responsibility

In any organization the management generally, lays emphasis on one or more of the above objectives. For example, in a research organization innovation would be given more importance than profit or productivity. Some organization may forego profit to capture a larger market share and thus have market standing as their main objective. Still other well established companies may lay equal emphasis on profit and innovation to remain both competitive and economically viable. The thrust areas vary from time to time depending on the situation or special circumstances of a company. In any organization, performance measurement, evaluation, and control are critical components of its general management process.

LITERATURE REVIEW

The organizations have developed control system for various functional areas like finance, production. material, quality, personnel, marketing, etc., in terms of various performance measures like cost, price, capacity utilization, inventory level etc. Every manager in one form or another, monitors, evaluates, and controls one or more of the performance indicators, in a manner he thinks best in the interest of the organization. But this belief may or may not be valid. An effective measurement and feedback system is invaluable for an effective planning process and improved performance, (Rossler and sink 1990, Somers et al 1987).

Every organization is unique in terms of its goals, objectives and strategies adopted to achieve them. Temporal, spatial, or valuation in congruency exists among different organizations (Mohanty and Rastogi 1986). Therefore, no one set of variables is suitable for evaluating the performance of all organizations. The performance measures which are suitable in one organization are not suitable in another. They may, in fact be counterproductive (Gold1985). Moreover, today's organizations are facing far more dynamic political, economic, and social environment, in which, many business factors, such as; the cost of capital, external regulations and interference, technology, employee values and attitudes are becoming more critical, and therefore, becoming more critical, and therefore more difficult to manage. Hence, a better a better strategic management is a must. Thus it becomes extremely important to design and develop an effective efficient measurement system for excellence. (Rossler and Sink 1990, Somers et al 1987). Somers, Tuttle, and Locke (1987) have suggested that the practices of Industrial Engineering, Information technology, and Behavioural Science should be synthesized in collection, quantification, and analysis, communication, and team building for understanding and agreeing upon the key result areas. According to Rossler and sink (1990), Somers et al (1987) the development and validation of key indicators is both a very difficult and a critical step in performance management.

Since the 1950's many scholars have suggested various methods for improving performance. More specifically, Drucker's (1954) generic key result areas are:

1. Customer satisfaction
2. Employee attitude & development
3. Innovation
4. Management Development & performance
5. Operating Budget
6. Internal Productivity
7. Social Responsibility

Peters and Waterman (1982) offered eight principles; based on their study of best-run large corporations in America, for better performance and these are as follows:

1. Stick to knitting: The best companies know the ins-and outs and singular qualities of their particular business and don't diversify into unfamiliar fields. They believe you should: Stay reasonably close to business you know. Make your strengths decisive.

2. Stress for Action: The best company's encourage action over procrastination or extensive analysis. The ''Do it, fix it try it" ethic does not impede action. On the contrary it promotes action research.

3. Customer Focus: The best companies cultivate their customers. They are fanatics, about their quality control, and use customer suggestions for product improvement and innovation.

4. Hand on. Value driven: Wining companies have strong cultures. Values are maintained personal enthusiastistic attention from the top management. The management stays close to shop floor operations.

5. Simple Form, Lean staff: Top staffs are kept to a minimum. The structures of the company's organization are kept simple and flexible. This promotes an elegant simplicity and avoids top heavy ness

6. Productivity through people: Rank and file are seen as root sources of quality and productivity gain. They are treated as mature, adult people.

7. Autonomy and entrepreneurship: In the most successful companies, all employees are encouraged to practice creativity and practical risk taking beliefs – "make sure you generate a reasonable number of mistakes", tools do not substitute thinking; intellect does not over power wisdom.

8. Employ "simultaneous loose tight properties": The best companies maintain a paradoxical combination of centralized decentralized properties in their organizational structures. They are tight about the things that are truly important and extremely loosen about the rest. Autonomy is pushed down to the shop floor. This is effective leadership and delegation

In yet another way, Sink (1985) has identified seven criteria of performance as defined below:

1. Effectiveness is accomplishing the "right" things:

    a. On time (timeliness)
    b. Right (quality)
    c. All the "right" things (quantity), where things are goals, objectives, activities, and so forth.

1. Efficiency is the degree to which the system utilized the "right" things. That is 'efficiency' implies how well the resources are utilized to accomplish the results.
2. Productivity is a relationship between the quantity of outputs from a system and the quantity of inputs into the same system for the same period of time.
3. Quality is the degree to which the system conforms to the "specifications", where "specifications" can be identified as timeliness, various quality attributes, customer satisfaction etc.
4. Profitability is a measure or set of measures of the relationship between financial resources and uses for those financial resources. For example, Return on assets, Return on investment, and so forth.
5. Quality of work life (QWL) is human beings affective response to working in and living in organizational systems that "cause" positive effective responses. Often, the focus is on ensuring the employees are "satisfied", safe, secure, and so forth.
6. Innovation is the creative process of adapting products, service, process, structure, etc. in response to internal and external pressures, demands, changes, and needs. It is the process of maintaining fitness for use from the customer's point of view.

It is interesting to note that Sink (1985) has linked the above seven criteria of performance to Dructer's (1954) generic key result area and Peter and Waterman's (1982) attributes of excellence. The attribute of "simultaneous loose-tight properties" from America's best-run large corporations, is for the structure of the organizations for support of autonomy, effective leadership, and delegation and therefore, is not related to the performance criteria and key result areas.

These seven criteria of performance are not independent. The emphasis given to each of these criteria will depend on the type of the organization (public sector, private sector, manufacturing, marketing, service, R&D, large, small etc.) Effectiveness and innovation criteria are essential for success for all types of organizations. In R&D and service organizations, quality will generally be given more importance than efficiency, productivity, and profitability. In manufacturing organizations all the seven criteria should get appropriate attention for excellence. For long term survival profitability and productivity should be the result of effectiveness, efficiency, and quality.

Table 1: **Relationship of Performance Criteria, Key Result Areas, and Attributes of Excellence**

	Sink's Performance Criteria	**Drucker's Key Result Area**	**Peter and Waterman's Attribute of Excellence**
1	**Effectiveness**	· Customer satisfaction	
		· Social responsibility	· Stick to knitting
		· Employee performance	· Bias for action
		· Management Performance	· Close to customer
			· Hands-on, value driven
2	**Efficiency**	· Employee performance	· Simple form
			· Lean staff
3	**Quality**	· Management performance	· Productivity through people
		· Employee performance	
4	**Productivity**	· Internal productivity	
			· Productivity through people
5	**Quality of Work Life**	· Employee attitude	
		· Management Development	· Productivity through people
6	**Innovation**	· Innovation	· Autonomy and entrepreneurship
7	**Profitability**	· Operating budget	

Some researchers such as Riel and Shim (1988), Ray and Sahu (1989), Evanik (1983), Arsovaski et al (1991), and Swaim and Sink (1983) have made these seven criteria of performance as the basis of their study. Mali (1978) and Sumanth(1984) have related productivity with effectiveness and efficiency. Other researchers have tried to find the relationship between profitability and productivity. The viewpoints of different authors are not the same. According to some (David 1984, Gold 1985, Eilon 1985, Ray and Sahu 1989, Sink 1985, Suora 1991) productivity is related to profitability. But the relationship identified by

them is different. For example David (1984) suggested the relationship in terms of the following equation:

Profitability = Productivity + Price Recovery Factor

Whereas Swaim and Sink (1983) have given a multiplicative relationship, that is:

Profitability = Productivity * Price Recovery Factor

Harl and Bresser (1984) are of the opinion that productivity does not influence profitability. Thus it is seen from above that, though the seven performance criteria are interrelated, there is no agreement between the practitioners and the researchers as to how this link exists.

The objective of profitability has been important to most of the organisations. But, for continuous improvement in performance and long term survival, many authors are laying more emphasis on monitoring and improving other criteria of performance rather than just profitability alone. The quality aspect for improving performance has been studied by a number of researchers for organizational system performance. Prominent among them are Deming (1986), Ishikawa (1976), Juran and Gryna (1980), Crosby (1979), Charbonneau and Webster (1978), Besterfield (1979). The other aspects to concentrate on, as identified by many authors, are productivity (Chew 1988, Sink 1985, Sumanth and Genie 1985, Sardana and Vrat 1985, William 1991); Productivity and Quality (Somers et al 1987, Riggs et al 1990, Edosomwan 1987 and 1991, Arsovski and Meyer 1991). Still others (Burns and Smith 1991, Jamali 1983, Ritzman et al 1984, Newall and Dale 1991, Somers et al 1987) have suggested steps and strategies for improving performance through improved customer service, productivity and quality management. Top executives are likely to take one or more of the suggested steps for improving performance and are also likely to be interested in evaluating the effects of these steps on performance of their organizations. Evaluation is possible through measures. Measures are pervasive in all organizations. Long lists of measures are constructed in an attempt to cater for every conceivable eventuality (Elion 1979). It is difficult to relate to and manage a large number of measures. In most of the organizations performance indicators are not designed and developed in a rational and systematic way. Sink and Blackburg (1991) have reported on the basis of twelve years of experience that most of organizations do not have useful measures to assess performance. The authors (Geus 1988, Fulmer 1990, Somers et al 1987, Drucker 1988) have emphasized the importance of a measurement and feedback system through a properly designed information system.

In different countries, business excellence awards have been initiated since 1957 to encourage organisations to improve their performance and continually administered every year. Though these models are referred as quality awards, but these are essentially models for performance

excellence and follow similar procedure. The organisations are evaluated based on weightage on various criteria. List of some of the well-known awards are presented in Table 2. Grigoroudis & Siskos (2002) developed MUSABE methodology (MUlticriteria Self Assessment for Business Excellence) based on the review of quality awards.

Table 2: **National Quality Awards**

Name	Region	Country	Administering organization	Year first awarded
Canada Awards for Excellence	North America	Canada	Excellence Canada	1989
Deming Prize	Asia	Japan	Japanese Union of Scientists and Engineers	1951
EFQM Excellence Award	Europe	Multiple	EFQM	1992
Malcolm Baldrige National Quality Award	North America	United States	National Institute of Standards and Technology	1988
Rajiv Gandhi National Quality Award	Asia	India	Bureau of Indian Standards	1992
The IMC Ramkrishna Bajaj National Quality Award	Asia	India	IMC Chamber of Commerce & Industry	1997
Source: https://en.wikipedia.org/wiki/List_of_national_quality_awards as on Feb 1, 2018				

Based on these model some researchers (Meyer & Collier, 2001) developed causal model for finding the relationship between the strategic variables and the other functional variables whereas others used structural models to find a business excellence Index (BEI) (Kanji & Wallace, 2000) and relationship in various criteria such as customer satisfaction and employee satisfaction.

Performance evaluation at organization level can be based on measures of performance criteria. Conceptually, the seven criteria of performance need to integrate for studying the overall performance of an organization. To achieve a perfect integrating of performance criteria, measures for each of the criteria are to be identified and related to the overall performance of the organization. This is essential as the concept of overall performance has to be operationally viable. This concept is difficult to relate to the overall objective of the organization.

The starting point for performance evaluation should be the objective of an organization. Middle managers and technical specialists need to communicate with the top brass as well as

with the junior staff of the organization. Top executives give their decisions about investment, strategies for achieving set targets and generally talk in terms of money: sales, profit, taxes, investment, rate of return etc. Middle managers are required to implement the strategies with optimum use of resources at hand. For this they communicate with junior staff in the shop floor terminology referring to their specific area of work; for example "Rejection rate should not be more than 3.6% or production schedule has to be 100 tons per day" etc. The two practical approaches for evaluating performance are visualized as:

a) Performance evaluation through financial ratio analysis
b) Performance evaluation through measures identified for functional areas.

The number of measures in both these is large. It is difficult for any given organization to select and controllable and optimum size of measures to monitor, control, and improve performance. Therefore attempts have been made to group the measures that reflect the overall performance of the organization in terms of financial and functional measures. The numbers of financial and functional measures are not only large but also interrelated making it difficult to select and interpret them meaningfully. It is of relevance to suggest a mythology to select a small and meaningful set of measures.

OBJECTIVE AND SCOPE OF THE STUDY

Information is important at various levels of the organization top, middle and junior in different functional areas for effective decision making. Everyone in the organization should get relevant information in time for effective monitoring and control. The information required for this should come from scientific analysis of various financial and functional measures. The analysis and reporting should aim at stimulation the action towards accomplishing the objective.

The performance management cycle encompasses measurement, evaluation, planning and improvement, which is a cyclic process and continuous in nature. The objective of this study is:

1. To develop conceptual framework for arriving at an effective and manageable set of performance measures with respect to a company's objectives.

2. To develop a methodology to evaluate an organization's objective rationally.

Existing methods of performance evaluation

The studies on performance evaluation can broadly be classified into two main categories:

1. Papers evaluating performance qualitatively
2. Papers evaluating performance quantitatively

It has been observed from a review of existing literature that only a few authors have addressed the problem of quantitative evaluation of performance. The methods of evaluation of studies reported in literature can be grouped into the following two categories:

1. Statistical Evaluation Method
    a. Multiple discriminant analysis
    b. Multiple regression analysis
    c. Structural and Causal Methods

2. Other Methods
    a. Multi Criteria Performance/ Objective Matrix
    b. Data Envelop Analysis &/ Bench Marking
    c. Balance Score Card
    d. Business Excellence Index

The various methods of evaluation are summarized in Table 3. Multiple discriminant analysis has been most commonly made use of for performance of an organization.

Even though the quantitative methods used for evaluation are few, they are not free from shortcomings, as mentioned below in Table 3:

Table 3 : **Various Methods of Performance Evaluation**

Method	Year	Author	Purpose
Statistical Methods			
Multi Discriminant Analysis	1976	Sarma & Rao	Prediction of failure
	1976	Pandey et al	Prediction of failure
	1987	Yavuz and Sumanth	Company level performance
	1991	Joshi & Ramani	
Multiple Regression Analysis	1989	Ray & Sahu	Overall performance measurement
	1993	Rastogi & Kapoor	Relationship in Productivity and Other measures
Structural Model	2001	Kanji	Structural model to establish BEI
Causal Model	2000	Kanji & Wallace	Linkage between different criteria such as employee and customer satisfaction
	2001	Meyer & Collier	Relationship in the Baldridge healthcare criteria

Other Methods			
Multi Criteria performance / Objective Matrix Method	1983	Riggs	Monitoring and improving performance
	1986	Riggs	Monitoring and improving performance
	1989	Ray & Sahu	Overall performance measurement
	1990	Riggs et al	Productivity and Quality measurements
	1984	Sardana & Vrat	Productivity through P-O-P
Data Envelop Analysis &/ Bench Marking	2011	Najafi & Ahmadi	Relative efficiency of the organization
	2014	Joe & ZHU	Performance evaluation and Bench marking
Balance Score Card	2015	Cao, Zhao &Jiangxin	Strategy Deployment
Business Excellence Index	2000	Kanji& Wallace	

Multiple discriminant analysis (MDA) has been widely used for the prediction of failure and company level performance. MDA is capable of analysis for more than two groups and has been utilized only for two group analysis. Furthermore, while analyzing, multi-collinearity in the variables has not been examined. Taking all the interrelated variables for discriminant analysis, the ranking of the discriminant variables may not be correct (Hair 1987). Moreover, the question arises whether all the discriminant variables are to be used or only a selected few for performance evaluation. If the number of these variables is large, further screening is required. Thus how many and which of these should be utilized for measuring the performance remained a problem of relevance which has been addressed in this paper.

A practical method for finding meaningful and manageable performance indicators that could be effectively integrated into company's performance evaluation and strategic planning so as to improve the performance on a continuous bas**is.**

Proposed Method of Performance Evaluation

In a conceptual framework an objective methodology has been perceived. Generally organizational data for planning and evaluation is multivariate. The measures to be analyzed are inter- connected and are large in numbers. To obtain a concise and manageable set of

performance indicators the methodology makes use of versatile, multivariate, statistical techniques of Facto Analysis, Discriminant Analysis and Regression Analysis.

The methodology conceived is a modification of Yavuz and Sumanth's (1987) methodology. Figure 1 provides an overview of their methodology.

They have considered only Multiple Discriminant Analysis and suggested the use regression analysis for future time. The measures considered are multi- collinear and the first three or four variables may not effectively explain the variability in the dependent variable. However, the dependent variable is grouped comparing the consecutive values. If the values of the dependent variable is greater than its previous value, it is given a value '1' otherwise '0'. Thus the method is for two group analysis only. In practice, generally, performance evaluation is carried out for more than two groups.

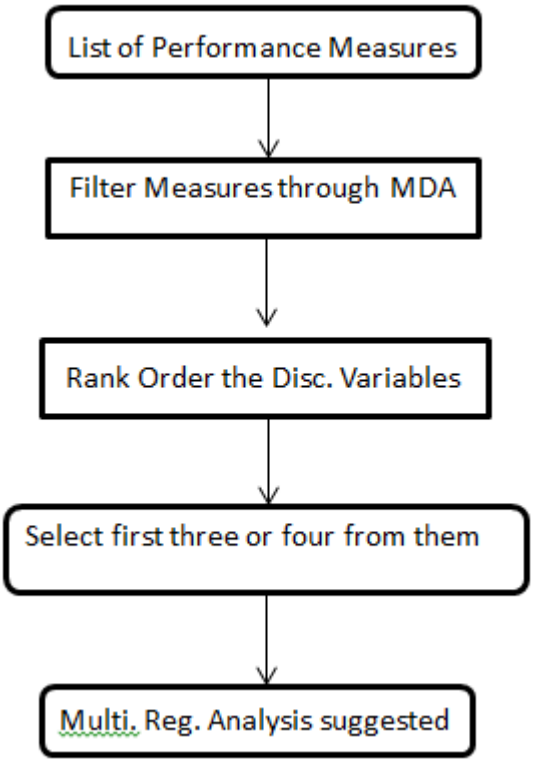

Figure 1. An Overview of Yavuz and Sumanth's Methodology

To overcome the limitation of Yavuz and Sumanth's methodology, in the suggested methodology Factor Analysis has also been incorporated and interlinked with Multiple

Discriminant Analysis for selecting the small set of discriminant variables. Figure 2 gives an overview of the proposed methodology.

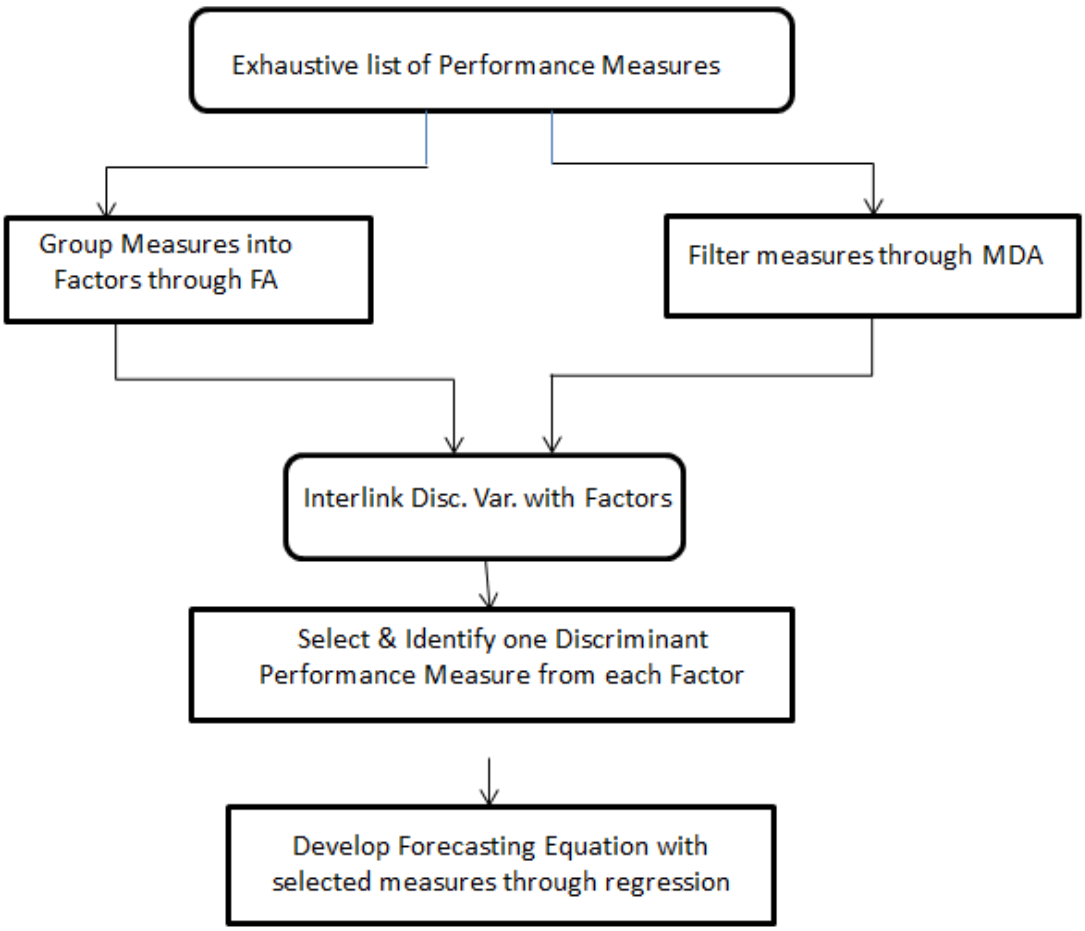

Figure 2. An Overview of Proposed Methodology

Factor Analysis helps in removing multi – collinear variables from the measure. The methodology aims at finding out the concise and effective set of performance indicators, which, in turn, help managers in planning the objectives at the organization's level. The steps for the methodology are as follows:

Step 1 - Choose a company objective to be evaluated. It could be profitability, productivity, growth etc.

Step 2 - Through a questionnaire and discussion with the executives of the company prepare an exhaustive list of performance measures. This list gives the measures being used presently and additional measures which in the opinion of the executives, should be included to measure the actual performance.

Step 3 - Gather data from the company records (technical and financial) for the set of "measurable" performance indicators. Denote them R1, R2, R3, etc.

Step 4 - Identify the measure which is directly associated with the objective under consideration. It would be one of the overall measures of performance for the chosen objective.

Step 5 - Through Factor Analysis (FA) group R1, R2, R3, etc. into different factors.

Step 6 - Find the classifying values for this indicator through Delphi or Statistical techniques and group the data in these groups based on past performance.

Step 7 - Define the model as:

Y = f (R1, R2, R3, Rn)

Step 8 - Use Multiple Discriminant Analysis (MDA) and find which of the indicators discriminate the groups.

Step 9 - The measures discriminating the groups are grouped into factors obtained in step 5.

Step 10 - The one ratio from each of the groups identified in step 9, which has the highest discriminating value by comparing "F to remove" values for discriminating variables. Alternatively, we could select one ration from each of the groups with highest loading on the factor.

Step 11 - Use MDA again with selected ratios in step 10 and get the classification results and compare with the results of the earlier analysis.

Step 12 - Se the set of ratios so obtained in a regression model to determine the values of the objective for a future time period.

Step 13 - Repeat from step 6 for other ratios which measure objective directly.

Step 14 - Compile the set of ratios related with the objective of the organization along with the importance due to them.

Sometimes, due to the non-availability of adequate data, certain important performance measure cannot be computed. However, if such measures are identified during the planning process, then a corresponding database can be developed to facilitate such initiatives. This will improve the quality of information required for goal – oriented decision making.

The methodology presented can be adopted by any organization for performance evaluation for its chosen objective. The chosen objective could be evaluated considering financial ratios,

functional measures, or a mix of the two. The methodology can also help organizations in evaluating targets at a department level.

CONCLUSION

Through development of key indicators, performance evaluation and planning can be carried out more effectively. This, in turn, helps in designing and developing a result oriented information system aimed at excellence. The performance of an organization should be evaluated against its set objective. The health of an organization is generally assessed with the help of financial indicators. But it is necessary to identify performance measures at departmental levels to carry out interim corrective actions that will improve the overall performance of the organization. At functional level, the numbers of measures are large. Therefore, at functional level, appropriate measures that highlight the contribution of the department to achieve the overall objective of the organization should be determined. Moreover, financial and functional measures identified for performance evaluation are interrelated. Therefore, arriving at a manageable set of indicators is not only critical but also difficult. Hence a methodology has been developed to filter and obtain a concise and effective set of measures. The set of measures arrived at through the proposed methodology is objective and hence, expected to receive higher acceptability from managers in any organization.

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