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Performance Evaluation of Bank Branches using Data Envelopment Analysis and Analytical Hierarchy Process (AHP/DEA)

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Abstract: Performance evaluation is the evaluation and assessment process of the existing situation. It determines how to achieve good status with the specified criteria in a specific period of time with the goal of continuous improvement of the organization performance. Data Envelopment Analysis (DEA) is one of the most effective and popular ways to evaluate performance. The basic DEA model does not rank overall and only classifies the options into two groups: efficient and inefficient. However, over the past 10 years, many efforts have been made to classify the options completely with the DEA. This research is another effort to use the concept of DEA in a complete ranking of options by one of the most common methods of multi-criteria decision making, Analytical Hierarchy Process (AHP). AHP/DEA model which is investigated in this research is comprised of two stages. In this study, first the criteria are measured in comparison to each other and the paired comparisons matrix is obtained, using data envelopment analysis. Then, the most efficient branch is determined, using the Analytical Hierarchy Process. Performance evaluation of branches is carried out based on the input and output values. In this study, four input criteria (cost of movable property, labor costs, administrative costs and the number of branch personnel) and three output criteria (deposits, granted facilities and branch profits) are used to evaluate the efficiency of bank branches in the period of Aban 1384 until Day 1385 for sixteen bank branches in Iran's Sistan and Baluchistan province, using WinQSB and Expert Choice software and the AHP/DEA model. Results showed that the three branches Alavi, Central and Joushkaran have the ranks highest weight respectively. In addition, the results indicated that the method of AHP/DEA is an efficient method for evaluating the performance and can improve the weaknesses of traditional DEA method.

Keywords: Combined method of data envelopment analysis and hierarchical approach, data envelopment analysis, hierarchical approach, performance evaluation

INTRODUCTION

The major purpose of performance evaluation is providing necessary feedback and implementing reforms to the process in order to improve the organization continuous performance. In many cases, performance of executive groups should be evaluated. Banks branches, naturally act as a group subsidiaries and employees as the group's members play an important role to achieve the goals set by the planning departments of banks (Tangen, 2004). The bank's branches differ from each other in terms of having facilities like ATM, point of sale, branch size and amenities. Also the number of branch employees, pay rates and encouraging, the residential and commercial situation of branch is different with each other. However, some cases such as being a governmental organization, regulations and administrative guidelines, interest rate payments, interest rate received include similar process. Branches unattainable deposit targets set by managers and experts, inadequate staff training, lack of a strong body of expertise in the banks particularly out of Tehran, low utilization of new technologies, competitive atmosphere with private banks and … are main issues that the governmental banks confront. Naturally, these cases also influence the branches effective performance. The question that arises now is how the performance of branches is investigated and ranked. This study, with regard to the existing conditions, evaluates the performance of branches within the specified time period and provides suggestions to improve their performance.

LITERATURE REVIEW

In recent years, the pace of environmental change (economic, social and technological) was so impressive that many organizations and their managers have failed to understand these changes and react properly along with the speed of these changes. The changes in the technology sector, is faster than other sectors. The emergence of new technological phenomena such as computer, internet, optical fiber networks, communications satellite and advanced software has a

big impact on people's lives and their expectations. These changes bring additional pressure on organizations to satisfy the new customer needs and expectations (Mahadzir, 2004). Quality and effectiveness of management and its performance is a critical determinant in achieving development and prosperity of society. Various services, different products and providing the costs from the resources, sufficient sensitivity to investigate the goals achievement, continuous quality improvement, customer and client satisfaction enhancement, organizational performance evaluation have created management and employees (Behmand and Bahmani, 1382).

Generally performance evaluation is one of the most difficult aspects of management so that some have used it as a vulnerable spot of management (Fazli and Azar, 1381). The performance evaluation system officially dates back to the nineteenth century. The performance evaluation has been developed along with the management thoughts development in the schools of management. Indexes change and development in general and universal principles for organizations and the comprehensive quality management evaluation indicates evaluation systems development (Karimi, 1385).

Necessary in competitive activities, primarily is to gain competitive advantages (Afshar Kazemy, 1385). Considering the gap between domestic and foreign banking, low level of high-tech in the domestic banking, lack of knowledgeable employees and relatively inexperienced banks, the performance comparison of banks has been somewhat difficult and therefore in the same conditions, the performance of a bank branch can be compared and present a model for other branches. Due to this evaluation, the managers find a more comprehensive awareness of the covered branches and inefficient branches lead to the efficient branches by changes the input variables (Drake and Hall, 2003).

Data envelopment analysis which was introduced in 1978 by Charnes, Cooper and Rhodes, now is widely used to evaluate the efficiency of governmental and nongovernmental organizations that are located in a series of similar units or branches. In 1957, Farrell tried to achieve the productivity of a system with two inputs and one output. He offered this system based on the general concept of productivity (Bowlin, 2002). Charnes, Cooper and Rhodes generalized data envelopment analysis for systems with multiple inputs and outputs. Their method has been published in a paper titled "Measuring the efficiency of decision-making units" and it was known the CCR model which is composed of three individuals from the first letters of their names. In this method, evaluation is carried out based on homogeneous inputs and outputs identified and introduced for the unit and any organizational unit is compared with the best units and units reach to their optimum efficiency by changing the system input or output. At first, data envelopment analysis was used for evaluating the relative efficiency of nonprofit organizations and institutions such as schools (1980), hospitals (1983), Courts (1982), Army (1982) and universities (1992) were used. Over time, the application of data envelopment analysis models extended in order to cover profit organizations and institutions (Charnes *et al*., 1995).

Since accurate and timely decisions can have a great impact on the private and working lives of the people, the necessity of a powerful technique that can assist them in this area is quite tangible. One of the most effective techniques is "Analytical Hierarchy Process" which first was introduced in 1980 by Thomas L. Saaty. This technique is based on the paired comparisons which gives the ability to check the different status to the managers. The Analytical Hierarchy Process (AHP) method is one of the most comprehensive designed systems for decision making with multiple criteria because the problem can be formulated in hierarchical form. Also, it considers the various quantitative and qualitative criteria of the problem. The Analytical Hierarchy Process (AHP) is a powerful theory, which has been designed with the mind and human nature being as it goes along (Fukuyama and Weber, 2003). This process is a set of judgments (decisions) and the personal evaluation in a reasonable way. Another privilege is that it provides the structure and framework for group collaboration and participation in decision-making (Rahimi, 1385).

DEA classifies the options (organizational units) into two categories: efficient and inefficient. This classification is carried out based on two sets of multiple criteria: Multiple inputs with negative impact on the overall evaluation and multiple outputs with positive impact on the overall evaluation (Tangen, 2004). The basic DEA model does not rank overall and the options are only classified into two groups: efficient and inefficient. However, over the past ten years, many efforts have been made to classify the options completely with the DEA concept. This research is another effort to use the concept of DEA in a complete ranking of options by one of the most common methods of multi-criteria decision making, Analytical Hierarchy Process (AHP). Model AHP/DEA will be examined in this study, is comprised of two stages. AHP/DEA model which is investigated in this research is comprised of two stages. In the first step, DEA model is implemented for two by two options (organizational units) without considering other options. In the second step, options paired comparisons matrix is created and the ranking becomes complete by solving an AHP model. This study uses the DEA original format so that the DEA analysis can be developed to complete ranking beyond the classification of efficient/inefficient (using the AHP). In the original AHP model, paired comparisons matrix data are subjective (preference of

individual decision-maker) (Robbins, 1384). On the other hand, the model presented in this study is objective paired comparisons matrix. This objective method is more desirable from the individual decision maker point of view that considers mental stress for paired comparisons of options and criteria. In this model, paired comparisons are conducted by DEA model and the final ranking is carried out by AHP model. Although DEA is designed primarily for dual classification, it is often required in practice to measure the overall productivity and complete ranking. AHP/DEA method has the advantages of both methods AHP and DEA and none of the above methods constraints (Drake and Hall, 2003). It has been tried to combine AHP and DEA in the previous years so that the subjective result of AHP can be entered in the DEA model. This method has all the limitations of the DEA and AHP methods. The importance of each evaluation indexes of various basic, applied and developmental researches can be different. In this study, the criteria are measured using data envelopment analysis and then the paired comparisons matrix is obtained. Then the most effective branch will be determined, using the Analytical Hierarchy Process. Performance evaluation of branches is carried out based on the inputs and resulted outputs. Based on record review and conceptual model of the study, four input criteria and three output criteria were identified to evaluate the efficiency of bank Refah branches in Zahedan.

AHP/DEA COMPUTATIONAL MODEL

AHP/DEA model includes two steps so that in the first step, paired comparisons of units (DMUs) is carried out by DEA method and then in the second stage, first stage results model is entered in one-level AHP to complete the rankings:

Step 1: Assume k (k = 1, 2... n) Decision Unit (DMUk) should be evaluated. Each DMU uses m input to produce S output. For example DMUk uses input values X_{ik} (i = 1, 2... m) to produce output values Y_{rk} (r = 1, 2... s). X (m×n) and Y (s×n) are input and output matrices respectively. Such as DEA method, (the only difference is that in DEA method, each unit is being compared with all units, but in this method to compare binary units, each unit is compared with another unit), DMUs are being evaluated. For each pair of DMUs, a model must be written and solved as it is written below for DMU1 compared to DMU2:

$$e_{1,2} = \max \frac{\sum_{r=1}^{s} u_r . Y_{r1}}{\sum_{i=1}^{m} v_1 . X_{i1}}$$

$$st:$$

Table 1: Matrix E in AHP/DEA model

	1	2	3	…	n
1	1	$e_{1,2}$	$e_{1,3}$	…	$e_{1,n}$
2	$e_{1,2}$	1	$e_{2,3}$	…	$e_{2,n}$
3	$e_{3,1}$	$e_{3,2}$	1	…	$e_{3,n}$
⋮	⋮	⋮	⋮	…	⋮
n	$e_{n,1}$	$e_{n,2}$	$e_{n,3}$	…	1

$$\frac{\sum_{r=1}^{s} u_r . Y_{r1}}{\sum_{i=1}^{m} v_1 . X_{i1}} \le 1 \qquad k = 1,2$$

$$u_r \ge 0 \qquad r = 1,2,...,s$$
$$v_1 \ge 0 \qquad i = 1,2,...,m$$

The above problem can be converted to a linear programming problem by the following method:

- The numerator of Eq. (1) is placed in the objective function.
- The denominator of Eq. (1) is equal to one and is placed in the limitations.
- The expression of Eq. (2) should be transferred to one side.

By implementing these steps, AHP/DEA model is converted to Eq. (3):

$$e_{1,2} = \max \sum_{r=1}^{s} u_r . Y_{r1}$$

$$st:$$

$$\sum_{i=1}^{m} v_{1.} X_{i1} = 1$$

$$\sum_{r=1}^{s} u_r . Y_{rk} - \sum_{i=1}^{m} v_1 . X_{ik} \le 0 \qquad k = 1,2$$
$$u_r \ge 0 \qquad r = 1,2,...,s$$
$$v_1 \ge 0 \qquad i = 1,2,...,m$$

The values (k' = 1, 2, …, n, k = 1, 2, …, n, k ≠ k') $e_{k,\,k'}$ are obtained by solving the above mathematical model and the matrix E (Table 1) is created with k rows and k' columns which all its elements on the main diagonal are one.

Step 2: In the second step of AHP/DEA process, a two-level model of AHP (level of target and level of options) is created. After the hierarchy, values of matrix A, resulted from the organization paired comparisons in equation $a_{k,k'} = \frac{e_{k,k'}}{e_{k,k'}}$ (this equation indicates the efficiency of the organizational unit k to organizational unit K′) are obtained (Table 2).

Table 2: Paired comparisons matrix of AHP/DEA model

	1	2	3	…	n
1	1	$\alpha_{1,2}$	$\alpha_{1,3}$	…	$\alpha_{1,n}$
2	$\alpha_{2,1}$	1	$\alpha_{1,1}$	…	$\alpha_{2,n}$
3	$\alpha_{3,1}$	$\alpha_{3,2}$	1	…	$\alpha_{3,n}$
⋮	⋮	⋮	⋮	…	⋮
n	$\alpha_{n,1}$	$\alpha_{n,2}$	$\alpha_{n,3}$	…	1

Table 3: Normalized paired comparisons matrix of AHP/DEA model

	1	2	3	…	n
1	1	$\alpha'_{1,2}$	$\alpha'_{1,3}$	…	$\alpha'_{1,n}$
2	$\alpha'_{2,1}$	1	$\alpha'_{1,1}$	…	$\alpha'_{2,n}$
3	$\alpha'_{3,1}$	$\alpha'_{3,2}$	1	…	$\alpha'_{3,n}$
⋮	⋮	⋮	⋮	…	⋮
n	$\alpha'_{n,1}$	$\alpha'_{n,2}$	$\alpha'_{n,3}$	…	1

Table 4: Column vector A" obtained from matrix A'

1	α''_1
2	α''_2
3	α''_3
⋮	⋮
N	α''_n

Table 5: Column vector A''' obtained from matrix A"

1	α'''_1
2	α'''_2
3	α'''_3
⋮	⋮
n	α'''_n

After obtaining the matrix of paired comparisons, this matrix must be normalized. The elements of this new matrix (A') are obtained by equation $\frac{a_{k,k'}}{\sum_{k=1}^{n} a_{k,k'}}$ (Table 3). After obtaining the matrix A', the values of the column vector (the sum of each row) is obtained by equation $a_k^{''} = \sum_{k'=1}^{n} a'_{k,k'}$ (Table 4). Finally, the column vector A'' is normalized by equation $a_k^{'''} = \frac{a_k^{''}}{\sum_{k=1}^{n} a_k^{''}}$ and the vector A''' which is the complete ranking of organizational units is obtained (Table 5).

RESEARCH METHODOLOGY

In terms of target, this study is an applied research that shows the performance evaluation of bank Refah branches in Zahedan, Iran, using a quantitative method. Also, method of research is descriptive-mathematical study. In terms of time, cross-sectional study is used which began from Aban 1384 and continued until Dey 1385. The present research started by library study in DEA performance evaluation method. Regarding the weaknesses of data envelopment analysis such as separation of branches (decision making units) to two efficient and inefficient groups and not presenting a method to develop inefficient branches to efficient branches, a combination of Analytical Hierarchy Process and Data Envelopment Analysis methods were selected. In addition to eliminating the aforementioned shortcomings, this method includes some other advantages such as eliminating the subjective judgment of the managers in determining the preferred criteria. In this study, statistical population is bank Refah branches in Sistan and Baluchestan province is Iran which 16 branches were chosen among as the samples. The reason is benefiting Zahedan branches from facilities such as supply time of branches cash requirements, services extension, telecommunication facilities and quicker access to technical support services. After determining the criteria and standards and eliminating waste and similar information, the required data of bank's sixteen branches were obtained and analyzed using WinQSB and Expert Choice software and the results were achieved.

Table 6: Input and output criteria of research for calculating the efficiency

Output	Input
Deposits	Movable money costs
Granted facilities	Manpower costs
Branch's profit	Administrative costs
	Number of branch's personnel

Data gathering tools: Bank performance evaluation, using AHP/DEA method, is a descriptive-mathematical study. Since the first step in this evaluation process is the input and output criteria determination, first the books, articles published in magazines and Persian and Latin websites and also conducted research projects and thesis at universities as the references were investigated. Seventeen input and output criteria were identified. After input and output criteria identification, these criteria were investigated by irregular interviews of management experts in bank Refah branches in Sistan & Baluchestan province. The interviews were based on measurability, bank software facilities for presenting figures and also the importance of each criterion in the impact on actual performance evaluation. In the end, four input criteria and three output criteria were selected according to Table 6.

The validity and reliability of performance evaluation, using AHP/DEA method: The target of this study is to evaluate the performance of bank branches in Zahedan using AHP/DEA method. Since input and output criteria are extracted by the extensive study and research studies in banks and selected by the bank experts and approved by the supervisors, it is expected that performance evaluation is correctly carried out and therefore the research structural validity can be approved. Among all aspects of the balanced evaluation (financial, customer, internal processes and growth), input and output criteria have been selected, therefore the research content validity can be approved. AHP/DEA model is a mathematical model that has a perfect stability and accuracy and thus a complete reliability is approved. Regarding the fact that data envelop analysis, in the performance evaluation of bank branches lead to create a matrix of paired comparisons, resolve the need to distribute questionnaires and

personal judgment. Thus, an unbiased performance evaluation is obtained. With regard to the fact that the performance evaluation is important in today's organizations and also the cost of performance evaluation using AHP/DEA model is very low due to the existing software facilities, it is also an applicable method.

RESULTS

In the first step, after identification of the efficiency calculation model inputs and outputs, paired comparisons matrix should be created. Therefore, at first inputs and outputs of branches were extracted and were presented in Table 7. As it is illustrated in the table of the bank branches inputs and outputs, three branches include losses (negative O_3) and since in DEA, the criteria must be nonnegative and even positive, therefore the number 600 is added to the column O_3 to make all numbers positive.

In order to create the matrix of paired comparisons, the bank branches should be compared two by two. In this way, the paired comparisons matrix elements can be obtained. Since the number of branches under study were sixteen branches, practically 256 comparisons were carried out. Comparing each branch with its own branch represents number one and therefore the elements in the matrix main diagonal are one. Also the equation $a_{ij} = 1/a_{ij}$ is established for the paired comparisons matrix elements. Therefore, the upper elements of the main diagonal are calculated and lower elements of the main diagonal can be estimated by the aforementioned equation. Thus, 120 Comparisons between the two branches have been conducted. Relevant values of the binary comparisons are presented in Table 8.

In paired comparisons matrix, the aggregate of the numbers in each column is calculated and displayed at the bottom of each column. Finally, each element of the column is divided by the aggregate value and therefore the normal matrix is achieved. Table 9 shows the normalized matrix.

In order to obtain each branch rank weight, average of the normalized matrix elements in each row is calculated. Table 10 demonstrates the rank weight values of branches.

Table 7: Input and output model of the branches efficiency calculation

(O3+600)	Profit (O3)	Granted facilities (O2)	Deposits (O1)	Office cost (I4)	Manpower cost (I3)	Imparted money cost (I2)	Personal number (I1)	Branch name	Branch code	Row
3.100	2.500	65.900	48.600	240	1182	433	22	Markazi	225	1
1.347	747	16.700	22.500	136	626	259	10	Alavi	387	2
989	389	7.900	6.600	109	319	169	6	Rasouli	439	3
427	-173	6.300	6.400	67	215	126	4	Mir-Hosseini	537	4
807	207	5.900	6.900	50	285	183	5	Saleh	617	5
1.125	525	6.100	4.900	85	216	119	4	Bazar	619	6
1.101	501	8.400	5.400	84	176	135	3	Joushkaran	671	7
1.088	488	10.300	8.900	90	389	255	7	Sa’adi	678	8
912	312	6.700	5.900	58	326	181	6	Behzisti	684	9
896	296	11.300	14.600	87	324	171	6	Jomhouri	689	10
30	-570	10.800	28.600	64	275	158	5	Beheshti	690	11
750	150	9.200	11.300	93	374	228	7	Medical science	691	12
1.557	957	14.300	8.000	117	335	157	6	Medical service	740	13
761	161	8.100	13.600	46	236	307	4	Imam Ali	945	14
895	295	6.400	11.100	55	211	162	4	Ghalanbor	1152	15
270	-330	8.500	18.200	49	275	134	5	بوعلیس	1192	16

Table 8: Matrix of paired comparisons between the branches

Buali	Ghalanbor	Imam Ali	Medical services	Medical science	Beheshti	Jomhouri	Behzisti	Branch
2	2	2	2	2	2	2	2	Markazi
1	1	1	2	2	1	1	2	Alavi
1	1	1	1	2	1.3778	1	2	Rasouli
1	1	1	2	1	1	1.8402	2	Mir-Hosseini
1	1	1	2	1	1.4827	1.9670	2	Saleh
1	1	1	2	2	1.2852	1	2	Bazar
2	2	2	2	2	2	2	2	Joushkaran
1	1	1	1	2	1	1.9657	2	Sa’adi
1	1	1	1	1	1.4866	1	1	Behzisti
0.8047	1	1	2	2	1	1	1	Jomhouri
2	2	2	2	2	1	1	0.6727	Beheshti
1	1	1	2	1	0.5	0.5000	1	Medical science
2	2	2	1	0.5	0.5	0.5000	1	Medical services
1.8824	1	1	0.5	1	0.5	1	1	Imam Ali
1.0242	1	1	0.5	1	0.5	1	1	Ghalanbor
1	0.9764	0.5312	0.5	1	0.5	0.5541	1	Buali
21.7110	19.9760	19.5312	23.5	23.5	17.1320	19.3270	23.6727	□

Table 8: (Continue)

Sa'adi	Joushkaran	Bazar	Saleh	Mir-Hosseini	Rasouli	Alavi	Markazi	Branch
2	2	2	2	1.7573	2	2	1	Markazi
2	2	2	2	2	2	1	0.5000	Alavi
1.4142	1	1	2	1	1	0.5	0.5000	Rasouli
2	1	2	2	1	1	0.5	0.5690	Mir-Hosseini
2	1	2	1	0.5000	0.5000	0.5	0.5000	Saleh
2	1	1	0.5000	0.5000	1	0.5	0.5000	Bazar
2	1	1	1	1	1	0.5	0.5000	Joushkaran
1	0.5	0.5000	0.5000	0.5000	0.7071	0.5	0.5000	Sa'adi
0.5000	0.5	0.5000	0.5000	0.5000	0.5000	0.5	0.5000	Behzisti
0.5087	0.5	1	0.5084	0.5434	1	1	0.5000	Jomhouri
1	0.5	0.7781	0.6744	1	0.7258	1	0.5000	Beheshti
0.5000	0.5	0.5000	1	1	0.5000	0.5	0.5000	Medical science
1	0.5	0.5000	0.5000	0.5000	1	0.5	0.5000	Medical services
1	0.5	1	1	1	1	1	0.5000	Imam Ali
1	0.5	1	1	1	1	1	0.5000	Ghalanbor
1	0.5	1	1	1	1	1	0.5000	Buali
20.9230	13.5	17.7780	17.1830	14.8007	15.9329	12.5	8.5690	□

Table 9: Normalized matrix of paired comparisons

Branch	Markazi	Alavi	Rasouli	Mir-Hosseini	Saleh	Bazar	Joushkaran	Sa'adi
Markazi	0.12	0.16	0.13	0.12	0.12	0.11	0.15	0.10
Alavi	0.06	0.08	0.13	0.14	0.12	0.11	0.15	0.10
Rasouli	0.06	0.04	0.06	0.07	0.12	0.06	0.07	0.07
Mir-Hosseini	0.07	0.04	0.06	0.07	0.12	0.11	0.07	0.10
Saleh	0.06	0.04	0.03	0.03	0.06	0.11	0.07	0.10
Bazar	0.06	0.04	0.06	0.03	0.03	0.06	0.07	0.10
Joushkaran	0.06	0.04	0.06	0.07	0.06	0.06	0.07	0.10
Sa'adi	0.06	0.04	0.04	0.03	0.03	0.03	0.04	0.05
Behzisti	0.06	0.04	0.03	0.03	0.03	0.03	0.04	0.02
Jomhouri	0.06	0.08	0.06	0.04	0.03	0.06	0.04	0.02
Beheshti	0.06	0.08	0.05	0.07	0.04	0.04	0.04	0.05
Medical science	0.06	0.04	0.03	0.07	0.06	0.03	0.04	0.02
Medical services	0.06	0.04	0.06	0.03	0.03	0.03	0.04	0.05
Imam Ali	0.06	0.08	0.06	0.07	0.06	0.06	0.04	0.05
Ghalanbor	0.06	0.08	0.06	0.07	0.06	0.06	0.04	0.05
Buali	0.06	0.08	0.06	0.07	0.06	0.06	0.04	0.05

Branch	Behzisti	Jomhouri	Beheshti	Medical science	Medical services	Imam Ali	Ghalanbor	Buali
Markazi	0.08	0.10	0.12	0.09	0.09	0.10	0.10	0.09
Alavi	0.08	0.05	0.06	0.09	0.09	0.05	0.05	0.05
Rasouli	0.08	0.05	0.08	0.09	0.04	0.05	0.05	0.05
Mir-Hosseini	0.08	0.10	0.06	0.04	0.09	0.05	0.05	0.05
Saleh	0.08	0.10	0.09	0.04	0.09	0.05	0.05	0.05
Bazar	0.08	0.05	0.08	0.09	0.09	0.05	0.05	0.05
Joushkaran	0.08	0.10	0.12	0.09	0.09	0.10	0.10	0.09
Sa'adi	0.08	0.10	0.06	0.09	0.04	0.05	0.05	0.05
Behzisti	0.04	0.05	0.09	0.04	0.04	0.05	0.05	0.05
Jomhouri	0.04	0.05	0.06	0.09	0.09	0.05	0.05	0.04
Beheshti	0.03	0.05	0.06	0.09	0.09	0.10	0.10	0.09
Medical science	0.04	0.03	0.03	0.04	0.09	0.05	0.05	0.05
Medical services	0.04	0.03	0.03	0.02	0.04	0.10	0.10	0.09
Imam Ali	0.04	0.05	0.03	0.04	0.02	0.05	0.05	0.09
Ghalanbor	0.04	0.05	0.03	0.04	0.02	0.05	0.05	0.05
Buali	0.04	0.03	0.03	0.04	0.02	0.03	0.05	0.05

Table 10: Rank weight of the branches

Rank	Rank weight	Branch's name
1	0.110	Markazi
2	0.086	Alavi
3	0.080	Joushkaran
4	0.072	Mir-Hosseini
5	0.066	Saleh
6	0.065	Rasouli
7	0.064	Beheshti
8	0.061	Bazar
9	0.053	Jomhouri
10	0.053	Imam Ali
11	0.052	Sa'adi
12	0.050	Ghalanbor
13	0.050	Medical services
14	0.047	Buali
15	0.045	Medical science
16	0.043	Behzisti

DISCUSSION AND CONCLUSION

One of the tools for organizations in the existing complex and changing conditions is timely and ongoing evaluation of their performance and their subordinate units. This evaluation, in addition to the financial aspect should include other aspects such as customers' satisfaction, business processes, environment, growth and learning. Also include them. Determining the influential aspects of performance evaluation is very important. This study also considered four aspects of financial, customer, internal processes and learning and growth for bank Refah branches with regard to the existing effectiveness or limitations and according to

the values extracted from these criteria, performance efficiency of the branches were measured and ranked. This study evaluates the performance of bank Refah branches in Zahedan which have different commercial and residential situations and the overall results obtained are as follows:

- Performance evaluation and efficiency assessment should be comprehensive and include the financial and nonfinancial aspects.
- Important criteria in each aspect should be identified and effectiveness on their performance evaluation should be confident.
- The performance evaluation method is as important as its own performance evaluation.
- Due to our country banking system which is based on referring to banks, location of branches has a key role in its success.
- Every branch's strengths can be a model for other branches in various aspects.

RECOMMENDATIONS

According to the results of analysis, the following recommendations are offered for the branches of study.

Central branch: This branch has far more granted facilities than the deposit and uses a high number of personnel, thus the timely receipt of payments and track and collect receivables significantly increase the branch received dividends.

Joushkaran branch: Regarding the branch's low input criteria, it has a good performance in attracting deposits and granting facilities and it is better to increase the number of branch staff as an effective input criterion to maintain and improve the optimum performance.

Mir-Hosseini branch: This branch is one of the three branches that not only make no profitability, but also make losses. This is resulted from the fact that deferred demands increase of the branch is over normal limit. Therefore, this branch can perform more active by adding a personnel and receiving new facilities simultaneously in order to access the receivables.

Rasouli branch: This branch's input criteria are normal, but its output criteria (deposits) have been performed poorly and should act increasingly to attract the deposits.

Saleh branch: According to the location of this branch, it should be supported for attracting deposits and also receiving the deferred demands which are reflected in receivables reduction.

Beheshty branch: This branch, according to the low amounts of input criteria, had a successful performance in output criteria (attracting deposits and granting facilities), but the greatest losses among the branches is associated to this branch. Due to the volume of granted facilities, increasing the number of branch personnel can reduce the amount of deferred demands and losses and ultimately increase profitability.

Bazar branch: This branch must strengthen the deposits attraction while maintain the existing situation of profitability.

Jomhouri branch: This branch was successful in attracting deposits and granting facilities and benefiting the personnel and should strengthen this aspect to take steps toward greater profitability.

Imam Ali branch: This branch was unsuccessful in achieving the desired profit, which due to the high volume of granted facilities and low input costs, is resulted from the deferred demands increase. The branch with the track and collect receivables can significantly increase the profitability.

Sa'ady branch: With respect to the location of Sa'adi branch, input criteria are well used and high output criteria are produced, but it should make more active to attract deposits.

Ghalanbor branch: Due to the location of this branch in the residential area, it became successful in attracting deposits and for granting the appropriate facilities, it should increases its activities to achieve higher profitability.

Medical services branch: Despite having high values of input criteria (number of personnel and staffing costs), this branch, in attracting deposits, a very successful operation and is ranked thirteenth. This branch should significantly increase its activity in this sector.

Buali branch: Despite having the proper values in the input criteria and also succession in attracting deposits, it ranked very low due to losses. Therefore, it is required to improve this situation by the timely receipt of payments and receivables outstanding.

Medical science branch: Despite having high values of input criteria, it does not make good profits and therefore, it is allocated to the fifteenth place. Efforts to attract more deposits and deferred payments receipt can improve the branch performance.

Behzisti branch: This branch has had the weakest performance among sixteen branches under review.

This branch has had a weak performance in attracting deposits and granting facilities-despite having high values in the input criteria- and it should apply all facilities and ability in these two output criteria to be upgraded to a better place:

- The current single criterion evaluation which only assesses the deposit.
- Branch's managers and employees should be prepared mentally to adopt new methods of performance evaluation, to find.
- Branch managers and employees should be trained how to conduct a comprehensive performance evaluation.
- The branches, whose performances were successful, should have been encouraged to become a practical pattern for other branches.
- The strengths and weaknesses of branches in each of the financial, customer, internal processes and learning and growth aspects should be identified and declared to them.

Recommendations for future research: The present study attempted to evaluate the performance, using a mathematical technique relying on the balanced evaluation throughout the bank branches. The traditional structure of Iranian banks to requires the customer's presence in the branch, the following subjects can be researched in the future:

- Considering the criteria such as commercial or residential location, visibility and as environmental aspect in addition to customer, financial, internal process and learning and growth aspects
- Effects of electronic banking on the performance evaluation criteria
- Ranking the Decision Maker Units (DMUs) using fuzzy AHP
- Effects of branches experiences on its performance increase or decrease

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