Design and Analysis of Organizational Resilience Model in Banking Industry (Case study: Bank Melli Iran)

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ABSTRACT

One of the issues and topics that has attracted a lot of attention in recent years is organizational resilience in the national and global arena. The aim of every organization and institution is to continue business and create an advantage, especially in critical situations and disruptions. Resilience can be defined as endurance and standing in critical situations, and this research deals with the comprehensive analysis of factors affecting resilience in the banking industry. The banking industry is always exposed to internal and external damage, due to the provision of credit needed by economic enterprises and households, and the bank-oriented nature of financing the economy in Iran, any crisis in this industry affects the entire country's economy. The purpose of this article is to design and analyze the organizational resilience model in the banking industry with an emphasis on Bank Melli Iran during the 2013-2022. The research design is applied in terms of objective and qualitative and quantitative research (mixed method). In the qualitative part, the resilience model was collected through interviews with several bank managers and university elites using the grounded theory methodology. In the quantitative section, the level of resilience in the banking system was measured using the designed model, a case study was conducted in the Bank Melli, and a sample of 80 people was selected. The results of this part show that with 95% certainty, the resilience level is equal to 3.98 and it is approved. Also, in the end, by using the FAHP method, the 21 factors of resilience were prioritized, and the factor of resource and expenditure management is the first priority, then optimization, and finally factor and indicator of banking policy and rules were placed in the last priority of resilience in the banking system.

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1. Introduction

Societies, organizations, and individuals are in diverse and changing environmental conditions. Despite the fact that this environment can have significant opportunities for the success and growth of organizations, it can seriously threaten organizational performance. Today's world is affected by decisions made by people in very complex situations with high uncertainty. The chaos resulting from these decisions has caused the uncertainty of the phenomena to reach a very high level. Organizations in any sector are faced with complex operational environments with dynamic risks (Rusdi and Wibowo, 2022). These complex environments force organizations to consider how they can manage operational risk and resilience of critical business processes and services (Kulkarni et al., 2022). Organizations are constantly bombarded with conditions and events that bring stress and uncertainty and can disrupt organizational operations (Neace et al., 2020). As a result, to overcome these complex and destructive events, the need to develop resilience in organizational and infrastructure systems is highlighted. Organizational resilience is defined as the organization's ability to predict, avoid and adjust positively against environmental disturbances and changes. This ability is a combination of organizational capacity to restore efficiency after a disruption and create the necessary capabilities before responding to a crisis (Bashir, 2022).

The important issue among these is that fundamentally, in order to be resilient, communities rely on the services provided by organizations to enable them to plan, respond and recover from emergencies and crises. Critical organizations that provide services such as water, gas, electricity, transportation, money, education, and health have always been considered very important. This is because these are the organizations that enable societies to function (Xu et al., 2022). On the other hand, organizations that are focused on resilience generally face disruptions that compromise the quality of adaptability and proactive responses. In addition, positive behavior within the organization and the organization's view of disruptions as

development opportunities have been emphasized (Martin et al., 2022). One of the types of these organizations, which has both an effective role and a high effectiveness role in tensions and riots, is the banking industry. Banks play a significant role in the economy (Jamshidi and Toghyani, 2021). The very heavy responsibility of the banking system in the market-based economy is not hidden from anyone, and the banking system is always one of the most important components of the country's economy, which determines the growth or stagnation of the economic structure with its activity because the capital in the banks is the main source of purchasing products and Their services and facilities are a source of creating credit for all economic units, including families, businesses, companies, and the government (Bayar et al., 2022). Therefore, the optimal activity of banks to realize their goals, including the exploitation of capital and equipping it, will be very effective in various economic activities and the overall state of the country's economy (Gholizadeh et al., 2021). Due to the very important role of this industry in production, consumption, investment, and other variables and institutions, it is very important and fundamental to provide a healthy and resilient banking system to deal with shocks and manage the economy (Safarzadeh et al., 2020).The necessity of reviewing this article can be highlighted from the point of view that the results of not studying organizational resilience in the country's banking industry can lead to stagnation and even create bankruptcy crises in the country's banks. A crisis that can have destructive effects on the country's economy, considering the mutual dependence of the state economy and banks on each other. On the other hand, identifying the dimensions and components of organizational resilience can give bank managers the opportunity to try to increase it in their organization and group by identifying the basic points and components of resilience, and thus a coherent and continuous strategy and plan to improve banking conditions. to deal with crises and incidents. Considering that Iran's position is under threat and invasion both in terms of geopolitics and natural geography, and in terms of various political and economic crises, the resilience

of organizations, especially banks, is of great priority and importance. With these preliminaries, this article tries to design and analyze the organizational resilience model in the banking industry (Bank Melli Iran).

2. Literature Review

Moghadamfar et al., (2022) concluded that Anticipating, monitoring, response, reassurance, reducing impacts of corruption on staff, and improvement were recognized as principal categories in the empirical layer. Categories of intelligence and dynamic organism, strong control and resilient staff were recognized as generative mechanisms in the actual layer. Categories of open system, organizational culture and attitude to corruption and reform were recognized as structures in the real layer. These 12 factors with other conditional factors shape organizational resilience against corruption. Mahmodzadeh et al., (2022) concluded that there is no significant relationship between innovation in knowledge management and knowledge transfer with organizational resilience, but between the dimensions of knowledge retention, application of knowledge, acquisition and documentation of management results. Knowledge and its creation have a significant relationship with organizational resilience, so the organization must review the processes of knowledge transfer and innovation in knowledge management to move toward organizational resilience. Zhang and Ma (2022) argued that managerial implications for successfully coping with crises, such as a global pandemic, by leveraging firm's resilience capabilities facilitated by social relationship and implementing reactive and proactive strategies. Ebrahimi and Noornejad Vanoush (2022) argued that some factors affecting the capacity of organizational resilience development such as shared vision, organizational knowledge management, human resource empowerment, and flexible organic structure can be considered as soft and behavioral aspects of organizational resilience capacity development; on the other hand, other factors such as technology, financial resources, alliance and outsourcing and resource redundancy can be

considered as organizational and difficult (resource-oriented) aspects in the development of organizational resilience, which in general, they can provide the ground for production and supply agility, as well as innovation and creativity and the use of environmental opportunities and organizational flexibility, and increase organizational resilience capacity. Radic et al., (2022) argued that the strategic factors for improving the organizational resilience model for managers and decision-makers include such things as the expansion of communication; clarification of rules; empowering management; organizational planning; expansion of service quality and effective organizational strategy; organizational participation, capable human resources and employee satisfaction). Sadathosseini Khajouei et al., (2021) concluded that almost medium to a low degree of resilience for the e-learning system established in Iran's virtual university. Statistical analysis demonstrated that there was no meaningful difference between experts' opinions and our proposed procedure for E-learning resilience measurement. The proposed model showed significant sensitivity to changes in agility. Therefore, agility should be considered the first priority in achieving the desired level of resilience for the e-learning systems of the Iranian virtual university.

Salehi and Veitch (2020) concluded that reporting safety issues played a central role in enhancing adaptive capacity at all management levels. Both middle management and low-level management emphasized the importance of management commitment, whereas top-level management considered flexibility as a vital factor in managing disruptions and reducing accidents. The findings of this study could be useful for managers and other decision-makers to improve safety in process industries. Shams et al., (2020) argued that the concept of resilience has been applied in various fields including psychology; environmental sciences; system theory; information and communication technology and strategic management, etc. Therefore, extracting articles related to "resiliency in the organization" requires it takes more time.

The innovation of the current article is that the authors are trying to design and analyze the organizational resilience model in the banking industry, with an emphasis on the Bank Melli Iran, considering the country's economic conditions and the application of comprehensive international sanctions.

3. Theoretical Framework, Organizational resilience

Resilience is the elastic or flexible property of a material. Its root is taken from the science of physics and it means jumping back. In fact, resilient organizations bounce back. The term resilience has been used in various fields and disciplines: from ecology and safety engineering to metallurgy and individual and industrial psychology, supply chain, strategic management, and many others. A definition has been provided for this concept by many fields and authors; although the definitions provided by different fields are different, they all revolve around a common axis "in the ability of the capacity to return to a stable state after a disturbance" (Tennakoon and Janadari, 2021). The organization's ability to achieve its mission even under conditions of disruption (Teng et al., 2022), the organization's capacity to deal with difficulties and hardships (Cruickshank, 2020), the strength and capacity to quickly recover an organization after an event and shock (Deason et al., 2022), the ability of the organization to survive, and the capacity to grow in times of crisis (Bartuseviciene, 2022), the ability of the organization to survive, and the capacity to grow in times of crisis (Evenseth et al., 2022).

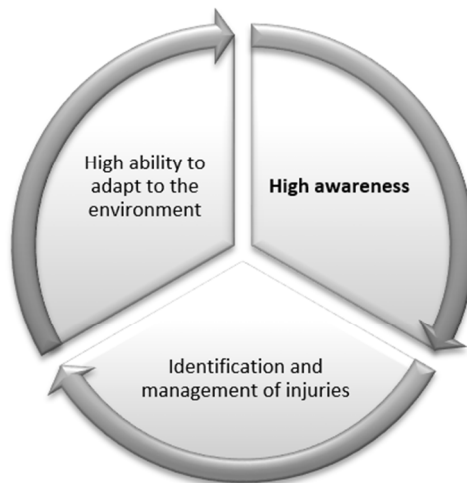### Organizational resilience

The concept of organizational resilience was first used to describe the need for organizations to respond to a rapidly changing business environment. Successful organizations must evolve like resilient ecosystems that are constantly adapting to the external environment. (Cooke et al., 2019). Organizational resilience is referred to as the organization's ability to face

disruptions in order to maintain the organization's configuration or create a new organizational configuration that is more suitable to new environmental conditions. Resilience means tolerance and coping and recovery of the organization after a catastrophic event or a crisis or difficult conditions.

Resilient organizations have three main characteristics:

1. The resilient organization is alert and has a lot of awareness and information about itself, the main stakeholders, and the environment in which an emergency has arisen or daily work is done;

2. It has an increasing ability to identify and manage major injuries; Injuries that can have positive and negative effects on the organization in critical conditions (Mitsakis, 2020).

3. Through innovative and new solutions, the resilient organization has the ability to adapt to changing conditions, as well as the ability to adapt to new and unforeseen conditions (Annarelli et al., 2020).

Fig 1. The three main features of resilient organizations

Source: Annarelli et al., (2020)

Obstacles of organizations in improving the level of resilience

There are three main obstacles in the way of organizations to improve their level of resilience:

1. The organizations' limited awareness of the environment in which they operate, situational awareness indicating things such as identifying potential incidents and investigating their consequences, awareness of the number of resources available to the organization in the face of a crisis, and awareness of the organization's obligations in relation to All stakeholders;

2. The inability to identify and manage key vulnerable points. Key vulnerabilities refer to the components of an organizational system that, if lost or damaged, cause irreparable damage to the organization;

3. The lack of organizational capability in creating adaptability. Adaptability is a measure of an organization's culture and dynamism, according to which, the organization can make timely and appropriate decisions in its normal and everyday business and in critical situations (Sadathosseini Khajouei & Pilevari, 2021).

4. Methodology

This article has a qualitative and quantitative approach, and the strategy used is the theory of conceptualization of the ground theory, which collects qualitative data according to the interpretations of actors with an exploratory approach. To determine the samples of this research and to determine this group of experts, the purposeful sampling method was used. If the purpose of the interview is to explore and describe the opinions and attitudes of the interviewees, then according to the available time and resources, about 10 to 15 samples can be used to conduct the interview (Creswell, 2018) states that study which has been carefully guided and in which the selection of the sample has been evolutionary and successive, it is possible to reach the saturation point with about 12 participants and probably this number will not be more than 20. Based on this, an interview was conducted with 15

university professors as well as banking industry experts. The interview with these people was done by appointment. Interviews with people lasted between 1 and 2 hours. All the interviews were recorded and reviewed several times to extract key points. From the twelfth interview onwards, the repetition in the received information was observed and reached the saturation point, but to be sure, it continued until the fifteenth interview and after that, the process of repeating the interviews Confirmation of the validity of the interview requires compliance with the seven steps of determining the topic, design, location of the interview, copying, analysis, confirmation, and reporting.

In this research, the interview process was carried out according to seven steps. To ensure the validity of the subject selection, the theoretical literature and the history of the research conducted in the field of organizational resilience were reviewed. In order to ensure validity in the design stage, various articles and publications were studied in the field of interview design methods. At the time of conducting the interviews, the researcher has been very careful in the way of asking questions and establishing the situation with prior coordination at certain hours and without stress, so that the quality and validity of the interview situation is not damaged. In the transcribing stage, two steps of writing the oral data obtained from the interviews and entering these data into the MAXQDA software were used for transcribing. The validity of the analysis depends on how the questions are included in the interview. To confirm the validity of the analysis stage, first, the research problem itself was asked from the point of view of the interviewees, and then the interview questions were directed in a specific order. The coder was checked. The inter-coder reliability for the interviews conducted in this study was 75%. If the reliability rate is more than 60%, the reliability of the coding is confirmed. In order to ensure the validity of the reporting stage, it has been tried to ensure that the contents presented in the form of results have high accuracy and correctness. In the second part, by using the designed model, the level of resilience in the banking system was measured, a case

study was conducted in Bank Melli and a sample of 80 people was selected. The results of this part show that the level of resilience is 3.98 with 95% confidence and it is approved, and at the end, 21 factors of resilience were prioritized using the FAHP method.

5. Data analysis

In order to analyze the data collected from the interview, the three-step process of open coding, central coding and selective coding was used. Central phenomenon (category): The central phenomenon is the conceptual label that is considered in the research. Here, organizational resilience was chosen as the central phenomenon or category.

Causal conditions: these conditions cause the creation and development of a central phenomenon. Based on the findings from the interviews conducted, three categories of identifying and managing vulnerable points in the banking industry, developing new capabilities and expanding the capabilities of synchronizing with the control environment and crisis management to They were identified as the causal conditions of organizational transparency.

Strategies: organizational strategies that express the interactions and activities that are adopted in response to the central phenomenon and under the influence of intervening conditions and background factors, including reforming the organizational structure - organizational communication - fighting corruption - human resource management policies - Expanding organizational culture - employee participation - loyalty - empowering employees.

Contextual conditions: these conditions are made up of a set of variables and special categories that affect organizational transparency strategies with general conditions (intervening factors). These conditions include administrative-management inefficiencies, economic inefficiencies, cultural-social failures.

Intervening conditions: In this study, intervening conditions are general conditions that, along with background factors, affect organizational transparency strategies. In the introduced model of these conditions, administrative bureaucracy and mismanagement, control and monitoring, innovation, organizational communication, market orientation, technology in use can be mentioned.

Consequences: Some of the categories are the consequences and results of the implementation of the organizational transparency strategy. Based on the collected data, the resilience model in the banking industry creates value and improves profitability, the growth and excellence of human resources, the creation and development of social responsibility, the improvement and development of the international field of customer-oriented cost management.

After the above classification, the extracted concepts and categories were systematically related to each other and drawn in the form of a paradigm model (selective coding). The results of the above steps are presented in Table. 3 and Fig. 2.

Table 1. Primary codes, Concepts, Sub-category and Main category

Main category	Sub-category	Concepts	Primary codes
Causal conditions	Management of resources and costs	Resources and expenses in the bank	-Index of cash assets to total deposits -Index of investment deposits to total deposits -Index of current deposits and savings to total deposits -Appropriate allocation and distribution of resources and interaction with new customers to reduce credit risk concentration -Prevent sedimentation of resources- Cost of money -Effective facility rate -Liquidity crisis
		Arrears and follow-up of collection of claims	-Consolidation of bank bonds and guarantees -Monitoring the use of facilities in the relevant economic sectors -Management of non-current claims -Lack of specific mechanism for collection of loans obtained by banks

Main category	Sub-category	Concepts	Primary codes
			-Compliance with credit health and strengthening of up-to-date customer credit information systems
	Optimization and development of technical capabilities and abilities	Technology field	- New digital technologies - Mobile applications - Responding to the needs of the new bank ecosystem - Data analysis, artificial intelligence and blockchain -Standardization and establishment of integrated architecture in the field of information technology
	Crisis control and management (environmental pressures)	Challenges, threats and opportunities	-The speed of decision-making in the conditions of terrorist attacks and cyber attacks -Prevention of banking shock - Bank's fast applicability In natural and environmental disasters -Providing emergency and extraordinary services after a crisis -Recording the experiences gained from the crisis and transferring it to the employees
Pivotal conditions	Resilience management	Organizational resilience	-Designing and implementing a positive adaptive situation in the face of crisis -The ability of the organization to survive, and the capacity to grow in times of crisis
	Management of systems and collections	Systems management	-Creating a system capacity to maintain the main pillars against external shocks -Systemic ability against change -Creation of shock points at the border of the organization
	Political environment	Changes and political preferences	- The political nature of bank managers - The bank's relationship with the government - Stability of managers -Recession caused by political crises -Economic and banking sanctions - Political crisis in the Middle East
Intervening onditions	Economic environment	Business environment	-Economic growth of the country - Inflation -Government economic policies -Removal of zero from the national currency -Business environment indicators
	Banking policy and rules	Legal environment	-Amending banking laws -Transparency -The degree of independence of the central bank -Monitoring the performance of banks -Activities based on Islamic banking

Main category	Sub-category	Concepts	Primary codes
	Competitive environment	Competitive challenges	-Sustainable competitive advantage -Marketing, marketing and marketing
Strategies	Modifying the organizational structure	Structural issues	-Suitability of bank structure with business model - Corporate banking - Establishing a system to fight against administrative corruption
	Human Resource		- Cost per head of branche
	Management (HRM) policies	Motivation	-Ratio of branch profit to personnel cost -The excellence of human capital - Permanency in the job - Job productivity
	Expansion of organizational culture	Organizational Culture	- Accountability culture - Work culture - Responsibility
	Education	Participatory Management	-Establishing a suggestion system - Teamwork and group work -Collaborative decision making
		Training during military sevice	-Providing specialized training appropriate to the post - In-service training to increase the skills required by the system -Meritocracy and training talented employees for management positions
		Empowering employees	-Increasing the responsibility of employees -Delegation of authority - Clarify goals and expectations - Encouraging employees to do things right -Career development and enrichment
Contextual conditions	Administrative bureaucracy and management system	Administrative failures	- Non-responsiveness - Administrative corruption - Existence of party game - Monitoring and controlling and establishing effective work discipline - Knowing the strengths and weaknesses of the system and managing it optimally
	Innovation and creativity	Change and dynamism	-New thinking in bank managers and employees -Changing the movement of banks and financial companies towards customer choices -Analyst banks instead of traditional banks -Attracting innovative people and creating an innovative structure -Creating a new and new structure to provide better

| Main category	Sub-category	Concepts	Primary codes
	Corporate Communications	Actions of organizational behavior	-Creating successful human skills -Successful extra organizational interactions
	Market and market orientation	Customer relation management	-Creating intelligent information about customers and competitors -Creating intelligent culture and behavior - Customer's perceived value of the bank -Establishing the CRO system
	Information and ommunication Technology (ICT)	Used technologies	-Group decision support systems -Decision processing systems -Personnel support system
Consequences	Financial growth and development	Creating business value	-Productivity of assets -Improving income and expense areas -Identification of new value-creating areas
		Income	-Fee income from letters of credit and foreign exchange guarantees - Investments -Demands from the government -Service development
		Cost management	-Financial discipline and cost management -Generation of frozen assets -Handing over real estate and surplus property -Management of subsidiary companies
	Development and excellence of intellectual capital	Human resources	-Improving the knowledge level of human resources -Improving the necessary motivation of human resources -Maintenance of human resources -Improving the position of intellectual capital
	Customer oriented	Customer Orientation	-Identification and segmentation of customers -Customer retention, strengthening and attraction programs - Providing a variety of new fee services -Product life cycle management -Development of customization services for products and services with the bank's customer group
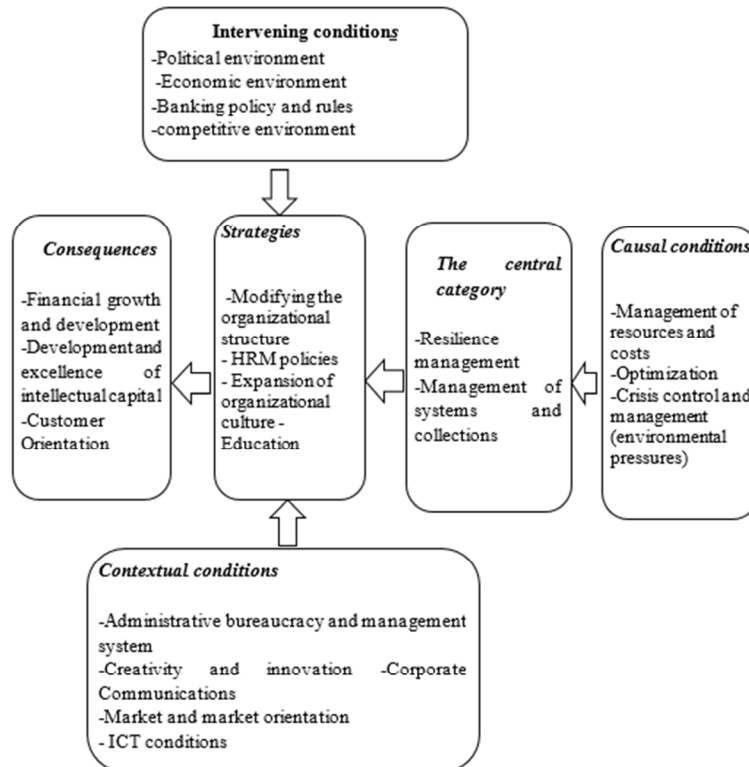
Fig 2. Organizational resilience model in the banking industry

Evaluation and implementation of the model

After formulating the model and determining the factors and indicators of resilience in the banking system, in order to implement and evaluate resilience in the banking system and finally prioritize the extracted effective factors for resilience, a case study was conducted in Bank Melli. At first, a researcher-made questionnaire was compiled, which has 52 items, and it was sent to 80 managers and officials in the Bank Melli, and finally, the data was analyzed with the help of SPSS v22 software for t-test and FAHP software for prioritization with Fuzzy hierarchical analysis method was used, according to the analyzes related to the questionnaire, which was classified in five Likert scales (very high, high, medium, low and very low). The

following hypothesis was formulated and analyzed in order to investigate the level of resilience of the studied community.

Hypothesis: "The level of resilience in the Bank Melli is higher than the average."

Assumption H_0: The level of resilience in Bank Melli is lower or equal to the average.

Assumption H_1: The level of resilience in the Bank Melli is higher than the average.

H$_0$: μ≤3   H$_1$: μ>3.

Table 2. Resilience level in Bank Melli

Variable	Average obtained	St.d	T-value	Error received (Sig.)	Test Result
Resilience level	3.98	1.33	5.702	0.000	Hypothesis is accepted

Considering the calculated t (equal to 5.702) which is greater than the critical t value (equal to 1.96) of the table at the error level of 0.05 and the significant level is (sig=0.000), it can be interpreted that the assumption H0 is not accepted and the opposite hypothesis (H1) is confirmed. In other words, it can be concluded that the resilience level of Bank Melli is higher than the average (the average is equal to 3); And this shows a relatively high level of resilience in Bank Melli. In order to more closely examine the 21 factors and variables of resilience extracted from the interviews and the compiled model, a t-test was conducted for each of them, and the general results are described in Table 3.

Table 3. The results of t-test with the help of SPSS software

Row	Indexes	Average	Standard deviation	Significance level	Result
1	Management of resources and costs	4.01	1.26	0.000	Confirmed
2	Optimization	3.98	2.13	0.001	Confirmed
3	Crisis Management	3.01	2.20	0.022	Confirmed
4	Resilience management	3.51	1.69	0.002	Confirmed
5	Management of systems and collections	3.56	2.14	0.000	Confirmed
6	Organizational Structure	3.33	0.81	0.000	Confirmed
7	Human resources management	3.11	0.97	0.000	Confirmed
8	Organizational Culture	2.71	1.84	0.01	Confirmed
9	Education	3.12	1.33	0.030	Confirmed
10	Financial development	3.32	1.19	0.000	Confirmed
11	Development of intellectual capital	4.19	1.88	0.002	Confirmed
12	Customer Orientation	3.75	1.55	0.000	Confirmed
13	Bureaucracy and management system	4.38	2.01	0.000	Confirmed
14	Creativity and innovation	3.91	1.54	0.010	Confirmed
15	Corporate Communications	3.81	1.76	0.003	Confirmed
16	Market orientation	4.55	2.22	0.025	Confirmed
17	ICT conditions	4.02	1.02	0.000	Confirmed
18	Political environment	3.21	1.11	0.000	Confirmed
19	Economic environment	3.01	1.68	0.011	Confirmed
20	Banking laws	3.82	1.32	0.021	Confirmed
21	Competitive environment	4.11	1.79	0.000	Confirmed

Fig1. 1 shows the average obtained for each of the resilience factors in the studied community
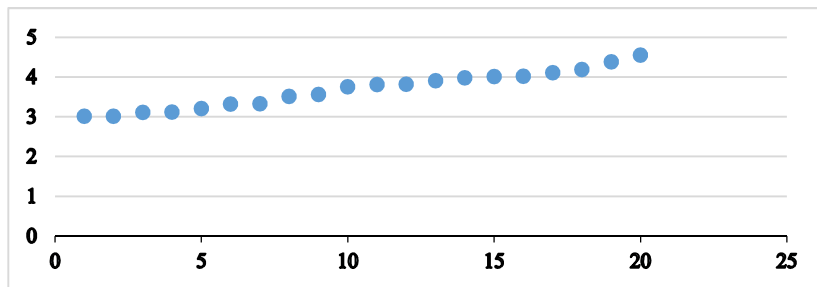

(Crisis management is the least Market orientation is the most)
Fig 1. Average of each resilience factor in the banking system (Bank Melli)

Prioritization of resilience factors by fuzzy hierarchical analysis method

The hierarchical analysis process is one of the most famous multi-indicator decision-making techniques, which was invented by Thomas L. Saati in the 1970s. This method can be useful when the decision-making process is faced with several options and decision-making indicators. The process of fuzzy hierarchical analysis is the fuzzification of the classic AHP method using numbers and fuzzy calculations. When priorities show uncertainty and imprecision, precise numbers are not very suitable for showing temporal judgment. In order to deal with ambiguity, triangular fuzzy numbers, and AHP have been integrated into the fuzzy method to solve decision-making problems. In 1983, two Dutch researchers Larhorn & Pedrick proposed a method for the fuzzy hierarchical analysis process based on the logarithmic least squares method. The number of calculations and the complexity of the steps of this method has made it not widely used. In 1996, another method called the developmental analysis method was presented by a Chinese researcher named Rayong Chang. The numbers used in this method are fuzzy triangular numbers. In the following, the concepts and

definitions of the fuzzy hierarchical analysis process based on the EA method are explained (Abbasi et al., 2022).Consider two triangular fuzzy numbers M1=(l1,m1,u1) and M2=(l2,m2,u2), Then:
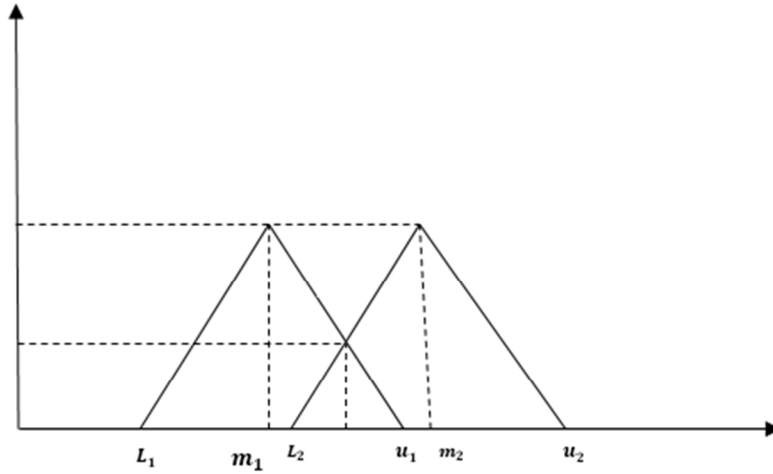
$$M_1 + M_2 = (L_1 + L_2, m_1 + m_2, u_1 + u_2) \tag{1}$$

$$M_1 . M_2 = (L_1 L_2, m_1 m_2, u_1 u_2) \tag{2}$$

$$M_1^{-1} = (\frac{1}{u_1}, \frac{1}{m_1}, \frac{1}{L_1}) \qquad M_2^{-1} = (\frac{1}{u_2}, \frac{1}{m_2}, \frac{1}{L_2}) \tag{3}$$

It should be noted that the product of two triangular fuzzy numbers or the inverse of a triangular fuzzy number is no longer a triangular fuzzy number and these relations only express an approximation of the real product of two triangular fuzzy numbers and the inverse of a triangular fuzzy number. In the EA method, for each row of the matrix of pairwise comparisons, the value of S_K, which is itself a triangular fuzzy number, is calculated as follows:

$$S_k = \sum_{j=1}^{n} M_{kj} \times \left[\sum_{i=1}^{m} \sum_{j=1}^{n} M_{ij} \right]^{-1} \tag{4}$$

K represents the line number and i and j represent the options and indexes respectively. In this method, after calculating S_k, their relative magnitude should be obtained. In general, if M1 and M2 are two triangular fuzzy numbers, the degree of magnitude of M1 over M2 is defined as follows:

$$\begin{cases} V (M2 \geq M1) = 1 \quad \text{if} \quad m_2 \geq m_1 \quad V (M2 \geq M1) = \text{hgt} (M1 \cap M2) \quad (5) \\ \quad \text{otherwise} \\ \\ \text{Hgt} (M1 \cap M2) = \dfrac{u_1 - L_2}{(u_1 - L_2) + (m_2 - m_1)} \quad\quad\quad\quad\quad (6) \end{cases}$$

The magnitude of a triangular fuzzy number from k other triangular fuzzy numbers is obtained from the following equation:

$$V (M_1 \geq M_2 , ... , M_k) = V (M_1 \geq M_2) \text{ and } ... \text{ and } V (M_1 \geq M_k) \quad (7)$$

Also, to calculate the weight of indicators in the matrix of pairwise comparisons, we act as follows:

$$w' (x_i) = \min \{V (S_i \geq S_k)\} \quad\quad k = 1,2, ... ,n \quad , k \neq I \quad (8)$$

Therefore, the weight vector of the indicators will be as follows:

$$w' = [\, w' (x_1) , w' (x_2) , ... , w' (x_n) \,]^t \quad\quad\quad\quad (9)$$

The vector of non-normal fuzzy coefficients. The results of this analysis are as follows: Normalized weights of each resilience factor obtained from the software is as described in Table 4.

Table 4. Calculation of priority of resilience factors

Agents	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	Final magnitude	Normalized weights
A1	_	0.98	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1	0.094
A2	0.98	_	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.976	0.092
A3	0.88	0.92	_	0.97	0.99	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.871	0.082
A4	0.72	0.77.	0.85	_	0.91	0.98	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.493	0.047
A5	0.69	0.78	0.98	0.99	_	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.888	0.083
A6	0.55	0.58	0.57	0.56	0.99	_	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.549	0.052
A7	0.51	0.53	0.53	0.52	0.96	0.97	_	0.97	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.507	0.048
A8	0.53	0.56	0.56	0.55	0.99	1.00	1.00	_	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.533	0.048
A9	0.52	0.54	0.54	0.53	0.97	0.98	1.00	0.98	_	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.517	0.050
A10	0.26	0.29	0.29	0.27	0.73	0.74	0.77	0.74	0.77	_	0.80	0.85	0.90	0.95	0.96	0.97	0.98	0.99	0.99	1.00	1.00	0.263	0.025
A11	0.42	0.44	0.53	0.55	0.63	0.66	0.78	0.80	0.91	0.99	_	0.98	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.428	0.040
A12	0.53	0.54	0.56	0.55	0.58	0.58	0.68	0.74	0.75	0.78	0.90	_	0.98	0.98	0.99	1.00	1.00	1.00	1.00	1.00	1.00	0.408	0.038
A13	0.32	0.39	0.49	0.59	0.74	0.75	0.78	0.81	0.88	0.97	0.97	0.98	_	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.309	00.29
A14	0.28	0.31	0.30	0.46	0.75	0.76	0.79	0.76	0.79	0.85	0.89	0.95	0.99	_	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.569	0.053
A15	0.27	0.30	0.30	0.28	0.74	0.75	0.78	0.75	0.78	0.84	0.88	1.00	1.00	0.99	_	1.00	1.00	1.00	1.00	1.00	1.00	0.279	0.026
A16	0.28	0.30	0.30	0.29	0.75	0.76	0.79	0.76	0.78	0.89	0.97	1.00	1.00	0.99	1.00	_	1.00	1.00	1.00	1.00	1.00	0.576	0.058
A17	0.53	0.59	0.74	0.75	0.78	0.81	0.88	0.97	0.97	0.98	0.99	1.00	1.00	1.00	1.00	1.00	_	1.00	1.00	1.00	1.00	0.635	0.051
A18	0.56	0.06	0.75	0.76	0.79	0.79	0.81	0.85	0.89	0.95	0.97	0.97	0.98	0.98	0.98	0.99	0.99	_	0.99	1.00	1.00	0.436	0.033
A19	0.33	0.53	0.56	0.56	0.57	0.58	0.58	0.68	0.74	0.75	0.78	0.90	0.96	0.97	0.98	0.99	0.99	1.00	_	1.00	1.00	0.361	0.031
A20	0.22	0.27	0.28	0.31	0.38	0.68	0.75	0.76	0.79	0.76	0.79	0.85	0.89	0.95	0.96	0.97	0.98	0.99	0.99	_	1.00	0.181	0.009
A21	0.44	0.05	0.53	0.55	0.63	0.66	0.75	0.76	0.79	0.76	0.79	0.85	0.89	0.95	0.97	0.98	0.98	0.99	0.99	0.99	_	0.201	0.011
مجموع																						10.98	1

Based on the output of the software, the final weights of the options for the organizational resilience of the banking system are shown in Table 5. And Fig 2.

Table 5. The final matrix of the weights of options for the organizational resilience of the banking system

Rank	Indicators	The final weight is finalized
1	Management of resources and costs	0.94
2	Optimization	0.92
3	Management of systems and collections	0.83
4	Crisis Management	0.82
5	ICT conditions	0.058
6	Creativity and innovation	0.053
7	Organizational Structure	0.052
8	Market orientation	0.051
9	Organizational Culture	0.05
10	Human resources management	0.048
11	Education	0.048
12	Resilience management	0.047
13	Development of intellectual capital	0.04
14	Customer Orientation	0.038
15	Political environment	0.033
16	Economic environment	0.031
17	Bureaucracy and management system	0.029
18	Corporate Communications	0.026
19	Financial development	0.025
20	Competitive environment	0.011
21	Banking laws	0.009
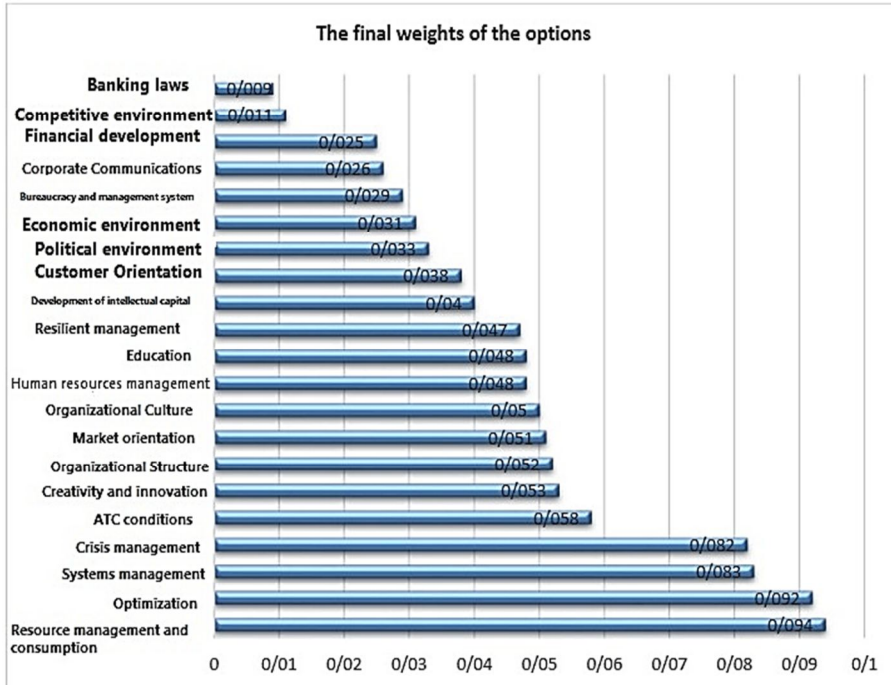
Fig 2. The final weights of the options in the organizational resilience of the
software output

According to the results obtained from the prioritization of the factors and
indicators affecting the resilience of the banking system, it can be seen that
the first rank and the most priority factor is the resource and expense
management factor, which with a weighting factor of 0.094 is the highest.
Then, the second priority is the optimization factor with a weight factor of
0.092, and in the same way, the last and twenty-first factor with a factor of
0.009 is the factor or index of banking rules and policies. This indicates that
in the studied banking society of the country, for the phenomenon of
organizational resilience, among the 21 main and essential factors, resource
and expense management is the most important priority from the point of
view of banking system experts.

6. Conclusion

Today, the complexity of technology and environmental changes, and organizational dependence are much greater and wider than in the past, and organizations are facing more serious challenges and risks than they have faced in the past. In a competitive market (especially banking), where the number of banks is large, especially in Iran, and everyday banks have to provide more innovative and new measures in order to satisfy customers, adopting the most appropriate strategy for survival is considered essential and vital. Now the question is why some banks fail and are eliminated in the

face of events and disruptions and are forced to close their business and why some banks are able to turn threats and disruptions into opportunities and advantages for themselves and can make the best of it take advantage? For this purpose, the following suggestions are provided for the use of managers and decision-makers of the banking industry (with emphasis on Bank Melli):

Management of resources and expenses: the department of equipping and allocating resources in the banking industry plays a significant role in increasing the resilience of a bank. The bank can increase its resilience in crisis situations by measures such as managing its liquidity, working capital management, correct management of outstanding claims, and risk management. Using short-term deposits to grant long-term facilities can expose the bank to the risk of mismatching the maturity of debts and assets. The results of this article are in line with the findings of Shams et al., (2020) and Zhang & Ma (2022)

✓ **Management quality:** Banks that have competent managers and employees can manage critical situations and turn threats into opportunities. Quality management in the bank makes the bank efficient and profitable. The training of employees and managers and the continuous improvement of performance and updating, upgrading the level of managerial knowledge, and learning new methods of management and teamwork should be done periodically. Paying attention

to the principle of succession and formulating a coherent and scientific system in order to replace and educate efficient people. In most banks and institutions, services are provided by human resources, and the provision of resources at the level of global standards requires skilled and trained employees. In the technical dimension, employees must have the ability to use new technology and be professional in their jobs, in the human dimension, the employees must be able to interact and communicate with customers in the best way, and in the perceptive dimension, the working human force must be recognized analyze and solve customer problems.

✓ **Technology field:** Managers should try to respond to the new needs and demands of customers by using information technology fields such as fintechs and up-to-date applications. The technology used by banks should be periodically updated and advanced. The results of this article are in line with the findings of Sadathosseini Khajouei et al., (2021)

✓ **Customer oriented:** every bank seeks to maximize its profit and this is achieved through the increase in customers. And customer satisfaction is also achieved through customer satisfaction. Therefore, in order to be able to continue its business in all circumstances, the bank must satisfy its customers. A satisfied customer uses the bank's services and encourages others to use the bank's services.

✓ **Cost management:** this factor is one of the most important reasons for distinguishing banks with good performance. Bank managers should better manage operational costs. Reducing unnecessary expenses is one of the symbols of successful banking. In this way, banks can better achieve the set goals and a higher profit share. The results of this article are in line with the findings of Mahmodzadeh et al., (2022)

✓ **Innovation and creativity:** Innovation is a requirement for any business progress and continuity. Experience has shown that organizations that do not innovate in today's changing environment have failed. Therefore, in today's competitive environment, banks must be innovative in providing services in order to surpass their competitors. Banks should be aware of the change in

consumer preferences and periodically review their services to ensure that they match the needs of customers. The results of this article are in line with the findings of Shams et al., (2020) and Shams et al., (2020)

✓ **Market orientation:** In today's world, all businesses should consider market orientation to introduce themselves to the customer, including the necessary measures in the market orientation of banks, the use of new marketing methods to identify the target market (general public), advertising (Internet advertising, Advertising through social media, word-of-mouth advertising, etc.), service delivery channels, etc. Therefore, paying attention to market orientation is considered essential and vital, especially in critical situations. The results of this article are in line with the findings of Salehi & Veitch (2020)

✓ **Communication:** Information and communication play an important and vital role for any organization, especially for the bank. Without communication and information, the bank cannot perform its daily actions correctly. Among the actions that the bank can take in the field of improving resilience are improving the technologies used, managing rumors, updating communication systems, etc.

✓ **Crisis management:** Banks should be able to act quickly in crisis situations and make immediate decisions. - Management and system of control and supervision: in order to reduce corruption in the banking system, constant control should be done, including actions that can be taken to create transparency in the affairs of banks, the presence of inspectors and supervisors of the central bank to monitor the performance of banks, supervisors of the banks themselves to monitor the performance The system itself and... banks should be more sensitive in selecting employees and supervising employees. The results of this article are in line with the findings of Moghadamfar et al., (2022) and Radic et al., (2022)

✓ **Political environment:** The political conditions of the society have a significant impact on the performance of businesses, and banks are not exempt from this. The government and the central bank must make

decisions so that banks are not affected by political turmoil and can continue their business. Central Bank's independence includes monetary policy, liquidity, injection of oil money, quality of relationship with the government. The governance structure of the bank should be transparent and the banks should have independence in functioning and the central bank should have the role of managing and supervising the banks.

✓ **Competitive environment:** In a competitive market, adopting the most appropriate strategy for survival is considered essential and vital in order to be aware of the waves of change. Banks must be dynamic and adapt to environmental changes. The results of this article are in line with the findings of Ebrahimi & Noornejad Vanoush (2022) and Shams et al., (2020)

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