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ANALYSIS, ASSESSMENT AND RANKING OF RISKS IN BANKS (A CASE STUDY: POST BANK, HORMOZGAN PROVINCE)

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ABSTRACT

This research has been conducted in 2016 about the analysis, identification and ranking of risks in Post bank of Hormozgan Province, Iran. The research community consists of 30 experts, managers and elites of Post bank of Hormozgan Province. Since the population size limited, the census method used and the population size was selected as the sample size. The questions of this research was in line with identifying and ranking risks of Post Bank which based on our library studies include financial, operational, business and event risks. To confirm these questions, questionnaires of Likert scale and pairwise comparisons with FAHP method. The consistency ratio for questionnaires and various factors (mean for consistency ratio is 0.004 being lower than 0.1) confirms the calculations and reliability of calculation in order to evaluate and prioritize the questions. To confirm the risk of Post Bank, after collecting library information, due to the normality and parametric research data, T-test has been used to confirm the indices. Fuzzy AHP technique was used to rank the indices. Defuzzification method and Expert Choice® software were used to analyze the consistency of research data. The research results show that the most important risk is the currency risk and the least important risk is the market risk based on which the consistency ratios confirms these results.

Keywords: *Bank Risks, FAHP, Financial Risks, Operational Risks, Business Risks, Event Risks.*

INTRODUCTION

The financial institutions play a crucial role in the economic structure of any country. These institutions are acting as the beating heart of the economy in both investment and money markets and lead to the flow of money and cash in the society. Money market is the short-term stock exchange (with due more than one year). The capital market is composed of primary and secondary markets.

Despite the use of modern technologies, the credit management in all global countries such as credit risk management, credit ranking, credit scoring and validation methods such as cs5, lapp and etc. and despite the daily-increasing deferred and suspected debts in the credit institutions (banks, financial-credit institutions, leasing companies and etc.), unfortunately credit allocation is still determined by the traditional methods without measurement. The risk management is a process that the managers identify the measurement, decision-making and supervision on the various types of risks for the agency. All profit and non-profit institutions almost encounter with a kind of risk. One choice in one place, various options with various results are available for the various works. If one of the results entails undesirable effects, from the small workshop to the big industries will have a tape of risk.

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All banks face risk during their operations that do not able to eliminate them but they are manageable. Therefore, the banks should control and reduce their risks to survive which requires identification of effective factors on the various risks (Shadkam, 2001).

The major duty of financial system is to build the relationship between the investors (owner of money) and investees (who need money for their finance). Appropriately executing this process happens by means of an efficient financial system which includes the financial organs, financial tools, financial markets and policy-making organizations in the financial sector and the dominant rules in the financial sector. This system is in fact the mediating cycle between the various markets which finances them by means of each other. The banks are considered as the major pillars of financial markets and are the mediating monetary resources along with investment organizations such as stock exchange and the insurance. Additionally, it can be said that the banks are the important factors of monetary policies and executers for economic decisions of Central Bank. The banks use contraction and expansion of credits and transfer of money between sectors not only to assist the economy stability at macroscale but also to play an effective role in adjusting the economic sectors. Due to the lack of required development of capital market in Iran's economy, the banking possesses more importance and these are the banks that are responsible for the long-term financing. Establishment of risk management in banks leads to decrease the probable loss as the result of risk in the banking transactions and activities so that the background is set for the promotion of performance level, and increase in benefit and wealth of stockholders. Thus, providing the control of risk in the agenda will reside the extent of risk shifting from full uncertainty to the relative uncertainty (Growning, Heniven and Sonia Brajovic Bratanovic, 2008).

To do the research in the field of identifying types of risks and ranking them as well as managing them in the domain of Post Bank actions, it seems crucial and necessary that the present research tends to move forward in this regard. The objectives of present research are:

1. identifying types of risks in Post Bank of Iran
2. ranking types of risks in Post Bank of Iran
3. recommending strategies to manage and control risk in the banking industry generally and Post Bank of Iran specifically.

Mahdavi Najmabadi (2002) analyzed four types of financial, operational, market and organizational risks in the Islamic and traditional banking in Essential Differences of Risk Distribution in Both Islamic and Traditional Banking Systems and concluded that risk management in the Islamic banking is more difficult than that of in the traditional baking due to its specific features. To reduce these risks, the analyzed the corporation of risk with the loan customer by taking bail from bank and also executing the advocate system by bank (Mahdavi Najmabadi, 2002).

Fartoukzadeh and Elahi (2010) analyzed the risks in branches of Mellat Bank in Identifying and Rankin Strategic Risks in the Modern Banks without Riba (A Case Study: Bank Mellat). They aimed to reach the knowledge treasures of bake elites and explore in these sources in order to illuminate and document the strategic risks using Delphi® (Fartoukzadeh and Elahi, 2010).

Talebi et al. (2012) analyzed the operational risk in the Islamic banking in Analysis and Ranking Operational Risk in Islamic Banking. Using descriptive research method and analytical hierarchical process, they sought to answer the question of 'what are the most important operational risks for these bank regarding the equipment methods and allocation of resources

in the without-riba banking? What are the classifications of these risks due to their various nature? How finally are these risks ranked?' The results of research show that the operational risks the Islamic banking are first classified into two categories: a) common risks with conventional banking; b) specific risks in the Islamic banking, each having subgroups; secondly, in ranking these risks based on the occurrence probability, the technology and embezzlement risks have the highest importance in the common risks and the clarity and payment risks have the highest importance in the specific risks (Talebi et al., 2012).

RESEARCH METHOD

The present research composed of both descriptive and analytical methods. The former has been extracted by means of library studies and criteria and items of questionnaires. Then, the data have been collected by a questionnaire and the questions have been answered using data collected and the FAHP method. The research community includes 30 experts, managers, and elites of Post Bank of Hormozgan Province. Since the population size limited, the census method used and the population size was selected as the sample size. To collect the data, library, interview and questionnaire methods have been used. The data collection tool is the questionnaire. Pairwise comparison is used as the questionnaire which was delivered to the committee.

Figure 1 shows the indices of bank risk in Post Bank in terms of library studies:

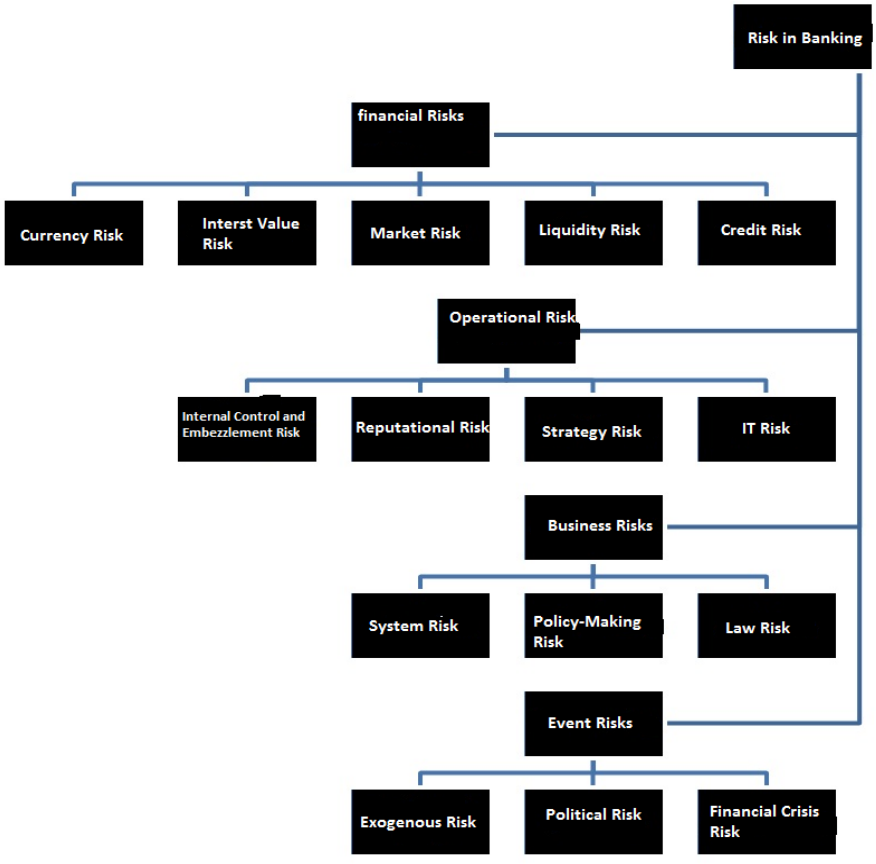

Figure 1: Bank Risk Indices in Post Bank in Terms of Library Studies

DATA ANALYSIS

In the following, the data are analyzed fully. First, the various risks in sectors of Post Bank are given which are based on the wholesale review of previous literature and interview with experts. T-test is then applied and the confirmed indices enter into next step of research and these indices are taken into account after applying FAHP with a developed approach. Consequently, they are compared in-pair with each other and their weights are calculated and ranked. Finally, the final weight and rank of each risks are calculated.

- *Descriptive statistics of answers to questions of questionnaire*

Descriptive statistics of first questionnaire's questions have been explained in the following.

Table 1: Descriptive Statistics of First Question

Question	Number of Respondents	Maximum Answers	Minimum Answers	Mean	Standard Deviation
1	30	5	2.00	4.2000	0.79097
2	30	5	2.00	4.1000	0.95542
3	30	5	2.00	3.9750	1.02501
4	30	5	1.00	4.1250	0.99195
5	30	5	2.00	3.7750	0.97369
6	30	5	3.00	4.3250	0.69384
7	30	5	1.00	3.6000	1.05733
8	30	5	0.00	4.1750	1.21713
9	30	5	3.00	4.1000	0.74421
10	30	5	3.00	4.1750	0.74722
11	30	5	1.00	4.0000	1.08604
12	30	5	2.00	3.7250	1.13199
13	30	5	0.00	3.8250	1.17424
14	30	5	3.00	4.4000	0.59052
15	30	5	1.00	3.8000	1.28502

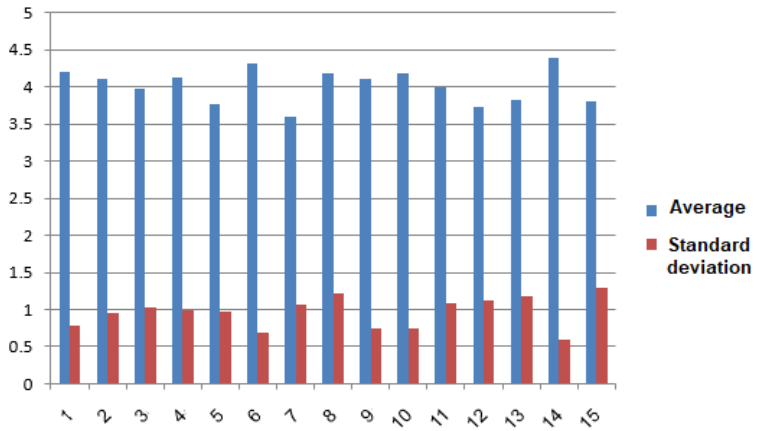

Figure 2: Descriptive Statistics of Question 1

- *Analysis of Research Questions*

Question 1: What are the types of risks in Post Bank of Iran, Hormozgan Province?
Due to the library studies, the below risks have been accounted as the risk in Post Bank of Hormozgan Province where T-test is used to confirm them.

Can these risks be accounted as the effective risks in Post Bank in Hormozgan Province?
In this state, we will have the following hypothesis: 'The mentioned risks can be accounted as the effective risks in Post Bank in Hormozgan Province'. To test the above-mentioned hypothesis, T-test at 0.05 significance level is used so that the H_0 and H_1 are as follows:
H_0: These risks cannot be accounted as effective risks in Post Bank in Hormozgan Province.
H_1: These risks can be accounted as effective risks in Post Bank in Hormozgan Province.
$H_0 \leq 3$
$H_1 > 3$
The results of T-test for first research question have been given in Table 2.

Table 2: Results of T-Test for First Research Question

No.	Risks	Hypothesis	Significance	Critical Value at Significance Level (0.95)	Mean	Lower Limit at Confidence Interval (0.95)	Upper Limit at Confidence Interval (0.95)	H1 Confirmation
1	Financial Risk	Credit Risk	0.000	0.05	1.20000	0.9470	1.4530	Confirmed
2		Liquidity Risk	0.000	0.05	1.10000	0.7944	1.4056	Confirmed
3		Market Risk	0.000	0.05	0.97500	0.6472	1.3028	Confirmed
4		Interest Rate Risk	0.000	0.05	1.12500	0.8078	1.4422	Confirmed
5		Currency Risk	0.000	0.05	0.77500	0.4636	1.0864	Confirmed
6	Operational Risk	IT Risk	0.000	0.05	1.32500	1.1031	1.5469	Confirmed
7		Strategic Risk	0.000	0.05	0.60000	0.2618	0.9382	Confirmed
8		Reputational Risk	0.000	0.05	1.17500	0.7857	1.5643	Confirmed
9		Internal Control System and Embezzlement Risk	0.000	0.05	1.10000	0.8620	1.3380	Confirmed
10	Business Risk	Law Risk	0.000	0.05	1.17500	0.9360	1.4140	Confirmed
11		System Risk	0.000	0.05	1.00000	0.6527	1.3473	Confirmed
12		Policy-Making Risk	0.000	0.05	0.72500	0.3630	1.0870	Confirmed
13	Event Risk	Financial Crisis Risk	0.000	0.05	0.82500	0.4495	1.2005	Confirmed
14		Political Risk	0.000	0.05	1.40000	1.2111	1.5889	Confirmed
15		Exogenous Risks	0.000	0.05	0.80000	0.3890	1.2110	Confirmed

0.05 significance level

Based on the results in Table 2, and results of T-test for the abovementioned indices using SPSS-22, the SIG level (significance of test at 0.05 level) is analyzed based on which because of their 0.05 value it can be claimed that there is a significant difference between this test and the expected mean (3). Regarding the lower and upper limits of confidence interval (95%) for mean, all risks are positive and their mean is higher than the tested values, H_0 is rejected and H_1 is confirmed.

Thus, the banking risks in Post Bank of Hormozgan are given in Table 3.

Table 3: Confirmation Results of Final Risks

Risks	Financial	Operational	Business	Event
Subsets	Credit Risk	IT Risk	Law Risk	Financial Crisis Risk
	Liquidity Risk	Strategic Risk	System Risk	Political Risk
	Market Risk	Reputational Risk	Policy-Making Risk	Exogenous Risks
	Interest Rate Risk	Internal Control System and Embezzlement Risk		
	Currency Risk			

Question 2) What is the importance level of risks?

To rank and weigh the confirmed risks in Post Bank of Hormozgan, the FAHP technique is used.

- *Executing the Fuzzy Analytical Hierarchy Process*

Before conducting FAHP with developed approach of Chang, it is worth noting that this research uses group decision-making process and the tables in this part are the results of geometrical mean of 40 questionnaires completed by the elites, and experts of Post Bank.

To determine the weight of each criterion in the previous step, FAHP method has been used by Chang developed analysis. To collect the idea about the pairwise comparison of criteria, the membership function of linguistic variables has been utilized. Since the same weight has been considered for the ideas of all elites, the mean geometrical formula is given as mentioned.

The importance and weight of each risk are analyzed in the various fields of Post Bank.

- *Ranking Financial Risks*

In the following, five sub-indices of financial risks are ranked. In this regard, the combined fuzzy group decision-making table related to the pairwise comparison of five sub-indices is given. Then, to have the inconsistency ratio of this matrix, the fuzzy numbers should be first change into real numbers and the inconsistency ratio of decision matrix is calculated. Table 4 includes the matrix of FAHP pairwise comparison which is the result of geometrical mean of the elites' opinion on ranking financial risks. In the presented table, regarding the lower values of main diameter the inversion of values acquired has been used for the arrays of main diameter. All steps for acquiring weight of each sub-index are as follows. Meanwhile, Table 4 shows the ranking matrix of financial risks.

First, each index bears a symbol for simplicity.

A1= Credit risk

A2= Liquidity risk

A3= Market risk

A3= Interest rate risk

A5= Currency risk

Table 4: Ranking Matrix of Financial Risks

	A_1	A_2	A_3	A_4	A_5
A_1	(1,1,1)	(1/27, 1/42, 1/33)	(0/6 , 0/54, 0/57)	(0/68, 0/75, 0/77)	(0/4, 0/34, 0/37)
A_2	(0.75, 0.7, 0.78)	(1, 1, 1)	(0/54, 0/47, 0/51)	(0.65, 0.59, 0.68)	(0.37, 0.35, 0.32)
A_3	(1/74, 1/85, 1/65)	(1/95, 2/11, 1/83)	(1, 1, 1)	(1/14, 1/32, 1/25)	(0.74, 0.65, 0.71)

A_4	(1/29, 1/33, 1/47)	(1/46, 1/67, 1/54)	(0.8, 0.75, 0.87)	(1, 1, 1)	(0.43, 0.36, 0.35)
A_5	(2/68, 2/94, 2/47)	(3/14, 2/85, 2/71)	(1/412, 1/54, 1/35)	(2/79, 2/80, 2/30)	(1, 1, 1)

After that, based on EA method, SK value which is itself a triangle fuzzy number is calculated for each of matrix lines of upper pairwise comparison.

S1= (0.134, 0.129, 0.133)
S2= (0.112, 0.099, 0.108)
S3= (0.223, 0.221, 0.212)
S4= (0.169, 0.163, 0.172)
S5= (0.374, 0.356, 0.324)

Then, the largeness degree of each SK values are accounted in ratio to other values. In the following, the values for largeness degree are given for each SKs.
Therefore, the results of using FAHP show that preference of abovementioned factors on the basis of elites' opinions is given in Table 5. Table 6 shows the defuzzification of fuzzy numbers related to the ranking indices of financial risks.

Table 5: Weights Based on Elites' Opinions about Financial Risks

Financial Risks	Importance Weight of Fuzzy AHP	Rank based on Importance Degree
Credit risk	0.026	4
Liquidity risk	0.213	3
Market risk	0.022	5
Interest rate risk	0.346	2
Currency risk	0.39	1

Table 6: Defuzzification of Fuzzy Numbers Related to the Ranking Indices of Financial Risk

	A_1	A_2	A_3	A_4	A_5
A_1	1.0000	1.34	0.57	0.73	0.37
A_2	0.74	1.0000	0.506	0.64	0.34
A_3	1.75	1.97	1.0000	1.24	0.7
A_4	1.36	1.56	0.8	1.0000	0.38
A_5	2.7	2.94	1.42	2.63	1.0000
			CI=0.04		

As be shown in Table 6, the consistency ratio is 0.004 that shows the consistency ratio of intended answers (because this value is lower than 0.1, it possesses consistency ratio).

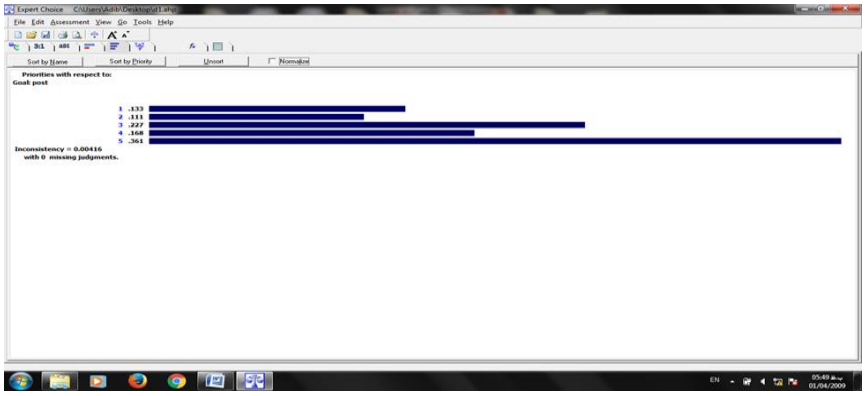

Figure 3: Output of Expert Choice

- *Ranking Operational Risks*

In the following, four sub-indices of operational risks are ranked. In this regard, the combined fuzzy group decision-making table related to the pairwise comparison of four sub-indices is given. Then, to have the inconsistency ratio of this matrix, the fuzzy numbers should be first change into real numbers and the inconsistency ratio of decision matrix is calculated. Table 7 comprises the matrix of FAHP pairwise comparison which is the result of geometrical mean of the elites' opinion on ranking financial risks. In the presented table, regarding the lower values of main diameter the inversion of values acquired has been used for the arrays of main diameter. All steps for acquiring weight of each sub-index are as follows.

First, each index bears a symbol for simplicity.

B1= Reputational risk

B2= Internal control system and embezzlement risk

B3= IT risk

B4= Strategic risk

Table 7: Ranking Matrix of Operational Risks

	B_1	B_2	B_3	B_4
B_1	(1, 1, 1)	(0/607, 0.741, 0/921)	(0/351, 0/417, 0.5)	(0/4, 0/471 , 0/579)
B_2	(1/086, 1/349, 1/645)	(1, 1, 1)	(0/423, 0/489, 0/565)	(1/233, 1/256 , 1/277)
B_3	(2, 2/398, 2/849)	(1/767, 2/045, 2/364)	(1, 1, 1)	(1/085, 1/349 , 1/644)
B_4	(1/727, 2/123, 2/5)	(0/783, 0/796, 0/811)	(0/608, 0.741, 0.921)	(1, 1, 1)

Later on, based on the EA method, SK value which is itself a triangle fuzzy number is calculated for each of matrix lines of upper pairwise comparison.

S1= (0/113, 0/144, 0/186) S2= (0/179, 0/225, 0/278)

S3= (0/281, 0/373, 0/487) S4= (0/198, 0/256, 0/324)

Then, the largeness degree of each SK values are accounted in ratio to other values. In the following, the values for largeness degree are given for each SKs.

Therefore, the results of using FAHP indicate that preference of abovementioned factors on the basis of elites' opinions is given in Table 8.

Table 8: Weights Based on Elites' Opinions about Operational Risks

Operational Risks	Importance Weight of Fuzzy AHP	Rank based on Importance Degree
Reputational risk	0.038	4
Internal control system and embezzlement risk	0.348	2
IT risk	0.484	1
Strategic risk	0.13	3

Table 9: Defuzzification of Fuzzy Numbers Related to the Ranking Indices of Operational Risk

	B_1	B_2	B_3	B_4
B_1	1.0000	0.756	0.423	0.48

B_2	1.36	1.0000	0.485	1.256
B_3	2.42	2.059	1.0000	1.359
B_4	2.12	0.796	0.757	1.0000
			CI=0.02	

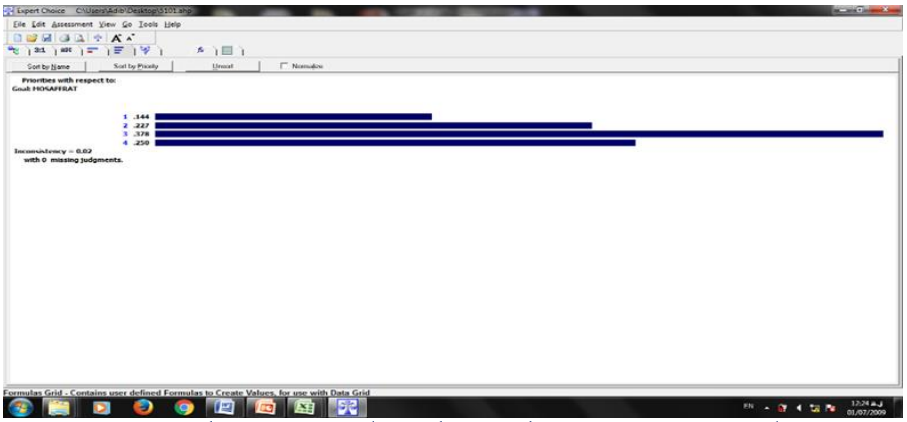

Figure 4: Output of Expert Choice Regarding the Ranking of Missing Judgements for Indicators of Operational Risks with Respect to Defuzzification Numbers

According to Table 9, the consistency ratio is 0.02 that shows the consistency ratio of intended answers (because this value is lower than 0.1, it possesses consistency ratio).

- *Ranking Business Risks*

In the continuation, three sub-indices of business risks are discussed. To do so, the combined fuzzy group decision-making table related to the pairwise comparison of four three-indices is given. Then, to have the inconsistency ratio of this matrix, the fuzzy numbers should be first change into real numbers and the inconsistency ratio of decision matrix is calculated. Table 10 comprises the matrix of FAHP pairwise comparison which is the result of geometrical mean of the elites' opinion on ranking financial risks. In the presented table, regarding the lower values of main diameter the inversion of values acquired has been used for the arrays of main diameter. All steps for acquiring weight of each sub-index are as follows.

First, each index is changed into a symbol for simplicity.

C1= Legal risk

C2= System risk

C3= Policy-making risk

Table 10: Ranking Matrix of Business Risks

	C_1	C_2	C_3
C_1	(1,1,1)	(0.431,0.52 , 0.581)	(0.558,0.68,0.85)
C_2	(1,72, 1.93,2,32)	(1,1,1)	(1.25, 1.54, 1.84)
C_3	(1.18,1.46,1.79)	(0.543 , 0.649,0.8)	(1,1,1)

Then, based on the EA method, SK value which is itself a triangle fuzzy number has been calculated for each of matrix lines of upper pairwise comparison.

S1= (0.177, 0.224 ,0.279)

S2= (0.353, 0.456, 0.593)

S3= (0.242, 0.317, 0.413)

Then, the largeness degree of each SK values are accounted in ratio to other values. In the following, the values for largeness degree are given for each SKs.
Therefore, the results of using FAHP show that preference of abovementioned factors is given in Table 11.

Table 11: Weights for Business Risks

Business Risks	Importance Weight of Fuzzy AHP	Rank based on Importance Degree
Legal risk	0.179	3
System risk	0.631	1
Policy-making risk	0.189	2

Table 12: Defuzzification of Fuzzy Numbers Related to the Ranking Indices of Business Risk

	C_1	C_2	C_3
C_1	1.0000	0.51	0.696
C_2	1.99	1.0000	1.543
C_3	1.47	0.664	1.0000
		CI=0.001	

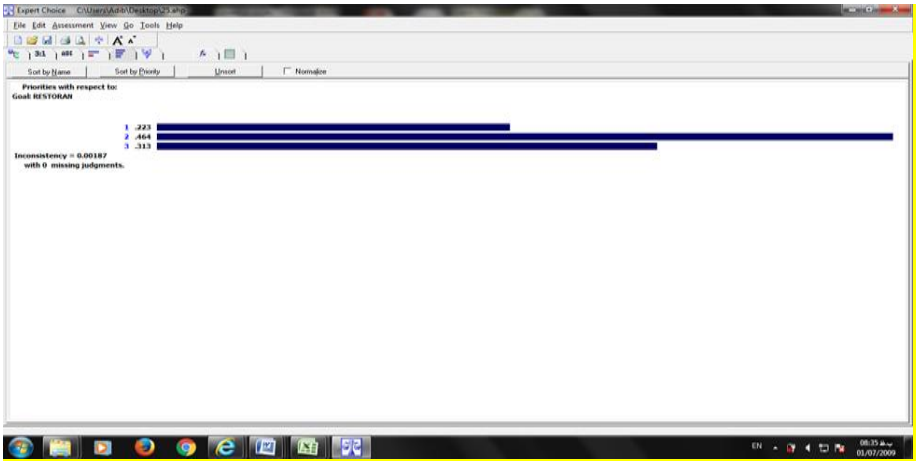

Figure 5: Output of Expert Choice Software about Ranking Business Risks

According to Table 12, the consistency ratio is 0.001 that shows the consistency ratio of intended answers (because this value is lower than 0.1, it possesses consistency ratio).

- *Ranking Event Risks*

In the continuation, three sub-indices of event risks are discussed. To do so, the combined fuzzy group decision-making table related to the pairwise comparison of four three-indices is given. Then, to calculate the inconsistency ratio of this matrix, the fuzzy numbers should be first change into real numbers and the inconsistency ratio of decision matrix is calculated. Table 13 gives the matrix of FAHP pairwise comparison which is the result of geometrical mean of the elites' opinion on ranking financial risks. In the presented table, regarding the lower values of main diameter the inversion of values acquired has been used for the arrays of main diameter. All steps for acquiring weight of each sub-index are as follows.
First, each index is changed into a symbol for simplicity.

D1= Financial crisis risk
D2= Political risk
D3= Exogenous risks

The ranking matrix of event risks has been shown in Table 13.

Table 13: Ranking Matrix of Event Risks

	D_1	D_2	D_3
D_1	(1,1,1)	(1.5942, 1.8869, 2.1992)	(1.8236, 2.1931, 2.5665)
D_2	(0.4549, 0.5299, 0.6272)	(1,1,1)	(2.2214, 2.6186, 3.0128)
D_3	(0.3896, 0.4559, 0.5483)	(0.3319, 0.3818, 0.4501)	(1,1,1)

S1= (0.3561, 0.4590, 0.5874)
S2= (0.2963, 0.3748, 0.4727)
S3= (0.1387, 0.1660, 0.2036)

Therefore, the ranking of event risks is as Table 14.

Table 14: Ranking Event Risks

Major Dimensions	Importance Weight of Fuzzy AHP	Rank based on Importance Degree
Financial crisis risk	2356/0	3
Political risk	3613/0	2
Exogenous risks	4029/0	1

Table 15 shows the defuzzification of fuzzy numbers as regards to ranking event risks.

Table 15: Defuzzification of Fuzzy Numbers Related to the Ranking Event Risk

	D1	D2	D3
D_1	1.0000	1.89	2.194
D_2	0.53	1.0000	2.61
D_3	0.45	0.38	1.0000
CI=0.07			

According to Table 15, the consistency ratio is 0.007 which signifies very high consistency ratio of intended answers (because this value is lower than 0.1, it possesses consistency ratio).

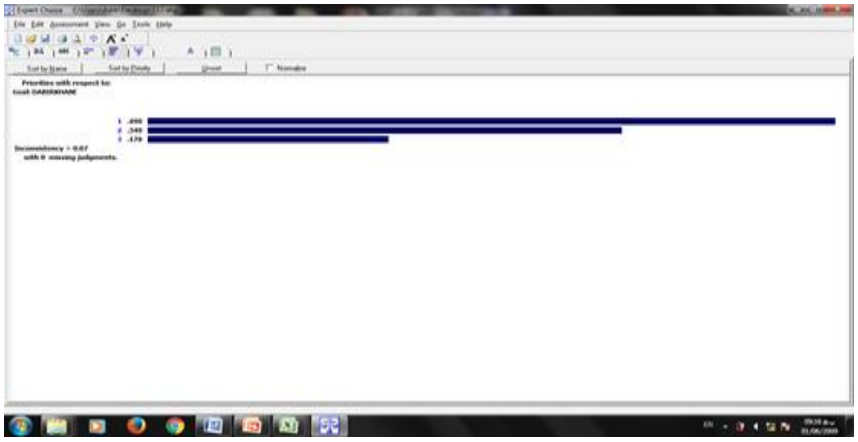

Figure 6: Output of Expert Choice

- *Pairwise Comparison of All Risks*

In the following, ranking all risks is considered. In this regard, the combined fuzzy group decision-making table related to the pairwise comparison of four risks is given. To calculate the inconsistency ratio of this matrix, the fuzzy numbers should be first to the real numbers so that the inconsistency ratio of decision matrix is calculated. Table 16 gives the matrix of FAHP pairwise comparison which is the result of geometrical mean of elites' opinion regarding the ranking of final risks. Table 16 uses the inversion of reached values for the upper arrays of main diameter in relation to the lower values of main diameter. All steps to achieve the weight of each sub-index are as follows.
First, each index requires a symbol for simplicity in calculation.

E1= Event risks
E2= Operational risks
E3= Financial risks
E4= Business risks

Table 16: Matrix of Ranking Total Risks in Post Bank

	E_1	E_2	E_3	E_4
E_1	(1,1,1)	(1.12,1.34,1.65)	(0.36,0.47,0.65)	(0.51,0.61,0.82)
E_2	(0.6,0.75,0.89)	(1,1,1)	(0.31,0.35,0.47)	(0.38,0.47,0.65)
E_3	(1.52,2.14,2.75)	(2.12,2.85,3.25)	(1,1,1)	(1.12,1.8,2.35)
E_4	(1.22,1.64,1.95)	(1.53,2.14,2.62)	(0.42,0.55,0.89)	(1,1,1)

Then, based on the EA method, SK value which is itself a triangle fuzzy number has been calculated for each of matrix lines of upper pairwise comparison.

S1= (0.179, 0.178, 0.268) S2= (0.137, 0.134, 0.196)
S3= (0.345, 0.405, 0.196) S4= (0.25, 0.277, 0.42)

Then, the largeness degree of each SK values are accounted in ratio to other values. In the following, the values for largeness degree are given for each SKs.
Therefore, the results of using FAHP show that preference of abovementioned factors based on elites' opinions is given in Table 17.

Table 17: Weights Achieved from Elites' Opinions in Relation to Ranking of Total Banking Risks

Risks	Importance Weight of Fuzzy AHP	Rank based on Importance Degree
Event Risks	0.083	4
Operational Risks	0.154	3
Financial Risks	0.556	1
Business Risks	0.205	2

Table 18: Defuzzification of Fuzzy Numbers Related to Ranking of Total Banking Risks

	E_1	E_2	E_3	E_4
E_1	1.0000	1.37	0.49	0.65
E_2	0.75	1.0000	0.38	0.5
E_3	2.14	2.74	1.0000	1.76
E_4	1.6	2.09	0.62	1.0000
			CI=0.003	

According to Table 18, the consistency ratio is 0.003 that shows the consistency ratio of intended answers (because this value is lower than 0.1, it possesses consistency ratio).

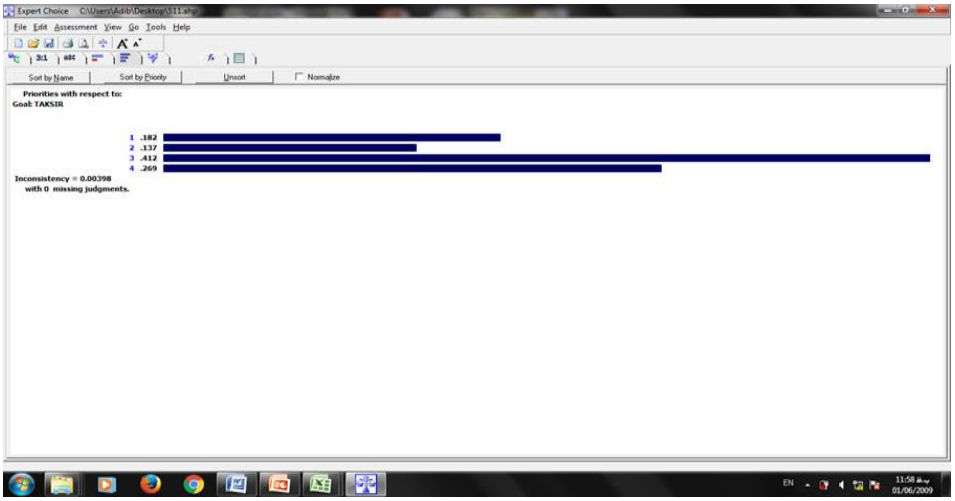

Figure 7: Output of Expert Choice

Table 19: Final Weight of Various Risks

No.	Total Risks		Sub-Risks		Final Weight
1	Financial	0.556	Credit	0.026	0.014
2			Liquidity	0.213	0.118
3			Market	0.022	0.012
4			Interest rate	0.364	0.192
5			Currency	0.39	0.217
6	Operational	0.1547	Reputational	0.038	0.006
7			Internal control system and embezzlement risk	0.348	0.054
8			IT	0.484	0.075
9			Strategic	0.13	0.020
10	Business	0.205	Legal	0.179	0.037
11			System	0.634	0.129
12			Policy-making	0.189	0.039
13	Event	0.083	Financial crisis	0.2356	0.020
14			Political	0.3613	0.030
15			Exogenous	0.4029	0.033

Based on the results, it is known that the most important risk is the currency risk and the least important risk is the market risk. These results are confirmed in terms of the consistency ratios.

CONCLUSION

The present research has been conducted in terms of analysis, evaluation and ranking all risks in Post Bank of Hormozgan Province. In so doing, theoretical principles were presented in relation to the research subject, a hypothesis was adjusted and the questions were securitized by means of research method. Then, the hypothesis testing, and findings led to conclusion and finally the recommendations and research limitations are proposed.

In relation to the data analysis, two hypotheses were proposed and the following results were reached:

- *Results of testing hypothesis 1*

Question 1 has been proposed as follows:

- What are the types of risks in Post Bank of Iran (Hormozgan Province)?

Based on the library studies, the following risks have been distinguished as the risks in Post Bank of Hormozgan Province and T-test is used to confirm them.

Table 20: Results of First Question

No.	Risks	Hypothesis	Significance of Test (sig)	Critical Value at Significance Level (95%)	Mean	Lower Limit of Confidence Interval 95%	Upper Limit of Confidence Interval 95%	H_1 Confirmation
1	Financial Risk	Credit	0.000	0.05	1.20000	0.94700	1.4530	Confirmed
2		Liquidity	0.000	0.05	1.10000	0.7944	1.4056	Confirmed
3		Market risk	0.000	0.05	0.97500	0.6472	1.3028	Confirmed
4		Interest rate	0.000	0.05	1.12500	00.8078	1.4422	Confirmed
5		Currency	0.000	0.05	0.77500	0.4636	1.0864	Confirmed
6	Operational Risk	Reputational	0.000	0.05	1.17500	0.7857	1.5643	Confirmed
7		Internal control system and embezzlement risk	0.000	0.05	1.10000	0.8620	1.3380	Confirmed
8		IT	0.000	0.05	1.32500	1.1031	1.5469	Confirmed
9		Strategic	0.001	0.05	0.60000	0.2618	.9382	Confirmed
10	Business Risk	Legal	0.000	0.05	1.17500	0.9360	1.4140	Confirmed
11		System	0.000	0.05	1.00000	0.6527	1.3473	Confirmed
12		Policy-making	0.000	0.05	0.72500	0.3630	1.0870	Confirmed
13	Event Risk	Financial crisis	0.000	0.05	0.82500	0.4495	1.2005	Confirmed
		Political	0.000	0.05	1.40000	1.2111	1.5889	Confirmed
		Exogenous	0.000	0.05	0.80000	0.3890	1.2110	Confirmed

The results show the confirmation of all risks in the various parts.

The results are in line with Ahmadi in Analysis of Risk Management in Bank Melli and the analysis conducted by Eghtesad Novin Bank in Risk Management and Measurement in Eghtesad Novin Bank (Ahmadi, 2013; Eghtesad Novin Bank, 2008).

- How important are each of risks?

To rank and weigh the confirmed risks in Post Bank of Hormozgan Province, FAHP technique is utilized.

Table 21: Results of Second Question

No.	Total Risks		Sub-Risks		Final Weight
1	Financial	0.556	Credit	0.026	0.014
2			Liquidity	0.213	0.118
3			Market	0.022	0.012
4			Interest rate	0.364	0.192

5			Currency	0.39	0.217
6	Operational	0.1547	Reputational	0.038	0.006
7			Internal control system and embezzlement risk	0.348	0.054
8			IT	0.484	0.075
9			Strategic	0.13	0.020
10	Business	0.205	Legal	0.179	0.037
11			System	0.634	0.129
12			Policy-making	0.189	0.039
13	Event	0.083	Financial crisis	0.2356	0.020
14			Political	0.3613	0.030
15			Exogenous	0.4029	0.033

Due to the calculated consistency ration, this ranking is confirmed.

Recommendations

1. identifying and ranking the effective factors in reducing the effects of banking risks using decision-making techniques such as TOPSIS, and etc.
2. identifying the effective factors in the banking risks in relation to the BSC strategy model and its various aspects
3. analyzing situation of customers' needs regarding the conditions of various risks
4. using techniques of engineering economics in reducing the value of banking risks
5. relationship between reducing banking risks, loyalty and customers' satisfaction
6. analyzing effect of reducing banking risks in performance evaluation of banks' branches using DEA
7. situation of banking risks in performance evaluation of Post Bank in contrast to other banks

Limitations of Research

1. The present research has been conducted in one city in terms of location which may be constrained to the study area and has its own unique conditions so that the generalization of these results to other cities and offices should be taken into consideration.
2. The lack of integrated researches in this field and the lack of particular literature in Iran.
3. This research faced inherent limitations in questionnaire for data collection. For instance, the questionnaire cannot fully measure the opinions, and thinking manner of subjects.

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