

Designing a Model for Evaluation of Bank Managers' Performance Using AHP-BSC Approach (Case Study of Mellat Bank Branches in Tehran)

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Abstract - The simplest source for change in banks is the capability of human resources. Lack of giving authority and freedom of action for employees, forming meetings only with the presence of managers and supervisors, entrusting work below the level of education, the skills and expertise of the employees will reduce the efficiency and, as a result, the performance of the bank, reflecting the performance of managers. Evaluation of the performance of managers is crucial in facilitating organizational effectiveness. Much attention has been paid to the role of performance evaluation in recent years. An effective performance evaluation system can bring several benefits to organizations and their employees. In the present study, given the importance of evaluating the strategic performance of managers, the combination of two models of the Analytic Hierarchy Process (AHP) and balanced scorecard (BSC) is used to provide a comprehensive model of managers' performance. Important indicators are first evaluated. Then, considering the different dimensions of the subject of study (performance management), a comprehensive model taking into account all the dimensions is presented.

Keywords: Bank, Managers, Performance evaluation, Hierarchical, Balanced scorecard

1. Introduction

Each organization and in general, each government, regardless of its activity, size and structure, is trying to improve its performance to up to the optimal level in order to maintain its existence. Many critics to the traditional performance evaluation systems are due to their failure in assessing and monitoring multiple dimensions of performance because of overemphasis on the financial indicators (André Lip, 2016). In recent years, much attention has been paid to the performance of managers, since its supporters believe that high-performance management can provide numerous benefits to the organizations and their employees (Amboy et al, 2012). In addition, organizations have experienced significant developments and changes over the past two decades and have become globalized organizations with decentralization characteristics. In this regard, the use of concepts of employees' capability in better using of knowledge, ability and skills of human resources has high importance. Competence of human resources in terms of skills is also one of the factors for the success of any organization, which improving its performance requires these skills. It can be achieved by employing them in different positions of the organization (Babakhani et al, 2012). Human resources need basic skills to play their roles. Technical, human and perceptual skills are the most important skills in this regard. It should be noted that the performance is multi-dimensional, which requires an evaluation method that covers all dimensions, and the best method is balanced scorecard model (De Castro et al., 2011). The balanced scorecard tool is one of the most effective performance evaluation methods, which is a combination of current, past, and future performance indicators. It integrates the financial and non-financial indicators. Using this method, the bank managers' performance evaluation indicators are derived and using analytic hierarchy method, we identify and prioritize the main indicators affecting the evaluation of the performance of managers from different dimensions (Beyrami et al., 2014). In the current situation of the country, banks have a great responsibility to achieve a high status appropriate to the status of the country. In this regard, managers also play a major role in using employees' capabilities to increase their effectiveness, since banks are among the organizations, in which performance has high importance. Thus, a performance evaluation system should be provided for managers to take steps for improving the performance. The present study seeks to answer the question of whether the performance evaluation of banks' managers can be modeled.

2. Theoretical principles

2-1-The concept of performance evaluation

Performance refers to the degree of performing the duties completing an employee's job (Byars & Rue, 2008: p. 216). It indicates how employee fulfills the requirements of a job. Performance evaluation can be defined as the process of evaluating and communicating with the employees in performing a job and implementation of a program for its improvement (Byars & Rue, 2008, p. 345). Performance evaluation allows employees to know what their performance is. It will also affect the level of their future effort and path. According to Foot and Hook (2008 p. 105), employee evaluation is an official process for assessing and providing feedback to employees about their characteristics and the way of performing their activities and recognizing their potential to actualize them in the future.

2-2-Goals of performance evaluation

According to Bernardin (2003, p. 144), information derived from performance assessment is widely used for compensation, improving performance, and documentation. It can be also used in decisions made on employees (such as promotion, transfer, and dismissal), analysis of educational needs, development of employees, research and program evaluation. Ivancevich (2007, p. 253) also categorized employee evaluation goals into two categories of development goals and administrative-executive goals.

2.3. Balanced scorecard at a glance

Many organizations fail in completely implementation of their own strategies. It is due to the lack of a solid framework for aligning employees and operational processes with the goals of the organization (Jarman & Mikijani, 2016). The balanced scorecard management system has been considered as a comprehensive framework for evaluating performance and advancing strategy. It leads to a balance between short and long term goals, financial and non-financial measures, internal and external performance, internal and external stakeholders, conductive indicators and performance functions (Mikijani & Carmen, 2016: Novin, 2017). The balanced scorecard also enables us to link the strategy to the organization's operational and executive goals in a comprehensive management system (Kaplan & Norton 2008).

2.4. Components of balanced scorecard

The balanced scorecard framework consists of four interdependent components (Makijani & Carmen, 2016)

A. A strategy map that identifies the organization's strategic goals. In the strategy map, the organization's key goals are classified in the strategic plan of the organization from four perspectives. These four perspectives represent all the components and processes of the organization. They include financial perspective, customer perspective, internal processes perspective, growth and learning perspective. By accurately specifying the causal relationships between the organization's strategic goals in these four perspectives, a base is driven called as a balanced scorecard (ibid).

B) Performance measures that pursue the level of progress toward strategic goals. Strategic goals and organizational strategy maps can actually show the organization's macro goals for delivering short- and long-term performance in the form of words and charts. However, for the implementation of these goals, we should make them measurable (Parmenter, 2017). The number of measures should be limited. Two measures are often enough for each goal. Guides, in addition to being strategic, must also be in line with the standards of the documentary and published standards at the highest level of the organization (Novin, 2017).

C) Quantitative goals determined for each performance measure. Quantitative goals can be used to express the relative impact of the implementation of the strategies operationally (Parmenter, 2017). The quantitative goals, that is, the level of the performance that the organization believes, should be met in a time period (Mikijani & Carmen, 2016).

Quantitative goals in a balanced scorecard management system should reflect the necessary changes in performance. Increasing performance should also be proportionate to the quantitative goals (Parmenter, 2017).

D) Designing (selecting) and implementing strategic initiatives (innovative plans) in order to link the organization's performance to quantitative goals and, ultimately, achieve the strategic goals. In order to link the performance to quantitative goals and, ultimately, to achieve strategic goals, a set of actions and processes (projects) are needed, called strategic initiatives.

The goal of implementing strategic initiatives is to fill the identified gap between actual and expected (desirable) performance to achieve a strategic goal. The main criterion for selecting initiatives is that they should be directly linked to the goals of the strategy map (Norton and Kaplan, 2008). As with all the organizational projects, the implementation of a balanced scorecard is associated with some challenges that are generally classified into two categories of structural challenges and cultural challenges (Mikijani & Carmen, 2016).

2-5-Review of literature

A research was conducted by Ruhollah Askari (2013) entitled "Evaluation of the efficiency of hospitals affiliated to Yazd University of Medical Sciences using a quantitative approach of data envelopment analysis". According to the research results, one of the most important suggestions is the use of other performance evaluation methods, such as a balanced scorecard to compare with the results of the present study to identify and guide inefficient units to improve the efficiency for hospitals with high level performance. In a study conducted by Maryam Ebrahimi (2013) entitled "evaluation of the relationship between strategic management of information systems with balanced scorecard and information systems performance", the alignment relationship between strategic management of information systems and balanced scorecard and the performance of information was recognized essential. The results of this research suggest that an increase in the alignment of strategic management of information systems with a balanced scorecard leads to an increase in the performance of the information system and vice versa.

Banker et al (2016) conducted a BSC analysis of the performance measurement scale in the US telecommunication industry. The results showed that two of the three non-financial metric scales did not require any kind of give and take by financial scale, while the third non-financial scale (percentage of commercial access lines) should be evaluated by the financial scale and should be appropriately incorporated into the performance evaluation system. Abran and Buglione (2016) argued that the traditional BSC could not automatically integrate perspectives into a single perspective, so the frameworks did not inhibit the participation of each goal in the entire BSC. A multidimensional performance model was proposed for integrating the BSCs using a quality factor plus technical, social, and economic dimensions of the BSC for IT organizations.

3. Methodology

The research method is descriptive in terms of the data collection method and survey in terms of classification of descriptive studies. Among survey research methods, the research is a Delphi survey type. It is also an applied study in terms of objective. The subject scope of the study is the identification of indicators related to the performance evaluation of banks' managers. The spatial scope of this research is the management of evaluation performance of Mellat Bank Branches of Iran, including General Directorate for investigation of plans and credit, located at Taleghani Street in Tehran. The time period of research is a six-month period from the beginning of spring until the end of the summer of 2017. A non-randomized purposeful method was used in this study. Accordingly, out of 50 people of our research population, 8 experts were selected (2 leading managers and 6 senior experts) as the statistical sample of the research. To collect the data and information needed for research, library and field methods were used. For calculating and preparing the data and descriptive analysis of the questionnaires, Excel and SPSS software were used.

4. Analysis of data

4.1. Distribution of frequency of samples in terms of gender, age, and level of education

The distribution of frequency of 128 completed questionnaires shows that out of 77 people selected, 60.16% are male and 39.84% are female. Approximately, 43% of the samples are in the age group of 20-30 years old, 28% are in the age group of 30-40 years, 18% in the age group of 40 to 50 years, and 11% in the age group of over 50 years. In addition, about 7% have a diploma, about 11% have an associate degree, 45% have a bachelor's degree, 33% have master's degrees, and 4% have a Ph.D. degree.

4.2 Analysis of data using the SWOT model

In this section, the answer of the employees to questionnaire questions is specified.

Table 1: Results of strengths

Item description and number in questionnaire	n	Very high	high	moderate	low	Very low
1- Young managers with high level of education	128	55	34	24	11	4
2- Match of managers' field of study with organizational positions of the service place	120	57	39	14	5	5
3-Proper payment of benefits	123	35	21	43	12	14
4-Updated equipment and information technology	125	62	28	14	21	0
5- Using employees' encouragement and punishment systems	121	54	31	17	15	14
6-Using performance evaluation results in employee promotions	123	66	28	12	8	9
7-Continuous attitude to human resource education and development	127	69	24	15	10	9
8- The manager's efforts in developing and enhancing the general and specialized awareness of employees in providing customer service	120	43	37	18	14	8
9-Allocating budget for educational activity	128	63	40	14	9	2

Table 2- results of weaknesses

Item description and number in questionnaire	n	Very high	high	moderate	low	Very low
1) non-implementation of employee selection and appointment criteria	99	20	35	26	11	7
2-Weakness in the educational system due to the lack of updated job description in organizational units	115	24	37	39	8	7
3-Weakness in the relationship between education and development programs for employees and performance evaluation and employee promotion systems	112	32	32	18	21	19
4-Weakness in planning to attract outstanding students for training courses	69	37	24	15	11	9
5. non-complete implementation of employee evaluation process	120	32	28	17	23	20
6- Reduced efficiency and performance of the manager in dealing with customers	111	37	30	18	14	12
7-Low level of participation with employees in making decision on issues related to the bank	125	52	38	15	12	8
6- The negative attitude of employees towards the performance of some managers in the fair payment of benefits	100	39	21	11	17	12
-Paying insufficient attention to the employees deserving the appreciation in the customer-orientation issue	115	36	37	39	8	7

Table 3- results of opportunity factors

Item description and number in questionnaire	n	Very high	high	moderate	low	Very low
1-Increased attention to education and development of human resources in respect to customer	99	20	35	26	11	7
2-Emphasis on the level of employee productivity in the degree of accuracy in work and creating flexibility in employees	115	24	37	39	8	7
3. paying special attention to education and development of human resources in the evolution program of the banking industry	112	32	32	18	21	19
4. Writing justification plans and receiving specific budgets from the government and the central bank	69	37	24	15	11	9
5. Creating a sense of family cooperation and human resource development	120	32	28	17	23	20
6. Creating a sense of respect for organizing the organization and the relevant unit in in performing the affairs within the specified intervals	111	37	30	18	14	12
7. The use of counselors and academic resources for the development of human resources	125	52	38	15	12	8
8. Development of online educational services	100	39	21	11	17	12

Table 4- threat factors results

Item description and number in questionnaire	n	Very high	high	moderate	low	Very low
1. Paying serious attention to education and development of efficient workforce in the banking industry	118	14	13	18	39	34
2-Time-consuming licensing process for implementing educational programs	106	28	27	20	17	14
3. High financial costs for courses and educational seminars	110	32	39	22	8	9
4. Variable economic conditions of the relevant bank	109	54	43	12	0	0
5. Lack of knowledge on political and economic dimensions of the environment	113	38	27	17	19	12
6. lack of meeting the needs of the banking industry education in the education chapters of high education	117	12	15	17	39	34
7. The shortage of specialized workforce, especially in specific areas in the considered branch	122	12	13	20	44	33
8. Extension of the public organizational culture among employees and the lack of sufficient motivation in employees to provide service and in customer-orientation	124	45	42	27	7	3
9. Lack of sufficient knowledge of the updated scientific and academic experiences in the area of providing service for customer	105	24	20	22	19	18

The relevant BSC matrix was designed and the factors affecting the evaluation of Mellat managers were determined through a balanced scorecard model, so that the factors are selected for input variables of the FAHP model after being screened and verified by the experts.

4-1-Classification of factors based on the BSC model

The objective of this section is to classify the factors of SWOT model in three areas of customer orientation, growth and learning, and internal and financial processes.

Table 5: Classification of factors based on a balanced scorecard

Main factors	Secondary factors
Learning of growth and education	Young managers with high level of education
	Match of managers' field of study with organizational positions of the service place
	Continuous attitude to human resource education and development
	Allocating budget for educational activity
	Weakness in the educational system due to the lack of updated job description in organizational units
	Weakness in the relationship between education and development programs for employees and performance evaluation and employee promotion systems
	Weakness in planning to attract outstanding students for training courses
	Increased attention to education and development of human resources in respect to customer
	paying special attention to education and development of human resources in the evolution program of the banking industry
	Possibility of using university advisers and resources for training human resource
	Development of online educational services
	The lack of paying serious attention to education and development of efficient workforce in the banking industry
	Time-consuming licensing process for implementing educational programs
	High financial costs for educational courses and seminars
	lack of meeting the needs of the banking industry education in the education chapters of high education
Financial and internal processes	Proper payment of benefits
	Updated equipment and information technology
	Using employees' encouragement and punishment systems
	Using performance evaluation results in employee promotions
	non-implementation of employee selection and appointment criteria
	Non-complete implementation of employee evaluation system
	Low level of participation with employees in making decision on issues related to the bank
	The negative attitude of employees towards the performance of some managers in the fair payment of benefits
	Emphasis on the level of employee productivity in the degree of accuracy in work and creating flexibility in employees
	Writing justification plans and receiving specific budgets from the government and the central bank
	Creating a sense of family cooperation and human resource development
	Creating a sense of respect for organizing the organization and the relevant unit in in performing the affairs within the specified intervals
	Variable economic conditions of the relevant bank
customer	Lack of sufficient knowledge of the updated scientific and academic experiences in the area of providing service for customer
	Reduced efficiency and performance of the manager in dealing with customers
	Paying insufficient attention to the employees deserving the appreciation in the customer-orientation issue
	Extension of the public organizational culture among employees and the lack of sufficient motivation in employees to provide service and in customer-orientation

4-4. Introduction of the sub-indicators affecting the evaluation of the performance of Mellat Bank managers

As general and collective agreement of experts is considered as a criterion for making a decision in the Delphi method, we collected the data in three stages and asked the experts to confirm or change their answers according to the views and the reasons of other experts. Finally, the general agreement of experts screened the indicators shown in Table 5 and Table 14 and presented 14 final indicators of the performance evaluation of the Mellat Bank managers, shown in Table 6.

Table 6: effective indicators in the performance of the evaluation of Mellat Bank managers

dimensions	indicators
Learning, growth, and education	Match of managers' field of study with organizational positions of the service place
	Continuous attitude to human resource education and development
	Allocating budget for educational activity
	Possibility of using university advisers and resources for training human resource
	Development of online educational services
	paying special attention to the education and development of human resources in the evolution program of the banking industry
	meeting the needs of the banking industry education in the education chapters of high education
Financial and internal process	Updated equipment and information technology
	Using employees' encouragement and punishment systems
	Emphasis on the level of employee productivity in the degree of accuracy in work and creating flexibility in employees
	Creating a sense of respect for organizing the organization and the relevant unit in performing the affairs within the specified intervals
customer	The manager's efforts in developing and enhancing the general and specialized awareness of employees in providing customer service
	- increasing efficiency and performance of the manager in dealing with customers
	Extension of the public organizational culture among employees and the lack of sufficient motivation in employees to provide service and in customer-orientation

4-5-Weighting and ranking of dimensions and indicators of suppliers' evaluation indicators by the FAHP technique

-Weighting and ranking of managers' evaluation dimensions

Step 1: Forming Fuzzy Group Decision Making Matrix

Using the Triangular Fuzzy Numbers Spectrum, a pairwise comparison was conducted on the elements of the Mellat Bank managers' evaluation dimensions, including the performance of dealing with customer, financial performance and internal processes, and performance of learning, growth and education by eight experts. Then, the matrix of mean fuzzy importance of experts about dimensions was formed as Table 7.

Table 7: Pairwise comparison matrix of main dimensions of the Mellat bank managers' performance evaluation from the viewpoint of decision makers

dimensions	performance of dealing with customer	financial performance and internal processes	performance of learning, growth and education
performance of dealing with customer	(1,1,1)	(0.111,0.250,584)	(0.448,0.673,0.845)
financial performance and internal processes	(1.71,4, 9)	(1,1,1)	(0.194,0.239,0.482)
performance of learning, growth and education	(1.18,1.49,2.232)	(2.075,4.184,5.155)	(1,1,1)

Then, using the Chang fuzzy hierarchy process analysis technique, we weighted the main dimensions of the managers' performance evaluation. For example, the method of calculating the matrix of the pairwise comparison of factors and their normal weight is as follows. The results of the weighting factors are as shown in Table 9.

First, the coefficients of each of the pairwise comparison matrix are computed (i.e., we calculate the sum of the values of (l), (m) and (u) for all nine triangular fuzzy numbers.)

$$\sum l = (1) + (0.111) + (0.448) + (1.71) + (1) + (0.194) + (1.18) + (2.075) + (1) = 8.723$$

$$\sum m = (1) + (0.250) + (0.673) + (4) + (1) + (0.239) + (1.49) + (4.184) + (1) = 13.832$$

$$\sum u = (1) + (0.584) + (0.845) + (9) + (1) + (0.482) + (2.232) + (5.155) + (1) = 21.307$$

Now, we obtain the inverse of each triangular fuzzy number: the inverse of each of them is obtained by dividing the number 1 by the sum of each triangular fuzzy number. According to Table 8, we calculate the S_K value.

$$M_1 = \left(\frac{1}{l_1}, \frac{1}{m_1}, \frac{1}{u_1} \right) = \left(\frac{1}{8.723}, \frac{1}{13.832}, \frac{1}{21.307} \right) = (0.115, 0.072, 0.047)$$

$$M_i^{-1} = M_1 = \left(\frac{1}{u_i}, \frac{1}{m_i}, \frac{1}{l_i} \right) = (0.047, 0.072, 0.115)$$

Then, sum of each M_i is calculated.

$$\sum M_1 = (1, 1, 1) \oplus (0.111, 0.250, 0.584) \oplus (0.448, 0.673, 0.845) = (1.599, 1.923, 2.429)$$

$$\sum M_2 = (1.71, 4, 9) \oplus (1, 1, 1) \oplus (0.194, 0.239, 0.482) = (2.906, 5.239, 10.491)$$

$$\sum M_3 = (1.18, 1.49, 2.232) \oplus (0.2075, 4.184, 5.155) \oplus (1, 1, 1) = (4.258, 6.670, 8.387)$$

Table 8- values of S_K s for each dimension

T (triangular fuzzy number)	L	m	u		l	m	U	Final value of S_K
performance of dealing with customer	1.599	1.923	2.429	\otimes	0.047	0.072	0.115	(0.073, 0.139, 0.278)
financial performance and internal processes	2.906	5.239	10.491	\otimes	0.047	0.072	0.115	(0.136, 0.379, 1.203)
performance of learning, growth and education	4.258	6.670	8.387	\otimes	0.047	0.072	0.115	(0.200, 0.482, 0.961)

Table 8 also shows the weight of the main dimensions of performance evaluation by Fuzzy AHP technique.

Table 9: Weight of the main dimensions of the bank managers' performance evaluation by the FAHP technique

Dimensions	Degree of magnitude of the indicators relative to each other	Magnitude value	Minimum value of S_i	Normalized weight of indicators	Indicator rank
performance of dealing with customer	$V(S_1 > S_2, S_3)$	(0.372, 0.186)	0.186	0.089	3
financial performance and internal processes	$V(S_2 > S_1, S_3)$	(1, 0.906)	0.906	0.433	2
performance of learning, growth and education	$V(S_3 > S_1, S_2)$	(1, 1)	1	0.478	1

According to Table 9, the dimension of performance of education, growth and learning ranked first, internal processes ranked second, and the performance of dealing with the customer ranked third. Accordingly, weighing and ranking were performed for indicators.

• Weighing and ranking of Mellat Bank managers' performance evaluation

The results of weighting the indicators and coefficients of their importance are shown in Tables 10, 11, 12.

Table 10: The weight of Mellat Bank evaluation indicators in dimension of performance of education, growth and learning with FAHP technique

Performance of education, growth, learning	Degree of magnitude of the indicators relative to each other	Magnitude value	Minimum value of S_i	Normalized weight of indicators	Indicator rank
Indicator 1	$V(S_1 > S_2, \dots, S_7)$	(0.503, 0.388, 0.184, 0.168, 0.116, 0.068)	0.068	0.014	7
Indicator 2	$V(S_2 > S_1, \dots, S_7)$	(1, 0.867, 0.522, 0.518, 0.444, 0.311)	0.311	0.065	6
Indicator 3	$V(S_3 > S_1, \dots, S_7)$	(1, 1, 0.779, 0.781, 0.726, 0.590)	0.590	0.124	5
Indicator 4	$V(S_4 > S_1, \dots, S_7)$	(1, 1, 1, 1, 0.976, 0.894)	0.894	0.188	4
Indicator 5	$V(S_5 > S_1, \dots, S_7)$	(1, 1, 1, 0.997, 1, 0.974)	0.974	0.205	2
Indicator 6	$V(S_6 > S_1, \dots, S_7)$	(1, 1, 1, 1, 1, 0.912)	0.912	0.193	3
Indicator 7	$V(S_7 > S_1, \dots, S_6)$	(1, 1, 1, 1, 1, 1)	1	0.211	1

According to Table 10, in the dimension of the performance of education, the growth and learning, seventh indicator (meeting the needs of the banking industry education in the education chapters of high education) ranked first and the fifth (development of online educational services), the sixth (paying serious attention to the education, development and enriching the efficient workforce in the banking industry), the fourth (the use of advisors and university resources for human resource development), the third (allocation of budget for educational activities), the second (continuous attitudes toward education and human resource development) and the first (match of the field of the study of managers with organizational positions of service place) indicators ranked second to the seventh, respectively.

Table 11: Weight of managers' performance evaluation indicators in the financial performance and internal processes dimension using the FAHP technique

Financial performance and internal processes dimension	Degree of magnitude of the indicators relative to each other	Magnitude value	Minimum value of S_i	Normalized weight of indicators	Indicator rank
Indicator 1	$V(S_1 > S_2, S_3, S_4)$	(0.694, 0.237, 0.654)	0.237	0.084	4
Indicator 2	$V(S_2 > S_1, S_3, S_4)$	(1, 0.624, 0.654)	0.624	0.220	3
Indicator 3	$V(S_3 > S_1, S_2, S_4)$	(1, 1, 1)	1	0.354	1
Indicator 4	$V(S_4 > S_1, S_2, S_3)$	(1, 1, 0.969)	0.969	0.342	2

According to Table 11, in the dimension of financial performance and internal processes, the third indicator (Emphasis on the level of employee productivity in the degree of accuracy in work and creating flexibility in the employees) ranked first and fourth indicator (creating a sense of respect for organizing of the organization and the relevant unit in performing the affairs during the specified intervals), the second indicator (implementation of employee performance system and employing using employee encouragement and punishment systems) and the first indicator (updated equipment and information technology) ranked second to the fourth, respectively.

Table 12: Weight of Mellat Bank managers, performance evaluation from the customer perspective with the FAHP technique

Indicator rank	Normalized weight of indicators	Minimum value of S_i	Magnitude value	Degree of magnitude of the indicators relative to each other	Performance of dealing with customer
3	0.128	0.279	(0.434, 0.279)	$V(S_1 > S_2, S_3)$	Indicator 1
2	0.413	0.900	(1, 0.900)	$V(S_2 > S_1, S_3)$	Indicator 2
1	0.459	1	(1, 1)	$V(S_3 > S_1, S_2)$	Indicator 3

According to Table 12, in the dimension of performance of dealing with customer, the third indicator (Extension of the public organizational culture among employees and the lack of sufficient motivation in employees to provide service and in customer-orientation) ranked first, and the second indicator (increasing efficiency and performance of the manager in dealing with customers) ranked second and the first indicator (the manager's efforts in developing and enhancing the general and specialized awareness of employees in providing customer service) ranked third.

- Measuring the inconsistency rate of the pairwise comparison matrix

In this research, the inconsistency rate for all pairwise comparison matrices after the defuzzification of the matrices is measured through method using the EXPERT CHOICE11 software. The results are shown in Table 13.

Table 13: Inconsistency rates of pairwise comparison matrices

row	factors	Inconsistency rate	indicators	Inconsistency rate	row	factors	Inconsistency rate	indicators	Inconsistency rate
1	Performance of education, growth and learning indicator	IR =0.06 IR < 0.1	Indicator 1	IR =0.04 IR < 0.1	8	Financial performance and internal processes indicator	IR =0.07 IR < 0.1	Indicator 1	IR =0.06 IR < 0.1
2			Indicator 2	IR =0.03 IR < 0.1	9			Indicator 2	IR =0.09 IR < 0.1
3			Indicator 3	IR =0.02 IR < 0.1	10			Indicator 3	IR =0.01 IR < 0.1
4			Indicator 4	IR =0.01 IR < 0.1	11			Indicator 4	IR =0.04 IR < 0.1
5			Indicator 5	IR =0.02 IR < 0.1	12	Performance of dealing with customer indicator	IR =0.04 IR < 0.1	Indicator 1	IR =0.01 IR < 0.1
6			Indicator 6	IR =0.03 IR < 0.1	13			Indicator 2	IR =0.03 IR < 0.1
7			Indicator 7	IR =0.05 IR < 0.1	14			Indicator 3	IR =0.07 IR < 0.1

According to Table 13 and the values obtained from the inconsistency rate of the pairwise comparison matrices, since the inconsistency rate (IR) values for dimensions and indicators are less than (0.1), there is consistency in the pairwise comparisons.

4-6- Selection of managers with fuzzy TOPSIS technique

• Step 1: Create a Fuzzy decision-making matrix

After summing up the judgments using equation 1, the results of obtaining the mean of the fuzzy importance of the selection of managers are shown in Table 12. After collecting the questionnaires, they entered the EXCEL2013 software and the mean weight was taken from experts' views. The results of the fuzzy group decision making matrix are presented in Table 15. Negative indicators are marked with gray color.

$$\tilde{w}_{ij} = \frac{1}{k} (\tilde{w}_{ij}^1 + \tilde{w}_{ij}^2 + \dots + \tilde{w}_{ij}^k) \quad \text{Equation (1)}$$

Table 14- mean fuzzy importance of Mellat bank managers' performance selection

Dimension	mean fuzzy importance of factors from the perspective of experts
Financial performance and internal processes indicator	(0.61•0.71•0.49)
Performance of education, growth and learning indicator	(0.55•0.67•0.8)
Performance of dealing with customer indicator	(0.59•0.66•0.85)

Table 15- experts' fuzzy group decision making matrix

options indicators		Manager of Khani Abadanu branch	Manager of Shahrake- Farhangian branch	Manager of Khiaban-e Ejaredar branch
Performance of dealing with customer indicator	Indicator 1	(0.48•0.59•0.79)	(0.32•0.61•0.84)	(0.62•0.87•0.92)
	Indicator 2	(0.51•0.63•0.85)	(0.3•0.53•0.76)	(0.41•0.52•0.78)
	Indicator 3	(0.23•0.35•0.46)	(0.3•0.49•0.55)	(0.21•0.52•1)
Financial performance and internal processes indicator	Indicator 1	(0.15•0.26•0.39)	(0.29•0.38•0.51)	(0.2•0.52•0.76)
	Indicator 2	(0.22•0.41•0.34)	(0.28•0.53•0.71)	(0.5•0.65•0.79)
	Indicator 3	(0.29•0.55•0.96)	(0.2•0.3•0.45)	(0.26•0.45•0.65)
	Indicator 4	(0.46•0.62•0.82)	(0.32•0.43•0.59)	(0.23•0.64•0.79)
Performance of education, growth and learning indicator	Indicator 1	(0.21•0.29•0.35)	(0.08•0.47•0.98)	(0.43•0.5•0.73)
	Indicator 2	(0.65•0.75•0.89)	(0.2•0.28•0.48)	(0.46•0.53•0.89)
	Indicator 3	(0.41•0.59•0.69)	(0.16•0.24•0.65)	(0.25•0.49•0.79)
	Indicator 4	(0.39•0.63•0.74)	(0.28•0.55•0.7)	(0.49•0.58•0.91)
	Indicator 2	(0.69•0.71•0.99)	(0.48•0.49•0.95)	(0.24•0.48•0.69)
	Indicator 3	(0.33•0.55•0.7)	(0.32•0.67•0.98)	(0.35•0.76•0.88)
	Indicator 7	(0.34•0.5•0.73)	(0.48•0.57•0.64)	(0.3•0.5•0.74)

• **Step 2: Normalizing the decision-making matrix**

In this step, we normalize the fuzzy numbers of Table 15. For this purpose, we divide the triangular fuzzy number of each component into the largest fuzzy number in that column (Max c_{ij}) for the positive and the benefit indicators. For the negative and cost results, we divide the smallest triangular fuzzy number of that column (Min a_{ij}) by all the fuzzy numbers of that column, and then, we replace the numbers of rows together. In this step, we form the normalized fuzzy decision matrix \tilde{R} .

• **Step 3: Creating a normal weight matrix**

In order to create a normal weight matrix, the importance of the results should be multiplied in the normalized matrix numbers to obtain a normal weight matrix.

Table 16: Normalized Weight Decision Matrix

options indicators		Manager of Khani Abadanu branch	Manager of Shahrake- Farhangian branch	Manager of Khiaban-e Ejaredar branch
Performance of dealing with customer indicator	Indicator 1	(0.267•0.399•0.638)	(0.180•0.417•0.686)	(0.341•0.583•0.736)
	Indicator 2	(0.283•0.426•0.687)	(0.168•0.362•0.620)	(0.226•0.348•0.624)
	Indicator 3	(0.179•0.287•0.522)	(0.080•0.109•0.213)	(0.110•0.258•0.762)
Financial performance and internal processes indicator	Indicator 1	(0.089•0.173•0.335)	(0.175•0.256•0.442)	(0.118•0.343•0.646)
	Indicator 2	(0.260•0.241•0.580)	(0.066•0.100•0.243)	(0.149•0.203•0.340)
	Indicator 3	(0.173•0.367•0.824)	(0.120•0.202•0.390)	(0.153•0.297•0.553)
	Indicator 4	(0.2741•0.413•0.704)	(0.193•0.290•0.512)	(0.136•0.422•0.672)
Performance of education, growth and learning indicator	Indicator 1	(0.104•0.179•0.251)	(0.040•0.293•0.710)	(0.211•0.305•0.518)
	Indicator 2	(0.322•0.462•0.638)	(0.100•0.174•0.348)	(0.225•0.323•0.632)
	Indicator 3	(0.203•0.364•0.495)	(0.080•0.149•0.471)	(0.123•0.299•0.561)
	Indicator 4	(0.193•0.388•0.531)	(0.140•0.342•0.507)	(0.240•0.354•0.646)
	Indicator 5	(0.342•0.437•0.710)	(0.240•0.305•0.688)	(0.118•0.293•0.490)
	Indicator 6	(0.163•0.339•0.502)	(0.160•0.417•0.710)	(0.172•0.464•0.625)
	Indicator 7	(0.168•0.308•0.524)	(0.240•0.355•0.646)	(0.147•0.305•0.525)

• **Step 4: Determining the fuzzy positive ideal solution \tilde{v}_j^* (A + FPIS and Fuzzy Negative Ideal Solution \tilde{v}_j^- (A-FNIS)**

Table 17 shows the distance between the fuzzy positive ideal solution and the fuzzy negative ideal solution.

Table 17: Distance from the positive and negative ideal solution

Options	Manager of Khani Abadanu branch	Manager of Shahrake-Farhangian branch	Manager of Khiaban-e Ejaredar branch
FPIS ⁺	(0.342•0.462•0.824)	(0.240•0.417•0.710)	(0.341•0.583•0.762)
FNIS ⁻	(0.089•0.173•0.251)	(0.040•0.100•0.213)	(0.110•0.203•0.340)

• **Step 5: Calculating the distance of each of the options from the fuzzy positive ideal values (di +) and negative ideal values (di-)**

Results of finding the distance of each option from the positive and negative ideal are shown in Tables 18 and 19, respectively.

Table 18: distance of indicators from the positive and negative ideal solution

options indicators		Manager of Khani Abadanu branch 0911		Manager of Shahrake-Farhangian branch 0174		Manager of Khiaban-e Ejaredar branch 0367	
		Positive	negative	Positive	negative	Positive	negative
Performance of dealing with customer indicator	Indicator 1	0.121	0.277	0.037	0.337	0.015	0.342
	Indicator 2	0.088	0.310	0.073	0.288	0.170	0.195
	Indicator 3	0.221	0.176	0.348	0.024	0.229	0.244
Financial performance and internal processes indicator	Indicator 1	0.357	0.048	0.183	0.177	0.200	0.193
	Indicator 2	0.195	0.216	0.339	0.023	0.344	0.023
	Indicator 3	0.111	0.351	0.232	0.126	0.230	0.136
	Indicator 4	0.084	0.313	0.138	0.221	0.158	0.229
Performance of education, growth and learning indicator	Indicator 1	0.392	0.009	0.135	0.306	0.225	0.131
	Indicator 2	0.107	0.308	0.263	0.095	0.180	0.193
	Indicator 3	0.213	0.189	0.226	0.152	0.236	0.139
	Indicator 4	0.194	0.211	0.137	0.226	0.158	0.210
	Indicator 5	0.067	0.337	0.066	0.319	0.262	0.100
	Indicator 6	0.223	0.178	0.046	0.346	0.143	0.225
	Indicator 7	0.218	0.180	0.146	0.235	0.237	0.123
$\sum d_j^+$		2.592	3.104	2.369	2.875	2.788	2.483

Step 6: Calculating closeness coefficients and prioritizing the options

By determining the closeness coefficient, the final step for ranking all options can begin and decision-makers can select the best branch manager among the three studied branches. Table 19 shows the results of calculating the closeness coefficients of managers of the three branches.

Table 19: Ideal positive closeness coefficients at Mellat Bank branches

row	options	$\sum d_j^+$	$\sum d_j^-$	Ideal positive closeness coefficients CCI	rank
1	Manager of Khani Abadanu branch 0911	2.592	3.104	0.545	2
2	Manager of Shahrake-Farhangian branch 0174	2.369	2.875	0.548	1
3	Manager of Khiaban-e Ejaredar branch 0367	2.788	2.483	0.471	3

According to Table 19, the Manager of Shahrake-Farhangian branch ranked first and manager of Khani Abadanu branch and manager of Khiaban-e Ejaredar branch ranked second and third, respectively.

5. Conclusion

5-1-Answering the first question: What indicators can be presented to evaluate the performance of managers of Mellat bank branches in Tehran?

After consulting and collaborating with the Mellat Bank managers and experts, the SWOT matrix was randomly sent to 128 employees of the Mellat Bank and returned to the researcher after completion. Using the data of the research questionnaire, the score for strengths, weaknesses, threats and opportunities was determined. In the BSC matrix, the SWOT model variables were classified into three areas of customer orientation, growth and learning, and internal process. The relevant BSC matrix determines the factors affecting the Mellat Bank managers' performance evaluation through a balanced scorecard model that the mentioned factors will be selected for input variables of the FAHP model after being screened and verified by the experts (Table 5).

5.2. Answering to the second question: What is the ranking of the performance evaluation indicators?

The mentioned factors as inputs for weighting and ranking of the dimensions and indicators of evaluation by managers with the FAHP technique do not have adequate quality. The experts of the bank included 8 people (2 leading managers and 6 senior experts) and selected as the statistical sample of the research and the Delphi method was used to analyze the factors (Table 6).

5-3 Answering to the third question: How can the BSC-AHP model be used to evaluate the performance of managers of Mellat bank branches in Tehran?

• Results of weighting and ranking of the dimensions and indicators of performance evaluation of managers

After weighing and ranking the indicators using the Fuzzy AHP technique, the results of which are presented in Tables (5), (6), (9) and (10), in the dimension of education performance, growth and learning ranked first and the dimensions of financial performance and internal processes and the performance of dealing with the customer ranked second and third, respectively. The results are presented in Table (10),

In the dimension of performance of education, the growth and learning, seventh indicator (meeting the needs of the banking industry education in the education chapters of high education) ranked first and the fifth indicator (development of online educational services), the sixth indicator (paying serious attention to education, development and enriching the efficient workforce in the banking industry), the fourth indicator (the use of advisors and university resources for human resource development), the third indicator (allocation of budget for educational activities), the second indicator (continuous attitudes toward education and human resource development) and the first indicator (match of the field of study of managers with organizational positions of service place) ranked second to seventh, respectively.

According to Table 11, in the dimension of financial performance and internal processes, the third indicator (Emphasis on the level of employee productivity in the degree of accuracy in work and creating flexibility in employees) ranked first and fourth indicator (creating a sense of respect for organizing of the organization and the relevant unit in performing the affairs during the specified intervals), the second indicator (implementation of employee performance system and employing using employee encouragement and punishment systems) and the first indicator (updated equipment and information technology) ranked second to fourth, respectively. According to Table 12, in the dimension of performance of dealing with customer, the third indicator (Extension of the public organizational culture among employees and the lack of sufficient motivation in employees to provide service and in customer-orientation) ranked first, and the second indicator (increasing efficiency and performance of the manager in dealing with customers) ranked second and the first indicator (the manager's efforts in developing and enhancing the general and specialized awareness of employees in providing customer service) ranked third.

• Results of ranking of Mellat Bank branches' managers with fuzzy TOPSIS

After weighing and ranking of the dimensions and indicators of the Mellat bank managers performance evaluation, the performance of managers of three Mellat Bank branches, including Shahrake-Farhangian branch, Khani Abadanu branch, and Khiaban-e Ejaredar branch was weighted and ranked using the Fuzzy Topsis technique, the results of which are presented in Tables 18 and 19. Based on these tables, the manager of Shahrake-Farhangian branch 0174 ranked first, Khani Abadanu branch 0911 ranked second, and manager of Khiaban-e Ejaredar branch 0367 ranked third.

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