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**ANSAR BANK NEW BRANCH LOCATION IN THE CENTER
OF GILAN: TOPSIS METHOD APPLICATION**

In this study, Ansar banks location in the city of Rasht-Gilan (Iran) is analyzed considering the factors influencing the demand for banking services. The best area for a bank location is determined through the use of the TOPSIS method. The result of this investigation has facilitated a new choice in finding the best place for building a bank branch, being "Rasht St. Motahari mosque after Chaharbradran".

Keywords: branch location; bank; TOPSIS method.

JEL classification: M21; M29.

Рамін Башир Ходапарасті, Ельназ Форузанфар
**РОЗМІЩЕННЯ НОВОГО ФІЛІАЛУ БАНКУ «АНСАР» У ЦЕНТРИ
М. ГІЛАН (ІРАН): ЗАСТОСУВАННЯ МЕТОДУ TOPSIS**

У статті розміщення філіалів банку «Ансар» у м. Рашт-Гілан (Іран) проаналізовано з урахуванням чинників впливу на попит на банківські послуги. Найкращий варіант розміщення нового філіалу обрано за допомогою методу TOPSIS. У результаті детального аналізу запропонованих варіантів найкращим місцем для розміщення філіалу став об'єкт «вул. Мотahari, поряд з мечеттю».

Ключові слова: розміщення філіалу; банк; метод TOPSIS.

Рис. 3. Табл. 6. Літ. 12.

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**РАЗМЕЩЕНИЕ НОВОГО ФИЛИАЛА БАНКА «АНСАР» В ЦЕНТРЕ
Г. ГИЛАН (ИРАН): ПРИМЕНЕНИЕ МЕТОДА TOPSIS**

В статье размещение филиалов банка «Ансар» в городе Рашт-Гилан (Иран) проанализировано с учётом факторов влияния на спрос на банковские услуги. Лучший вариант размещения нового филиала выбран с помощью метода TOPSIS. В результате детального анализа предложенных вариантов лучшим место для размещения филиала стал объект «ул. Мотahari, рядом с мечетью».

Ключевые слова: размещение филиала; банк; метод TOPSIS.

Introduction. Banking is of crucial importance for economic growth. The role of banks in economic development is to remove the deficiency of capital by stimulating savings and investments. A sound banking system mobilizes small and scattered savings of communities, and makes them available for investment into productive enterprises, and for this reason; local banking services are utmost importance. Better quality of services provided by banks has a positive influence on customer satisfaction, thus directly contributing to profitability in banking (Ladhari et al., 2011). Good quality of services provides numerous benefits to banking industry like better corporate image, enhancement of customer satisfaction, cross-selling opportunities, increased chances for word-to-mouth recommendation and overall maintenance of long-term good customer relationships (Bauman et al., 2007; Ehigie, 2006; Hawke and Heffernan, 2006; Wang et al., 2003). In contemporary banking maintaining and developing long-term customer relationships is essential for competitive business (Camarero, 2007).

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Banks as enterprises that communicate with people daily are specially sensitive to selecting a suitable location and thus increasing customer satisfaction through quicker access.

Locating and searching for new locations traditionally have been considered by researchers and managers (for example, Hotelling, 1929; Cheng, Li and Yu, 2005). Banks branches location plays a major role in the efficiency of financial services. Locating branches should be done in a way to improve quality performance of branches, further leading to customer satisfaction.

Problem definition. Nowadays, due to competition between banks and other financial-credit institutions in attracting resources, mastering the effective tools of financial resources mobilization is of utmost importance. One of the factors affecting the financial resources mobilization in new banking is the location of banks and other financial-credit institutions.

Due to increasing intensity of competition, providing services in location and customers sites is a decisive factor in attracting customers and keeping them. Therefore today, banks and other service organizations establish branches in various areas in addition to providing better services. Location of banks and financial institutions is a significant stimulus in attracting customers and it should be carefully evaluated by bank marketers. Therefore, banks need an accurate assessment of feasibility while establishing new branches. The existing buildings must also be taken into account in banking marketing (Dehnavi Yazdani, 2008). It is necessary to choose optimal locations of banks and financial institutions so that their financial services receive the highest return rate against the set-up costs; moreover the location capacity must be used to the highest possible degree. The research shows that customer satisfaction has a direct relation with ATM locations (Bamdad and Rafie Mehrabadi, 2008).

The importance of this research. Money and banks are part of a large system named "financial system" and a component of national economy. Banks activities in a country are performed by large and small branches; larger branches have broader activity and smaller branches have limited liability. These responsibilities are initially distributed by grading branches. The grading of bank branches is essential and the results of this ranking usually has certain effects on the branches performance.

Location of bank branches in the financial world has never been under estimated. Yet there are only few academic studies in this area. In addition, the list of the criteria to be considered in modelling has never been completed. For example, the inclusion of employees' number which determines whether a branch is small or large, is available in only several researches and it seems that a large part of the problem has been ignored as such.

Introduction of the decision criteria. The first step in locating a bank branch is to determine the criteria for it. To understand these criteria we have studied previous researches and expert opinions. These indicators are outlined in Table 1.

Research scope. 7 locations in the city of Rasht proposed as choices (Table 2). Ansar Bank already existing branches shown in Table 3.

Concepts and theoretical basis.

Locating. Place theory was first proposed in 1909 by A. Weber, who considered arrangement at inventory of goods subject to minimum possible physical distance

between warehouses and customers. This problem was completed in 1956 by Ayzard through investigating the distribution of industrial units and territorial land. Location studies covered the key problems in maintaining optimum conditions for competitive servicing that focus on costs reduction and success of industrial units. The location problem is "allocation of limited geographical space resources" that in its simple form, one or more service center (servers) provide services to a collection of applicants (available customers) in their sphere of influence (Brandeau and Chiu, 1989: 645–646).

Table 1. Effective criteria on decision-making, authors' compilation

Criteria	Description
Transportation	there are taxi and bus stations
Traffic	crossings in the area
Education and Culture	proximity to places such as university, college, high school, middle school, elementary school, library, mosque
Official	proximity to municipality, embassies, government offices etc.
Population	population density
Economic and commercial	chain stores, shopping centers, cooperatives, gas stations, competitor banks and other financial institutions
Land prices	the initial investment cost for the construction of a branch

Table 2. Proposed alternatives for new bank branches, authors'

(A1)	Rasht, Sardar jangal Ave
(A2)	Rasht, Lacany Str
(A3)	Rasht, Taleghani Ave, Tarbiat moalem Alley
(A4)	Rasht, South side of Green Square
(A5)	Rasht, Motahari Ave, After Chaharbradran Mosque
(A6)	Rasht, Book Market Stores
(A7)	Rasht, Namjoo Ave

Table 3. The already existing Branches of Ansar Bank, authors'

Code / Branch Name	Address
2902 / Fooman Rd	Rasht, First of Fooman road, Shohadaye Gomnam Sq
2938 / Shariatee	Rasht, Shariatee Str, Next to the Hajj Mojtabeh mosque
2910 / Farhang Sq	Rasht, Farhang Sq in front of Saderat Bank

Methodology. According to the research objectives first we identified the effective economic criteria and locating indicators through library research and completed them by expert opinions (Vice and President of the Ansar Bank). Then in accordance with the criteria we analyzed area position data, also evaluating the comments of Rasht presidential supervision as DM. The weight of each criterion is specified via the entropy method and we continued by checking the desired choices in establishing a new bank branch using the TOPSIS method. In this paper, we used MATLAB software for coding and implementation of TOPSIS method.

The method of TOPSIS is based on the concept that the best decision is the closest to the ideal solution and farthest from the non-ideal solution (Karande and Chakraborty, 2012). This method assumes that each attribute is monotonically increasing or decreasing. The ideal solutions (positive ideal solution) maximize the

interested criteria and minimize the cost criterion, while a non-ideal solution (negative ideal solution) maximize the cost criteria and minimize the interested criteria.

TOPSIS uses the Euclidean distance to measure alternatives towards the positive ideal solution and negative ideal solution. Preference of choices experiences by comparing the Euclidean distance.

Data analysis. The decision matrix from DM comments has been proposed as following. It is noteworthy that these scores have been considered on the scale of 1–9 with 5 values and also their median values.

Table 4. The Decision Matrix, authors'

	C1	C2	C3	C4	C5	C6	C7
	Transportation	Traffic	Education and Culture	Official	Population	Economic and commercial	Land prices
(A1)	5	2	2	3	6	1	2
(A2)	7	4	4	3	4	3	6
(A3)	4	3	6	4	8	5	3
(A4)	8	7	5	7	3	7	7
(A5)	9	6	3	5	5	9	9
(A6)	3	5	8	3	1	3	5
(A7)	3	3	8	5	6	2	5

Decision matrix linear graph. In this diagram, each alternative reveals the identified values in each criterion linearly.

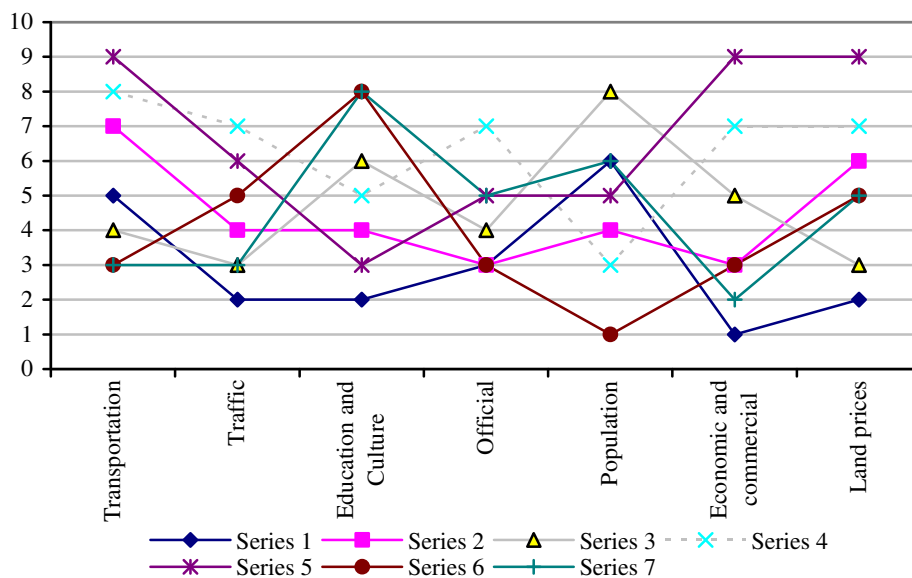


Figure 1. Decision Matrix Graph, authors'

Using the entropy weights of indicators calculated, the results achieved in 2013 Excell software are as follows: Table 5.

Characteristics Weights Bar Graph. In Figure 2 the characteristics calculated weights are plotted using the entropy method.

Table 5. Weights of characteristics, authors'

Transportation	Wc1	0.118229
Traffic	Wc2	0.108748
Education and Culture	Wc3	0.132631112
Official	Wc4	0.0709
Population	Wc5	0.1669
Economic and commercial	Wc6	0.274433646
Land prices	Wc7	0.128118616

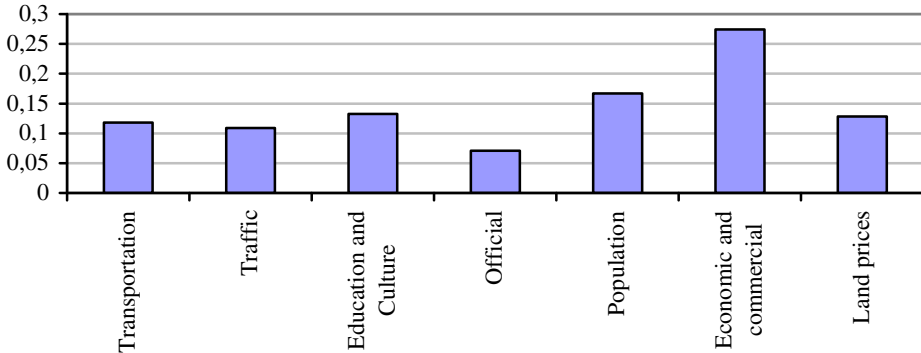


Figure 2. Weights Bar Graphs, authors'

Then, according to the TOPSIS results we have the output of the code written in MATLAB as the result of choosing choices with more appropriate preference.

Table 6. Preference choices bar graph, authors'

Preference	Choices	Proximity to ideal solution
1	5	0.6831
2	4	0.6173
3	3	0.57196
4	7	0.36547
5	6	0.33249
6	2	0.32945
7	1	0.31886

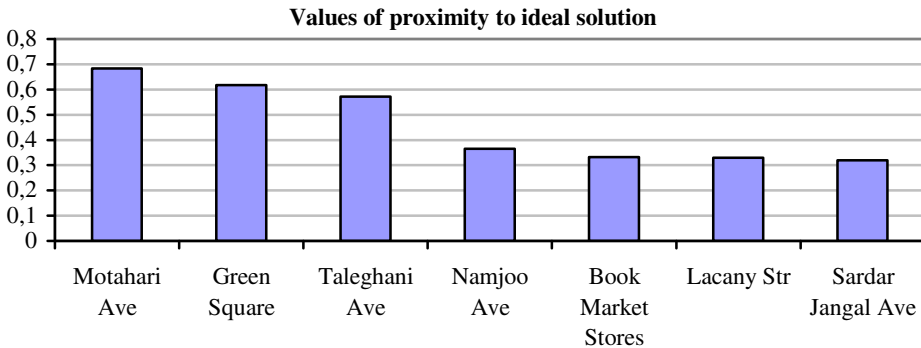


Figure 3. Preference choices bar graph, authors'

To evaluate the results of TOPSIS model, the highest score from the proposed areas as the new location establishment of new branches in the output of MATLAB refers the best choice. The value 0.6831 got the Rasht – Motahari Str – after the Chaharbradran mosque, thus it is the best choice.

Conclusion. Nowadays competition at money and capital markets especially with the growth and development of financial institutions and banks in recent years can be seen more than ever, thus it needs accuracy of the desirability of banks location and financial and credit institutions as one of the influential component for financial resources mobilization. This research assists Ansar Bank managers and planners by identifying locations with high economic potential, through description and selection of potential locations for establishing new branches and ATMs. To achieve better results it is necessary to test this research with other combined criteria techniques, and to compare them together to provide more exact decision-making.

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Стаття надійшла до редакції 28.07.2015.