

## **Ranking the Strategies of Attracting Financial Resources in the Banking Industry by Fuzzy Multi-Criteria Decision Making Methodology Case Study: Post Bank Branches in Tehran**

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**Abstract:** This study has ranked the strategies in attracting the financial resources in the banking industry by using fuzzy multi-criteria decision making methodology while it has determined the effective factors in attracting the financial resources. This study includes a main and some secondary objectives. Selecting a suitable strategy for attracting the financial resources in the banking industry in Post Bank of Tehran is the main objective of this research. The secondary objectives are the identification, weighting and ranking of financial resources in the banking industry in the Post Bank of Tehran. To do this, the influential criteria and sub-criteria were extracted by interviewing and doing library studies. Due to the specific impact of criteria on each other and also the effectiveness of sub-criteria on the other clusters, the Fuzzy Delphi- analytical hierarchy approach is used to solve the problem and to find the sub-criteria. Ultimately, the Triangular Fuzzy TOPSIS method is used to prioritize the Post Bank branches. This study is done in descriptive method and data are gathered by questionnaire instrument. The population of this research was selected among ten experts from the staff of the central Post Bank. Results suggest that developing electronic banking is in the first rank and attracting cheap resources, convenient access to the facilities and capabilities, innovation in services ranked second, third and fourth, respectively.

**Key words:** Financial resources, post bank, the fuzzy delphi-analytical hierarchy approach, the fuzzy TOPSIS, Iran

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### **INTRODUCTION**

Now a days, mastering the factors affecting the mobilization of financial resources has special importance due to the competition between banks and financial institutions to attract more resources. Mobilization of resources has always been the main task of the banking system. The traditional task of the banks which is mediation between depositors and borrowers is performed by collecting the surplus funds and granting loans to the applicants. The mobilization of financial resources was begun since humans turned to the social life and started the trading and exchange of goods. And it has always been the main task of the banking system. In modern banking, banks provide numerous services to customers in the non-bank financial fields and providing new services such as investment banking, insurance, housing and production affairs has led to the flow of new resources to the banks. In fact, in the modern banking, a major part of resources are obtained through non-banking activities. Perhaps, globalization is the most striking

phenomenon of banking in the present age. Now, the banks are trading like any other organization in the world; moreover, there have been significant changes in financial resources due to the increasing development of technology and industrialization of the countries. An important issue in the banking and monetary system is the way of mobilizing the financial resources, then allocating and distributing them to the various economic sectors and between economic activists as well as routes in which the total money supply enters the economic system and circulates in it. With regard to the responsibility of the banking system in mobilizing financial resources and allocating them to the economic system optimally, it is possible to decrease production costs and improve the production, employment and economic growth whatever the banking system acts effectively in mobilizing financial resources and allocating them in the competitive environment. Otherwise, the lack of efficiency in the banking system for mobilizing and allocating financial resources leads to a waste of resources and ultimately the economic growth (Ramezaani, 2006). In recent years,

banks have achieved fairly good progresses in the electronic technology in Iran which is a major factor in mobilizing resources for modern banking. Currently, financial institutions and banks in our country have not provided a plan to attract the financial resources and diversify the services and similarity of these banks' services in various banks is a proof for the authenticity of this claim (Bahmani, 2006). There are several factors in modern banking which affect the process of mobilizing the monetary resources for banks. So, identifying and determining the effectiveness and the relationship of these factors with the success of banks in mobilizing the financial resources is an important matter. Therefore, attracting the financial resources for each bank and the banking system is related to both the external and internal factors considering that today, bank's conditions are not similar to the other banks and maybe the factors affecting the mobilizing financial resources are different even for every branch of banks. So, recognizing these factors and their impact is essential to success in this field. Hence, the important matter in this research is answering to the question that what are the factors affecting the mobilizing bank's resources in Post bank? Affective factors are those which are influential in increasing customers and attracting financial resources and applying them leads to increasing the customers of banks. The importance and the level of impact of each factor in every bank is not identical. Also, according to the services and prospects in the Post Bank of Iran which is one of the prestigious banks and one of its main objectives is providing banking and financial services in the rural areas. It can be said that the bank has tens of thousands of ICT offices for rural and it is the widest bank in terms of access to the remote areas in Iran. In recent years, there have seen a large variation in the financial services and banking affairs in this bank. Therefore, it is necessary to identify and prioritize the important factors based on their importance and use them in order to improve the efficiency of executable plans and strategies.

Now, this question arises that in conjunction with ranking the strategies for attracting financial resources in the banking industry, how we can offer an efficient and stable hierarchical model which along with the Delphi method have always appropriate answers in uncertainty conditions.

### **Theoretical framework**

**The definition of strategy:** There are many definitions of "strategy" and each of them has considered some aspects of this concept. The word "strategy" came to denote "leading, dispatching, sending, carrying and surveying". The term was taken from the Greek

word "Stratēgia" and came into use around 400 BC. It has been referred as the art and science of guiding military forces.

**The miles and snow typology of strategies:** Miles and Snow have proposed the most famous typology. They have identified four fundamental strategies for dealing with the environment in which the organization work and each one associates with a special combination of technology, structure and process.

**Defenders:** The organizations that follow a defender strategy usually have a relatively limited product line and market scope. Their top managers are expert in the limited scope of organizations; but they avoid searching for new market opportunities.

**Prospectors:** These organizations are always looking for new market opportunities. They examine new products and services in response to environmental trends. They also tend to create unknown conditions and changes in the market where competitors should also respond to it and meet their needs and demands.

**Analyzers:** These organizations have a product in a stable market and a product in a changing market. In the stable market, they act relatively fluently and efficiently by using formulated structures and processes. Markets are also changing rapidly; they watch their competitors, closely and adapt to the conditions as best as they can.

**Reactors:** These organizations have excellent managers that perceive the unknown changes in the external environment of their organization; but they cannot mobilize the organizational resources effectively in order to respond to those changes and unknowns. They have a shortcoming in the stability of the structure-strategy relationship and it is unlikely to make major adjustments unless the environmental pressures emerge.

### **Identifying the internal strengths and weaknesses for formulating strategy**

**The nature of investigating the internal factors:** Each organization has its strengths and weaknesses within the scope of its functional units and all departments and units in any firm have different strengths and weaknesses. Internal strengths and weaknesses, external threats and opportunities and finally the organization's mission all would lead to a basis which accordingly setting long-term objectives would be possible.

**The process of investigating organization's internal factors:** Compared to external factors, the process of investigating organization's internal factors provides more opportunities for staff to understand the relationship between their work, the circle and unit and the entire organization well. This investigating requires collecting, storing and evaluating the operation-related information. At present, due to the more complex and dynamic environment, the success of the organization largely depends on the matter that the company could consider the fateful functional units simultaneously.

**A comprehensive framework for formulating the strategy:** The important methods of formulating strategies can be included in a three-step framework for decision making. Tools and procedures which are presented in this framework are appropriate for all types of organizations of various sizes- and help strategists identify, evaluate and choose the strategies.

**First stage; the input:**

- EFE (External Factor Evaluation Matrix)
- CPM (Competitive Profile Matrix)
- IFE (Internal Factor Evaluation Matrix)

**Second stage; comparison:**

- SWO (Strengths, Weakness, Opportunities and Threats Matrix for Strategies)
- SPACE (Strategic Position and Action Evaluation)
- GSM (Grand Strategy Matrix)
- BCG (Boston Consulting Group)
- IE (Internal-External Matrix)

**Third stage: decision making:**

- QSPM (Quantitative Strategic Planning Matrix)

**Investigating methods of mobilizing and allocating resources in the banking system:** Monetary and financial system plays a key role in the stability and efficiency of the economic environment, maintaining the stability of the general price level, supporting productive affairs and facilitating the economic growth and development. So that, the efficiency and stability of the monetary and financial system will support the efficiency of the real economy sector and unlike the instability and inefficiency of monetary and financial system will lead to the instability and inefficiency of the real economy sector. An important issue in the banking and monetary system is the way of mobilizing the financial resources, then allocating and distributing them to the various economic sectors and between economic activists as well as routes in which the total money supply enters the economic system and

circulates in it. With regard to the responsibility of the banking system in mobilizing financial resources and allocating them to the economic system optimally, it is possible to decrease production costs and improve the production, employment and economic growth whatever the banking system acts effectively in mobilizing financial resources and allocating them in the competitive environment. Otherwise, the lack of efficiency in the banking system for mobilizing and allocating financial resources leads to a waste of resources and ultimately the economic growth (Ramezaani, 2006).

**The effective factors on attracting the financial resources:** The Banks make money through the provision of banking service for customers. So that, they make this earning by attracting deposits with low interest rates and lending money at rates higher than the cost of the money they lend which the difference between the two rates is called profit margin. Therefore, the profit will increase whatever it is able to use the economic scales. Profitability of banks is under the influence of internal controllable factors in managing banks or the economic conditions and factors governing the country and environmental factors that affect it. So, the factors affecting the profitability are divided into two major groups of internal and external determinant factors in order to avoid any deviation (Baqeri, 2006).

**The external factors affecting the organization:** The external determinant factors are beyond the bank's management which are divided into two groups

**The ownership and scale of bank:** Socialist countries usually have a national banking, private banks are found in capitalist countries and normally the third world countries have semi-governmental banks.

**The factors that depend on the economic conditions of the country:** These factors are inflation rate, money supply, market share, economic growth, adjustment terms, the central bank's policies and GDP growth rate.

**The internal factors affecting the organization:** The internal factors are often under the control of the bank's management. They are essentially a reflection of the bank's management policies and decisions with regard to the banking resources. Management high motivation in performing task optimally is effective in the profitability of the banks which can be analyzed by investigating the balance sheet and the profit and loss accounts (Baqeri, 2006).

**Service factors:** Among the factors and classification which affect the attracting resources, perhaps it could be said that the service factors are the most important factors affecting the attracting banking resources. The factors which are described in this section are as follows:

- The diversification of banking services
- The quality of banking services
- Electronic banking services
- The specialized skills of staff

**Financial factors:** These factors which include the financial factors are as follows:

- Facilities paid to customers
- Interest rates paid on deposits
- Bonuses paid on interest-free deposits

Each of these factors is described in the following.

**Communication and human factors:** Generally, communication and human factors in this classification, consider the humanity-social aspects which include the following:

- Advertising bank
- Staff behavior and their way of dealing with bank customers
- Fairness and non-discrimination in the provision of services
- Informing and providing the necessary training for customers and e. Suitable personal characteristics of staff

**Physical factors and conditions:** In general, these are physical, visible and tangible factors which include other items. Hereafter, each of the following are explained:

- Location of branches
- The number of bank branches
- Designing and beautifying the interior and exterior areas of bank
- Physical facilities of bank branches

**Review of literature:** Raazaani (2003) in his dissertation entitled "Investigating and introducing new and effective methods for attracting financial resources in Tejarat Bank branches in Lorestan" while presenting the subject and discussing the objectives and hypotheses, he has studied the factors that affect attracting the financial resources in Tejarat bank of Lorestan and these factors are providing more convenient facilities, better physical space, review

in the way of awarding, care about customers, appropriate laws and regulations and attracting long-term resources. This study also examines the competitiveness between country's banking groups, the process of country's monetary variables during 1995-2001 as well as the bank's performance with other banking groups.

Ramezaani (2006) in his dissertation titled "Investigating the factors affecting the resource mobilization in Sepah bank in Golestan", in addition to a brief reference to the history of banking and its transformation as well as pointing to the structure and history of Sepah bank, has explained the factors influencing the mobilization of financial resources in Sepah bank and has concentrated more on attracting deposits in various forms. It should be mentioned that it referred to new services of Sepah bank such as telephone banking, Iran check, Sepah check, Asaan check, dynamic notification system, FAQ system, etc. and it has considered them an effective factor in attracting financial resources for banks.

Yong-chin and Jung-Hua Hung have studied the long-term profitability in Taiwan's banks. They concluded that banking services are the most important factors in profitability and getting profit for the studied branches. Ultimately, they considered the bank staff as the most important and essential factor to achieve increased profitability and getting interest.

Abhiman have considered factors, including human resources, staff's level of education, bank environment, its location, advertisement, governmental laws and regulations and the reduction of government interventions in the banking affairs as the effective factors in attracting people's deposits by studying some branches of large state-owned banks in India. According to them, human resources are the most important and influential factor in attracting individual's assets and they has considered inefficiency and undesirable effectiveness of human resources as the reason for the poor performance of some banks in attracting and controlling banking resources.

**Objectives of the study:** In general, the objectives of the study can be stated as follow.

**The main objectives:**

- Selecting a suitable strategy in attracting financial resources in the banking industry in Post Bank of Tehran
- Helping Post bank of Tehran in selecting a suitable strategy in attracting financial resources to improve the profitability of executing plans and thereby to increase attracting customers and their satisfaction

**Secondary objectives:**

- Identifying the factors in attracting financial resources in the banking industry in Post Bank of Tehran
- Weighting and ranking the factors in attracting financial resources in the banking industry in the Post Bank of Tehran
- Ranking the strategies in in attracting financial resources in the banking industry in the Post Bank of Tehran

**MATERIALS AND METHODS**

This study in terms of its objective is an applied research and it is a descriptive research based on the nature of the method. The population of this research is composed of experts, including senior and middle managers of Post bank in Tehran. This study has not used statistical sample but it has considered managers and experts. A questionnaire was designed for gathering information which it included four dimensions and sixteen variables. Ten questionnaires which is equal the number of experts were distributed among them; and all of them were gathered comprehensively. To make sure the validity of questionnaires, some copies were distributed among experts and they were asked to leave a comment on the questionnaires and their accuracy and understandability. Then, data were analyzed by FAHP method and AHP (The Analytical Hierarchy Process) was used to investigate the relationship between the criteria and weighting them as well as to identify the effective criteria and their relative importance.

**RESULTS AND DISCUSSION**

**Identifying and evaluating the criteria:** Several articles were used to identify and rank the criteria for determining the strategy in attracting financial resources in the banking industry and then the factors were extracted. In this study, sixteen criteria were selected as the important and critical criteria for the ultimate solution of the model. Now, it is answered to the first question of research. The most important criteria are presented in Table 1.

**Prioritizing the criteria using fuzzy ahp approach:** After formation of the pair-wise comparison matrix and the linguistic variables of decision matrix became into triangular fuzzy numbers, it has been attempted to measure the weight of factors and criteria by using F. The AHP approach. Gogus and Boucher method is used to calculate the rate of incompatibility which its results

Table 1: Effective factors in ranking strategies for attracting the financial resources

Main factors criteria	Abbreviations
<b>Financial factors</b>	
Bonuses	C <sub>11</sub>
Profit and facility	C <sub>12</sub>
<b>Service factors</b>	
Quality of services	C <sub>21</sub>
Ease of services	C <sub>22</sub>
Diversification of services	C <sub>23</sub>
Variation and innovation	C <sub>24</sub>
Competence and skills	C <sub>25</sub>
<b>Human factors</b>	
Advertisement	C <sub>31</sub>
Reliability	C <sub>32</sub>
Way of dealing with customers and providing services for them	C <sub>33</sub>
Staff behavior	C <sub>34</sub>
<b>Physical factors</b>	
Physical facilities	C <sub>41</sub>
eographical location	C <sub>42</sub>
<b>External factors</b>	
Bonuses paid to depositors	C <sub>51</sub>
Interest rates paid on deposits	C <sub>52</sub>
Facilities paid to customers	C <sub>53</sub>

are given in Table 2. Since, in all matrixes, values of CR<sup>m</sup> and CR<sup>g</sup> are <0.1, then all matrixes are compatible with Fuzzy.

**Computing the weights of the main factors:** According to the information which is obtained by ten studied experts and through calculating all of their comments on each item of the fuzzy pair-wise comparison questionnaire and putting them in fuzzy triangular scale, weights of criteria can be presented in Table 3.

**Weights of Main factors**

**Computing the weights of the criteria:** Given the information which is obtained by the studied experts and by calculating all of their comments on each item of the Fuzzy pair-wise comparison questionnaire, the weight of criteria is measured that decision matrix and relative weight are presented in Table 3.

**The weights of criteria for “Financial Factors:** As it can be seen in the above table, “Profit and Payment” criterion is the most important criteria among the financial factor criteria in ranking the strategies for attracting financial resources. Then, “Paid Bonuses” is in the next rank (Table 4).

**The weights of criteria for “Service Factors”:** As it can be seen in Table 5, “Diversity in service” criterion is the most important criteria among the service factor criteria in ranking the strategies for attracting financial resources. And the criteria of “Variation and Innovation”, “Quality of Services”, “Competency and Skills” and “Ease of Service” are at the next ranks, respectively.

Table 2: The compatibility test for matrixes

Matrix	N	$\lambda_{max}^m$	CI <sup>m</sup>	CR <sup>m</sup>	$\lambda_{max}^g$	CI <sup>g</sup>	CR <sup>g</sup>	Results
Main factors	5	5.0043	0.0011	0.001	5.0443	0.0111	00	<0.1
Service factors	5	5.0002	000	000	5.0399	0.01	0.0278	<0.1
Human factors	4	4.00021	000	000	4.05065	0.01688	0.06426	<0.1
External factors	3	3.0046	0.0023	0.0047	3.0213	0.0107	0.0594	<0.1

Table 3: The relative importance of main factors

Main factor	Normalized weight	Normalized weight
Financial factors (C <sub>1</sub> )	0.945	0.1981
Service factors (C <sub>2</sub> )	0.998	0.2092
Human factors (C <sub>3</sub> )	1.000	0.2096
Physical facilities (C <sub>4</sub> )	0.939	0.1968
External factors (C <sub>5</sub> )	0.889	0.1863

Table 4: The pair-wise comparison matrix between criteria of financia factors

Weight	-----C <sub>2</sub> -----			-----C <sub>1</sub> -----			Matrix
0.3678	1	0.58	0.2	1	1.00	1	C <sub>11</sub>
0.6322	1	1.00	1.0	5	1.74	1	C <sub>12</sub>

Table 5: The pair-wise comparison matrix between criteria of service factors

Weight	-----C <sub>25</sub> -----		-----C <sub>24</sub> -----		-----C <sub>23</sub> -----		-----C <sub>22</sub> -----		-----C <sub>21</sub> -----		Matrix					
0.198	4	0.965	0.333	4	0.885	0.333	3	0.841	0.333	3	1.000	0.333	1	1.000	1.000	C <sub>21</sub>
0.197	3	1.000	0.333	3	0.917	0.333	1	0.841	0.333	1	1.000	1.000	3	1.000	0.333	C <sub>22</sub>
0.205	3	1.189	0.333	3	1.091	0.333	1	1.000	1.000	3	1.189	1.000	3	1.189	0.333	C <sub>23</sub>
0.202	3	1.091	0.333	1	1.000	1.000	3	0.917	0.333	3	1.091	0.333	3	1.130	0.250	C <sub>24</sub>
0.198	1	1.000	1.000	3	0.917	0.333	3	0.841	0.333	3	1.000	0.333	3	1.037	0.250	C <sub>25</sub>

Table 6: The pair-wise comparison matrix between criteria of human factors

Weight	-----C <sub>24</sub> -----			-----C <sub>23</sub> -----			-----C <sub>22</sub> -----			-----C <sub>21</sub> -----			Matrix
0.174	1	0.49	0.25	1	0.64	0.25	1	0.64	0.25	1	1.00	1	C <sub>21</sub>
0.266	1	0.77	0.25	3	1.00	0.33	1	1.00	1.00	4	1.57	1	C <sub>22</sub>
0.265	1	0.74	0.33	1	1.00	1.00	3	1.00	0.33	4	1.57	1	C <sub>23</sub>
0.295	1	1.00	1.00	3	1.35	1.00	4	1.29	1.00	4	2.03	1	C <sub>24</sub>
0.174	1	0.49	0.25	1	0.64	0.25	1	0.64	0.25	1	1.00	1	C <sub>25</sub>

**The weights of criteria for “Human Factors:**As it can be seen in Table 6, “Staff Behavior” criterion is the most important criteria among the human factor criteria in ranking the strategies for attracting financial resources. And the criteria of “Reliability”, “The way of dealing with the customers and providing services for them” and “Advertisement” are in the next ranks, respectively.

**The weights of criteria for “Physical Facilitie”:**As Table 7 shows, both criteria for “Physical Facilities” and “Geographical Location” are as the most significant criteria for “Physical Facilities” factor in ranking the strategies for attracting the financial resources.

**The weights of criteria for “External Factors:** As Table 8 shows, criteria for “Interest rates paid on deposits”, is the most significant criteria for “External factors” in ranking the strategies for attracting the financial resources. Then, the criteria for “Facilities paid for customers” and “Bonuses paid to depositors” are in the next ranks, respectively. Finally, after calculating the weights of the main factors and their criteria, their final weight is calculated and then prioritized them based on their weights. As it can be seen in Table 9, the highest

Table 7: The pair-wise comparison matrix between criteria for “Physical Facilities”

Weight	-----C <sub>42</sub> -----		-----C <sub>41</sub> -----		Matrix		
0.5	3	1	0.33	1	1	1.00	C <sub>41</sub>
0.5	1	1	1.00	3	1	0.33	C <sub>42</sub>

Table 8: The pair-wise comparison matrix between criteria for external factors

Weight	-----C <sub>53</sub> -----		-----C <sub>52</sub> -----		-----C <sub>51</sub> -----		Matrix			
0.223	1	0.58	0.25	1	0.5	0.2	1	1	1	C <sub>51</sub>
0.413	3	1.41	1	1	1	1	5	2	1	C <sub>52</sub>
0.364	1	1	1	1	0.71	0.33	4	1.73	1	C <sub>53</sub>

weight belongs to the criteria for “profit and facilities” which is one of the criteria for “financial factors” and it has obtained the first priority. Afterward, the criteria for “physical facilities”, “geographical location”, “interest rates paid on deposits” and “bonuses” have obtained the highest weights among the sixteen criteria, respectively, that 47.19% of the total weight of criteria is allocated to them and this finding highlights the significant role of these criteria.

**Ranking the options by f.vikor method:**After calculating and obtaining weight of criteria by using F.AHP method, F.VIKOR method is used to rank the options selecting a

Table 9: The weight and priority of effective factors in ranking the strategies in attracting the financial resources

Weight of main factors and its rank	Relative weight of criteria and its rank		Final weight of criteria and its rank	
Financial factors	C <sub>11</sub>	(2) 0.368	0.0729	50
C <sub>1</sub> (3) 0.198	C <sub>12</sub>	(1) 0.632	0.1253	1
Service factors	C <sub>21</sub>	(3) 0.198	0.0415	13
C <sub>2</sub>	C <sub>22</sub>	(5) 0.197	0.0412	15
(2)	C <sub>23</sub>	(1) 0.205	0.0429	10
0.2092	C <sub>24</sub>	(2) 0.202	0.0422	11
	C <sub>25</sub>	(4) 0.198	0.0415	14
Human factors	C <sub>31</sub>	(4) 0.174	0.0365	16
C <sub>3</sub>	C <sub>32</sub>	(2) 0.266	0.0557	8
(1)	C <sub>33</sub>	(3) 0.265	0.0555	9
0.2096	C <sub>34</sub>	(1) 0.295	0.0618	7
Physical facilities	C <sub>41</sub>	(1) 0.500	0.0984	2
C <sub>4</sub> (4) 0.197	C <sub>42</sub>	(1) 0.500	0.0984	3
External factors	C <sub>51</sub>	(3) 0.223	0.0415	12
C <sub>5</sub>	C <sub>52</sub>	(1) 0.413	0.077	4
(5) 0.186	C <sub>53</sub>	(2) 0.364	0.0677	6

Table 10: Components of fuzzy numbers

	C <sub>1</sub>			C <sub>2</sub>			C <sub>3</sub>			C <sub>4</sub>			C <sub>5</sub>		
Fuzzy	-----			-----			-----			-----			-----		
No.	L	M	U	L	M	U	L	M	U	L	M	U	L	M	U
A <sub>1</sub>	1	1.62	7	1	1.73	7	1	1.62	7	1	1.73	7	1	1.62	7
A <sub>2</sub>	1	1.39	5	1	1.55	5	1	1.39	5	1	1.55	5	1	1.39	5
A <sub>3</sub>	1	1.79	9	1	1.79	9	1	1.79	9	1	1.79	9	1	1.79	9
A <sub>4</sub>	1	1.55	5	1	2.93	5	1	1.55	5	1	2.93	5	1	1.55	5
	C <sub>6</sub>			C <sub>7</sub>			C <sub>8</sub>			C <sub>9</sub>			C <sub>10</sub>		
Fuzzy	-----			-----			-----			-----			-----		
No.	L	M	U	L	M	U	L	M	U	L	M	U	L	M	U
A <sub>1</sub>	1	2.49	9	1	2.25	9	1	2.49	9	1	2.25	9	1	2.49	9
A <sub>2</sub>	1	2.27	9	1	3.11	9	1	2.27	9	1	3.11	9	1	2.27	9
A <sub>3</sub>	1	2.62	9	1	1.93	9	1	2.62	9	1	1.93	9	1	2.62	9
A <sub>4</sub>	1	3.47	9	1	3.88	9	1	3.47	9	1	3.88	9	1	3.47	9
	C <sub>11</sub>			C <sub>12</sub>			C <sub>13</sub>			C <sub>14</sub>			C <sub>15</sub>		
Fuzzy	-----			-----			-----			-----			-----		
No.	L	M	U	L	M	U	L	M	U	L	M	U	L	M	U
A <sub>1</sub>	1	2.56	9	1	2.49	9	1	2.56	9	1	2.49	9	1	2.56	9
A <sub>2</sub>	1	1.81	7	1	2.02	7	1	1.81	7	1	2.02	7	1	1.81	7
A <sub>3</sub>	1	2.11	9	1	2.58	9	1	2.11	9	1	2.58	9	1	2.11	9
A <sub>4</sub>	1	2.25	7	1	4.11	7	1	2.25	7	1	4.11	7	1	2.25	7
	C <sub>16</sub>														
Fuzzy	-----														
No.	L	M	U												
A <sub>1</sub>	1	2.65	7												
A <sub>2</sub>	1	2.52	7												
A <sub>3</sub>	1	2.23	9												
A <sub>4</sub>	1	3.3	7												

strategy for attracting the financial resources- according to the obtained criteria and weights. In this research, there are four options which include:

- Convenient access to the facilities and capabilities of bank (A<sub>1</sub>)
- Innovation in service (A<sub>2</sub>)
- Attracting affordable resources (A<sub>3</sub>)
- Developing electronic banking (A<sub>4</sub>)

Various calculation stages of F.VIKOR are as follows:

**Step 1; Arranging decision matrix:** Pairwise comparison matrix was applied in order to obtain the importance of

each sub-criterion compared to the options which have been completed by ten experts. According to the sum of decision-maker's comments, components of fuzzy numbers related to each option is given in Table 10.

**Determining the best and the worst value of fuzzy:** The best and the worst fuzzy value for various criteria is presented in Table 11.

**Calculating the distance from every option to the ideal solution:** At this stage, calculating the distance from every option to the ideal solution and then sum of them is calculated for the ultimate

Table 11: Best and worst value of fuzzy

Value	C <sub>1</sub>			C <sub>2</sub>			C <sub>3</sub>			C <sub>4</sub>			C <sub>5</sub>			C <sub>6</sub>		
$\tilde{f}_j^*$	1	1.79	9	1	2.93	9	1	1.79	9	1	2.93	9	1	1.79	9	1	2.93	9
$\tilde{f}_j^*$	1	1.39	5	1	1.55	5	1	1.39	5	1	1.55	5	1	1.39	5	1	1.55	5
Value	C <sub>7</sub>			C <sub>8</sub>			C <sub>9</sub>			C <sub>10</sub>			C <sub>11</sub>			C <sub>12</sub>		
$\tilde{f}_j^*$	1	3.88	9	1	3.3	9	1	3.88	9	1	3.3	9	1	3.88	9	1	3.3	9
$\tilde{f}_j^*$	1	1.93	7	1	3.03	7	1	1.93	7	1	3.03	7	1	1.93	7	1	3.03	7
Value	C <sub>1</sub>			C <sub>2</sub>			C <sub>3</sub>			C <sub>4</sub>								
$\tilde{f}_j^*$	1	3.44	9	1	1	3.44	9	1	1	3.44	9	1						
$\tilde{f}_j^*$	1	2.14	7	1	1	2.14	7	1	1	2.14	7	1						

Table 12: Values of  $\tilde{s}$  and  $\tilde{r}$

Value	$\tilde{s}$			$\tilde{r}$		
A <sub>1</sub>	-0.8084	0.11508	1	-0.0208	0.0199	0.12526
A <sub>2</sub>	-0.746	0.14801	1	-0.0274	0.02573	0.12526
A <sub>3</sub>	-0.9896	0.11646	1	-0.0311	0.01882	0.12526
A <sub>4</sub>	-0.8333	0.01229	1	-0.0274	0.00344	0.12526

Table 13: Ideal level for measuring criteria

Criteria	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	A <sub>4</sub>
Bonuses	0.091	0.183	0.000	0.177
Profit and facilities	0.217	0.224	0.047	0.083
Quality of services	0.030	0.034	0.159	0.000
Convenient access to services	0.189	0.196	0.139	0.000
Variation in services	0.031	0.087	0.098	0.000
Variation and innovation	0.041	0.050	0.035	0.000
Competency and skills	0.151	0.115	0.081	0.000
Advertisement	0.011	0.083	0.007	0.091
Reliability	0.130	0.145	0.028	0.083
Way of dealing with customers and providing services	0.052	0.061	0.049	0.083
Staff behaviors	0.000	0.115	0.019	0.096
Physical facilities	0.067	0.170	0.064	0.000
Geographical location	0.022	0.137	0.000	0.012
Bonuses paid to depositors	0.189	0.098	0.000	0.103
Interest rates paid on deposits	0.201	0.113	0.000	0.088
Facilities paid for customers	0.110	0.116	0.044	0.083

value. This research is used the obtained weights by F. The AHP that are given in step 2.

Eventually, values of  $\tilde{s}$  and  $\tilde{r}$  are calculated. The value of  $\tilde{s}$  for every option is the highest row's amount of every option and the value of  $\tilde{r}$  for each option is the sum of the row's amount of each option. Calculations are shown these Table 12. Performance and the distance from options to the ideal level for measuring criteria are obtained according to Table 13.

**Calculating and ranking the options:** According to the Table 14, values of  $\tilde{s}$  and  $\tilde{r}$  are the best and the worst values. Then, the ultimate the values of difuzzificated  $\tilde{Q}$  for every option is calculated at the confidence level of  $V = 0.5$ ; afterward, they are arranged in ascending order and the options are ranked. In this section, ranking is calculated in a difuzzificated form. Calculations and ranking the options are shown in Table 15. According to the fuzzy ranking shown in the Table 16., the results of ranking options will be as follows:

Table 14: The best and worst values of  $\tilde{s}$ ,  $\tilde{r}$  and  $\tilde{Q}$

$\tilde{s}$	$\tilde{r}$	$\tilde{r}^*$	$\tilde{r}$
-0.746	-0.9896	-0.0208	-0.0311
0.14801	0.01229	0.02573	0.00344
1	1	0.12526	0.12526

Table 15: Values of  $\tilde{s}$  and  $\tilde{r}$  in ascending order  $\tilde{s}$ ,  $\tilde{r}$  and  $\tilde{Q}$  ranking of options Difuzzificated

$\tilde{Q}$ (V = 0.5)	$\tilde{r}$	$\tilde{s}$	Ranks	
0.017	A4	0.0338 A4	0.042 A3	1
0.025	A3	0.0376 A3	0.06 A4	2
0.052	A1	0.0412 A2	0.102 A1	3
0.06	A2	0.0415 A1	0.134 A2	4

Table 16: The results of ranking

Ranks	Abbr.	Option
1	A4	Development of electronic banking
2	A3	Attracting affordable resources
3	A1	Convenient access to the facilities and capabilities of bank
4	A2	Innovation in service

$$Q4 < Q3 < Q1 < Q2$$

So, it can be concluded that option A<sub>4</sub>-development of electronic banking- is considered as the best option in term of the criteria (V = 0.5). This option should meet two conditions to get the best ranking. Taken together, the results of ranking are given in Table 16.

### CONCLUSION

The first secondary objective of this research was identifying effective factors in attracting financial resources in the banking industry in Post bank of Tehran. To this end, according to the previous studies and researches, the effective factors in attracting the financial resources in the banking industry are divided into groups of external and internal factors. External factors include the rise in inflation, increased growth rates, increased economic growth and banking policies; and internal factors are financial, service, human and physical facility factors.

The second objective was the weighting effective factors in attracting financial resources in the banking industry in Post bank of Tehran. In this regard, A questionnaire was designed, including five main dimensions, sixteen secondary dimensions and



seventy-four sub-criteria. The main dimensions include the service, financial, communication and human, physical conditions and external factors. Likewise, as previously presented, the secondary dimensions are staff's competency and skills, variation and innovation in bank's services, variation in services, convenient access to services (e-banking), quality of services, profit and facilities, bonuses, staff behaviors, the way of dealing with customers and providing services, reliability, advertisement, physical facilities of bank and external factors. These questionnaires were distributed among the research's population, who were ten experts. Among the main factors, "human factors" was the most important factor in ranking for attracting financial resources. Afterward, "service factors", "financial factors", "physical facilities" and "external factors" have obtained the highest ranks, respectively.

The third objective was the ranking the strategies in attracting financial resources. Results showed that "development of e-banking" has obtained the first rank; then, attracting affordable resources, convenient access to the facilities and capabilities of bank and innovation in services have obtained the subsequent ranks, respectively.

### **SUGGESTIONS**

In this regard, Post Bank would attract many applicants through increasing the amount of facilities under the rules and regulations and in accordance with the certain standards. Since, the interest-free deposit accounts are considered as the cheapest resources, Post Bank can use this motivational factor by increasing the bonuses in order to encourage individuals. Given that "variation in services" is the most important criterion among the criteria for "service factors" in ranking the strategies for attracting financial resources, it is recommended to use more updated services. Post bank

can increase its advertisement in mass media and it can modify its advertisement in print media, since it would have a dramatic impact on attracting the resources.

It is recommended to pay special attention to the most important factor in communication and human factors, i.e. staff's way of dealing with customers and bank develop a code of conduct in order to respect for its clients and consider it as the frontispiece of its duties. Regarding the Physical factors and conditions, it is recommended to choose the best location for branches of banks by using new methods such as locating, research management in operations, multi-criteria decision making methods, AHP, TOPSIS and knowledge of surveying engineering and geography; especially, geographic information systems.

Finally, it is suggested to hold some special conferences and seminars for privileged customers with the presence of bank staffs in order to teach them the way of using e-banking. Also, the way of using e-banking would be taught to the public by holding specialized e-banking exhibitions.

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