

## Developing a Decision-Making Framework for Activities Outsourcing in Iranian State Banks

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Though financial services outsourcing has been increasing during the last decades, most outsourcing projects have failed due to qualitative criteria used in decision-making as well as being unaware of differences in environmental circumstances. This study aims at designing a model of deciding on outsourcing in state banks. The data of this applied, developmental research was collected, using descriptive-survey method and two instruments, namely, interview and quantitative were used in qualitative and quantitative sections, respectively. The sample of the study comprises of banking experts working in six state banks and the Central Bank of Iran. The initial model was derived, based on an analysis of the aspects of variables as well as the indices obtained from the theoretical principles and previous studies. The final research model, which consists of 6 factors and 22 subfactors was developed, using the Fuzzy Delphi Method and in triple consultation with 20 banking experts. The criteria were weighted, and the relationship between the criteria was examined, using F-DEMATEL method and ANP. The results of the study indicate that the following are the most significant criteria driving the decisions made by state banks on activities outsourcing: reliance on service providers, cost, the rapid delivery of services by the contractors, gaining competitive advantage, the existence of multiple contractors, improved control and overseeing.

**Keywords:** Making Decision, Outsourcing Activities, State Banks

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### 1 Introduction

Considering the significant advances in the business environment, including globalization, information technology advances, public sector reforms, increased competitive pressure, rapid technological change and the diffusion of knowledge across different companies and markets with geographically

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different positions in the last two decades have forced organizations to respond increasingly to customers' needs. For this purpose, many organizations that were hierarchically controlled in the past have been forced to outsource their activities to specialist suppliers (Mcivor, 2008). In this regard, managers in Iran have faced continuous emergence of management tools in recent decades. In the last two decades, endless waves of tools such as ISO 9000, productivity improvement systems, organizational excellence models, administrative transformation programs, service compensation systems, process reengineering, outsourcing, strategic planning, etc. have been introduced into work plans of organizations (Akbari and Nikzad, 2011).

Nowadays, organizations consider outsourcing as an operational necessity and plan many services for outsourcing. Due to the involvement of different decision making groups as well as the interrelationships between outsourcing criteria and options, outsourcing decision making on processes is a process that requires examining different and sometimes conflicting theories of experts considering the multiple and complex quantitative and qualitative factors. Inaccurate and wrong decision-making is associated with the payment of the cost for errors, and it is irreversible in some cases and requires the use of robust and practical techniques in the area (Masrur et al., 2018).

Numerous previous studies have investigated the phenomenon of outsourcing and its various aspects, different types of outsourcing in terms of the nature and scope of activity, and sourcing models in terms of service delivery and seller location. A large volume of the previous studies has focused on outsourcing IT-related activities (Delen et al., 2019) such as digital logistics (Teo et al., 2014), e-commerce (Al-Qirim, 2007), customer relationship management (Hung et al., 2010). Some previous studies have also considered the benefits and risks associated with outsourcing (Fan et al., 2012) and have focused on success and failure of outsourcing projects (Law, 2018). Besides, past studies have also investigated the factors affecting the outsourcing of logistics (Zhu et al., 2017).

Outsourcing of financial services has grown in recent decades. Banks, along with other organizations around the world, are increasingly outsourcing their activities. Regardless of non-core activities such as maintenance services, security services, property, and buildings maintenance, preparing food, etc., which their outsourcing has become obligatory in some cases, many banks are significantly outsourcing IT processes, administrative affairs, and human resources (Tabatabaei and Mohammadi, 2015).

Despite increasing knowledge of managers of this issue, most outsourcing projects in financial institutions are facing problems such as increased costs

(Rahman, 2011), reduced employee motivation and reduced organizational learning ( Liapopoulos and Moschuris, 2013) due to the qualitative nature of decision-making criteria and lack of attention to differences in environmental conditions and various risks.

Some previous studies conducted on outsourcing in the banking industry have investigated some of the advantages and disadvantages of outsourcing in the banking industry (Tayauova, 2012). Moreover, a large number of studies have investigated outsourcing of IT in the banking industry in Iran (Feyzizadeh, 2013) and foreign countries (Blumenberg et al., 2009) as well as information systems in this industry (Adeleye et al., 2004). Another study conducted by Hanafizadeh et al. in Iran in 2017 investigated the factors affecting the decision-making on e-banking outsourcing. However, very little research was conducted to investigate the decision-making process for outsourcing activities in banks.

This study investigates the decision-making criteria for the outsourcing of activities in Iran's state banks. According to the general policies of Article 44 of the Constitution, the stocks of Iranian Banks, including Melli, Sepah, Sanat and Madan, Keshavarzi, Maskan, and Tose'e cannot be transferred to the private sector. Given the critical role of these banks in Iran's economy and the intense competition of the banking network, outsourcing the activities of these banks from a scientific point of view can significantly help these banks to improve their efficiency and effectiveness.

In Iran, no comprehensive research has been conducted on providing an indigenous model of decision-making on outsourcing of state banks based on the conditions of the banking industry to the banking industry, and no specific and well-organized guideline has been introduced as reference for policy-making and monitoring on banks. Accordingly, this research has tried to fill the theoretical gap with having a comprehensive and systematic approach to outsourcing decisions and taking into account various factors including internal and external factors as well as the involvement of experts from 6 state banks and central bank. The results of the research can also be used in the preparation of future relevant circulars.

Hence, the present study seeks to answer the question of what are the principles and criteria for deciding on outsourcing of activities in Iran's state banks, given the specific sensitivity and duties of state banks and financial Institutes, and how are the effects between criteria, weighting, and priority of activities for outsourcing.

The research literature is reviewed first to become familiar with the concept of outsourcing and in particular, the factors affecting the decision-

making of outsourcing activities. Next, the research methodology is discussed. Then, the research model and results are presented, and finally, the conclusion of the research is presented.

## **2 Literature Review**

### **2.1 Definition of Outsourcing**

It can be stated that the idea of outsourcing was first mentioned in Adam Smith's book entitled "Wealth of Nations." Adam Smith states "It is a true term that the foresighted master of a family never tries to build something at home that can cost him more than its purchasing" (Bagheri et al., 2015).

Experts have provided different definitions for outsourcing. In a general description, outsourcing is defined as the allocation of internal duplicate activities as well as the decision-making power to external contractors under a contract (Khalili, 2014).

In general, outsourcing of activities consists of four main stages. The first stage is preparation in which the advantages and disadvantages are examined. In the second stage, the outsourced business and its supplier are selected. In the third stage, the organization negotiates with the company that supplies the service. In the last step, the activity is also outsourced and controlled (Bagheri et al., 2015).

The decision-making criteria for outsourcing internal and external activities and factors affecting these decisions can be divided into the following dimensions.

### **2.2 Criteria for Making Deciding on Outsourcing of Activities in Banks**

#### **2.2.1 Criteria Related to Enhancing Organizational Capability**

Radlo (2011) examined the extent and barriers to outsourcing in Polish banks. He found that the main reason for the increase in outsourcing in banks was the restructuring of costs and assets and gaining more profit and competition and an improvement in capability in general. Outsourcing, in addition to maintaining the knowledge within the organization, provides the conditions to promote it and use knowledge of the organization to achieve the organization's goals (Gavious and Rabinowitz, 2003). Besides, outsourcing is a strategic tool for risk-sharing and transfer of investment and business risks by forming an investment portfolio for different areas of its business. It cuts the costs, uses

capital and force of other companies, and reduces the risk of lack of technology, technical knowledge, and skill (Parvyzyan, 2006).

### **2.2.2 Security Criteria**

The data and information of banks have considerable value, and banks must consider strict security issues to protect these data. As major part of banks' data is collected and stored through information technology, it is clear that outsourcing some functions, including information technology, will reduce the banks' security (Nahavandi et al., 2010). In general, banks need to ensure that service providers meet security-related indicators and criteria (Hanafizadeh, 2017).

### **2.2.3 Technological Criteria**

The use of new technology tools and the development of business enterprises has many benefits for gaining advantage and growth of organizational capability in global competition. Hence, much attention should be paid on deciding to deploy new technology due to its sensitivity, high cost, and risk of success (Farzad et al., 2012). It can be concluded that when the organization activities are associated with more technology uncertainty, the tendency to outsource the activities will be higher (Alvani and Ashrafzadeh, 2012).

### **2.2.4 Management Criteria**

Outsourcing management goals include managers' access to more time, reducing managers' trivial tasks, and facilitating the management of challenging tasks. Moreover, outsourcing is usually associated with a decrease in the size of the organization and a decrease in the job security of employees. Therefore, in evaluating outsourcing decision, it is necessary to consider its effects on morale, motivation, and loyalty of the employees (Olfat and Barati, 2010). Quality improvement, including quality planning, quality control, and quality assurance can also be considered as management goals. If the service quality of the organization improves after the outsourcing, it can be used as a strategy for improvement and development of the organization (Assaf, 2011).

In a study entitled "Outsourcing of accounting tasks and its impact on the quality of financial reporting," Høglund (2016) showed that outsourcing of accounting tasks such as providing legal, financial statements as well as having long-term relationships with service providers enhances the quality of reporting. However, outsourcing of other tasks such as payment of wage does not lead to higher quality in this area.

### **2.2.5 Criteria Related to Service and Goods Suppliers**

To outsource an activity, a company requires potential suppliers for that activity. If there is only one supplier, the company needs to show a lower tendency to outsource the activity, because it is associated with a risk of complete dependence on the supplier. Besides, lack of paying attention to the contractor's background and experience along with the tools, capabilities and technical knowledge of supplier in the outsourced process can lead to failure in outsourcing process (Masrou et al.2014).

In a study entitled "risk identification and providing a model for IT outsourcing in Chinese financial institutions," Kin (2012) showed that the most critical risks associated with outsourcing in these institutions include contractor selection constraints, cultural conflicts, and non-commitment of contractors.

### **2.2.6 Criteria Related to the Characteristic of the Activity Outsourced**

The question that arises in outsourcing is to what extent performing an activity in the organization is necessary and important and if lack of performing it actually disrupts the system or not (Kuhani et al., 2013). Some service activities, such as preparing foods for airline passengers, are highly standardized and some others, such as teaching, are less standardized and regulated. Standardized services are easily replicated, and the quality of the delivered service is also maintained. Therefore, as service activities focus more on standardization, the tendency to outsource those activities will be stronger (Alvani and Ashrafzadeh, 2012).

## **2.3 External Influential Factors**

### **2.3.1 Social Criteria Influencing the Outsourcing of Activities**

The expansion of civil community and the establishment of democracy in communities, along with other social developments in Western communities have led the development of new perspectives that rely on the renewal of government intervention in civil affairs, assigning the activities to non-public sector, privatization, outsourcing, and so on (Lewis, 2001). Additionally, during outsourcing, many employees may be fired because of outsourcing contracts. Outsourcing reduces the demand for low skilled workers and can increase unemployment. Therefore, outsourcing:

- Reduces the wages and increases unemployment for low skilled workers
- Increases inequality between high and low-income groups.
- Increases the cost of social insurance (Keuschnigg, 2009).

People satisfaction, the reaction of the media and the press are among the influential social factors in this field.

### **2.3.2 Economic Factors**

The banking industry around the world has changed dramatically in the last two decades. The technological process and globalization of the financial services have made banks face increased competitive pressure and focus on optimizing operations and productivity, often performed through merging and acquiring the ownership of companies and outsourcing (Fiorentino, 2009). Due to government restrictions in financing the domestic economy (inefficiency of the tax system) in Iran, the control of the government over the banking system has increased. Unfortunately, despite the strong tendency to reduce the authority of government, it has not been achieved so far, and the stock market and securities boom failed to increase the depth of the financial markets, so the firms' ability to attract capital has weakened (Isa Zadeh and Saheri, 2012).

### **2.3.3 Political and Legal Factors**

One of the significant barriers to outsourcing is the conflict between unions and labor unions because, despite processes such as privatization and outsourcing, many employees of the organization will lose their jobs, and take actions such as protest. The authorities have not been able still to solve this issue thoroughly and deal with it (Rajabzadeh, et al., 2010). Privatization and the transfer of control of affairs to the private sector have been on the agenda of Iran's authorities in past decades. According to the relevant laws (National Service Law, Article 44 of the Constitution, 20-year Vision 1404, five-year development plans laws, etc.), outsourcing of the processes and activities of organizations and changes in this regard have been emphasized by senior officials of Iran (Bagheri and et al., 2015).

## **2.4 Internal Influential Factors**

### **2.4.1 Mission and Strategy of the Organization**

As the mission of the organization is providing guidance for doing the works and adopting different strategies, those activities that are consistent with the organization's vision must be maintained, and rest of activities must be outsourced to external organizations (Dastyari et al., 2014). According to the subject literature and interviews with experts, making organization agile and decentralization are among the significant objectives (missions) in the issue of state bank outsourcing. Reforming organizational structure and processes,

human resource development, and so on are among the strategies of the study banks in the strategic planning process.

### **2.4.2 Cultural Factors**

Although companies around the world are nowadays moving toward outsourcing, differences in organizational cultures and the complexity of managing relationships created in outsourcing can lead to failure or dissatisfaction (Rezaei et al., 2015).

Proper work interaction among employees of a company reduces time and increases productivity. Companies whose relationships are based on personal communications among the employees not merely based formal contracts have stronger relationships. Secure communication between two organizations will result in increased problem solving, cooperation, mutual trust, mutual satisfaction, and confidence in the relations of the parties (Gottschalk, 2006).

### **2.4.3 Size of Organization**

The size of the organization increases the ability of the organization to pay training and maintenance-related costs. Increasing the size of the organization improves the ability to access large amounts of the resources required and increases the ability to manage the risks associated with outsourcing. Moreover, large companies have more experience with suppliers' management than smaller ones. As a result, they will be probably more successful in managing and signing outsourcing contracts (Gray, 2006). Since company side activities are costly and time-consuming, it is cost-effective for large companies that perform these activities on a large scale and costly for smaller companies with a lower work scale (Dastyari et al., 2014).

## **3 Research Methodology**

This study was conducted to identify the dimensions and components of decision-making regarding outsourcing of Iran's state banks. To answer the main question, the following questions were asked in the research:

- What are the elements of the decision-making model of outsourcing of activities in the state banks?
- How is the interaction of elements of the decision-making model of outsourcing of activities in the state banks?
- What is the priority of each of the factors?



- What are the effective factors (internal and external) in the outsourcing decision-making model?
- What is the appropriate model for outsourcing activities in state banks?

The research is an applied and developmental study in terms of objective and descriptive-survey in terms of method of collecting data and information. In this study, a questionnaire on a Likert scale in fuzzy Delphi method, as well as DEMATEL and Vikor questionnaire, were used to investigate the effects of criteria, weighting, etc. for fuzzy calculations. The geographical domain of the research is limited to Tehran, and it was carried out between autumn 2017 and winter 2018.

The opinions and views of experts, university professors, and related experts in the banking system were used in this study. Since the survey included six state banks, the relevant heads of departments (organization and human resources, etc.) who had more than 15 years of employment history in state banks, including experts in the areas of organization, management of studies and baking regulations and human resources of the Central Bank were selected to join the Delphi Group. Snowball technique was used to choose the experts. In this technique, some managers with characteristics such as having relevant postgraduate studies, relevant scientific experience primarily managerial experience, sufficient motivation for participation and cooperation were selected. Then, 20 individuals (14 from state banks and 6 central banks) were identified with similar characteristics. Moreover, in the data analysis stage, 7 banking experts' views were used.

The main stages of this research are:

- 1) Initial identification of the elements of the decision-making framework for outsourcing activities in Iran's state banks after reviewing the outsourcing literature and various decision-making models and exploratory interviews.
- 2) Developing and testing the initial model by selecting the fuzzy Delphi method and using the views of banking system experts and designing the final model.
- 3) Collecting information using questionnaires and finally using fuzzy DEMATEL and fuzzy ANP methods for inter-criteria effects, weighting and prioritizing of decision-making criteria

According to experts, there is a relationship between the dimensions and components of the internal relationships model, so this study uses a combination of DEMATEL and ANP techniques to analyze the data. According to Kumar and Dixit (2018), DEMATEL is a mathematical approach that can be used to analyze the causal dependence and relationship

between the dimensions of a problem for compound management and efficient problem solving, and the ANP method can be used for calculating the relative weight of criteria based on a set of hierarchical and internal relationships between criteria (Yeh and Huang, 2014).

## **4 Designing and Identifying the Elements of the Decision-Making Model**

In the theoretical stage, the conceptual model and theoretical framework were developed based on the theoretical foundations and different models. At this stage, the dimensions, components, and indicators extracted from theoretical foundations and studies conducted on the subject and exploratory studies were used as a base for the identification of the conceptual model. Then, during several stages of an exploratory interview with banking system experts and after numerous reviews and consultation with 15 honorable professors of the university, dimensions and components were identified, and the initial model was designed.

### **4.1 Model Identification Using Fuzzy Delphi Method**

The fuzzy Delphi method was invented in the 1980s by Kaufman and Gupta (Cheng and Lin, 2002). Using this technique to make a decision and reaching a consensus on issues whose goals and parameters are not explicitly stated yields precious results. At this stage, the conceptual model and a questionnaire with 29 questions (each question representing one factor) were sent to 20 expert group members, and their agreement on each of the factors was obtained, and they suggested, and corrective views were applied. These questionnaires are scored qualitatively on a five-point Likert scale ranging from extremely important to unimportant. At this stage, the conceptual model presented along with a questionnaire with 29 questions (each question representing one factor) was sent to 20 expert group members and their agreement with each of the factors obtained along with their suggested and corrected points of view. Split. These questionnaires were qualitatively based on five Likert ranges from extremely important to unimportant.

Then, the second questionnaire was prepared and sent back to the expert group along with the previous views of each individual and their differences with the views of other experts were sent to expert groups. In the second stage, the expert team members again responded to the questions based on the opinions of the other group members. According to the views presented in the first stage and comparing with the results of this stage, if the difference between the two phases is less than the threshold of 0.2, the survey process

stops. As expert groups reached a consensus in some of the components and the rate of disagreement in the first and second stages was less than the threshold of 0.2, the survey on these factors stopped and the factors in which the defuzzified mean of the experts' view was less than 8 were excluded from the conceptual model of the research. At this stage, 24 factors stopped, and a survey was performed on rest of 5 factors in the third stage.

Finally, during the three-stage survey of 29 factors, 7 factors were excluded from the final conceptual model of the research, and the final model consisted of 22 factors.

Table 1  
*Factors and Secondary Factors Affecting the Decision-Making on Outsourcing of Activities*

Main factors	Secondary factors	Abbreviations
Security C <sub>1</sub>	Lack of access to confidential organization information by the contractor	C <sub>11</sub>
	Defect in dependency on companies providing service	C <sub>12</sub>
	Defect in disclosing information of clients	C <sub>13</sub>
Organization's capability C <sub>2</sub>	Improving the capability and releasing the human resources within the organization	C <sub>21</sub>
	Eliminating non-core activities	C <sub>22</sub>
	Obtaining competitive advantage	C <sub>23</sub>
	Access to the specialty of contractors	C <sub>24</sub>
Technological C <sub>3</sub>	Lack of human resource in applying technology	C <sub>31</sub>
	Complexity of technology	C <sub>32</sub>
	Access to new technology	C <sub>33</sub>
	Technological uncertainty (rapid changes in technology)	C <sub>34</sub>
Management C <sub>4</sub>	Improving controlling and monitoring	C <sub>41</sub>
	Improving service quality	C <sub>42</sub>
	Motivation and morale of employees	C <sub>43</sub>
	Cost	C <sub>44</sub>
Suppliers' market C <sub>5</sub>	Speed of provision of services by contractors	C <sub>51</sub>
	Multiple and potential contractors	C <sub>52</sub>
	Experience and background of contractors	C <sub>53</sub>
Activity characteristic C <sub>6</sub>	Standardization of activities	C <sub>61</sub>
	Simplicity or complexity of the activity	C <sub>62</sub>
	Tangibility of activity	C <sub>63</sub>
	The level of dependency of activity to other activities	C <sub>64</sub>



**Table 3**  
*Matrix of Fuzzy Direct Relationships between Secondary Factors*

	C <sub>11</sub>			C <sub>12</sub>			C <sub>...</sub>	C <sub>63</sub>			C <sub>64</sub>		
	L	M	U	L	M	U		L	M	U	L	M	U
C <sub>11</sub>	0	0	0	0.125	0.292	0.542	...	0.125	0.292	0.542	0.125	0.292	0.542
C <sub>12</sub>	0.042	0.208	0.458	0	0	0	...	0.208	0.417	0.667	0.125	0.292	0.542
C <sub>13</sub>	0.417	0.625	0.833	0.083	0.25	0.5	...	0.125	0.292	0.542	0.042	0.208	0.458
C <sub>21</sub>	0.125	0.292	0.542	0.292	0.5	0.708	...	0.125	0.292	0.542	0.125	0.292	0.542
C <sub>22</sub>	0.042	0.208	0.458	0.042	0.208	0.458	...	0.167	0.375	0.625	0.375	0.542	0.708
C <sub>23</sub>	0.333	0.5	0.708	0.375	0.583	0.792	...	0.125	0.292	0.542	0.125	0.292	0.542
C <sub>24</sub>	0.083	0.25	0.5	0.292	0.5	0.708	...	0.083	0.208	0.458	0.042	0.167	0.417
C <sub>31</sub>	0.083	0.25	0.5	0.417	0.625	0.792	...	0.167	0.333	0.583	0.167	0.333	0.583
C <sub>32</sub>	0.042	0.208	0.458	0.458	0.667	0.833	...	0.125	0.292	0.542	0.083	0.208	0.458
C <sub>33</sub>	0.125	0.292	0.542	0.333	0.542	0.75	...	0.125	0.292	0.542	0.167	0.333	0.583
C <sub>34</sub>	0.042	0.167	0.417	0.292	0.5	0.708	...	0.125	0.292	0.542	0.042	0.167	0.417
C <sub>41</sub>	0.542	0.75	0.875	0.417	0.625	0.792	...	0.417	0.583	0.75	0.375	0.542	0.708
C <sub>42</sub>	0.083	0.208	0.458	0.292	0.5	0.708	...	0.167	0.292	0.5	0.083	0.208	0.458
C <sub>43</sub>	0.125	0.292	0.542	0.25	0.458	0.667	...	0.25	0.417	0.625	0.25	0.417	0.625
C <sub>44</sub>	0.333	0.5	0.708	0.333	0.542	0.75	...	0.167	0.333	0.583	0.167	0.333	0.583
C <sub>51</sub>	0.042	0.167	0.417	0.208	0.417	0.667	...	0.083	0.208	0.458	0.083	0.208	0.458
C <sub>52</sub>	0.208	0.417	0.667	0.542	0.75	0.875	...	0.042	0.167	0.417	0.125	0.292	0.542
C <sub>53</sub>	0.333	0.542	0.75	0.167	0.375	0.625	...	0.042	0.208	0.458	0.042	0.167	0.417
C <sub>61</sub>	0.042	0.167	0.417	0.167	0.333	0.583	...	0.083	0.25	0.5	0.125	0.292	0.542
C <sub>62</sub>	0.167	0.333	0.542	0.292	0.5	0.75	...	0.125	0.292	0.542	0.208	0.417	0.667
C <sub>63</sub>	0.167	0.333	0.542	0.167	0.333	0.583	...	0	0	0	0.042	0.208	0.458
C <sub>64</sub>	0.042	0.167	0.417	0.333	0.5	0.708	...	0.167	0.333	0.583	0	0	0

Note: Due to the small size of the page and the large size of the matrix (24 x 24), the matrix has been summarized.

Then, using other steps of fuzzy DEMATEL, the normalized fuzzy direct relationships matrix was formed. Finally, the sum of column elements and the row of matrix  $\tilde{T}$  was calculated for the primary factors and their secondary factors and presented as  $\tilde{D}$  (influencing) and  $\tilde{R}$  (influenced) vectors. The calculations are presented in Table 4.

Table 4

The values of  $\bar{D}$ ,  $\bar{R}$ ,  $\bar{D} + \bar{R}$ ,  $\bar{D} - \bar{R}$

	$\bar{D}$	$\bar{R}$	$\bar{D} + \bar{R}$	$\bar{D} - \bar{R}$	Result
Security	3.01	3.11	6.12	-0.097	<u>influenced</u>
Lack of access to confidential organization information by the contractor	0.249	0.228	0.478	0.02109	<u>influencing</u>
Defect in dependency on companies providing service	0.239	0.255	0.494	-0.0167	<u>influenced</u>
Defect in disclosing information of clients	0.242	0.247	0.489	-0.0044	<u>influenced</u>
Organization's capability	3.48	3.36	6.83	0.12	<u>influencing</u>
Improving the capability and releasing the human resources within the organization	0.37	0.363	0.734	0.00691	<u>influencing</u>
Eliminating non-core activities	0.359	0.334	0.694	0.02489	<u>influencing</u>
Obtaining competitive advantage	0.373	0.429	0.802	-0.0561	<u>influenced</u>
Access to specialty of contractors	0.361	0.336	0.697	0.0243	<u>influencing</u>
Technological	3.21	3.08	6.29	0.13	<u>influencing</u>
Lack of human resource in applying technology	0.372	0.392	0.764	-0.0202	<u>influenced</u>
Complexity of technology	0.377	0.379	0.756	-0.0021	<u>influenced</u>
Access to new technology	0.397	0.387	0.784	0.00988	<u>influencing</u>
Technological uncertainty (rapid changes in technology)	0.352	0.34	0.692	0.01242	<u>influencing</u>
Management	3.44	3.6	7.03	-0.162	<u>influenced</u>
Improving controlling and monitoring	0.432	0.429	0.86	0.00312	<u>influencing</u>
Improving service quality	0.408	0.422	0.83	-0.0136	<u>influenced</u>
Motivation and morale of employees	0.387	0.366	0.753	0.02159	<u>influencing</u>
Cost	0.453	0.465	0.918	-0.0111	<u>influenced</u>
Suppliers' market	2.86	2.93	5.79	-0.064	<u>influenced</u>
Speed of provision of services by contractors	0.189	0.236	0.425	-0.0475	<u>influenced</u>
Multiple and potential contractors	0.196	0.217	0.413	-0.0213	<u>influenced</u>
Experience and background of contractors	0.213	0.145	0.358	0.06884	<u>influencing</u>
Activity characteristic	2.92	2.85	5.77	0.073	<u>influencing</u>
Standardization of activities	0.291	0.287	0.578	0.00414	<u>influencing</u>
Simplicity or complexity of activity	0.292	0.306	0.598	-0.0142	<u>influenced</u>
Tangibility of activity	0.272	0.275	0.547	-0.0033	<u>influenced</u>
The level of dependency of activity to other activities	0.285	0.272	0.557	0.01334	<u>influencing</u>

Based on table 4, the factors that have positive  $\tilde{R}-\tilde{D}$  show that these factors are influential and factors that have negative  $\tilde{R}-\tilde{D}$  show that these factors are influenced by other factors. Therefore, among the primary factors “technological” is the most influencing factor, and “management” is the most influenced factor. Generally, *positive*  $\tilde{R}-\tilde{D}$  factors are considered triggering factors and negative  $\tilde{R}-\tilde{D}$  factors are considered as influenced factors.

### 5.1 Weighting of Factors by Fuzzy ANP Method

The Network Analysis Process Method was presented in 1996 by Saaty for multiple criterion decision making. It aims to provide a model to breakdown complex multiple criterion decision-making problems into smaller components to make the final decision by giving reasonable value for simple components and then merging these values.

In this study, the fuzzy ANP was solved based on the general relations matrix showing to what extent these factors are influencing or being influenced. In this section, the general relations matrix was first normalized, and the fuzzy weighted supermatrix was calculated. After normalization, the weighted supermatrix was converged to form a limited supermatrix.

Finally, weights of factors and secondary factors were identified, as shown in Table 5.

As Table 5 shows, the highest weight belonged to the factor of “defect in dependency on companies providing service,” which is a secondary factor of “security”, so it was ranked first. The second priority belonged to “cost” factor, the third priority belonged to speed of providing the services by contractors, the fourth priority belonged to “competitive advantage”, the fifth priority belonged to “presence of multiple and potential contractors”, and sixth priority belonged to “improvement of control and monitoring” among the 22 factors. They approximately accounted for 35.65% of the total weight of the factors, indicating the high importance of these secondary factors.

Figure 1 shows the priority of the primary factors, and Figure 1 shows the final priority of secondary factors by the F.ANP method.

Table 5

*Weight and Priority of Factors Affecting Outsourcing Decision Making*

Weight and relative priority of primary factors		code	Weight and relative priority		Weight and final priority	
Security C <sub>1</sub>	0.163 (3)	C <sub>11</sub>	1	0.2789	0.0454	10
		C <sub>12</sub>	3	0.4198	0.0683	1
		C <sub>13</sub>	2	0.3013	0.0491	7
Organization's capability C <sub>2</sub>	0.182 (2)	C <sub>21</sub>	2	0.2265	0.0412	14
		C <sub>22</sub>	1	0.2116	0.0385	17
		C <sub>23</sub>	3	0.3213	0.0585	4
		C <sub>24</sub>	4	0.2405	0.0438	11
Technological C <sub>3</sub>	0.162 (4)	C <sub>31</sub>	4	0.2949	0.0479	9
		C <sub>32</sub>	2	0.2569	0.0417	13
		C <sub>33</sub>	3	0.2603	0.0422	12
		C <sub>34</sub>	1	0.1879	0.0305	22
Management C <sub>4</sub>	0.202 (5)	C <sub>41</sub>	3	0.2668	0.054	6
		C <sub>42</sub>	2	0.2425	0.049	8
		C <sub>43</sub>	1	0.1932	0.0391	16
		C <sub>44</sub>	4	0.2975	0.0602	2
Suppliers' market C <sub>5</sub>	0.147 (1)	C <sub>51</sub>	3	0.4011	0.0588	3
		C <sub>52</sub>	2	0.3877	0.0568	5
		C <sub>53</sub>	1	0.2112	0.031	21
Activity characteristic C <sub>6</sub>	0.144 (6)	C <sub>61</sub>	3	0.2611	0.0376	18
		C <sub>62</sub>	4	0.2832	0.0408	15
		C <sub>63</sub>	2	0.2329	0.0336	19
		C <sub>64</sub>	1	0.2228	0.0321	20

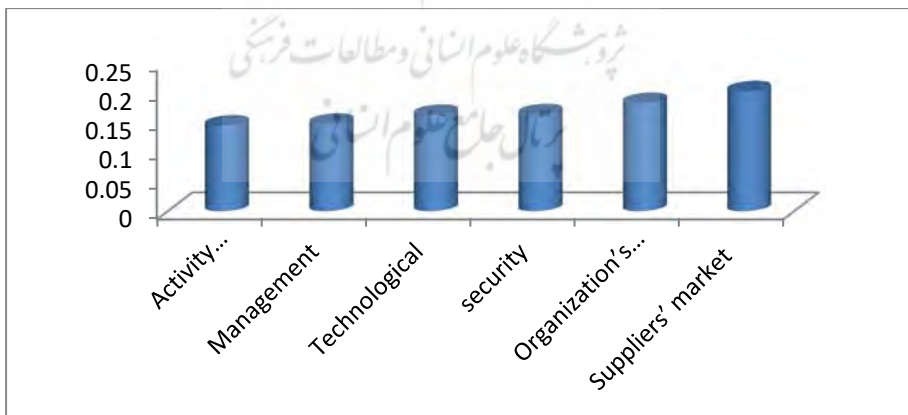


Figure 1. Relative Priority Diagram of Primary Factors.





“Gaining competitive advantage” is the fourth priority among the criteria of deciding on outsourcing the activities in state banks. Outsourcing enables banks to use their resources more effectively to create value and gain competitive advantage by focusing on their core activities. Hence, in outsourcing decisions, managers did not show a tendency to outsource activities that create a competitive advantage for the organization (Olfat and Barati, 2010).

“Existence of numerous and potential contractors” is the fifth priority. To outsource an activity, a bank requires potential suppliers for that activity. If there is only one supplier, the company needs to show lower tendency to outsource the activity, because it is associated with a risk of complete dependency on the supplier, which this secondary factor is highly related to the secondary factor of “defect” in companies providing services, as stated before. Thus, the greater the number of potential suppliers, the tendency for outsourcing the activity will be higher (Masrouf et al., 2014).

Finally, “improving the process of controlling and monitoring” is the sixth priority among the criteria of deciding on outsourcing the activities in state banks. Outsourcing not only involves assigning the activity by the outsourced organization but also involves assigning the right of decision-making to an external supplier. By attaching the right of decision-making, the external supplier will make the decision, and it will be responsible for the consequences of its decisions to the outsourcer organization. Hence, it allows the outsourcer organization to focus more on its core competences. It will also help the bank improve the process of controlling and monitoring other activities.

This research was conducted to develop a model to deal with the complexities of decision making in the real world. As the research sample is selected from state banks, the results will not be generalizable to the entire banking system. The results of this study included guidelines in theory and practice areas. In general, the results of this study emphasize that the one-dimensional outlook of the outsourcing decision-makers will not lead to the desired results. As Iran’s economy is a bank-centered economy and banking system affects the economy and lives of citizens, if the focus of decision-makers is merely on cost factors or a limited set of factors, we cannot be optimistic for future of such decisions.

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