

## Utilizing the BSC and EFQM as a Combination Framework; Scrutinizing the Possibility by TOPSIS Method

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### Abstract

Increasing the competition between organizations in the field of productions and services leads them to use the samples and patterns to assess their activities and performance. Appearing this kind of needs and inefficiency of measuring systems with traditional activities assessment causes to create new models of activities assessment in organizations. These models could be divided in two groups. The first group is based on self assessment and the second group is based on measurement and improvement of business trade process. Among mentioned models, Balanced score Card (BSC) and European Foundation for Quality Management (EFQM) have had more chance to be used by many companies. Regarding the high acceptance of these two models in the world and existence many similarities between them; this study is going to present exact glance of these two models and present a comparison between them. Moreover, after recognizing the weaknesses and powers of them, the possibility of using them at the same time will be evaluated. In order to gain this goal, an automobile company's performance has been assessed based on BSC and EFQM and the results are analyzed with TOPSIS method.

**Keywords:** : Balanced Score Card (BSC), Total Quality Management (TQM), European Foundation for Quality Management (EFQM), TOPSIS Method, Assessment, Performance

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### 1. INTRODUCTION

In the past decades, fast provident of global completion which caused by technological change and increasing of products variation lead companies to find out importance of constant improvement process to sustain their constant competition progress. At present organizations

and enterprises search many ways and opportunities to improve, maximize strong and to minimize weak sides of their activity. As the practice shows, the managers seek the tools to strategic management basing on well-known principles of the PDCA Circle - Plan, Do, Check and Act [16].

Performance measurement systems dominated by financial measures have often been criticized [4]. Researches show that the traditional system of activity measurement which was based on financial management is not suitable. Financial measures have been characterized as backward-looking, historical, aggregate, and too focused on short-term results. Non-financial measures are believed to be more predictive of future performance and more useful in "driving" performance. Increased competitive pressures, implementation of other programs like Total Quality Management (TQM), and the perceived limitations of traditional financial measures have led to increased usage of non-financial measures [2][4]. There are eight limitations of traditional performance assessment as below:

- ✓ Basis on traditional cost management
- ✓ Using slow and retarded standards
- ✓ Lack of strategic links
- ✓ Complexity of implementation and performance
- ✓ Inflexibility
- ✓ Contradiction in accepting constant improvement
- ✓ Neglecting customer needs and expectation
- ✓ Over concern traction on increasing profit and decreasing costs

At the result of these limits, new measurement system appeared on discourses. The major parts of discussion in new discourse were base on new organization strategies and nonfinancial symbols. New action measurement systems could be divided into two groups:

- ✓ First group emphasizes self assessment like Deming Prize [27], Malcolm Baldrige Award [18] and European Foundation for Quality Management (EFQM) [7].
- ✓ Second group are systems which are helping managers for assessment and improvement of trade and business like Balanced Score Card (BSC) [20].

The common basis of mentioned models is a straggle to like plane of activities with further landscape of an organization. Meanwhile, Balanced Score Card and European Foundation for Quality Management have been more acceptable for organizations.

This study is begun with an overview of the BSC and EFQM including an outline of the foundation vision and mission statements, which are at the core of their development process. Following this, a brief comparison between them is presented. Finally, as the main subject of this study, it is discovered that whether performing two models of EFQM and BSC are more influence together or alone. In this regard, a performance assessment has been conducted in Sepehr Karamadan Company (SK Company) with implementing BSC and EFQM and then the results has been analyzed using TOPSIS method. The reasons for choosing BSC and EFQM are because both models are accepted and recognized as implementation tools in many countries including in the American, European and Asian countries. Hence using these tools in this research guaranteed the reliability of study.

## **2. METHODOLOGY**

This stage is to design the research methodology to achieve the research questions. The first step of constructing an instrument of performance assessment is literature review. The paper begins with a discussion to explain what the BSC and EFQM are and what are their similarities and differences. The primary methodology is case study. Research was conducted through personal interviews with executives and managers at SK Company which is an automobile properties supplier manufacturer in Iran with 400 employees that has been established in 1979 in Iran. Then the TOPSIS method was used to analyze the results of the performance assessment. It should be noted that this results were gained by implementation of BSC and EFQM at SK Company.

## **3. THEORETICAL BACKGROUND**

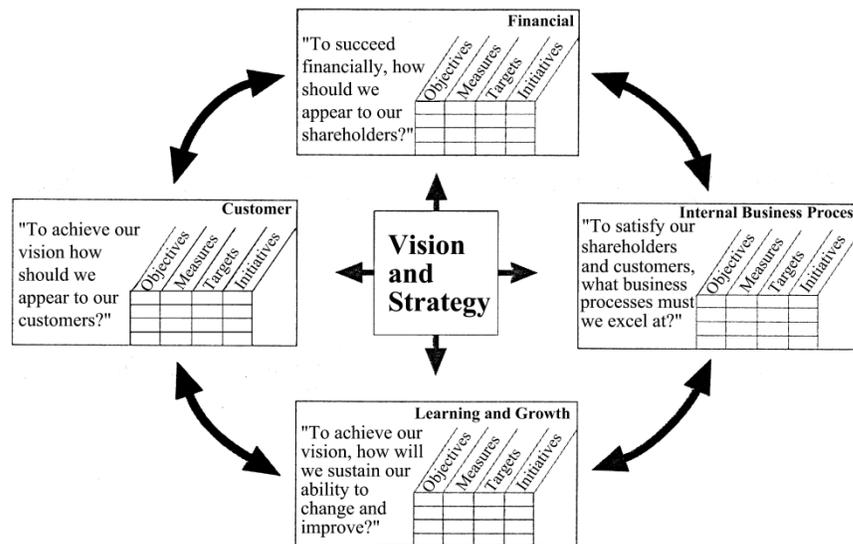
### **3.1. Balanced Score Card (BSC)**

The balanced scorecard (BSC) is one of the most highly touted management tools today [19][25][3][21]. The Balanced Scorecard Approach has been developed at the Harvard Business School by Kaplan and Norton [27] since the early 1990s. It is an essentially multi-dimensional approach to performance measurement and management that is linked specifically to organizational strategy [6] and fortune 500 companies are increasingly using it. A survey found that approximately 50 percent of Fortune 1000 companies in North America and 40 percent in Europe use a version of the BSC [26].

It suggests that as well as financial measures of performance, attention should be paid to the requirements of customers, business processes and longer-term sustainability. Thus four areas of performance are defined (Now labelled as financial, customer, internal business and innovation and learning), and it is suggested that up to four measures of performance should be developed in each area (Figure 1 shows the BSC framework) [6]. The BSC is now being listed as a value methodology along with cost-benefit analysis and return on investment [24]; it is being used to help change organizational culture [1]; and several companies have reported improved operational efficiency and profitability as a result of using the BSC [13][3][14].

A major strength of the balanced scorecard approach is the emphasis it places on linking performance measures with business unit strategy. This appears to be a very weak area in many organizations and the technique provides a practical approach to addressing this issue [6]. The framework of the four perspectives of the BSC helps to translate strategy into objectives and measures. The four perspectives are financial, customer, internal process, and learning and growth [22]. The critical success factors created in each of the four perspectives are balanced between long term and short term, as well as internal and external factors that contribute to the business strategy [6].

The Balanced Scorecard is thus a potentially powerful tool by which senior managers can be encouraged to address the fundamental issue of effectively deploying an organization's strategic intent. It focuses on establishing links between strategic objectives and performance measures; it also pays some attention to measuring the achievement of the components of the strategic plan the organization has espoused.



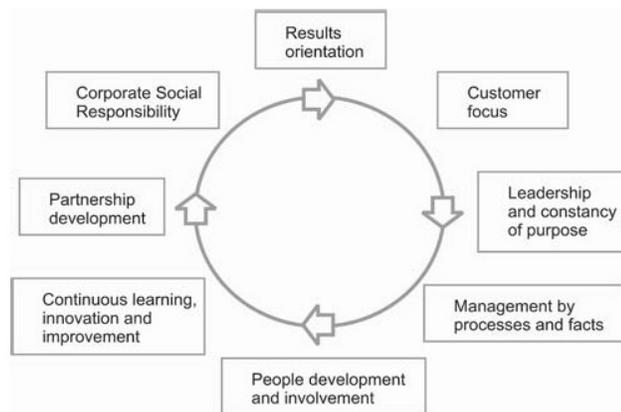
**FIGURE 1:** The BSC: a framework to translate a strategy into operational terms [27].

In summary, the BSC helps an organization in the following six ways [6]:

1. Promotes growth; due to focus on long-term strategic outcomes, not just short-term operational results.
2. Tracks performance; individual and collective results can be tracked against targets in order to correct and improve.
3. Provides focus; when measures are aligned to a few critical strategies, the BSC provides focus on what is important to the company.
4. Alignment to goals; when you measure what is truly important to success; the measures become linked and support each other. Alignment occurs across the organization.
5. Goal clarity; the BSC helps respond to the question, "How does what I do daily contribute to the goals of the enterprise?"
6. Accountability; individuals are assigned as owners of metrics in order to provide clear accountability for results.
- 7.

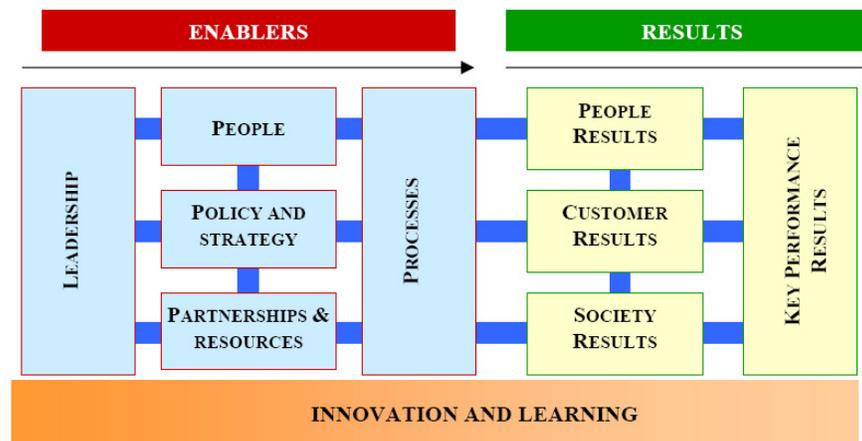
### 3.2. European Foundation for Quality Management (EFQM)

The EFQM Excellence Model was introduced at the beginning of 1992 as the framework for assessing organizations for the European Quality Award [15]. The EFQM Excellence Model is based on the accepting and consistent realizing in everyday practice "Eight Basic Rules of Excellence" that is adapted to the European conditions, the principles of the Total Quality Management (TQM), which implemented in the strategic management process guarantee the success of the enterprise, its development and strengthening of the market position (See Figure 2) [10][12].



**FIGURE 2:** Eight Basic Rules of Excellence [12]

The EFQM Excellence Model, a non-prescriptive framework based on nine criteria as shown in Figure 3. Five of these are ‘Enablers’ (leadership, people, policy strategy, partnership and resources, and processes) and four are ‘Results’ (people results, customer results, impact on society results and business results) [15]. Organizations can use the model and the process of self-assessment to improve performance. It is flexible and can be applied to organizations of any size, in the public and private sectors. It is now the most widely used organizational framework in Europe [11] and has become the basis for the majority of national and regional Quality Awards.



**FIGURE 3:** EFQM Excellence Model [18]

The EFQM Excellence Model is a practical tool that offers several advantages from the empirical research perspective, as do other Quality Awards [15]:

1. The model is regularly revised and updated, incorporating the contributions of EFQM consultants.
2. It provides an extensive set of sub-criteria to detail the exact meaning of each criterion.
3. EFQM is intended to be instruments for comparing an organization with its competitors in order to achieve and/or maintain competitive advantage.

### 3.3. Comparison of BSC and EFQM

The Balanced Scorecard and the European Foundation for Quality Management (EFQM) Business Excellence Model are tools that use measures of an organization's performance to drive organizational improvement, generally by highlighting current shortfalls in performance, in areas of particular concern or interest to management teams [17]. In the first glance these two models are very similar to each other. Similarities like common goal, common ideas, both of them are behaviour assessment models and are trying to improve behaviours and are base on cause and effect but in spite of this similarities, it is essential to know that the two approaches come from very different backgrounds and are designed and used using different processes, further, their essence and history are different and each of them provides different profits. This part is going to compare these two models. Otley [6] has written a research paper entitle " Performance management: a framework for management control systems research " which has asked five questions about organizational performance frameworks as below:

1. What are the key objectives that are central to the organization's overall future success, and how does it go about evaluating its achievement for each of these objectives?
2. What strategies and plans has the organization adopted and what are the processes and activities that it has decided will be required for it to successfully implement these? How does it assess and measure the performance of these activities?
3. What level of performance does the organization need to achieve in each of the areas defined in the above two questions, and how does it go about setting appropriate performance targets for them?
4. What rewards will managers (and other employees) gain by achieving these performance targets (or, conversely, what penalties will they suffer by failing to achieve them)?
5. What are the information flows (feedback and feed-forward loops) that are necessary to enable the organization to learn from its experience, and to adapt its current behavior in the light of that experience?

These questions relate very closely to some of the central issues of modern management and management accounting practice. Table 1 shows the analysis of BSC and EFQM based on these five questions.

**TABLE 1: BSC and EFQM Comparison**

<b>EFQM</b>	<b>BSC</b>	
Helping manager to establish changes by the TQM principles – increasing efficiency in decision making and leader capabilities assessment of organization situation by 9 values.	Key aim of justified behavior with the strategy of organization.	<b>Objectives</b>
No direct suggestion for selecting strategy and plan is given to organization. Just help organization to recognize the field for analyzing EFQM.	Using strategic plan to explain organization strategies in 4 aspect of BSC.	<b>Plans and Strategies</b>
Aiming is not stirringly mentioned and the man offers aim base on the situation.	Aiming is not considered but the cause and effect is the strategic way for this purpose.	<b>Targets</b>
In 1999 version reward was paid attention as a part of assessment.	Rewards and the exams should be adapted with each other.	<b>Reward</b>
It is the major part of this model. Results of four aspects can be considered as information feedback.	Obvious need to the process of learning.	<b>Feedback</b>

Regarding Table 1 it could be said that no one of this models is answering those 5 questions, this is not mean that these two models are unsuitable or unable to employ the organization mentioning this heat that both of these models are unprescribed which means that manager can use these models regarding different circumstances. EFQM is a framework designed to assist organizations achieve business excellence through continuous improvement in the management and deployment of processes to engender wider use of best practice activities. It enables the calculation of scores against a number of criteria that can be used for either internal or external “benchmark” comparisons. It is hoped that the results of these relative comparisons will lead to increased focus on improving key process performance, and so generate “business excellence” [17][23], while BSC is a framework that expresses an organization’s strategy as a set of measurable goals from the perspectives of owners/investors, other external stakeholders, and the organization itself. If these goals and associated measures, and targets are well chosen, the Balanced Scorecard will help managers focus on the actions required to achieve them, so helping the organization achieve its overall strategic goals and realize its strategic visions [22][23].

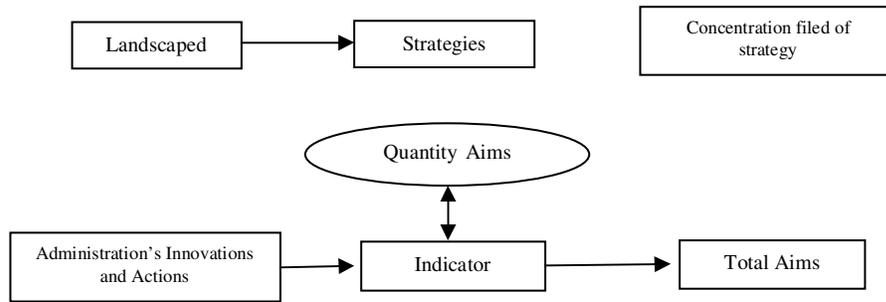
Moreover, BSC drives continuous improvements in processes within an organization versus EFQM that focuses management agenda on achieving strategic goals and supports two way communications of strategic priorities and organizational performance [17]. Both of them is flexible and should be use within the strategy, culture and aims of the organization. Important goal of both are in special areas. BSC is concentrated on four aspects and EFQM is concentrated on nine aspects. EFQM is not mentioning especial program and strategies while BSC help the managers by means of strategy plan. None of these models is helping managers for aiming. Furthermore, both of them, little thing has been mentioned about reword while in previous version of EFQM on 1999, it was not mentioned anything about it. The importance of information feedback has been indicated in both models. Table 2 shows the differences and similarities of BSC and EFQM.

**TABLE 2:** Differences and Similarities of BSC and EFQM

Similarities	Differences
Both of them have umpires cribbed structure. There is not obvious ways for successful performance. There is relation between reward and encouragement systems. Both of them concentrate to the customers’ profit. Both of them are sponsored and committed with an entire management team.	EFQM is based on total quality management (TQM) principals while BSC model is base on organization expected strategy. Information feedback is different in these two models. BSC is more flexible than EFQM.

#### **4. POSSIBILITY OF USING EFQM AND BSC AS A COMBINATION FRAMEWORK**

Regarding the similarities and differences of these two models which explained above, this question arose that “which one is better, using BSC and EFQM together as a combination model or use each of them individually”. Because of the fundamental differences that stated in Figure 4, it is better to employ both of these models together then superior results will be gotten. At continue, it is described that how BSC could be used to concentrate and indicate EFQM and also by using the EFQM how can strengthen the influence of BSC.



**FIGURE 4:** Schematic view of BSC

**4.1. Movement From BSC Toward Superiority**

After recognition the strategic behaviour of organization, its aims, indicators and the manner of performance by means of BSC, it is valuable to improve the quality level of processes which supports the aims and indicators to achieve strategic goals that are necessary. By using the self assessment information, organization can have a greater recognition for achieving its strategic goals (Figure 5).

BSC	Strategy	Improving Superiority Level	Maintaining High Level Quality	Competition Value
	Nonstrategic	Improvement Until the Level of Quality Acceptability	Eliminating Extra Investment	Organization's Efficiency Sign
		Weak Points	Strength Points	

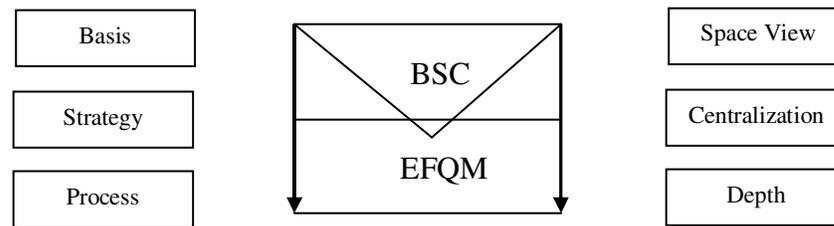
**FIGURE 5:** Supplementary of Superiority Model.

Using the model of superiority can fill the gap of acting between what the organization is and what will be at 2 or 5 years. These tools can be used as an indicator of time and assets which are needed for the process to determine the aims by BSC.

**4.2. Movement from Superiority Toward BSC**

As Table 1 is shown, using the EFQM provide a well understanding of the processes' strengths and weaknesses which have been obtained. Although as a result of activity evaluation, it can be realized what processes need to be improved, which processes are suitable, or in comparison with other organizations in what areas are noble but, it is not understood which areas are priority strategic or what kind of actions will result in even more valuable for improving the organization's activities. Then, in order to priority setting and resource allocation measures to strategic focus areas, BSC can be used as a tool.

Spend time and money to improve weak areas in the self-assessment process had been diagnosed, but do not have strategic importance, is not necessary. Of course in these areas least acceptability should be covered. Moreover, with conducting the evaluation, the noble points of organization are identified which may not be strategic, subsequently, additional investment and investiture should be avoided in these areas and organization's resources should be guided in the direction of the weak processes with the strategic priority (Figure 6).



**FIGURE 6:** EFQM Model that makes BSC Model Exhaustive.

Thus, BSC is employed as a supplemental self-assessment tool for strategic priority setting. Therefore, resources are assigned to the important strategic areas that need improvement, not only in areas where businesses have contained low self-assessment score. Combined use of BSC and EFQM, and combined them together will ensure that organization will do appropriate actions with the knowledge that they will improve organization's performance.

According to the above, it can be concluded that each of the BSC and EFQM, in the range of pre-eminent business organization, have a special place and they can be used together to cover the weaknesses of each other. In fact, intelligent application of these two models, processes and management will be strengthened. Some organizations have tried the merger of these two models to develop a new model. Such actions cause complexity, not fully understanding and coverage of the models and finally using them inappropriately. While both models with the full understanding and considerate their strengths and weaknesses, they can be used together effectively.

Most of the managers, with regard to the amount of resources spent and the high volume measures of self-evaluation process are worried. To these group managers, EFQM is very time consuming and complex model. Furthermore, lack of communication between strategic management and quality improvement activities will cause that managers face to a large number of improvement projects with no priorities. Although some managers believed that the use of the EFQM model improves the master communication, planning and participation by employees, but evidence indicates that overall business is not improved. Thus the Balanced Score Card model was introduced to cover two weaknesses of EFQM model which are as follows:

- I. Lack of strategic orientation
- II. Need to focus on improvement activities

## 5. RESULTS ANALYSIS USING TOPSIS METHOD

According to the discussion above, it is understood that using BSC and EFQM jointly enable organization to impart their advantages together. Furthermore, after identifying the BSC and EFQM's differences and similarities and their strengths and weaknesses, it is recognized that each of them can cover another weaknesses, therefore, an interview was conducted with SK Company's managers and experts and fifteen indicators were chosen among BSC's indicators which had more priority in comparison with other indicators against EFQM's nine criteria. Then, BSC and EFQM were implemented in SK Company. It should be noted that each organization has its own and unique BSC's indicators. After that, with using the TOPSIS method the effect rate of EFQM's criteria in comparison with BSC's indicators were evaluated quantitatively in a 9\*4

matrix to determine the most important EFQM's criteria in the most significant BSC's indicators as shown in Table 3.

**TABLE 3:** The priorities of EFQM's criteria in comparison with BSC's indicators.

	BSC's Aspects	BSC's Selected Indicators	EFQM's Criteria								Total	
			Leadership	Strategy	People	Partnerships and Resources	Process	People Results	Customer Results	Society Results		Key Performance Results
BSC's Selected Indicators	Financial	1 Increase Profits	4	3	2	8	4		4		8	33
		2 Become a Cost Leader	2	2	1	8	4		3		8	28
		3 Reduce Production Costs	2	2	3	1	9				8	25
		4 Income from New Clients	8	4	1	2	4	1	9	2	3	34
	<b>Total</b>		16	11	7	19	21	1	16	2	27	120
	Customer	5 On time Delivery of Product to Customer	2	2	1	3	9		8	2	2	29
		6 Increasing Brand's Vision	2	9	2	1	1	2	8	5	2	32
		7 After Sale Services	2	3	1	2	1		9	2	2	22
		8 Focus on Customers	9	2	2	1	2	2	7	2	2	29
	<b>Total</b>		19	16	6	7	13	4	32	11	8	112
	Learning and Development	9 Staff Satisfaction	9	2	6	1	1	5	2	1	2	29
		10 Training	3	2	9	2	4	8	2	2	2	34
		11 Developing Teamwork	7	6	9	2	2	4	1	2	7	40
		12 Relationship between Payments and Qualifications	2	8	9	2	2	7	1	2	4	37
	<b>Total</b>		21	18	33	7	9	20	6	7	15	140
	Internal Processes	13 Communication with Suppliers	4	2	2	9	1		1	2	4	25
14 Coordination between Internal Parts		4	5	2	2	2	2	1		8	26	
15 Improve Production Processes		2	2	4	3	3	4	6	3	2	29	
16 Number of stock-outs		4	3	1		2	7	1	4	3	25	
<b>Total</b>		14	12	9	14	8	13	9	9	17	105	

### 5.1. TOPSIS Method

TOPSIS (technique for order preference by similarity to an ideal solution) method is presented in Chen and Hwang [5]. TOPSIS is a multiple criteria method to identify solutions from a finite set of alternatives. The basic principle is that the chosen alternative should have the shortest distance from the positive ideal solution and the farthest distance from the negative ideal solution [8]. The procedure of TOPSIS can be expressed in a series of steps:

- i. Transform decision matrix into the dimensionless matrix with using of relation:

$$n_{ij} = x_{ij} / \sqrt{\sum_{i=1}^m x_{ij}^2}, \quad i = 1, \dots, m, \quad j = 1, \dots, n.$$

- ii. Construct the Weighted Normalized Decision Matrix:

$$V = N_D \cdot W_{n \times n} = \begin{pmatrix} V_{11}, \dots & V_{1j}, \dots & V_{1n} \\ \vdots & \vdots & \vdots \\ V_{m1}, \dots & V_{mj}, \dots & V_{mn} \end{pmatrix}$$

- iii. Determine the Ideal and Negative-Ideal solutions:

$$A^+ = \{v_1^+, \dots, v_n^+\} = \{(\max_j v_{ij} | i \in I), (\min_j v_{ij} | i \in J)\},$$

$$A^- = \{v_1^-, \dots, v_n^-\} = \{(\min_j v_{ij} | i \in I), (\max_j v_{ij} | i \in J)\},$$

- iv. Calculate the Separation Measure:

$$d_{i^+} = \left\{ \sum_{j=1}^n (v_{ij} - v_j^+)^2 \right\}^{1/2}, \quad i = 1, 2, \dots, m$$

$$d_{i^-} = \left\{ \sum_{j=1}^n (v_{ij} - v_j^-)^2 \right\}^{1/2}, \quad i = 1, 2, \dots, m$$

- v. Calculate the Relative Closeness for the Ideal Solution:

$$cl_{i^+} = \frac{d_{i^-}}{(d_{i^+} + d_{i^-})}, \quad 0 \leq cl_{i^+} \leq 1, \quad i = 1, 2, \dots, m$$

- vi. Rank the preference order. For ranking alternatives using this index, we can rank alternatives in decreasing order [9].

Calculated results are shown in Table 4. They demonstrate that A7 has the most priority versus A9 has the lowest ranking.

**TABLE 4: TOPSIS Results**

<b>Criteria</b>	<b>di+</b>	<b>di-</b>	<b>Ci+</b>
<b>Leadership</b>	0.04	0.038	0.487179
<b>Strategy</b>	0.036	0.034	0.485714
<b>People</b>	0.044	0.045	0.505618
<b>Partnerships and Resources</b>	0.06	0.0142	0.191375
<b>Process</b>	0.104	0.044	0.297297
<b>People Results</b>	0.052	0.043	0.452632
<b>Customer Results</b>	0.022	0.177	0.889447
<b>Society Results</b>	0.044	0.04	0.47619
<b>Key Performance Results</b>	0.054	0.01	0.15625

## 6. CONCLUSION

The choice of performance measures used in managing an organization is critical. Performance measures are an essential element in the evaluation of an organization's success, in achieving its strategic objectives, and in management compensation plans [2].

With growing the number of organizations which their types of activities require large amount of investments in financial and intellectual in the area of communication and information technology and modern services, and often they are incredibly concern about their investment return so the performance evaluation should be particularly important.

BSC as one of the latest innovation in management, is a multidimensional measurement system which provides a performance assessment framework with an integrated look at the business results, moreover, it includes quantitative criteria of short-term, result-oriented, and non-financial dimensions of quality, stimulating and long-term. The key features of BSC emphasizes on communication between company's strategy performance indicators [6] and by integration and providing a set of financial and non-financial indicators and link them to the organization's strategies and strengthen their connection oriented approach, it is expected that organization's problems would be reduced.

On the other hand, using the EFQM model can be filled the pre-eminent organization performance gap between what is today and what should be achieved in the future. EFQM is useful for comparative analysis of organization with other organizations and BSC will be valuable intended for transparency in the organization and implementation strategy.

As mentioned earlier, EFQM can help organizations to identify their strengths and weaknesses. With the activity evaluation can understand what processes need to be improved and which processes are suitable. However, it cannot be diagnosed the areas' priority and what kind of actions provide better results for improving the organization performance, BSC as a tool to prioritize actions and allocate resources to focus on strategic areas can be useful. All areas which are specified in self assessment that need improvement are not important and valuable for the organization so these kinds of investments may not be profitable. Concurrent use of two models together makes benefits for organization because ones' strengths will cover another's weaknesses. Additionally, as mentioned before, Balanced Score Card model and EFQM model despite some apparent similarities have some differences in the basic concept. Some important differences are:

- EFQM is independent from the environment but BSC is dependent.
- EFQM model is descriptive versus BSC is centralized.
- EFQM model is objective but BSC is a mental model.
- EFQM model shows the current status and BSC represent future status.

According to this study, in order to have a superior understanding of organization's process and its strategies, it is suggested to fully implement both of BSC and EFQM. Many organizations around the world which using these two models at the same time, have been able to have better results than when one of these two models had been used and the results gained from performance assessment using TOPSIS method in SK Company demonstrated it as well. Thus, it is recommended that organizations use these two models together as an integrated model.

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