Full Length Research Paper

Performance assessment at Iran’s electric power distribution company: A study based on Kanji’s business excellence measurement system (KBEMS)

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The increasing application of performance excellence and evaluation models causes organizations to use these models in assessment of their own performance and success (Tehran Jahad-E-Daneshgahi, 2002). Today, several models have been highly proposed to evaluate the performance. Some models like balanced scorecard have been widely developed (Akbari, 2007). In the present study, Kanji’s business excellence measurement system (KBEMS) has been used to assess the performance of Bandar Abbas Electric Power Distribution Company. In addition to focusing on organizational excellence, this model measures the performance with respect to two approaches on performance measurement from the perspective of inner and out stakeholders of the organization. Since the given performance measurement model has been constituted of two sections of performance evaluation from the viewpoint of inner and out stakeholders of the organization, in order to achieve the above mentioned objective, one should examine two minor goals which are based on performance in view of these stakeholders. Consequently, there were two different statistical populations in this study, which led to conducting test on the hypotheses about them. In this research, a questionnaire as means of collecting information, as well as SPSS and S-Plus software have been used for statistical analysis. Eventually, the final score was achieved and analyzed for organizational performance.

Key words: Performance measurement system, performance assessment, critical success factor (CSF), Kanji’s business excellence measurement system (KBEMS), Kanji’s business excellence model (KBEM), Kanji’s scorecard, index.

INTRODUCTION

Evaluation is not a new issue; but something that must be considered is that development of organizations, dramatic developments in knowledge management, has affected evaluation mechanisms (Amiran, 2004). The evaluation today is looking to create improved performance and look to the guidance and supervision of guidance (Kanji, 1998). So a performance assessment system should be designed to suit the position and functions of service organizations (Doroudian, 2006). The fundamental question posed by this study: What model is the model? In order to provide a good model performance evaluation in service organizations is to assess the appropriate model performance in services.

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In connection with this model, two questions are asked:

1. Which of the models of total quality management should be used for performance assessment of service organizations?
2. Which of the indicators selected model is appropriate to evaluate services organizations?

In this paper, firstly, we describe the performance assessment system applied. With respect to the fact that Kanji’s performance assessment system is a perfect system and has bidirectional approach toward organizational excellence and scorecard and all of its indices are quality indices and since the system is new to the performance measurement systems, it has been used for assessment of organizational performance in this study (Kanji, Gopal. K and Moura, Patricia, 2001).

**Structure of Kanji’s performance assessment system**

This system comprises of two measurement tools for performance as follows:


2. Kanji’s excellence scorecard (KESC) (Kanji & SA, 2002).

In view of inner stakeholders, role of KBEM is to measure organizational performance, while KESC examines organizational performance from outer stakeholders’ point of view. By integration of inner and outer scores (Ghorbani, 2005), organizational performance index (OPI) will be eventually computed. Organizational performance final index presents organizational excellence overall outcome to manage all critical success factors (Department of management improvement, 2003). Figure 1 shows Kanji’s business excellence measurement system (KBEMS).

**Kanji’s business excellence measurement system (KBEMS)**

As it seen in Figure 1, Kanji’s performance measurement system consists of two parts: Kanji’s business excellence model (KBEM) and Kanji’s business scorecard (KBS) (Banks J, Karsen J, 2003). This system has been designed based on principles of comprehensive quality management and organizational excellence systems (Najmi and Hosseini, 2003). Then they were related and...
integrated to introduce a comprehensive and multidimensional system for measuring intra- and extra-organizational performance called Kanji’s business excellence measurement system (KBEMS) (Khoshvaghti A, 2005). By introducing this system, several organizations and enterprises appreciated it and used it to measure their performance (Khaki Gh, 2004). Kanji’s business excellence model (KBEM) includes the following indices:

i. Leadership
ii. People-based management
iii. Customer satisfaction
iv. Management by fact
v. Continuous improvement

**Leadership**

In this model, leadership is the most important index of organizational performance from the perspective of inner stakeholders (Hosseini SA, 2008). Figure 2 shows Kanji’s pyramid model for achieving business excellence. As shown, leadership has been considered as the most important excellence cornerstone. Other four pillars in this pyramid are the same constituents of Kanji’s excellence model (Yousefi, 2006).

**People-based management**

The vital factor in this index is the formation of working teams and doing team-work (Ozma, 2007). This index indicates flexibility of working groups in an organization and measures their ability of forming specialized work groups in order to clear up or resolve the problems.

**Customer’s satisfaction**

Today, the satisfied customers guarantee survival of the organizations. Customers do not always come from outside the organization; so, organizational units may be customers for other units (Rahimi Gh, 2006). Staff and investors of an organization are amongst inner stakeholders, who work inside the organization and at the same time, benefit from performance of the organization. This index focuses on organizational emphasis on customers.

**Management by fact**

It is based on the extent to which the manager of an organization cares about what he/she hears while making decisions, the extent to which those decisions are logical and rational and the extent to which his/her decision-making is based on fact and not on emotions (Abili Kh and Movafaghi, 2006).

**Continuous improvement**

It consists of two factors; prevention and continuous
improvement cycle. In many occasions, you may hear that physicians and specialists tell us prevention is better than cure (Center of network development and health promotion, 2002). This fact applies to organizations as well; that is to say, where one could prevent conflict, misunderstanding, machineries breakdown, slackness and production of wastes, it is preferred to identify conflict and unrest sources in order to avoid occurrence of abrupt accidents. This is one of the principles of productivity. The modern organizations must not only be able to increase their profit, but also to increase effectiveness and efficiency and prevent wasting sources and energy.

Elements of Kanji’s business scorecard

The balanced scorecard (BSC) may be improved by integration of comprehensive quality management principles and critical success factors implied in Kanji’s business excellence model (Deputy of Management & HR affairs, 2001). This model focuses on findings in which each of the four fields feed each other in order to form a continuous improvement cycle; as a result (Amirkabiri, 2006):

- Delighting stakeholders may generate income and satisfy the investor.
- Rising incomes lead to investment on processes and training.
- The better training and processes contribute to make stakeholders delighted and to create business excellence.

Thus, one can draw Kanji’s business scorecard (KBS) as depicted in Figure 3.

The effective management of these critical factors of success may not only lead to financial good outcomes, as is declared by Kaplan and Norton (1992), but will also lead to a superior index which is called Kanji’s scorecard. That is to say, the organization tends to provide higher value for all stakeholders while enjoying a strong quality reliability that is a comprehensive and long-run concept.

Kanji’s business scorecard aims to complete Kanji’s business excellence model, focusing on the measurement of the performance of the organization from perspectives of out stakeholders. Organizations hoping to use KBS should know who their main stakeholders are and then codify a method to take their feedback. One possible way is periodic management of interviewees in field of stakeholder.

Comparison between Kanji’s business scorecard (KBS) and balanced scorecard (BSC)

The balanced scorecard (BSC) was first introduced by Norton and Kaplan (1992) as a measurement framework and was expected to overcome some defects of traditional performance measurement system (Fatehi Fooladi, 2007). The new approach on performance measurement suggested in balanced scorecard corresponds to innovations carried out in many factories; including inter-task correlation, continuous improvement, partnership among customers and supplier and team responsibility vs. individual responsibility (Sadooghian, Tadayon, 2007).

This scorecard may be used in formulation of organizational perspective and strategies. Similarly, it identifies key personnel and integrates customers’ requirements with business objectives. By use of BSC, personnel can observe their work result and be aware of their share in organizational development (OD) (Ezzati, 2005).

The balanced scorecard (BSC) deals with customers’ satisfaction index. On the contrary, Kanji’s business score card (KBS) is concerned with satisfaction of out stakeholders of the organization and includes investors and stockholders of the company or organization as well, while BSC does not act widely to the given extent (Razani, 2002). On the other hand, both models refer to learning index. BSC has two indices as financial
performance and internal perspective, while indices of organizational values and excellence of process in KBS show that this model is based on quality indices (Samadi, 2006). Since the model applied in this study is based on quality performance indices, selection of BSC indicates that we have properly acted based on Kanji’s business excellence management system (KBEMS) to select performance assessment system.

RESEARCH METHODOLOGY

As mentioned previously, this study has been conducted in Bandar Abbas Electric Power Distribution Company (BAPEDC) during the period of 21 March 2010 to 22 September 2010. To carry out research and assess performance of Bandar Abbas Electric Power Distribution Company (BAPEDC), some hypotheses are proposed and we gather some information to ask to the questions about these hypotheses and to prove or reject them.

Spatial domain

The present study was carried out in Bandar Abbas Electric Power Distribution Company (BAPEDC) with help of the personnel and some customers of this company.

Temporal domain

Company performance in the period between 21 March and 22 September 2010.

Statistical population

This study will be conducted in two parts; so, it has two statistical populations; inter-organizational stakeholders and extra-organizational stakeholders.

Inter-organizational stakeholder’s statistical population includes all personnel who work inside the organization and receive salary and benefits. Extra-organizational stakeholders’ statistical population comprises of shareholders and investors who have invested there and have benefitted from it. It also includes the customers who buy the products and services of that organization.

Statistical sample

If the number of an intra-organizational statistics population is small (about 50 to 70 persons) it is recommended to select the whole team as statistical population. But, if intra-organizational statistics population is large, as it would be certainly the same for extra-organizational statistics population, one can use the following formula to determine sample space and identify number of intra- and extra-organizational statistics population (Amiri F, 2006):

\[ n = \frac{N \cdot (Z\alpha/2)^2 \cdot pq}{(N - 1) \cdot e^2 + (Z\alpha/2)^2 \cdot pq} \]

where

- \( n \) = number of the needed samples;
- \( Z_{\alpha/2} \) = the given certainty level;
- \( e \) = the acceptable error that is 0.05;
- \( N \) = number of population;
- \( P \) = the considered certainty level which is 0.95 where \( q = 1 - p \), so we have \( q = 0.05 \).

Technique of collecting information

In this study, several techniques were used to collect information:

1. Library method: In this method, some sources, books and internet and essays which were mainly in Latin (especially about Kanji’s subject) have been used.
2. Field method: At the present research, questionnaire has been used as one of the very common tools in surveying researches. The applied questionnaire in this study is the same standard questionnaire of KBEMS to which Kanji has referred in his book (Kanji, 2002). The only notable point here is the fact that road management organization is a governmental organization and its output is services and not products; for this reason the questions mainly focused on services and no questions related to factories and plants have been raised (Delghavi, 2007).

Research hypotheses

Based on Kanji’s view, performance assessment aims to evaluate organizational performance that forms our main study hypothesis (Yousefi, 2006). Accordingly, the following hypothesis is the most important in our research:

\[ H_1: \text{In view of all (inner and out) stakeholders, the given organization acts well.} \]

Since Kanji’s performance assessment system consists of two intra- and extra-organizational performances, two hypotheses are proposed as follows:

\[ H_2: \text{In view of inner stakeholders, the given organization acts well.} \]
\[ H_3: \text{In view of out stakeholders, the given organization acts well.} \]

To prove the first hypothesis, first, one should demonstrate second and third hypotheses. This is realized through calculation of indices performance scores. Therefore, hypothesis test was done for intra- and extra-organizational indices; as a result, 5 tests were conducted for intra-organizational indices and 4 for extra-organizational ones. Respectively, and eventually, scores of internal and external performances underwent one test each and one test was carried out for overall score of organizational performance. This way, the study finally came to the end by 12 tests.

RESULTS AND DISCUSSION

First, number of the studied samples was calculated. Since population of extra-organizational stakeholders was about 4300, only one sample of 100 customers and company shareholders was selected which generally included company shareholders, and customers with commercial, administrative, clerical, residential and industrial application. On the other hand, by using Cranach’s alpha formula, number of intra-organizational
Table 1. Normality test for intra organizational indices in Kolmogorov-Smirnov test.

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Number of sample</th>
<th>Statistical value</th>
<th>Critical value</th>
<th>Test result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leadership</td>
<td>70</td>
<td>0.152</td>
<td>0.05</td>
<td>Accepted H₀</td>
</tr>
<tr>
<td>Customers' satisfaction</td>
<td>70</td>
<td>0.738</td>
<td>0.05</td>
<td>Accepted H₀</td>
</tr>
<tr>
<td>Management by fact</td>
<td>70</td>
<td>0.132</td>
<td>0.05</td>
<td>Accepted H₀</td>
</tr>
<tr>
<td>People-based management</td>
<td>70</td>
<td>0.231</td>
<td>0.05</td>
<td>Accepted H₀</td>
</tr>
<tr>
<td>Continuous improvement</td>
<td>70</td>
<td>0.167</td>
<td>0.05</td>
<td>Accepted H₀</td>
</tr>
</tbody>
</table>

Table 2. Normality test for extra-organizational indices in Kolmogorov-Smirnov test.

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Number of sample</th>
<th>Statistical value</th>
<th>Critical value</th>
<th>Test result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational values</td>
<td>100</td>
<td>0.121</td>
<td>0.05</td>
<td>Accepted H₀</td>
</tr>
<tr>
<td>Organizational learning</td>
<td>100</td>
<td>0.211</td>
<td>0.05</td>
<td>Accepted H₀</td>
</tr>
<tr>
<td>Process excellence</td>
<td>100</td>
<td>0.77</td>
<td>0.05</td>
<td>Accepted H₀</td>
</tr>
<tr>
<td>Satisfaction (delight) of stakeholders</td>
<td>100</td>
<td>0.67</td>
<td>0.05</td>
<td>Accepted H₀</td>
</tr>
</tbody>
</table>

Table 3. Results of SPSS software about scores of indices.

<table>
<thead>
<tr>
<th>KBEM</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leadership</td>
<td>42.86</td>
</tr>
<tr>
<td>Intra-organizational</td>
<td>39.77</td>
</tr>
<tr>
<td>customers' satisfaction</td>
<td></td>
</tr>
<tr>
<td>Management by fact</td>
<td>33.52</td>
</tr>
<tr>
<td>People-based management</td>
<td>26.31</td>
</tr>
<tr>
<td>Continuous improvement</td>
<td>27.46</td>
</tr>
<tr>
<td>Performance excellence</td>
<td>33.98</td>
</tr>
<tr>
<td>score, Part I, PEA analysis</td>
<td></td>
</tr>
</tbody>
</table>

persons was limited to 70, with 5% error and certainty level of 95%.

The questionnaire used in this study is of Kanji’s system standard questionnaire which uses Likert five-scale spectrum is updated as required according to a serving company, therefore, it is sufficiently valid (Eftekhari, 2007). On the other hand, to measure reliability of questionnaire, Kolmogorov-Smirnov Test (K-S-Test) was applied and the results indicated that intra- and extra-organizational questionnaires are reliable enough with scores of 0.82 and 0.781, respectively (it should be noted that the favorable value has been considered as 70% reliability). Data normality test was done for each of performance indices as follows:

\[ H₀: \text{Observations follows normal distribution} \]
\[ H₁: \text{Observations do not follow normal distribution} \]

The results indicated that the collected data are normal with different degree and percentage which are shown in Table 1. The Kolmogorov-Smirnov test was carried out for the data obtained from questionnaire in KBS part and these results are as in Table 2. Then, scores of indices performance were computed by application of SPSS software and their results are shown in Table 3. As is observed in Figure 4, Bandar Abbas Electrical Power Distribution Company (BAEPDC) has managed to obtain a score of 33.98 in the field of intra-organization performance and concerning extra-organizational indices the same scores were obtained as in Table 4.

As it is clear from the results in Figure 5, BAEPDC could obtain a score of 31.64 in terms of extra-organizational customers. Eventually, the overall score of organizational performance was achieved as shown in Figure 6.

Since intra- and extra-organizational performance scores is calculated based on a score of 100, this score is indicated as 1000 in assessment system of organizational performance overall score, so, we also compute organizational overall score as 1000. Then, this organization has obtained a score of 328.1 out of a score of 1000 in terms of performance.

Study’s main hypothesis

With respect to Kanji’s business measurement system, organizational performance should be compared with
As it observed, Bandar Abbas Electrical Power Distribution Company (BAEPDC) has managed leaders by fact management and continuous improvement. Table 4 shows the results of SPSS software about scores of extra-organizational indices.

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational values</td>
<td>37.44</td>
</tr>
<tr>
<td>Organizational learning</td>
<td>30.71</td>
</tr>
<tr>
<td>Process excellence</td>
<td>27.93</td>
</tr>
<tr>
<td>Extra-organizational customers</td>
<td>30.5</td>
</tr>
<tr>
<td>Extra-organizational score</td>
<td>31.64</td>
</tr>
</tbody>
</table>

Figure 4 shows the intra-organizational performance scores chart.

Figure 5 shows the extra-organizational performance scores.

H0: μ ≤ 700
H1: μ > 700

Each field, namely, Kanji’s excellence model (KBEM) and Kanji’s scorecard (KBS) has a score of 1000 and the favorable score is 700: that is to say, fields which have scored greater than 700 have had a good performance on that field. Similarly, to conduct test of study constituent with minor hypotheses, the two following tests were carried out:

First minor hypothesis test: HEDC organization has an acceptable performance in terms of inner stakeholders of the organization.
Second minor hypothesis test: HEDC organization has an acceptable performance in terms of out stakeholders of the organization.

Criterion for the scores is 70. On the other hand, in order to conduct this test on hypothesis, one- sided Z-hypothesis shall be used. Thus the following test is applied to 9 indices of intra- and extra- organizational performance:

\( H_0: \) The organization has not acceptable score in the given criterion.

\( H_1: \) The organization has acceptable score in the given criterion.

Since SPSS could not be used in one- sided analysis, S-Plus software was used for this purpose (Table 5). The obtained results from testing of hypotheses showed that the given organization has not acted well on each of the intra-organizational performance indices. Also, the hypothesis was tested on extra-organizational performance indices as shown in Table 6.

Table 6 indicates that the organization has obtained a score of 31.64 in terms of extra-organizational performance which, compared to the score of 70, is indicative of improper performance of the organization in external level.

Test of organization performance overall hypothesis

Test of organization performance overall hypothesis was also conducted and the following results showed that the overall score of organizational performance is low and the given organization has not managed to obtain
satisfaction of its stakeholder inside or outside the organization based on Kanji’s performance indices:

One-sample t-Test: Data: V1 in DS7
\[ t = -31.7863, \text{df} = 1, \text{p-value} = 0.99 \]

Alternative hypothesis: true mean is greater than 700
95% confidence interval: 254.2291 NA
Sample estimates: Mean of x (328.1)

Conclusion

The results show that the organization has not managed to obtain good score in any of the performance fields; although, it could have better performance in some of criteria than other ones.

With respect to the fact that in Kanji’s performance measurement system, qualitative indices are used and this model is based on organizational excellence models and scorecard, it was predicted that some lower scores are obtained for performance assessment at first stage of performance evaluation in this organization. On the other hand, in order to be effective, performance assessment should be repeated within subsequent stages and their result shall be proposed to organizational managers in order to make them able to observe the effect of changes in performance of their organization.

It is suggested to managers of the organization to convert performance assessment into a process within the given organization, and on the other hand, to spread organizational excellence culture and to use continuous improvement cycle, knowledge management, and do some activities like addressing to voice of customers inside and outside the organization including their complaints and proposals, taking feedback of customers to improve performance, to diagnose customers’ requirements, to respect customers as the most essential and determinant organizational stakeholders as well as encouragement of organizational values and learning in order to change it into a learner organization.

REFERENCES


