

Developing a Comprehensive Organizational Performance Measurement System: A Literature Review and Conceptual Framework

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<Abstract>

Given the competitive environment, the development and/or adaptation of a sound performance measurement system became a vital task of managers. Because of this need, many studies have been devoted to establishing a concept of performance measurement system and the procedures for developing the system, as well as developing specific performance measurement systems. Despite many efforts and trials, there still exist several deficiencies. This paper has recognized that an organization should be viewed from a multifaceted perspective necessitating a sophisticated analytical and systematic approach to monitor and improve organizational performance. The purpose of this paper is to introduce a conceptual framework of Comprehensive Organizational Performance Measurement System which evaluates organizational performance with multiple performance measures derived from the organization's strategies, integrates all of the performance information considering the relationships between them, and provides a single, global, integrated organizational performance score.

총괄적인 조직 성과 측정 시스템의 개발: 문헌고찰 및 개념

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<요약>

총괄적으로 조직성과를 측정하기 위해 다양한 관점에서 조직을 바라볼 필요가 있다. 본 논문은 총괄적인 조직성과 측정시스템을 구축하기 위한 개념 및 문헌고찰을 제시한다.

1. Introduction

It will be unnecessary to reemphasize here how much important continuously monitoring and improving organizational performance is. Briefly, given the competitive environment, as Parsley[38] mentioned, managers should continuously monitor and improve their organization's performance (1) to survive successfully in the future; (2) to make sure that an organization is delivering the desired products or services; and (3) to be sure that an organization is being efficiently operated in the most appropriate manner.

Historically, when organizations were small and simple, the primary performance measure was cash flow. During the Industrial Revolution, organization size increased, and then some measures of productivity were created for each production stage comparing input to output. As Fry and Cox[14] stated, the belief was that if an organization was able to convert raw materials into finished products efficiently at all production stages, then the organization would be profitable in the long run. During the 1920s, theoretical and practical methods of management accounting became available, and those standard techniques were widely taught and applied. Those traditional management accounting techniques became the accepted method for measuring the performance of an organization[29].

In the past decades, however, business environments have changed rapidly and dramatically. Product life cycles have been decreased, consumer quality and delivery expectations have been increased, new technologies have been rapidly developed, and levels of global competition have been intensified. Increasingly, organizations have found themselves needing to compete by improving quality, increasing flexibility, expanding product variety, and emphasizing innovation[15]. This new challenging circumstance demands that organizations consider an appropriate paradigm of performance measurement.

The development and/or adaptation of a sound performance measurement system became a vital task of managers. Because of this need, many studies have been devoted to establishing a concept of performance measurement system and the procedures for developing the system, as well as developing specific performance measurement systems. These systems have been a hot topic in most organizations for many years, and more organizations have recently begun employing them. Obviously, assessing organizational performance by an appropriate performance measurement system is an

important factor in today's competitive environment.

Despite many efforts and trials, there still exist several deficiencies. One of the most critical deficiencies is that management and industry analysts tend to pick only the one measure that they think symbolizes a success or a failure (e.g., return on investment, market value, capital allocation, etc.), even though there are, in fact, many criteria for assessing organizational performance. A single measure has the practical advantage of permitting an unambiguous comparison, so familiar in business journals. However, such a practice normally gives a biased and misleading picture of overall organizational performance[10]. As Kaplan and Norton[22] stated, a clear picture of how well an organization performs cannot be assessed by a single indicator.

Secondly, many organizations have used various local performance measures to assess the overall performance of an organization, even though local performance measures assess the performance of only a small part of the processes within an organization. Such local performance measures include the assessment of the ability of machine operator by measuring the amounts of parts he/she produces compared to the standard, the assessment of the ability of supervisor by measuring departmental efficiency, the assessment of the ability of plant manager by measuring plant utilization, and so on[14]. The underlying assumption is that if each local performance is optimized, then global performance will be automatically optimized. However, such an assumption is spurious because independent optimization of each of the local performance inevitably results in sub-optimization of the overall organizational performance, as Lardner[24] pointed out.

Next, many organizations have had bad experiences with too much unintegrated and unorganized performance information. For instance, most management information systems pump out dozens, even hundreds of data of performance measures each month. Unfortunately, the data they produce is seldom truly useful[52]. Managers are often faced with the difficulty of interpreting all of the data. In the worst case, as Occena[34] mentioned, managers under duress of performance information overload can either be easily confused, or simply ignore the unintegrated and unorganized performance information.

Finally, no study has presented a mechanism for integrating all of the crucial information of performance measures in a way that considers the relationships between them. It is obvious that the relationships should not be ignored when evaluating or improving an organization with multiple performance measures. If an attempt to improve organizational performance is made without considering the relationships, at best a sub-optimal level of performance will be obtained[42]. The reason is that such a practice cannot handle a complex situation where a change in one area affects other areas in an organization.

This paper has recognized that an organization should be viewed from a multifaceted perspective necessitating a sophisticated analytical and systematic approach to monitor and improve organizational performance. Currently, there exists an abundance of data

on a state of an organization. How to harvest useful information from the volumes of data available is a key issue[49]. Indeed, it is necessary that a conceptual framework of total performance measurement system should be developed.

The purpose of this paper is to introduce a conceptual framework of comprehensive organizational performance measurement system (COPMS)[35] which evaluates organizational performance with multiple performance measures derived from the organization's strategies, integrates all of the performance information considering the relationships between them, and provides a single, global, integrated organizational performance score. Thus, the COPMS overcomes the deficiencies mentioned earlier. First, this paper clarifies definitions of organizational performance, performance measurement, performance measure, and performance measurement system, because many studies used these terms in a mixed manner. Secondly, existing performance measurement systems are reviewed. Next, this paper introduces the COPMS followed by discussion based on the implementation of the COPMS in the one of the five veterans homes of the Missouri Veterans Commission, MO USA [35].

2. Definitions

In order to explore an appropriate paradigm of performance measurement, some terms (i.e., organizational performance, performance measurement, performance measure, and performance measurement system) should be clearly defined.

2.1 Organizational Performance

Performance refers to what is done and how well it is done. By the same token, organizational performance can be defined as a way in which an organization carries out or accomplishes its important functions that comprise a goal-directed and interconnected set of processes that affects the organization's outcomes[3]. It represents how well an organization achieves its objectives.

From a quantitative perspective, the definition of performance associates with a dimension of scale. This means that performance can be quantified, resulting in levels of performance. The level of performance can be expressed by an absolute number or a proportion such as 60 or 60%. It is important to notice that the level of performance is neutral in itself. The measured level of performance has no intrinsically good or bad meaning. Managers using this information should determine what constitutes an acceptable level - the threshold or pattern that will trigger further evaluation and action[3].

2.2 Performance Measurement

Performance measurement is the process of evaluating performance in terms of the explicit short-, medium-, and long-term objectives and reporting the results to management in an attempt to improve performance[5,13,32,45]. It is the language of progress and provides information about where an organization is and, more importantly, where an organization is going. Thus, performance measurement can guide a steady progression of an organization toward the established objectives and can identify shortfalls or stagnation[45].

2.3 Performance Measure

A performance measure is a metric which is used to quantify how well an organization achieves its objectives. It assigns a sign to an attribute according to a certain rule. By a sign, it simply means numeral, letter, or symbol. By a rule, it refers to a consistent, logical, and valid matching process between an attribute and a scale. Thus, a performance measure is a measurement data source - what is actually measured[32,45,48].

In general, performance measures can be classified into financial or non-financial (cost or non-cost), internal or external performance measures[23]. Financial performance measures tend to focus on the aggregate dollar impact of production activities rather than on the actual production activities, whereas non-financial performance measures tend to focus on the actual production activities[39]. On the other hand, internal performance measures are those that an organization can manipulate, whereas external performance measures are those that are generally beyond an organization's influence and control. Table 1 shows an example of the classified performance measures.

Table 1. Example of performance measures (source: [23])

	Non-financial (Non-cost)	Financial (Cost)
External	Number of repeat buyers Number of customer complaints Market share Product image among target customers (Many others)	Competitive cost position Relative R&D expenditure Supplier cost position Relative labor cost (Many others)
Internal	Design cycle time Percent on-time delivery Number of new products First-pass quality Product complexity (Many others)	Design cost Material cost Manufacturing cost Distribution cost End-product cost (Many others)

2.4 Performance Measurement System

Based on the above definitions, how can a performance measurement system be defined? A performance measurement system is not just a collection of all the data of performance measures. A performance measurement system does much more than simply record what has happened. According to Vitale, Mavrinac, and Hauser[52], a performance measurement system can be defined as a management tool which monitors, integrates, and emphasizes an organization's critical input, output, and process variables. It does not try to measure everything - only the elements crucial for managerial decision making. Thus, the output of a performance measurement system influences the future of an organization by shaping decisions and directing activities.

The purpose of a performance measurement system is (1) to provide integrated performance information to managers so that they can determine whether their efforts are on course; (2) to help managers understand when their organization is succeeding or failing by signaling potential management problems when performance measures do not track in the desired function; and (3) to improve the quality of management and decision making by providing a clear picture of the activities and accomplishments of an organization[5,21].

3. Review of Existing Performance Measurement Systems

A voluminous amount of research has been accumulated on the topic of performance measurement spanning several disciplines. Prior to discussing specific performance measurement systems, it would be of value to review the overall studies that gave some advice about designing a performance measurement system.

First of all, it is important to diagnose whether the performance measurement system currently being used is appropriately monitoring the performance of an organization. As such a diagnostic tool, the Boston University Manufacturing Roundtable developed the performance measurement questionnaire (PMQ)[9]. The PMQ is a survey instrument assessing the fit between the organization's strategies, the performance measurement system, and employees' actions. By utilizing the PMQ, managers can have insights on the existing performance measurement system in terms of strengths and weaknesses. The PMQ provides a starting point of monitoring and improving organizational performance.

With regard to designing a performance measurement system, this paper summarizes advice given by the literature as the general and specific suggestions. The general suggestions can be summarized as follows:

- Have a clear purpose;
- Be simple and easy to understand;

- Be customer-oriented, or stakeholder-focused;
- Develop with a team approach, or total commitment;
- Be dynamic and flexible, or evolve over time;
- Provide fast feedback; and
- Foster improvement.

On the other hand, the specific suggestions for developing a performance measurement system can be summarized as follows:

- Link to the organization's strategies;
- Be hierarchical as well as integrate across business functions;
- Focus on the activities and business processes;
- Monitor multiple performance measures including financial and non-financial;
- Consider the relationships between performance measures; and
- Develop an integration mechanism for multiple performance measures.

These suggestions can be used as benchmarks for developing an appropriate performance measurement system for the specific purpose.

Some measurement models have been proposed and are currently being used in many organizations. This paper classifies them into three categories: (1) models which develop performance measures; (2) models which are performance measurement system, but do not provide a global score; and (3) models which are performance measurement system, providing a global score.

For the first category, the performance measurement model[45] and the performance metrics development[1] were found in the literature. The performance measurement model provided a guide for developing the right performance measures which support control and improvement of organizational performance. The performance metrics development is a quality function deployment-based methodology for developing a set of performance measures suitable for controlling and improving business activities to achieve active critical success factors.

For the second category, the strategic measurement analysis and reporting technique (SMART)[6], the performance measurement model (PMM)[55], the integrated dynamic performance measurement system (IDPMS)[16], the strategic measurement system (SMS)[52], Wisner and Fawcett's approach[54], the business performance model[12], the performance measurement matrix[23], and the balanced scorecard[22] were found in the literature.

The SMART, the PMM, and the IDPMS proposed approaches for an integrated performance measurement system. For instance, the SMART linked strategies and operations through the performance pyramid, the PMM involved three components - who measures, what's to be measured, and what's used to measure, and the IDPMS integrated three primary functional areas - management, process improvement teams, and the factory shop floor. However, these three models did not provide any systematic procedure of how to implement them. The SMS and Wisner and Fawcett's approach

proposed typical procedures for developing a performance measurement system. They remained in the beginning stage of developing the system. They did not propose an integration mechanism for multiple performance measures. The business performance model proposed to consider the relationships between performance measures, but it did not present a method of how to accomplish this. The well-known balanced scorecard (including the performance measurement matrix) proposed one possible way of organizing multiple performance measures, but it did not provide a method that combines all of the information of performance measures into a global score. The balanced scorecard is primarily a score board which shows a set of performance measures in an organized manner.

For the last category, the analytic hierarchical performance model (AHPM)[26], the multicriteria performance/productivity measurement technique (MCP/PMT)[48], the objectives matrix[44], the performance matrix[53], the performance objective matrix[8], the overall system performance measurement[43], the productivity measurement and enhancement system (ProMES)[40], and the total organizational performance system[33] were found in the literature. Here, the objectives matrix, the performance matrix, the performance objective matrix, and the overall system performance measurement are variations of the MCP/PMT, and the total organizational performance system is another version of the ProMES.

The AHPM utilized the Saaty's[46] analytic hierarchical process which is a method of the multiple criteria decision making, in order to determine the relative importance of performance measures. Like the analytic hierarchical process, however, it is based on the independence between performance measures. The MCP/PMT and the ProMES provided methods of combining all of the information of performance measures into a global score, but both methods did not consider the relationships between performance measures. The MCP/PMT used subjective relative weights, and the ProMES used equal weights when aggregating multiple performance measures.

4. Comprehensive Organizational Performance Measurement System

4.1 Design of the COPMS

The design of a performance measurement system is both art and science[55]. The initial step is to establish the philosophical foundation of the system. This step is so important because the direction in developing the system is determined here. Although the principle of designing a performance measurement system has evolved as knowledge and experience have been accumulated, there is still no simple solution or universal recipe that provides the answer. This step is the art. Once the philosophical

foundation of the performance measurement system is established, the procedure of constructing the system is rather systematic. This step is the science. Specific procedures for the systems will vary depending upon the philosophical foundation.

The philosophical foundation of the COPMS is based on the recent literature. Among the various concepts of existing performance measurement systems, the following benchmarks were selected for the development of the COPMS:

- A link to the organization's strategies;
- A holistic approach;
- A dynamic approach;
- Simplicity and ease of use;
- Fast feedback;
- A diagnostic tool; and
- Total commitment.

A Link to the Organization's Strategies: Strategy refers to long-range, integrated, cross-functional plans that define an organization's approach to achieving its overall objectives[1]. Maskell[29] indicated two reasons for keeping the performance measurement system in line with the organization's strategies: (1) an organization needs to know how well it is achieving the objectives laid down in the strategies; and (2) people concentrate on whatever is measured. In a very real sense, if a performance measurement system is appropriately linked to the organization's strategies, the system will give a clear picture to all people in an organization about the priorities that are important to senior managers. The COPMS is directly linked to the organization's strategies by deriving performance measures from the organization's objectives.

A Holistic Approach: An organization is an open system that acquires inputs, transforms them, and discharges outputs to the external environment. Inputs and outputs reflect the dependency on the environment. In addition, it is a social system which consists of a set of interrelated elements. Interrelated elements mean that people and departments depend upon one another and must work together[7]. Thus, an organization is complex and ambiguous. Any measurement system developed for simple mechanical systems cannot be applied.

In order to capture a clear picture of the performance of such an organization, it is inevitable to holistically monitor an organization. The COPMS monitors an organization with two dimensions: vertical (i.e., hierarchical levels of management) and horizontal (i.e., units in an organization) directions. Vertically, the COPMS monitors the relevant performance measures for each level in the hierarchy. Within an organization, performance measures exist at different levels of detail and meaning. For instance, a performance measure that is useful at the grass-roots level of an organization may not be meaningful for strategic planning decisions made at the top, and vice versa[45]. Horizontally, the COPMS reflects the relationships between departments/units and

monitors each department/unit with the relevant performance measures. Similar to the vertical case, each department/unit in an organization may use different performance measures.

A Dynamic Approach: Since an organization is a social open system, it is continuously changing and evolving in order to synchronize with the dynamic business environment. As an organization evolves, so must the performance measurement system evolve if it is to stay in sync with the organization's needs[19,25,29]. Consequently, a performance measurement system should be dynamic. Since the COPMS derives performance measures from the organization's objectives, it develops new performance measures and evaluates the relevance of existing performance measures in response to changes in business processes, strategies, technologies, markets, and the external environment, as well as slough off obsolete performance measures that are no longer relevant.

Simplicity and Ease of Use: This issue is a very practical argument. As Maskell[29] indicated, no matter how subtly a performance measurement system has been devised and no matter how thoroughly it reflects the conflicting parameters of an organization, it will not be effective if the people using it do not have a clear picture of what the performance measurement system means. Thus, a performance measurement system should be simple and easy to use. The COPMS simplifies the results of performance measurement by providing an appropriately integrated global score to each member of an organization.

Fast Feedback: Feedback is information about past behavior, delivered in the present, and may influence future behavior[51]. The importance of feedback was stated by Likierman[27] in that "follow-up gives credibility; no feedback means atrophy; [and] negative-only feedback encourages game-playing." Since it also has time value, the COPMS provides the fast feedback report based on the readiness of data and the feasibility of preparing the feedback report.

A Diagnostic Tool: A performance measurement system should not be limited to simply recording what has happened by just collecting historical data. It should show clearly where improvement has been done and where more improvement is possible, rather than merely monitor the past work. Although a performance measurement system cannot solve problems, it should have the ability to point them out, indicate when the problems occur, and provide clues. The COPMS provides a vector of organizational performance rather than a scalar of organizational performance at a point of time. Thus, the vector provides managers with information of direction and magnitude of organizational performance.

Total Commitment: A performance measurement system is not simply a mechanical mechanism. It is a part of the philosophy that a whole organization should commit to for the organization's improvement. It should be developed by not a certain group, but the whole organization's participation. Pritchard, Roth, Jones, and Roth[41] stated some reasons for total commitment. First, the people actually doing the work are in the best position to know the specifics of the day-to-day operations. This knowledge is invaluable in designing the system. Secondly, since they will collect the data and use the feedback, it is vitally important that they accept the system. The best way to secure their acceptance is to heavily involve them in the system design. Finally, both supervisors and workers usually resent programs imposed on them from above. They feel that such programs are designed without the detailed knowledge necessary for the system to fit their needs. Having these people involved in the design process minimizes this problem. The COPMS invokes the organization's total commitment both by a top-down approach in identifying the objectives and by a bottom-up approach in determining performance measures.

4.2 Procedure of the COPMS

The COPMS based on the above benchmarks comprises six steps. Each step is described in the following sections.

Step 1: Implement a Modified Performance Measurement Questionnaire: As the first step, the COPMS utilizes a modified performance measurement questionnaire (MPMQ) to diagnose whether existing performance measures are appropriately evaluating the performance of an organization. The results of the MPMQ are used to have insights on the existing performance measurement system in terms of strengths and weaknesses [37].

Step 2: Identify the Objectives: The objectives are closely related to mission and goals. Briefly, a mission is the reason why an organization exists; goals are the results that support the mission; and objectives are what must be accomplished to achieve the goal[13]. To identify the objectives is the second step of the COPMS in relation to an organizational structure. As shown in Figure 1, each level of an organizational structure has its own objectives. For the entire organization, there will be the well-defined objectives of what products or services are to be produced, how effectively and efficiently this is to be done, how various personal interest will share in the results, and so on. Obviously, such broad objectives cannot be attained by a single step or an operation at one time. The objectives will be divided and subdivided as many as may be necessary so that they are within the cooperative capacities of many individuals. So the overall objectives of an organization will be first divided into the objectives of major divisions of an organization. Each of these divisional objectives will

be further subdivided. Finally, the foregoing objectives of organizational units will ultimately be divided until they reach the level of the particular employees and supervisors[2]. It is necessary to ensure that the organizational objectives are congruent with the strategies and that the objectives at the lower level are congruent with the ones at the upper level.

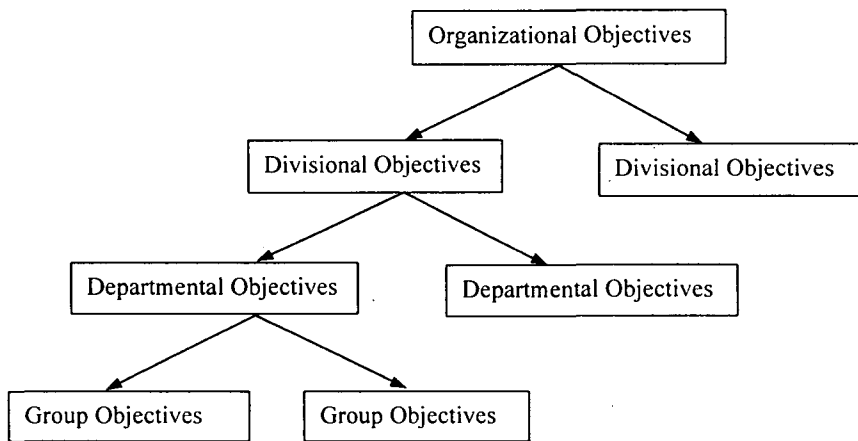


Figure 1. A top-down approach to the objectives

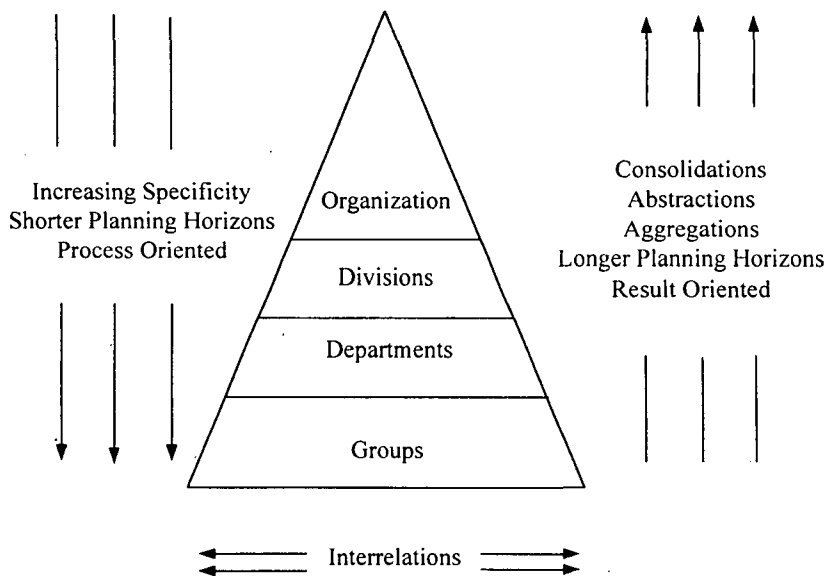


Figure 2. Hierarchical and horizontal performance measures

Step 3: Identify Performance Indicators and Determine Performance Measures.

Performance indicators are a few important factors to attain the objectives and represent areas that must be given special and continuous attention to bring about high performance. Performance indicators can be interpreted as dimensions of performance. They must portray the most meaningful aspects of the objectives. They are not direct measures of a specific performance, but are used to identify potential areas.

Performance measures are metrics which are used to quantify how well an organization achieves its objectives as mentioned earlier. In the COPMS, performance measures have two characteristics. They are hierarchical as well as integrated across functional boundaries. Figure 2 shows these characteristics of performance measures. High-level performance measures will be consolidated, abstract, aggregates of lower-level performance measures, result-oriented, and have longer planning horizons, while low-level performance measures will be increasingly specific, process-oriented, and have shorter planning horizons. Even the inter-functional relationships are more complicated. Managers must understand the relationships between functional areas and must use appropriate performance measures for each.

The third step of the COPMS is to identify performance indicators and determine performance measures. Performance indicators should be consistent with the objectives identified in step 2 and should be clearly defined to achieve the objectives. Similarly, performance measures should be consistent with the performance indicator identified. Each performance indicator may have one or more performance measures. Once performance measures are determined, intent, positive impact, and negative impact of performance measures should be considered. Furthermore, performance measures should be evaluated with respect to design criteria such as validity, accuracy and precision, completeness or collective exhaustiveness, uniqueness or mutual exclusiveness, reliability, comprehensibility, quantifiability, controllability, and cost effectiveness[48]. In practice, there may be trade-offs between some of these design criteria. In addition, an appropriate number of performance measures should be selected. "Too many will make it difficult to focus on what is important, and too few will distort action[27]."

Step 4: Data Collection: Step 4 of the COPMS is to design the data collection plan and to collect the data. In this step, key questions are: (1) how the data will be collected; (2) where the data can be obtained; and (3) who will collect the data. The data requirements and the specific answers to these questions depend on the specific approach taken and the particular technique selected[48]. In general, the data collection process should be cost-effective, providing the best information for the least cost. Costs can be lessened by using of existing data whenever appropriate and by employment of creative sampling strategies. Another aspects to be considered are the reliability (e.g., stability or replicability) and meaningfulness (e.g., quality) of data.

Step 5: Performance Information Integration: Performance information required by each level of management and each unit in an organization are different. Thus,

performance measures vary in degrees of importance, levels of detail, and meanings. Although some performance measures are sufficiently generic to all levels of management and units in an organization, some performance measures are not. Here performance information integration is required for each level of management and each unit in an organization.

Step 5 of the COPMS is to generate the integrated performance information for each level of management and each unit in an organization using an integration mechanism. An integration mechanism should be such a method that synthesizes all of the information of performance measures into a global performance score considering the relationships between them. The difficulty of developing this mechanism stems from the need to determine the functional form of the contribution of performance measures to a global performance score:

$$\text{Global performance score} = f(\text{performance measures})$$

where f is the functional form of a global performance score and performance measures (see Park[36] for details).

Step 6: Feedback Reporting: Feedback reports can positively impact performance as an error correction device, help identify problems and solutions, and increase motivation[34]. There are several issues involved in developing the feedback report: (1) frequency (i.e., how frequently should feedback reports be generated?); (2) timing (i.e., distribute as soon as possible after the completion of the reporting period); (3) manner of presentation (i.e., a written feedback reports and the use of visual aid); and (4) audience (i.e., who will receive the feedback report?).

Step 6 of the COPMS is to put all performance information into an organized feedback report. The feedback report should clarify the performance information for the requests of each level of management and each unit in an organization.

5. Discussion

A series of questions were asked during the implementation of the COPMS in the one of the five veterans homes of the Missouri Veterans Commission, MO USA. They were:

- (1) Do managers really need a performance measurement system?;
- (2) Does a performance measurement system need to link to the organization's strategies?;
- (3) Does a performance measurement system need to monitor multiple performance measures?;
- (4) Does a performance measurement system need an integration mechanism for multiple performance measures?; and

- (5) Does a performance measurement system need to consider the relationships between performance measures?

The first three questions were relatively easy and many studies provided the answers (e.g., see [5,20,21,36,52] for question 1, see [1,4,6,9,11,18,19,23,28,29,30,31,45,50,52,54] for question 2, and see [6,10,12,17,22,23,27,29,30,39,40,42,47-49] for question 3). However, the last two questions required the more speculation.

In order to answer question 4, this paper asked what will happen if a performance measurement system does not have an integration mechanism for multiple performance measures. Apparently, managers will be overloaded by too much unintegrated and unorganized performance information. Next, managers under duress of performance information overload may either choose to simply ignore the performance information, or interpret it incorrectly. In fact, in the implementation of the COPMS, nursing managers acknowledged that they looked at a few performance information which they thought were important and ignored the rest of performance information when they received a lot of monthly and quarterly unintegrated performance information. From this experience, this paper realized the importance of a single, global, integrated organizational performance score. The usefulness of a single, global, integrated organizational performance score is also supported by several studies (e.g., Pritchard[40], Sink[48], and Young[56]).

Regarding to question 5, this paper asked that "are the relationships between performance measures simple?" If performance measures are related to each other either in a monotonously positive manner only, or in a monotonously negative manner only, then managers do not need to consider the relationships, but focus only on any one performance measure. In the implementation of the COPMS, however, the relationships between performance measures were not so simple - a mixture of positive and negative relationships. Moreover, it was very difficult to identify the functional relationships. Rather, the statistical relationships between performance measures were used.

What will happen then if managers attempt to improve their organization's performance without considering the relationships between performance measures? As mentioned earlier, managers will obtain at best a sub-optimal level of performance because the efforts do not consider a complicated situation where a change in one area affects the others in an organization. In the implementation of the COPMS, it was observed that some performance measures contributed negatively to the overall organizational performance, and some contributed positively. However, nursing managers had attempted to improve one performance measure at a time - particularly the one which showed the lowest performance in the previous period. They did not realize that such an effort cannot achieve a global optimal level of performance.

In summary, this paper concluded that it is imperative to develop a performance measurement system which has the following attributes: (1) linking to the organization's strategies; (2) monitoring multiple performance measures; (3) providing a

single, global, integrated organizational performance score; and (4) considering the relationships between performance measures when integrating them. The COPMS provides all above attributes.

6. Summary

Managers should continuously monitor and improve their organization's performance to survive in a competitive business environment. In order to accomplish this task, it is crucial for the managers to acquire a well-designed performance measurement system. This paper introduced a conceptual framework of the COPMS which evaluates organizational performance with multiple performance measures derived from the organization's strategies, integrates all of the performance information considering the relationships between them, and provides a single, global, integrated organizational performance score.

This study provides a set of solid contributions to build up an appropriate paradigm for performance measurement. First, the COPMS aids managers in leading their organization in the direction of their mission, goals, and objectives by linking to the organization's strategies. Secondly, the COPMS helps managers see their organization as a whole by providing them with a holistic picture of organizational performance using multiple performance measures. Thirdly, the COPMS provides managers with an integrated performance information on their organization - a single, global, integrated organizational performance score. Fourthly, the relationships between performance measures are considered when the COPMS integrates all performance information. Fifth, the COPMS provides managers with information about which performance measures should be focused on to improve their organization's performance with the help of the relative importance weighting factors.

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