Evaluating & Ranking the Financial Performance of Bank after Privatization Using AHP FUZZY & TOPSIS Techniques

S.A. Nabavi Chashmi, A. Asghari, A. Ranjvar Alamdardehi

ABSTRACT

The present study aims to evaluate and rank the performance of Mellat Bank branches under the supervision of Sari area based on financial challenges after privatization using AHP FUZZY & TOPSIS techniques. In this study, in order to achieve the goal, 6 cases of financial challenges and 25 cases of indices related to these challenges which are measurable at branches under the supervision of Sari area have been analyzed and studied. Based on this, in addition to a thorough review of subject literature related to performance evaluation, privatization and establishing the financial challenges after privatization, 26 experts and professionals of Mellat Bank branches in this town (Sari) have answered the questionnaires which have been ranked by collecting the necessary data and information using library study and field study, and the final weight of the related indices to financial challenges has been calculated by AHP FUZZY software and the indices have been prioritized based on that. Then by using TOPSIS software, ranking of 13 branches under the supervision of this town (Sari) based on the after mentioned challenges has been dealt with. The study result indicated that concerning the calculated final weights, the indices of active issued cards number (withdrawal & credit), the percentage of cash machine (A.T.M) functioning time and the percentage growth and balance of the other Rial resources have stood first to third in priority and in ranking of this town branches, in addition to considering all financial challenges and indices related to Farhang, Enghelab and Khadamate Darmani in Sari have stood first to third.

Key words: performance evaluation, Mellat Bank branches under the supervision of Sari area, financial challenges after privatization, AHP FUZZY & TOPSIS.

Introduction

The transformation cycle of data to information & information to decision making connect measuring performance, enhancing performance and organizational success. Organizational success depends on management; management quality depends on the quality of decision & organizational perception; the quality of decision & organizational perception depend on the quality information. The quality of information is associated with measurement quality & its proportion, so its measurement & accuracy have key role in an organization's success.

From management point of view, measurement is considered as an of view, measurement is considered as one of the scientific perspective signs & of the most important management activities taken as the basis of analysis, planning, controlling activities & decision making of management by minimizing the variables relations & important indices[7]. Banks & their other bodies are an organization, with special mission & goals, which like any organization requires performance measurement to utilize their available limited resources maximally & to approach their goals more. In one hand, with past performance measurement criteria mostly as financial criteria & based on accounting system, it's impossible to evaluate organizations because first the goal of these organizations is not to make profit and second their financial resource are not provided by selling products or services [15].

On the other hand, every dynamic banking system needs evaluation to face every kind of change & transition [13].

Study Literature & Background:

A. Financial Challenges:

Mellat Bank Research & planning center has stated bank financial challenges & its related indices in the Banking operation program performance
Directions in 1389 (2010-2011) of which 6 cases of financial challenges & 25 cases of its associated indices at branches under the supervision of sari area are measurable and analyzable as follow:

First challenge: profitability & Other Revenues

The indices associated with the 3rd challenge are:

- a. performance ratio
- b. Total revenues to total assets
- c. Joint revenues balance
- d. Non-joint revenues balance
- e. profit margin

The second challenge: preservation & promotion of Bank competition position. The indices associated with the 2nd challenge include:

- a. Growth percentage & non-public four Rial deposits balance
- b. Growth % & state institutions current balance
- c. Growth % and other Rial resources balance.

Third challenge: The Necessity of finding Low-priced Resources

The indices associated with the 3rd challenge are:

- a. Growth % & the balance of private Rial current money loaned without interest (Gharzol Hasane) deposit
- b. Growth % & the balance of short-term Rial invested deposit
- c. Growth % & the balance of long-term Rial invested deposit

Fourth challenge: Delayed Items Reduction

The indices related to the 4th challenge include:

- a. Delayed items balance reduction
- b.Balance reduction of uncertain recoverable assets of facilities.
- c. Delayed assets of balance reduction.
- d. Delayed items reduction redaction level to total consumptions
- e. Past maturity items balance reduction
- f. Uncertain recoverable assets due to liabilities & debtors because of documentary credits & paid bouds.
- g. The balance reduction of debtors, uncertain recoverable documentary credits & paid bounds.

Fifth challenge: consumptions optional management.

The challenges related to the fifth challenge are:

- a. the balance increase of issued bounds (Foreign exchange currency & Rial) b. The volume increase of issued bonds (Foreign exchange currency & Rial).
- c. The advantage of revolving credit/substitution.
- d. The proportion of partnership contracts with a rate of more than 14% to total facilities

Sixth challenge: E-banking

The indices related to the 6th challenge include:

- a. The A.T.M operation time%
- b. Permanent customers number of E-banking
- c. Active issued Cards number (withdrawal & credit)

B. Vocabulary & Terms Definition:

Performance Evaluation: It is the quantifying process of the organization's efficiency process of the organization's efficiency & affectivity. Also performance evaluation can be defined as the constant supervision & reporting about the plan results & gaining the organizational goals.

Profitability: Banks gain revenue by giving banking services to their customers by which absorbing people's deposits with higher interest rate take place. Preserving & promoting Bank competition position: In recent years, banking industry has witnessed tough competition along with lots of opportunities & threats. Banks can adopt strategies to get to an appropriate competition position in the market by considering their strengths & available opportunities in the market. The Necessity of Finding Low-priced Resources:

Giving suitable services to customers is of the absorbing factors of low-priced resources regarding the importance of low-priced resources in Bank EPS, Services should be given in such a manner that their benefit for customers bring about investment & resource attraction.

Delayed Items: The delayed items appearing in institution's assets requires to create reserves & also requires to create reserves & also results in operational revenues decrease & corporation's assets volume contraction whir are not pleasant for shareholders. That's why it's necessary for the banks to manage these items seriously.

The role of managing liquidity & controlling resources & consumptions in banks & economic corporations & financial institutions is of special importance. It's possible to facilitate life for humans by correct utilization of money & monetary instruments & in contrast, in case of not controlling money & dependent market, by being converted to inflation & depression, the failure of all present systems results in

E-banking: E-banking can be introduced as utilizing the advanced technology of networks & telecom to transfer resource (money) in banking system.

Privatization: Privatization is a process which leads to limiting ownership or management of some state-owned economic units & transferring them to market mechanism & during which market mechanism revives.

C. Study Background:

Hedjazi et al. in a research titled total productivity analysis of Iran Exports Development Bank & its branches productivity growth using Data Envelopment Analysis (DEA) concluded that the bank branches productivity in the years 1383 (2004) grew 1% on average & in 1384 (2005) grew 2% o Also, its branches were ranked based on productivity growth. Hadji Karimi et al have done a research titled effective strategies in designing & adopting modern systems in organizational performance evaluation on country-wide business banks (case study, Mellat bank) in which efforts are made to identify the most important aspects of performance & then to analyze & test them by identifying the most
significant aspects of performance of business banks & also by reviewing studies related to the subject [2]. Hung, Hushiung & chen considered analyzing multi-criteria decision making to evaluate bank performance based on balanced score card (BSC). The gained results of studies indicate that assessing major aspects & determining these challenges can cause the promotion & improvement of banking performance to its optional level. The study results show that multi-criteria decision making assessment model & general Framework of BSC cam be used as a useful & effective tool for banking performance promotion[7].

Evtngral & Nilsen, in the article about Turkey cement factories performance evaluation using 2 methods AHP & Topsis, stated that today regarding society, assessing companies' performance is highly significant. The goal to present this article is to promote a logical model to be able to analyze companies' performance level with respect to financial ratios while a sensible & accurate judgment be made by decision markers.

The proposed methods are presented more based on AHP & Topsis. AHP method is used to determine criteria importance degree, then Topsis is used to rank & classify these companies (Firms).

These proposed methods have been utilized to assess the performance of 15 Turkish Cement Factories in Istanbul. The stock exchange of these companies are included in Financial tables & then ranking of the companies are done considering the achieved results [15].

**Study Methodology:**

**Study method:**

The present study is of descriptive-measurement type regarding collecting data & from goal point of vies, it's of practical type.

**Data Collecting Tool:**

To collect information in terms of theoretical facts & study literature, we used library references, articles, Internet & Mellat Bank Research & Planning Center. & to collect data & information for analysis, besides using bank documents, we used a questionnaire.

**Statistical Community:**

The present study statistical Community consists of 26 experts & professionals at Mellat Bank branches in sari, in which all community has been studied & Sampling has been ignored.

**Questionnaire Reliability & validity:**

The present study questionnaire has validity because the variables' elements bing measured have been taken from study subject literature. In other words, the concerned experts have agreed with them. spss test result indicates that regarding Cronbach $\alpha$ Coefficient calculated (0.851), the reliability of the present questionnaire is at an acceptable level.

**Data Analysis:**

1. using Spss software to calculate Cronbach $\alpha$ ,
2. using AHP Fuzzy technique to assess & prioritize financial challenge & its related indices,
3. using Topsis technique to rank Mellat bank branches under the supervision of sari area based on financial challenges after privatization.

**AHP fuzzy Technique Based on Developmental Analysis Method:**

AHP Fuzzy definitions & concepts are described based on EA method [6]. Consider two triangular numbers $M_1=(I_1, m_1, u_1)$ & $M_2=(I_2, m_2, u_2)$ drawn in fig.1

**Representation of Two Fuzzy Triangular numbers**

Their mathematical operators are defined as following:

\[
M_1+M_2= (I_1+I_2, m_1+m_2, u_1+u_2) \tag{1}
\]
\[
M_1\times M_2= (I_1\times I_2, m_1\times m_2, u_1\times u_2) \tag{2}
\]

It should be taken into account that the product of 2 fuzzy triangular numbers or the reverse of another fuzzy triangular number is not one triangular fuzzy number. These equations state only an approximation of the real product of two fuzzy triangular numbers and the reverse of one fuzzy triangular number.

In EA method, for each even parities matrix rows, sk value which is itself a triangular number is calculated in this way:

\[
S_k = \sum_{i=1}^{n} M_{k_i} \times \left[ \sum_{j=1}^{n} M_{j_i} \right] \tag{3}
\]

In which k indicates row number & i,j are option & indices, respectively.

In EA method, after calculating SKS, their magnitude to each other should be achieved. triangular Generally, if $M_1$ & $M_2$ are 2 Fuzzy triangular numbers, the magnitude of $M_1$ over $M_2$ shown as $V(M_1 \geq M_2)$ is defined as:
The magnitude of one fuzzy triangular number from \( K \) other fuzzy triangular number is gained by the following equation:

\[
V(M_i \geq M_j) = 1 \quad m_i \geq m_j
\]

\[
V(M_i \geq M_j) = \text{htg}(M_i \cap M_j)
\]

\[
\text{htg}(M_i \cap M_j) = \frac{u_i - l_j}{(u_i - l_j) + (m_j - m_i)}
\]

4. Data Analysis:

In this study, first available information in the questionnaire is included in the spss software & the mean related to every factor is gained. This task is done in such a way that a score is given to every questionnaire factor by using Likert 5-scale spectrum as shown Table 2.

Then these numbers are put into spss software & the mean of every factor is drawn.

- Calculating profitability indices weight & other Revenues

To Calculate profitability indices weight & other revenues, First the means of profitability indices & other revenues & profitability challenges & other revenues are calculated by using spss software & questionnaire's data converted into Likert 5-scale spectrum. (Table 3)

After achieving the indices mean, even parities table is arranged & indices are compared with each other. Based on table 4, comparison is made verbally.

Verbal terms of even parities are converted into Fuzzy triangular numbers by using Table1. (Table 5)

After arranging the even parities with Fuzzy triangular numbers, indices magnitude proportions to each other are calculated by using based on it, every index non-normalized weights are normalized & weights \((w)\) are achieved.

Calculations process is done this way Table 6.

Indices Final weight Calculation & Their Ranking:

After calculating all normalized indices weight & Financial Challenges, every index weight is multiplied by its related financial challenge weight to get the final weight of all indices. Indices will be prioritized.

The process of calculating indices Final weight is given in Table 7.

- Ranking the branches under the supervision of Sari based on Financial challenges After privatization by using Topsis (28, 12, 1389(2011))

| Table 1: Converting verbal variables into Fuzzy Triangular Numbers. (Hourly, 1980). |
|--------------------------------------|--------------------------------------|
| Verbal variables | Fuzzy Triangular Numbers | Verbal Variables | Fuzzy Triangular Number |
| Equal | \((1, 1, 1)\) | Equal | \((1, 1, 1)\) |
| A little Higher | \((1/2, 1, 3/2)\) | A little lower | \((2/3, 1, 2)\) |
| Relatively Higher | \((1, 3/2, 2)\) | Relatively lower | \((1/2, 2/3, 1)\) |
| Higher | \((3/2, 2, 5/2)\) | Lower | \((2/5, 1/2, 2/3)\) |
| Much Higher | \((2, 5/2, 3)\) | Much lower | \((1/3, 2/5, 1/2)\) |
| Absolutely Higher | \((5/2, 3, 3/2)\) | Absolutely Lower | \((2/7, 1/3, 2/5)\) |

| Table 2: Likert 5-scale spectrum. |
|---------------------------------|---------|---------|---------|---------|
| Very Insignificant | Insignificant | Average | Important | Very important |
| 1 | 2 | 3 | 4 | 5 |

| Table 3: The sample of profitability & other revenues means. |
|----------------|--------------|----------------|----------------|----------------|
| Efficiency Ratio | Total Revenues to total Assets | Joint Revenues Balance | Non-joint revenues balance | Profit margin |
| N valid | 26 | 26 | 26 | 26 | 26 | 26 |
| Missing | 0 | 0 | 0 | 0 | 0 | 0 |
### Table 4: The Sample of Profitability Indices Even Parities & Other Revenues Verbal From.

<table>
<thead>
<tr>
<th>Profitability &amp; Other Revenues</th>
<th>Total To Total Efficiency</th>
<th>Revenues Assets Ration</th>
<th>Joint Revenues Balance</th>
<th>Non-joint Revenues</th>
<th>Profit Margin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiency Ration</td>
<td>Equal</td>
<td>Lower</td>
<td>Much Lower</td>
<td>Much Lower</td>
<td>Much Lower</td>
</tr>
<tr>
<td>Total Revenues to Total Assets</td>
<td>Higher</td>
<td>Equal</td>
<td>A little Lower</td>
<td>A little Lower</td>
<td>Relatively Lower</td>
</tr>
<tr>
<td>Joint Revenues Balance</td>
<td>Much Higher</td>
<td>A little higher</td>
<td>Equal</td>
<td>Equal</td>
<td>A little Lower</td>
</tr>
<tr>
<td>Non-Joint Revenues Balance</td>
<td>Much Higher</td>
<td>A little higher</td>
<td>Equal</td>
<td>Equal</td>
<td>A little Lower</td>
</tr>
<tr>
<td>Profit Margin</td>
<td>Much Higher</td>
<td>Relatively Higher</td>
<td>A little Lower</td>
<td>A little Lower</td>
<td>Equal</td>
</tr>
</tbody>
</table>

### Table 5: The Sample of Converting Verbal Terms Into Fuzzy Triangular Numbers.

<table>
<thead>
<tr>
<th>Profitability &amp; Other Revenues</th>
<th>Total To Total Efficiency</th>
<th>Revenues Assets Ration</th>
<th>Joint Revenues Balance</th>
<th>Non-joint Revenues</th>
<th>Profit Margin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiency Ration</td>
<td>(1, 1, 1)</td>
<td>(1, 1, 1)</td>
<td>(1, 1, 1)</td>
<td>(1, 1, 1)</td>
<td>(1, 1, 1)</td>
</tr>
<tr>
<td>Total Revenues to Total Assets</td>
<td>(3, 5, 5)</td>
<td>(1, 2, 2)</td>
<td>(1, 2, 2)</td>
<td>(1, 2, 2)</td>
<td>(1, 2, 2)</td>
</tr>
<tr>
<td>Joint Revenues Balance</td>
<td>(2, 5, 5)</td>
<td>(1, 2, 2)</td>
<td>(1, 2, 2)</td>
<td>(1, 2, 2)</td>
<td>(1, 2, 2)</td>
</tr>
<tr>
<td>Non-Joint Revenues Balance</td>
<td>(2, 5, 5)</td>
<td>(1, 1, 1)</td>
<td>(1, 1, 1)</td>
<td>(1, 1, 1)</td>
<td>(1, 1, 1)</td>
</tr>
<tr>
<td>Profit Margin</td>
<td>(2, 5, 5)</td>
<td>(1, 2, 2)</td>
<td>(1, 2, 2)</td>
<td>(1, 2, 2)</td>
<td>(1, 2, 2)</td>
</tr>
</tbody>
</table>

### Table 6: LMU

|                | S1   | S2   | S3   | S4   | S5   | S1=S2 | S2=S1 | S3=S1 | S4=S1 | S5=S1 | S1=S3 | S2=S3 | S3=S2 | S4=S2 | S5=S2 | S1=S4 | S2=S4 | S3=S4 | S4=S3 | S5=S3 | S1=S5 | S2=S5 | S3=S5 | S4=S5 | S5=S1 | S5=S2 | S5=S3 | S5=S4 |
|----------------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                | 2.400| 2.700| 3.167| 0.027| 0.035| 0.045 | 0.064 | 0.095 | 0.144 |       | 0.0452| 0.8430 | 0.9347 | 0.9347 | 1.0000 | 0.8430 | 0.9347 | 0.9347 | 1.0000 |       |       |       |       | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| S1>S2          | 0.2139| S2>S1| 1.0000| S3>S1| 1.0000| S4>S1 | 1.0000|       |       |       | S5>S1 | 1.0000| S5>S2 | 1.0000| S5>S3 | 1.0000| S5>S4 | 1.0000|       |       |       |       |       |       |       |       |       |       |
| S1>S3          | 0.0452| S2>S3| 0.8941| S3>S2| 1.0000| S4>S3 | 1.0000| S4>S2 | 1.0000| S4>S3 | 1.0000| S4>S2 | 1.0000| S4>S3 | 1.0000| S4>S4 | 1.0000| S4>S5 | 1.0000| S5>S1 | S5>S2 | S5>S3 | S5>S4 | S5>S5 | S5>S1 | S5>S2 | S5>S3 | S5>S4 |
| S1>S4          | 0.0452| S2>S4| 0.8941| S3>S4| 1.0000| S4>S4 | 1.0000| S4>S5 | 1.0000| S4>S4 | 1.0000| S4>S5 | 1.0000| S4>S4 | 1.0000| S4>S4 | 1.0000| S4>S5 | 1.0000| S5>S1 | S5>S2 | S5>S3 | S5>S4 | S5>S5 | S5>S1 | S5>S2 | S5>S3 | S5>S4 |
| S1>S5          | 0.0663| S2>S5| 0.8430| S3>S5| 0.9347| S4>S5 | 0.9347| S4>S5 | 0.9347| S4>S5 | 0.9347| S4>S5 | 0.9347| S4>S5 | 0.9347| S4>S5 | 0.9347| S4>S5 | 0.9347| S5>S1 | S5>S2 | S5>S3 | S5>S4 | S5>S5 | S5>S1 | S5>S2 | S5>S3 | S5>S4 |

### Table 7: Calculating Indices Final Weight Related to Challenges After Privatization.

<table>
<thead>
<tr>
<th></th>
<th>Main criteria</th>
<th>Juices’ weight</th>
<th>Major Criteria Weight</th>
<th>Indices Final weight</th>
<th>Prioritizing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profitability &amp;</td>
<td>(Q11)= 0.0120</td>
<td>0.0120</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>other revenue</td>
<td>(Q12)= 0.2244</td>
<td>0.2244</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Q13)= 0.2488</td>
<td>0.2488</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Q14)= 0.2488</td>
<td>0.2488</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Q15)= 0.2661</td>
<td>0.2661</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Q16)= 0.3714</td>
<td>0.3714</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Q17)= 0.3941</td>
<td>0.3941</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Preserving &amp; promoting competitive</td>
<td>0.2040</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>position of Bank</td>
<td>(Q21)= 0.2345</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>(Q22)= 0.3174</td>
<td>0.3174</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The Necessity of Finding Low-Priced</td>
<td>0.2040</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Resources</td>
<td>(Q31)= 0.1144</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Q32)= 0.2634</td>
<td>0.2634</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>(Q33)= 0.2509</td>
<td>0.2509</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>(Q34)= 0.13713</td>
<td>0.13713</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Delayed Items Reduction</td>
<td>0.2040</td>
<td></td>
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<tr>
<td></td>
<td>(Q41)= 0.1913</td>
<td>0.1913</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>(Q42)= 0.0992</td>
<td>0.0992</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>(Q43)= 0.1353</td>
<td>0.1353</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>(Q44)= 0.2798</td>
<td>0.2798</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>(Q45)= 0.1913</td>
<td>0.1913</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Q46)= 0.1932</td>
<td>0.1932</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Consumptions optional management</td>
<td>0.2040</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>(Q51)= 0.0782</td>
<td>0.0782</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>(Q52)= 0.0267</td>
<td>0.0267</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Q53)= 0.2852</td>
<td>0.2852</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Q54)= 0.3734</td>
<td>0.3734</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>E-Banking</td>
<td>0.2040</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Q61)= 0.4572</td>
<td>0.4572</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Q62)= 0.0857</td>
<td>0.0857</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Q63)= 0.4572</td>
<td>0.4572</td>
<td></td>
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</tr>
</tbody>
</table>

### Table 8: Calculating Indices Final Weight Related to Challenges After Privatization.
In this steps, 13 branches under the supervision of sari are: khazr Blvd., Enghelab, Therapeutic services, keshavarz Blvd., Jomhouri Eslami, Tajan River, Fruit Market Place, sangtarashan, shahband, Farhang, Shahada sq., Moallem st., Amir Mazandarani have been analyzed regarding the 25 mentioned indices & the selected option should have the least distance from the ideal positive solution & the most distance from the negative ideal solution.

Topsis Method includes 6 steps as it follows:

**Step 1: Decision Matrix Forming (a):**

This matrix represents every option's values for each index. Every matrix row implies the position of each option.

**Step 2: Normalizing Decision Matrix (weighted Non-scaled Matrix):**

Matrix A is converted into a non-scaled (non-measured) matrix by using Euclidean norm. It’s done this way:

Every above decision matrix element is divided by the sum square root of every element of the relate column. The achieved matrix is shown as ND:

\[
N_{ij} = \frac{a_{ij}}{\sqrt{\sum_{i=1}^{m} a_{ij}^2}} 
\]

**Step 3: weighted Normalized Matrix Formation:**

By using normalized Matrix, (ND) in diametrical Matrix, we gain the indices weight (WN,n). The resulted matrix is shown as V

\[
V = N_{D} \times W_{n,n} = \begin{bmatrix}
V_{11} & V_{12} & \ldots & V_{1n} \\
V_{m1} & \ldots & \ldots & \ldots \\
\end{bmatrix}
\]

It’s worth to mention that won is a diametrical matrix that its main diameter elements are the indices importance coefficient & its non-diameter elements are zero.

**Step 4: Determining positive ideal & Negative ideal Answers:**

We choose the maximum value of every column at the positive ideal \( A^+ \) & the minimum level as the negative ideal \( A^- \) by using weighted normalized matrix.

\[
A^+ = \left\{ V^+_1, V^+_2, \ldots, V^+_k, \ldots, V^+_n \right\}
\]

Positive Ideal option

\[
s.t. \quad v^+_i = \max_{k} v_{ik}, \quad 1 \leq i \leq m
\]

\[
A^- = \left\{ v^-_1, v^-_2, \ldots, v^-_k, \ldots, v^-_n \right\}
\]

Negative Ideal option

\[
s.t. \quad v^-_i = \min_{k} v_{ik}, \quad 1 \leq i \leq m
\]

**Step 5: Calculating Criterion Distance Value:**

By using positive ideal \( A^+ \) & negative ideal \( A^- \) answers & based on Euclidean norm, we achieve the criterion distance value:

\[
d_i = \sqrt{\sum_{j=1}^{n} (v_{ij} - v_{ij}^-)^2}
\]

\[
i = 1, 2, \ldots, n
\]

\[
d_i^+ = 0.0927, d_i^- = 0.051
\]

\[
d_2 = 0.0593, d_2^- = 0.083
\]

\[
d_3 = 0.07, d_3^- = 0.083
\]

\[
d_4 = 0.1161, d_4^- = 0.029
\]

\[
d_5 = 0.1109, d_5^- = 0.035
\]

\[
d_6 = 0.1096, d_6^- = 0.04
\]

\[
d_7 = 0.1196, d_7^- = 0.024
\]

\[
d_8 = 0.1041, d_8^- = 0.04
\]

\[
d_9 = 0.0883, d_9^- = 0.057
\]

\[
d_{10} = 0.0587, d_{10}^- = 0.095
\]

\[
d_{11} = 0.0956, d_{11}^- = 0.043
\]

\[
d_{12} = 0.1025, d_{12}^- = 0.04
\]

\[
d_{13} = 0.0712, d_{13}^- = 0.076
\]

**Step 6: Prioritizing options:**

First we gain the column matrix (CL) (matrix mx1) whose every element is achieved by dividing the negative ideal by the sum of positive & negative ideal and then ranking the options is done based on a descending order.

\[
CL = \begin{bmatrix}
CL_1 \\
CL_2 \\
\vdots \\
CL_m
\end{bmatrix} = \begin{bmatrix}
\frac{d_i}{d_i^+ + d_i^-}
\end{bmatrix}
\]

\[
c_{11} = 0.354, c_{12} = 0.5842, c_{13} = 0.5414, c_{14} = 0.2009, c_{15} = 0.2401, c_{16} = 0.2648, c_{17} = 0.1673, c_{18} = 0.2775, c_{19} = 0.3931, c_{110} = 0.619
\]
Prioritizing the Mellat Bank branches monitored by Sari area regarding the calculated CL values is described this way: (Branches with higher CL Value are prioritized)

ANSWER:
A 10 Farhang
A 2 Enghelab
A 3 Therapeutic Services
A 13 Amir Mazandarani
A 9 Shahband
A 1 Khazar Blvd
A11 Shohada Sq
A12 Moallem Sq
A 8 Sangtarashan
A6 Tajan River
A 5 Jomhouri Eslami
A 4 Keshavarz Blvd
A 7 Fruit Marketplace

Results and Practical Proposals:

In the continuous part, based on the gained results, some proposals will be presented in order to improve the present situation:
A- Introducing magnetic, credit cards & etc to actual & legal persons
B- Providing Funds & solving Cash machines problems in a timely manner
C- Increasing guarantees issue & opening documentary credits
D- Incorporating resources optimally in order to increase low-priced deposits share & marketing in consumptions section
E- Economizing in administrative costs section & also optimal consumptions of allocated budget
F- Increasing the received commission by giving services & developing services in Electronic environment.
G- From exchange contracts to partner ship Contracts appyooach
H- preventing Liabilities creation by using appropriate credit instruments

References