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Using the balanced score card to design organizational comprehensive performance evaluation model

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To perform the right jobs and perform jobs correctly, a balanced relation is created between strategies and performances of organization (service company or manufacturing company), competitive threats and daily pressures on organizational processes. In order to develop and face future challenges, organizations develop their strategies and processes and perform their jobs properly. “Balanced score cards” is a good framework that balances between strategies and processes. Therefore, this article aims to carefully examine the “balanced score card” with one performance evaluation model and suggest it as an instrument for implementing strategies. In this article, a model was suggested for performance evaluation and a case study was conducted through this model in Pooya engineering company in Iran.

Key words: Balanced score card, value chains of organization, key success factors (KSF).

INTRODUCTION

Nowadays in the competitive world, in order to develop and sustain, all organizations, private or governmental, need efficient performance evaluation system through which they evaluate their programs, processes and human resources. Effective organizations are not satisfied with gathering and evaluating data, but they also utilize data in order to develop and approach their strategies and mission. In fact, they seek performance management not just performance evaluation. In information era, there is an absolute need for comprehensive performance evaluation; otherwise, organizations are not able to control and plan out something that they do not succeed to measure. Traditional accounting systems cannot measure actual organizational performance appropriately, though they are used frequently, because they emphasize just on financial dimension of organizational performance. It means they can measure financial success of organization; however, financial success does not provide competitive advantage in informational era.

Some organizations perceived limitations that traditional accounting system places on performance evaluation as time went by. They developed systems that measure intangible properties, whereas traditional systems could not evaluate intangible property. Although, many organizations utilize these kinds of systems besides traditional accounting systems to evaluate organizational performances, researchers and managers think these two systems together cannot measure all dimensions comprehensively yet (Robert, 2006). Therefore, it is believed that there should be a system that not only measures all dimensions but also measures the amount of success of organizations to achieve their mission and visions. This specific system can also help managers to provide strategic plan and decisions. “Balanced score card” is suggested as the system that can meet this for organizations and develop these kind of systems at whole. In organizations, after mission and vision are established and strategies are chosen, one of the main problems is to implement chosen strategies and make them effective and to achieve determined objectives. Organizations also face another problem; weakness of performance evaluation systems and administration control which are not appropriate for today. The more organizations grow, the more their problems increase, because their production sectors, workshops or supply

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and sales centers increase and change into obstacles against development. (Robert and David, 2006).

The main question is how performances of different sections of organization are evaluated in order to realize strategic objectives in a way that all internal and external organizational variables are identified and measured on time. Answering this question may lead to successful achievement towards organizational strategy and its efficient implementation because in fact organizational sections achieve organizational strategies. Performance evaluation based on organizational strategies and obvious indicators for managers and appropriate for each section, help managers correct performances of different sections according to organizational strategies. This kind of performance evaluation also provides appropriate answers for current problems. Efficient and predictable performance evaluation system can create opportunity for high executives to be involved in strategic issues; with this system, managers recognize management capacities of personnel and foster them according to capacity of high level of performance, give appropriate awards for organizational performances and provide motivation for subordinates to improve performance (Kaplan and Norton, 2006). On the other hand, most traditional performance evaluation systems concern financial statements data; they do ignore intangible organizational resources. This weakens these kinds of performance evaluation systems.

This article aims to design performance evaluation system through balanced score card (BSC). BSC concerns tangible and intangible resources such as customers, innovation, internal process, development of process and … as well. Notably it is strategy oriented: a performance evaluation system in terms of balanced score card can answer questions and solve problems, perfectly. Designing such a system leads to implementation of organizational strategies and create dynamic performance evaluation system that concerns all dimensions of organization and evaluates its actual performance. In consideration with this discourse, main question is: What is the most effective method of organizational performance evaluation leading to achieve objectives in terms of determined strategies? Objectives are as follows:

1. To design a comprehensive performance evaluation system in consideration with all dimensions and organizational assets including organizational tangible and intangible assets such as financial assets, customers, internal processes and development and learning.
2. To implement organizational strategy and make it effective through designing an effective and appropriate performance evaluation system.

Balanced performance evaluation system connects past, present and future of organizations and evaluates all organizational dimensions through modern technologies. Actualizing such a system and replacing it with traditional systems make performances transparent, achieve the desired effect, reduce costs and create connection with future that all are "innovation and creativity"-oriented.

LITERATURE REVIEW

In the first years of 1990s, Robert Kaplan, Professor of business School of Harvard University, and David Norton, manager of a research organization, surveyed reasons of success of 12 best American companies and compared their performance evaluation systems. Having provided an article entitled "performance evaluation", they suggested successful companies do not evaluate just financial dimensions but also other dimensions including customers, internal processes and learning and development. Kaplan and Norton suggested BSC as an evaluation instrument including four dimensions of finance, customers, internal business processes and development and learning. Therefore, objectives and standards of balanced evaluation system are derived from organizational missions and strategies and organizational performance is evaluated in terms of this vision. This method is a performance evaluation system that not only evaluates traditional financial issues but also evaluates three other dimensions including customers, internal business processes and development and learning. Nowadays, this method gives serious consideration into intangible organizational property so it provides the opportunity for organization to evaluate, monitor and judge the quality of intangible property and modify weaknesses and remedy defects (Kaplan and Norton, 2006, 2001). Balanced Score card is a concept that measures a company's activities in terms of its vision and strategies, to give managers a comprehensive view of the performance of a business. A Balanced Score card enables organizations to clarify their vision and strategy, and translate them into action (Cobbold and Lawrie, 2002).

In 2002, Toru Morisawa, a member of Nomoro Research institute, provided an article bearing the title of "Building Performance Measurement System with Balanced Scorecard Approach". In this article, he explains how BSC method achieves added value of management; He explains how this method influences performance evaluation of Japanese companies changing their evaluation systems towards BSC. In this article, performance evaluation system is explained and a performance evaluation through BSC is designed for an electronic company. At the end, effective factors on success of performance evaluation through BSC are stated (Morisawa and Nomura, 2002). In 2003, in their article “Using the Balanced Score card in Reforming Corporate Management Systems”, Toru Morisawa and Hiroshi Kurosaki explained the effect of using BSC on Japanese companies. They presented factors for
measuring success or failure of right use of BSC in order
to change management structure. Finally, relation
between budget and standard of performance evaluation
are explained (Morisawa and Kurosaki, 2003). Robert
Paladino in 2006 gave reasons of failure of implementing
strategies and explained how to measure strategy
through BSC. Then, they described performance eva-
ulation through BSC and related rewarding system with
results of performance evaluation (Paladino, 2006). In
1998, in his article under the title of “The balanced score
card to put the test at the University of California”,
Kristine A. Hafner suggested performance evaluation as
a learning process for organization. He identified
Balanced Score Card, as a performance evaluation, and
used it to explain management process of California
University (Hafner, 1998).
In 2006, Chih-Hsien Chen and Shuo-Yan Chou wrote
an article bearing the title of “A BSC Framework for Air
Cargo Terminal”. They designed an appropriate
procedure for air cargo terminal of Taiwan through BSC
and QFD. Having considered mission and vision of the
organization and provided map of organizational strategy,
they suggested indicators of performance evaluation of
all four areas of Balanced Score Card method. Finally, in
order to design necessities through QFD, they identified
critical issues evaluating performance (Chen and Chou,
2006).

Main aspects of the balanced score card

The BSC links our objectives, initiatives, and metrics to
our strategy while communicating our priorities to every
member of our company. Today our BSC program
includes linkages to our project approval process, bud-
geting methodology, compensation system, technology
initiatives, training program, and even our community
involvement and charitable contribution efforts. Our
results have been excellent with an uninterrupted history
of growth and a successful strategy implementation that
continues today, consistent with the first plans
established over six years ago. Profits are up, return on
assets is up, and assets have grown each year” (BMW,
2007). There are four main components of a Balanced
Scorecard (Figure 1). These are discussed subsequently:

Financial perspective

The importance of financial considerations is paramount
in most situations and in most organizations. For any
strategic choice, therefore, the timely and accurately pre-
sented funding data is critical and the sources of funding
and budgeting must be done. Another key consideration
is the prospects of sustainability of funding for the initia-
tive required to implement the strategy. This component
of the BSC therefore looks at the projects from a financial
perspective and discusses financial considerations
(Kaplan and Norton, 1992).

Customer perspective

This area focuses on what must be done and what is
most important, from the customer’s perspective, to
achieve the mission. The importance of customer focus

![Figure 1. Balanced score card - strategic perspective.](image-url)
and customer satisfaction has gained considerable importance in recent management philosophy. The increased competition in the markets means that it is easier than ever for the dissatisfied customers to switch suppliers. The objectives, measures, targets and, eventually activities are therefore planned to implement strategy regarding the customer satisfaction (Roy and Wetter, 1999).

**Internal process perspective**

This component focuses on what an organization must be doing well to meet the customer needs defined in the Customer Perspective. It also lets managers know how well their business is running and how well the internal processes are designed to meet the objectives. These may be divided into: a) mission-oriented processes and b) support processes. Specific measures and benchmarks are then set to monitor their effectiveness (Kaplan and Norton, 1992).

**Learning and growth perspective**

This perspective focuses on how an organization is improving its ability to innovate, improve and learn in order to support success with the critical operations and processes defined in the internal process perspective. This may include employee training and corporate culture attitudes. In the modern management philosophy, it is increasingly becoming important for the organizations to develop a culture of learning where the employees constantly learn and share the knowledge to facilitate growth. The on-the-job training and mentoring is also an essential component of the perspective.

Each of these four perspectives, (Kaplan and Norton, 1996) has a set of objectives, measures, targets and initiatives to achieve strategic goals defined. These are discussed as follows:

**Objectives:** Within each perspective, objectives identify what needs to be done in order to achieve the overall mission. They answer the questions: What must we do (from each perspective) to achieve the overall mission? What is most important (from each perspective) to achieving the overall mission?

**Measures:** Measures provide a way to determine how an organization is doing in achieving the objectives within the perspectives, and in turn the overall mission (Kaplan and Norton, 1996). They are the most “actionable” component in the Scorecard. Measures help answer the question: How do we know how well we’re doing in achieving our objectives, and in turn our overall mission?

**Targets:** Targets are set for each measure to monitor and evaluate the progress towards the objective (Hubbard, 2007).

**Initiatives:** These are the set of activities that are planned within each perspective in order to achieve the targets set for each measure.

Figure 1 visually depicts the global BSC framework.

**Benefits of balanced scorecard**

BSC provides more complete and precise information because it not only concerns financial dimension but also other dimensions. Therefore, chiefs of organization implement plans and strategies and make necessary modifications appropriately. Some major benefits of BSC are as follows:

1. To develop effectiveness of management through a overall and applied image of strategy.
2. To create organizational integrity and develop performance as supportive role for different unrelated programs such as quality, reengineering, design process in order to offer comprehensive and integrated services to customers.
3. To develop strategic outputs and consequences for sum of resources and property.
4. To create a total image of organizational situation and procedure, from last to present and to provide opportunities to have vision of future of organization.
5. To create integrity in order to achieve organizational objectives.
6. To help to organization to concentrate on affairs that leads to development of performance.
7. To develop comprehensive and balanced productivity of organization
8. To present a comprehensive and concise report of main total organizational factors.
9. Competency of changing and adapting to any kind of structure and organization.
10. To concentrate on limited number of standards and to ignore unnecessary information.
11. To utilize last information in order to reform future and make attempt in order to balance present and future performance (Lawrence and Sharma, 2002; Chen et al., 2006; Storey, 2002).

**METHODOLOGY**

Methodology is summarized as follows:

1. To survey and identify mission, vision and organizational strategies.
2. To identify organizational chains of value in order to realize organizational strategies through strategy map provided by BSC
3. To identify key success factors (KSF) and their related key performance indicators (KPI) and to determine their weights, actual critical and ideal value, for every indicator in all four areas of finance, customers, internal process and learning and development.
4. To evaluate performance based on a balanced consideration of
the four areas mentioned.

**Mission, vision and strategy of organization**

Organization should identify mission, vision and strategies precisely for different areas according to management procedure and strategic planning before implementing designed performance evaluation method. These strategies are to identify value of organization. Here, mission, vision and strategies of organization should be surveyed and clarified, if necessary, in order to determine considered values of organization.

**To identify value chains of organization through BSC**

After strategies of organization are determined, value chains of organization are identified according to BSC. Hence, map of organizational strategy is provided according to BSC. This map creates a situation that proves strategy relates intangible property to process of value creation. Financial dimension explains tangible consequences of strategy as financial explanations. Customer dimension explains values presented to target customers. It creates a situation that provides value of intangible property. Financial and customer dimensions describe expected consequences of strategy. Internal processes present limited key processes that are expected to have most effect on strategy achievement. Development and learning dimension defines intangible property that is important to strategy. Its objectives specify that which organizational skills and units (human capitals), which systems (information capitals) and what organizational climate (organizational capitals) are necessary for internal processes of value creation. These properties should be summed and assigned to key processes.

Objectives of these four dimensions are related to each other as cause and effect relationships. "Begin from the end" is a hypothesis that states financial results is accessible just when customers are satisfied. Values presented to customers describe how stuffs are sold and customers are loyal to company. Internal processes create and present values presented to customers. Intangible property that supports internal processes provides a base for strategy. The integration of these dimensions’ objectives is the key to creating values. Strategy map is developed based on cause and effect structure that relates these four dimensions (Kaplan and Norton, 2004).

**The method of creation of value chain in a typical company**

After establishing mission and clarifying vision s, organizational strategy for financial field is specified as follows: (a) To make profit through reducing cost; (b) To make profit through keeping customer and; (c) Increasing cash through providing in time incomes and generating new incomes.

To create value chain, the steps are needed as follows:

1. To identify issues that is considered as value for customers

   In the typical company, the issues stated subsequently are identified as examples of value for customers and as ultimate criteria of customer satisfaction:
   1. Quality of services.
   2. To offer competitive price.
   3. Reliability of company.
   4. Flexibility in facing problems and needs of customers.
   5. Subjective image of customer such as overall feeling of customer about services of company, past experiences of customers with rivals, efforts and advertisement of rivals in this field ....

2. To identify business processes

   Company business is achieved through performances as follows:
   2. Process of providing consumption substances from supplier.
   8. Development and management of human resources.
   10. Process of planning to offer customer services.

3. To identify position of each of processes in the chain of added value creation for customer

   Identifying the role of each process in providing customer satisfaction is shown in Table 1.

4. To identify different kinds of company incomes

   1. Incomes of routine bills.
   2. Occasional incomes through offering new services and equipments (addition to formal commitments).
   3. Incomes resulted from claim.

5. To identify role of each process in providing incomes for company

   1. Process that provide incomes.
   2. Process related to pursuit and receipt credit (Table 2).

   Based on identifying processes related to providing incomes, the following analyses are possible:
   1. Activities that are effective for in time payments.
   2. Activities that their development will lead to more income and will remedy defects of employer.
   3. Activities that form the basis of new opportunities and develop market.

6. To identify factors and structures of costs of implementing agreements

   1. Costs of consumption substances
   2. Costs of agencies
   3. Penalties
   4. Costs of personnel
   5. Costs of traffic and transformation

7. To identify processes that are origins of identified costs (Table 3)

   After identifying relation between implementation processes and
cost factors, the following analyses can be administered: Portion of each cost factors in total implementation costs.

To identify in tangible properties that are effective on processes of value chains

Some examples are as follows:

1. To transfer personal experiences and utilize it as a valuable asset.
2. To gather and analyze obtained knowledge of needs of customers that can be early idea of goods supply and new services for companies.
3. To achieve and control new technologies in time.
4. To employ, use and develop needed human resources.

All obtained information as the form of strategic map and results of analyses and models presented before, shown in figures 2, 3 and 4, are provided and suggested. To identify factors and indicators of key performances and to determine their weight and actual, ideal and critical quantities.

Here, key success factors and key performance indicators related to them for four fields of finance, customer, internal processes and learning and developing are identified according to provided strategic map and value chain. Then, weight, and actual, ideal and critical amounts are determined. Ideal amount is an amount to be reached. Critical amount is the amount that company faces critical problems if it does not observe it. To achieve actual amount for each indicator, actual data and information should be gathered through field researches and internal and external surveys and through questionnaires and interviews and so on. To achieve weight, critical and ideal amounts of indicators, techniques such as Delphi and brain storming of managers and related experts should be used according to goals and visions of company and standards for each indicator if identified in related industry.

The issues aforementioned were implemented for the four dimensions of the typical company, shown in Table 4, 5, 6 and 7. Notably, actual amount of each indicator for a specific time period was evaluated. Time periods are determined by experts and according to situations of company.

Balanced evaluation of performance for four dimensions of finance, customer, internal processes and learning and developing

To evaluate financial, customer, internal processes and learning and developing dimensions, efficiency indicator \((Y_i)\) for each dimension is calculated as shown in the subsequent formulor. Efficiency indicator is less or equal to 1 and equal or more than 0. According to the following formula, efficiency indicator is 1 when the amount is ideal and efficiency indicator is 0 when the amount is critical. Notably, the bellow formula normalizes all data, profits or costs.

\[
X_i = \frac{M_{i,n} - C_i}{T_i - C_i}
\]

\(X_i\) = amount of development of indicator (i)
\(M_i, n\) = the actual amount of indicator (i) in period (n) of evaluation
\(T_i\) = ideal amount of indicator (i)
\(C_i\) = critical amount of indicator (i)
Table 3. Processes that are origins of identified costs.

<table>
<thead>
<tr>
<th>Main process</th>
<th>Cost of consumption on substances</th>
<th>Costs of agencies</th>
<th>Penalties</th>
<th>Costs of Personnel</th>
<th>Costs of traffic and transformation</th>
<th>Costs of harm and loss</th>
<th>Capital turnover</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>A</td>
<td>E</td>
<td>D</td>
<td>I</td>
<td>G</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>B</td>
<td>B</td>
<td>B</td>
<td>G</td>
<td>D</td>
<td>E</td>
<td>D</td>
<td>B</td>
</tr>
<tr>
<td>C</td>
<td>C</td>
<td>C</td>
<td>H</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 2. Analysis dynamic relations of costly processes and value creating occasions and cases of customers and companies.
Figure 4. To study and survey dynamic relations of factors creating costs, incomes, customer satisfaction and internal processes of company.
Table 4. Financial dimension.

<table>
<thead>
<tr>
<th>Row</th>
<th>KSF</th>
<th>KPI</th>
<th>Critical amount</th>
<th>Actual amount</th>
<th>Ideal amount</th>
<th>Ideal weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cash management</td>
<td>Average of ratio of cash to overall company's credit in every month</td>
<td>0.2</td>
<td>0.5</td>
<td>0.8</td>
<td>0.3</td>
</tr>
<tr>
<td>2</td>
<td>Operating cost</td>
<td>Ratio of profit to cost</td>
<td>0.1</td>
<td>0.2</td>
<td>0.4</td>
<td>0.4</td>
</tr>
<tr>
<td>3</td>
<td>New incomes</td>
<td>Ratio of new incomes to total incomes</td>
<td>0.02</td>
<td>0.1</td>
<td>0.25</td>
<td>0.3</td>
</tr>
</tbody>
</table>

Table 5. Customer dimension.

<table>
<thead>
<tr>
<th>Row</th>
<th>KSF</th>
<th>KPI</th>
<th>Critical amount</th>
<th>Actual amount</th>
<th>Ideal amount</th>
<th>Ideal weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Level of costumer satisfaction</td>
<td>Ratio of unsatisfied customer to all customers</td>
<td>0.3</td>
<td>0.1</td>
<td>0.05</td>
<td>0.5</td>
</tr>
<tr>
<td>5</td>
<td>Number of customers</td>
<td>Ratio of new customers to all customers</td>
<td>0.01</td>
<td>0.05</td>
<td>0.2</td>
<td>0.3</td>
</tr>
<tr>
<td>6</td>
<td>New request of customers</td>
<td>Ratio of new request to all requests of customers</td>
<td>0.005</td>
<td>0.02</td>
<td>0.15</td>
<td>0.2</td>
</tr>
</tbody>
</table>

For the typical company, efficiency indicator of each dimension is presented in Table 8.

Radar chart for Table 8 is shown in Figure 5. The chart shows how balanced all dimensions are and also presents deviation of each dimension from actual amount.

Conclusion

In this article, a comprehensive performance evaluation system was designed through balanced score card. This comprehensive system is practical and usable for different organizations. Having considered value chains of business of organizations, the system evaluates four dimensions of finance, customer, internal processes and
Table 6. Internal processes dimension.

<table>
<thead>
<tr>
<th>Row</th>
<th>KSF</th>
<th>KPI</th>
<th>Critical amount</th>
<th>Actual amount</th>
<th>Ideal amount</th>
<th>Ideal weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Processes of issuing bills to customers</td>
<td>Time average of issuing invoices, sending to customers and receiving bills every month based on the number of day</td>
<td>50</td>
<td>20</td>
<td>10</td>
<td>0.3</td>
</tr>
<tr>
<td>8</td>
<td>Process of periodic service (repair and maintenance)</td>
<td>Ratio of numbers of damages of instruments to all instrument</td>
<td>0.5</td>
<td>0.3</td>
<td>0.1</td>
<td>0.3</td>
</tr>
<tr>
<td>9</td>
<td>CRM</td>
<td>Ratio of man-hour for measuring available customers’ satisfaction, researching about market and rivals to total man-hour work</td>
<td>0.02</td>
<td>0.05</td>
<td>0.1</td>
<td>0.2</td>
</tr>
<tr>
<td>10</td>
<td>Process of Planning services to customers</td>
<td>Average of ratio of not considered requests in a day to all requests in that day</td>
<td>0.4</td>
<td>0.3</td>
<td>0.05</td>
<td>0.2</td>
</tr>
</tbody>
</table>

Table 7. Developing and training dimension.

<table>
<thead>
<tr>
<th>Row</th>
<th>KSF</th>
<th>KPI</th>
<th>Critical amount</th>
<th>Actual amount</th>
<th>Ideal amount</th>
<th>Ideal amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Training personnel</td>
<td>Ratio of man-hour of periodic training to all personnel</td>
<td>2</td>
<td>5</td>
<td>25</td>
<td>0.5</td>
</tr>
<tr>
<td>12</td>
<td>To transmit and to store experience</td>
<td>Number of coordinated meetings in order to transmit and store experience</td>
<td>1</td>
<td>3</td>
<td>12</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Table 8. Efficiency indicator of each dimension.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Efficiency indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finance</td>
<td>0.39</td>
</tr>
<tr>
<td>Customer</td>
<td>0.48</td>
</tr>
<tr>
<td>Internal processes</td>
<td>0.51</td>
</tr>
<tr>
<td>Learning and development</td>
<td>0.16</td>
</tr>
</tbody>
</table>

learning and developing coordinately.

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