



Financial Resilience model of entrepreneurial business and prioritization of components using Structural Equation Method

Mehdi Amini

Department of Entrepreneurship, Qazvin Branch, Islamic Azad University, Qazvin, Iran
Mehdi.amini2013@yahoo.com

Faridoon Rahnamaye Roudposhti

Retired professor of the university, founder and head of Bazarsaz Financial Engineering and Investment Research Center
Rahnama.roodposhti@gmail.com

Habib Amirbeyki Langroudi

Assistant Professor of Accounting Department, Qazvin Branch, Islamic Azad University, Qazvin, Iran
Amirbeyki@yahoo.com

Ali Badi'zadeh

Assistant Professor of Management Department, Qazvin Branch, Islamic Azad University, Qazvin, Iran
A.badzadeh@gmail.com

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ABSTRACT

Financial resilience seeks to reduce the probability of failure or reduce financial losses and risks before and after the occurrence of economic and environmental impulses. The present research seeks to identify the factors affecting the financial resilience of entrepreneurial businesses and their prioritization and to derive an applicable and appropriate model. The methodology used in this research is mixed or combined, which was first used in the qualitative field of the grounded theory method with the opinions of 10 experts, and then the quantitative method was used using fuzzy Delphi series and structural equations method using SMART-PLS. The results of this research show that activities such as designing discovery mechanisms and creating financial resilience of entrepreneurial businesses; redesigning financial resilience processes; Creation of creativity and innovation processes in financial resilience; Creating a culture of using new technologies and the desire to innovate in the implementation of financial resilience is one of the most important factors affecting the development of financial resilience of entrepreneurial businesses.

Keywords:

Financial resilience, entrepreneurial businesses, grounded theory, fuzzy Delphi hierarchy

1. Introduction

The primary goal of financial resilience is to create capable companies that can bring significant economic returns with their economic and financial strength and save themselves in times of crisis and possible failures. Carrying out entrepreneurial business activities will lead to prosperity and economic growth of country, and to understand this issue, can pay attention to the economic conditions of developed countries. Financial inclusion has become a priority and policy. For many of these countries, this means focusing on the practical aspects of financial products and services. A better understanding of financial resilience can help determine the resources that should be invested to help people cope with financial adversity, help develop effective policies, and ultimately improve welfare financial investment. Multilateral decisions in different fields (social, political, economic and environmental) of the organization and in different scales (internal, local, provincial, national and global) have had a mutual effect on each other. The manager should be able to determine this importance by correctly managing the risk of his projects and how to deal with them, and finally, apply optimal behavior and decision against the damage that has occurred. Critical decisions and political opportunities can increase the probability of risks. Policy and practice are both the nature of risk reduction mechanisms, because in today's business, one should be alert and adaptable to unexpected events (such as internal and external crises) in order to cause uncertainty in the workforce, available resources, and their working relationships. and immediately guarantee their performance and survival. The problem that financial businesses are seriously facing in today's chaotic conditions is preparing to deal with crises and its problems and trying to maintain and maintain in the market of goods and services (Ray Marti et al., 2015). Today, there is a growing interest in the development of resilience of companies, which includes planning against crisis and gives companies the ability to continue and grow despite adverse conditions (Haton et al., 2012). The occurrence of a crisis in the financial and banking sector (which is one of the most important sectors of the economy of any country) can have destructive effects on other economic sectors of the country. Due to its special characteristics, the nature of the financial management profession is always susceptible to instability, risks and, in higher degrees,

crises (Panahi et al., 2018). The role of financial managers and financial institutions in preparing and allocating financial resources is very important. This is more evident in Iran's bank-oriented economy. In this regard, in addition to its duties, the developed financial system must also have high strength and be able to deal with various internal and external shocks (Jahangerd et al., 2017). Therefore, the health and safety of the banking system is extremely important to maintain the stability of the society's economy (Panahi et al., 2018). On the other hand, the lack of legal infrastructure and appropriate institutional requirements in the field of assessing the health of banks and their ranking has caused the financial health of the country's banking system to be somewhat opaque and ambiguous. Existing evaluations of the health of the country's banking network indicate the poor condition of banks from the perspective of health (Khosravi et al., 2018). On the other hand, the lack of legal infrastructure and appropriate institutional requirements in the field of assessing the health of banks and their ranking has caused the financial health of the country's banking system to be somewhat opaque and ambiguous. Existing evaluations of the health of the country's banking network indicate the poor condition of banks from the perspective of health (Khosravi et al., 2018). Business continuity management is one of the latest risk management frameworks, which enables organizations to improve their capabilities by eliminating known risks. The focus of the business continuity management system is on maintaining and continuing the key activities and success indicators of the organization after the crisis until the organization is restored to normal. Business continuity planning is a document that describes in detail how to continue key organizational activities (even in an alternative location) during and after a crisis. Resilient organizations have more competitive power in times when business is in normal conditions. Although many researches have been conducted in Iran regarding the financial resilience literature, but so far no comprehensive research has been done on presenting the financial resilience model of entrepreneurial businesses with a risk management approach, so the aim of the upcoming research is to present the financial resilience model of entrepreneurial businesses It is entrepreneurial with a risk management approach. But the main point is how to carry out the financial resilience process of

entrepreneurial businesses so that it has the necessary effectiveness? How to manage the risks caused by the financial resilience of entrepreneurial businesses? And what factors are effective on the process of financial resilience of entrepreneurial businesses?

2. literature

Currently, the majority of societies, organizations and individuals are in diverse and changing environmental conditions. Despite the fact that these environments can provide significant opportunities for the success and growth of organizations, they can also create important threats and challenges. All kinds of events such as natural hazards, political unrest, economic instability and human errors can seriously threaten the organizational performance. As a result, to overcome these complex and destructive events, the need to develop resilience in organizational systems and infrastructure is highlighted. The question that comes to mind is why some of the organizations have remained strong despite these incidents and continue their growing path and some others were not able to face the environmental risks in the same conditions and they are doomed to failure? What is the secret of success and distinction of such organizations? The need to achieve sustainable survival and success has caused many organizations to reconsider their business priorities and focus on adapting to business changes and responding appropriately to environmental requirements. In order to achieve this goal, a new concept called financial resilience has entered the science of financial management. Resilience refers to the capacity of a company to survive, adapt and grow against change. One of the most important strategies for business continuity in times of crisis is to create resilience in order to face environmental changes and threats. Resilience is a tool that can lead to the competitive advantage of organizations and strengthen their survival against crises (Salehi Abarquhui et al., 2017). Angoon and Batz (2015) define resilience as the ability to recover from a shock or resist the effects of a shock. The concept of resilience against shocks and disasters is mentioned in the following concepts of recovery, recovery time and recovery costs (Anarelli and Nonino, 2016). Business resilience is defined as the ability to predict, avoid and adjust positively against environmental disturbances and changes. This ability is a combination of the necessary capacities to restore efficiency after a disruption and create the

necessary capacities before responding to a crisis. Therefore, flexibility and adaptability for all businesses has become an important necessity in today's rapidly changing environment, and the need to create a strong attitude towards it is strongly felt for all businesses.

Resilience levels

Rose and Krazman (2013) stated operational criteria of resilience in two categories. Direct Static Economic Resilience (DSER) refers to the level of the company or industry (micro and medium level) and is in accordance with what economists refer to as the analysis of "**partial equilibrium**" or the performance of an economic enterprise or household. Total Static Economic Resilience (TSER) refers to the economy as a whole (macro level) and ideally with what is referred to as "general equilibrium" analysis, which corresponds with all interactions of price and The amount is in the economy. Researchers are facing three problems regarding resilience. At the conceptual level, there is a need to identify resilience actions, including actions that seem to violate fixed norms such as rational behavior. At the operational level, it may be difficult to model individual, group and community behavior in a single framework. At the empirical level, collecting data on resilience to determine models is particularly difficult (Rose, 2004). Finally, Rose (2017) describes resilience in three levels:

- Micro economy (individual or household jobs)
- Medium economy (individual industry or market)
- Macroeconomy (combination of all economic institutions)

Martin and Sonelli (2013) believe that resilience at the macroeconomic level is not only a function of resilient measures at the micro level (individual businesses); Rather, it is influenced by the actions taken by all companies and markets (at the average level), including their interaction. In this regard, table No.1 shows the compliments of resilience.

Table No. 1: Definitions of resilience

no	The definition	approach	author	year
1	Strategic resilience: the ability to create resilient business models and strategies when sudden events occur.	Developmental approach: adaptability, positive function, worthy	Hamel and Välikangas	2003
2	Resilience capacity: a unique combination of cognitive, behavioral and implicit characteristics that enhance the company's ability to understand the current situation and develop a customized response.	Developmental approach: adaptability, positive function, worthy	Lengnick-Hall and Beck	2000
3	Resilience refers to maintaining adaptability and adaptability in challenging conditions	Developmental approach: adaptability, positive function, worthy As a development approach, the best principles: adaptability, positive functioning, worthy, ability to endure, ability to improve.	Sutcliffe and Vogus	2003
4	The forms of resilience include: avoiding predicting, persevering, adaptability (reconfiguration), improvement form (reestablishment), Resilient system perspective: operational environment, discover / learn, adapt/act; Conceptual framework of resilience engineering: resilient system is affected by failure, empowerment by system features, related to measurement methods.	As a development approach, the best principles: adaptability, positive functioning, worthy, ability to persevere, ability to improve	Madani/ Madani and Jackson	/2009 2007
5	The ability to renew itself over time through innovation	Developmental approach: adaptability, positive function, worthy	Reinmoeller and Baardwijk	2005

Features of Resilience

Accepting the firm's resilience does not mean creating a new unit or considering resilience as another function in business. Resilience thinking should be integrated in all business processes. Each of the following resilience characteristics can be used to improve the resilience of specific business processes

Adaptability: It means the capacity of business to adapt or transform in response to changing conditions. Doing this may require modifying the structure or operation of the business due to actual changes or expected fluctuations in prices, market conflicts, competitive pressures or other trends in the business environment. The time frame during which adaptation occurs is very different from a few minutes to several decades. Some authors prefer to distinguish between adaptation as a response to sudden shocks and adaptation as evolution over time. Some others consider adaptability as the ability to maintain the existing system against adaptability or the ability to change shape as the ability to change the system.

Cohesion: Cohesion can be considered as the presence of unifying forces or links that cause business continuity. Distinct organizational culture and organizational identity, which are supported by strong principles and values, are examples of these forces. The pride and loyalty of employees are signs of

cohesive companies, and probably such employees make personal sacrifices to support the company and perform unusual actions beyond the call of duty. Cohesive companies are usually characterized by strong and visionary leaders who inspire employees and other stakeholders. These companies objectify stability by going through ups and downs, and if they are adaptable enough, they can achieve a long life.

Efficiency: It is the ability to do things effectively with moderate or relatively low consumption of resources. Companies that use resources carefully and wisely are able to increase their productivity and perform better than other companies when resources are scarce or prices increase.

Diversity: means the existence of multiple styles and talents that make innovation possible in response to changing conditions (Fixel, 2007).

Resilience in business processes

In each of the business processes, adaptability, coherence, efficiency and variety can complement the traditional performance criteria, because they are forward-looking indicators and reflect the basic characteristics of the business that It leads to profitability and stability (Fixel, 2007).

In supply chain management, operational resilience is improved by making it more efficient and

creating flexible alternatives. Strategic resilience is increased by encouraging innovation and connecting to information.

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In health, safety and environmental (HSE) management, proactive efforts to create new technologies to protect resources and eliminate waste materials play a role in reducing costs, preventing regulatory financial burden, and establishing trust among the main stakeholders.

In human resource management, employee satisfaction and growth are the main prerequisites for company productivity and continuous learning. For example, Watson-Wyatt, by studying 405 public companies, found that a well-managed workforce can increase the company's market value by 30%. However, in some cases, resilience stimuli may conflict with each other; For example, strengthening cultural cohesion may reduce the diversity of perspectives and business models.

In the development of products and services, strategic resilience is obtained through the innovation process, which emphasizes the creation of value for all stakeholders: increasing the ratio of customer value to the total cost of ownership, reducing the development and deployment cycle time (as a result of increasing the share market and profitability), enabling product adaptation through multiple developments and configurations and strengthening the company's identity and reputation.

In capital asset management, resilience increases by improving the utilization of assets to achieve leaner operations, developing flexible resources, diversifying the portfolio of existing technologies, and coordinating the deployment of assets throughout the company.

In information technology management, resilience can be achieved by measures such as providing redundancies and support systems to maintain necessary communications, preventing the destruction of valuable information, and preventing unauthorized access to the system.

In customer relationship management, resilience means getting close to the customer through efficient support services and strategic alliances, sensing

emerging changes in the market, and being flexible in adapting solutions related to customers.

In the management of foreign affairs, resilience is increased by utilizing external resources and partnerships, exploring external change scenarios and preparing for them, open dialogue with various stakeholder groups, and emphasizing social responsibility and organizational citizenship.

The goals and necessity of paying attention to financial engineering in the resilience of technological business

Among the most important goals and the need to pay attention to financial engineering, the following can be mentioned:

- a) The complexity and challenge of financial decisions and processes due to the complexity and challenge of business.
- b) Increasing the need for quantitative methods in the financial field due to the issues discussed in this field, which gave it a scientific aspect and necessitated financial knowledge.
- c) The need for this tool due to changes in business methods such as privatization and the like.
- d) The need of investors to make the best use of their capital, as well as managers to maximize the wealth of investors, who need consistent, dynamic and practical and at the same time reliable tools for decision making.
- e) Price fluctuations, especially in our country, have caused producers and consumers to try to predict financial estimates using mathematical tools in order to be in a better position from the economic crisis.
- f) The issue of the effects of global markets other than domestic markets and the changing of prices and monetary value and the globalization of the economy, made financial engineering as a global specialty that helps to control the risk caused by all fluctuations. In other words, the importance of risk and paying attention to it in order to increase the yield are other reasons for paying attention to this tool.
- g) The development of financial management as knowledge to solve problems related to this field caused the development of problem-

solving tools, which includes the financial engineer.

- h) The diversity and complexity of financial markets (money and capital) and the globalization of this market, considering the importance of the role of financial markets in achieving sustainable development (Roudpashti et al., 2019).

In general, the basic premise of financial engineering is engineering. The basis of financial engineering knowledge is financial economics or the application of economic principles in the dynamics of the securities market, especially the design, pricing and risk management of financial contracts. With the development and complexity and diversity in business, the function of financial engineering has become very diverse. Business excellence are the main goals of economic enterprises in the field of business competition. Therefore, solving complex problems and predicting the future that leads to organizational excellence, and this is in the group of solving complex financial problems, is considered one of the necessities of the third millennium. The tremendous developments in technology and the application of more and more mathematical and scientific methods such as engineering in processes caused special attention to be paid to these developments and methods. Financial processes are not excluded from this category. This field seeks to adapt existing financial instruments to market conditions and design new financial instruments to use profitable opportunities in the market. In the last few decades, large service and manufacturing companies have tried to attract stray funds in the financial markets by designing instruments such as bonds, options, forward contracts, and stocks, or by reforming the existing financial markets invest in profitable industrial and service activities.

Research background

Zahiri et al.(2022) in an article titled Designing a Resilience Model Based on Technology in Budgeri New Businesses in Baresar City concluded that creating and identifying opportunities, exploiting business and technological opportunities, the existence of entrepreneurial characteristics, the use of technology in providing customer service, and entrepreneurial orientation are among the main

conditions that increase financial resilience in entrepreneurial businesses.

Fallah et al. (2022) investigated the resilience of businesses and came to the conclusion that factors such as universities, economic crises, social crises, business customer management, governments, natural crises, political crises, human resource crises in the organization, organizational structure and operational risks of the organization were recognized as important and influential factors on business resilience.

Kass et al. (2022) in an article entitled Creating Financial Resilience through Financial and Digital Literacy in South Asia and Sub-Saharan Africa, concluded that both financial literacy and digital literacy are key factors for creating inclusiveness and financial resilience. Disparities are evident throughout the regions and also for poor households, rural people and women.

The research work of Matlub et al. (2022) under the title of "organizational readiness for digital financial innovation and financial resilience" examined the relationship between various factors of financial innovation and resilience and found that the realization of DFI in organizations requires reconfiguration and flexibility of resources. Information technology, strategy, cooperations and organizational culture.

Research methodology

The research method in this study is a combination of qualitative and quantitative. In the beginning, based on the investigations carried out in relation to the financial resilience of entrepreneurial businesses with a risk management approach and the primary criteria for its formation in general with experts and experts available to entrepreneurial businesses in Tehran province, based on the emerging criteria The objectives of the research were selected in a judicious and purposeful manner, and opinions were discussed. Based on the results of the initial interviews and the documents reviewed and the instructions given by the interviewees, other experts have been selected. In this research, three types of sampling proposed by Strauss and Corbin (1998), open sampling, relational and diversity sampling, and discriminating sampling were used to collect and assist in data analysis. Based on this, the researcher conducted 10 interviews and analyzed their text in three rounds. In the first round, after analyzing the text of 7 interviews, the researcher succeeded in identifying key categories. The

interviews were open-ended in the first sessions, and continued in a semi-structured manner in the subsequent sessions, with the identification of related issues. After analyzing these interviews and examining a wide range of studies conducted by previous researchers, questions arose about the main phenomenon of the research. Therefore, the researcher started the second round of interviews. In this round, in order to ensure the theoretical saturation of the categories, the researcher, taking into account the main phenomenon and its related sub-categories, conducted 3 more interviews. Finally, after identifying the categories and ensuring their theoretical saturation, it was time for the third round of interviews. At this stage, by conducting a questionnaire in the form of items extracted from the interviews and sending it to the interviewees, the researcher tried to provide a basis for refining the theory and presenting his conceptual model by finding theoretical examples of categories and the relationships identified between them. The duration of each interview was from 60 minutes to a maximum of 90 minutes, and in some cases, it was conducted in two sessions. In the quantitative method, in order to prioritize the components according to Grisham (2009) and Hsieh et al. (2006), he used fuzzy Delphi hierarchy to send and receive questionnaires and interviews with experts. This process of data collection is done through a series of carefully designed consecutive questionnaires. Using fuzzy set theory helps decision makers express their fuzzy opinions in terms of linguistic variables. This method uses a wide range of values to incorporate the decision maker's uncertainty. From this range, decision makers can choose the values that reflect their self-confidence and can also specify their attitude as optimistic, pessimistic or moderate (Saxena et al., 2010). Therefore, after going through the fuzzy Delphi process and filtering important components from the point of view of the experts mentioned above, the following steps were performed to rank the research components (Kazemi et al., 2015):

- Forming the fuzzy paired comparison matrix in this step, based on the fuzzy numbers obtained in the previous step, the fuzzy paired comparison matrix for the parameters is formed in the form of the sample matrix shown below.

$$\bar{A} = [\bar{a}_{ij}]_{n \times n}, \quad \bar{a}_{ij} \otimes \bar{a}_{ji} \approx 1, \quad i, j = 1, 2, \dots, n,$$

$$\bar{A} = \begin{bmatrix} (1, 1, 1) & \dots & (\alpha_{1j}, \delta_{1j}, \gamma_{1j}) & \dots & (\alpha_{1n}, \delta_{1n}, \gamma_{1n}) \\ \vdots & & \vdots & & \vdots \\ \left(\frac{1}{\gamma_{1j}}, \frac{1}{\delta_{1j}}, \frac{1}{\alpha_{1j}}\right) & \dots & (1, 1, 1) & \dots & (\alpha_{2n}, \delta_{2n}, \gamma_{2n}) \\ \vdots & & \vdots & & \vdots \\ \left(\frac{1}{\gamma_{1n}}, \frac{1}{\delta_{1n}}, \frac{1}{\alpha_{1n}}\right) & \dots & \left(\frac{1}{\gamma_{2n}}, \frac{1}{\delta_{2n}}, \frac{1}{\alpha_{2n}}\right) & \dots & (1, 1, 1) \end{bmatrix}$$

- Calculating the fuzzy weight of the parameters: The relative fuzzy weights of the parameters are calculated using the following relationship

$$\bar{Z}_i = [\bar{a}_{ij} \otimes \dots \otimes \bar{a}_{in}]^{1/n}, \quad \bar{W}_i = \bar{Z}_i \oslash (\bar{Z}_i \oplus \dots \oplus \bar{Z}_n)$$

In these relations, \otimes means fuzzy multiplication, \oplus means fuzzy addition and \oslash means division of fuzzy numbers, where \bar{W}_i is a row vector consisting of a fuzzy weight factor i . If \bar{M} and \bar{N} (shown in relation number two) are fuzzy numbers, the fuzzy multiplication, addition and division operators are shown in the following relations.

$\bar{M} = (\alpha_{11}, \delta_{11}, \gamma_{11}), \quad \bar{N} = (\alpha_{12}, \delta_{12}, \gamma_{12})$
$\bar{M} \oplus \bar{N} = (\alpha_{11} + \alpha_{12}, \delta_{11} + \delta_{12}, \gamma_{11} + \gamma_{12})$
$\bar{M} \otimes \bar{N} = (\alpha_{11} \times \alpha_{12}, \delta_{11} \times \delta_{12}, \gamma_{11} \times \gamma_{12})$
$\bar{M} \oslash \bar{N} = \left(\frac{\alpha_{11}}{\gamma_{12}}, \frac{\delta_{11}}{\delta_{12}}, \frac{\gamma_{11}}{\alpha_{12}}\right)$

- De-weighting of parameters: After finding the final weights of each parameter, all the obtained values are unambiguous based on the following relationship. De-fuzzification is done based on the geometric mean method (W_i is the weight of the i -th component)

$$W_i = \left(\prod_{j=1}^n \bar{W}_{ij} \right)^{1/n}$$

Analysis of the findings

In this research, interviews of experts in the field of financial resilience of entrepreneurial business with a risk management approach were collected and analyzed using three coding methods (re-orientational and selective) in the theorizing stage, data,

information. The data obtained from the sources of information (interviews, observations and review of previous researches, documents and texts...) are placed in tables based on coding rules. Coding in grounded theory is a type of content analysis and seeks to find and conceptualize debatable issues that exist among the mass of data. In fact, during the analysis of an interview, the researcher will find out that the interviewees use words and expressions during their conversations. As mentioned earlier, in the current research, the researcher has used all the processes of grounded theory (open, central, and selective coding,

as well as recording notes and drawing diagrams), which are shown in the following tables as examples. open coding according to the relevant table includes two parts of interviews and extracted primary codes, secondary codes of concepts and categories extracted from them.

I. As can be seen in Table No. 2, in the open coding stage, the key points and the items emphasized by the interviewees were extracted. Paying attention to these key points, the researcher with his creativity chooses titles appropriate to the specific characteristics related to the research. After coding, all the key points of the interviews were given a title as follows.

Table No. 2: An example of research interviews (qualitative part)

Initial coding (interview)
<ul style="list-style-type: none"> • Acquiring credibility and dignity is obtained from various sources such as politics, economy, society and culture, it depends on which one of these dimensions people play a role in. Also, in the development of financial entrepreneurial activities, one of the most important benefits for the beneficiaries will be the social prestige and dignity resulting from the interaction with businesses. • Entrepreneurial companies, by expanding the field of activities by investing in new and attractive businesses, provide the opportunity to create double value, especially when they use appropriate strategies for growth and development. • Reducing the cost price of the product will be a solution to lower the price and satisfy the customer and promote him to introduce the product to others and buy more. • Paying attention to the trends facing the business during the crisis and post-corona period. • Budgeting requires knowledge, the skill of understanding the main and common concepts in economics, accounting, behavioral sciences and finance, and the employees of the company are expected to use educated and professional people in this direction. • Development and application of a leadership style appropriate to crisis conditions, authoritarian or collaborative style • Recognizing an opportunity or identifying a chance to combine resources in a way that leads to the creation of profit is the main aspect of entrepreneurship that causes the business to overcome its current conditions. • Increasing the tolerance of ambiguity empowers managers to face the challenges caused by the crisis

In this stage, by creating a line of codes in the stage of coding and using them, 196 items related to the theme and formulation and presentation of an applicable and suitable model for the financial resilience of entrepreneurial business with a risk management approach were determined.

B: The formation of the main categories and classes is formed. In this part, the researcher relates the concepts extracted between the interviews (initial coding) and the basic foundations of the research (providing an applicable and suitable model for the financial resilience of the entrepreneurial business with a management approach. risk) and tries to adopt a comprehensive, complete, logical and integrated relationship among the mentioned categories in order to configure the main categories and classes based on that and to be able to compile the core coding to finally compile the desired model and provide financial resilience model of entrepreneurial business with risk management approach.

As a result, according to the interviews conducted in this research, the researcher is looking for the answer to this question: What are the main dimensions and components of the comprehensive and integrated financial resilience model of entrepreneurial business with a risk management approach and whether the ranking And the position of each of them can be identified?

After determining the categories, the stage of building the general classes of the theory is presented in Table No. 4.

According to the above table, which is formed in five dimensions, the number of main components and secondary components have been extracted from the results of the first step. In this regard, it is necessary to mention that the main and subcategories of this research will be analyzed and examined in the second step.

After refining the components of the research model using the fuzzy Delphi method, the following steps were performed to determine the priority of the research components

Table 3: Secondary coding of interviews

Component	the object
Improving the social image of the beneficiaries	Acquiring credibility and dignity is obtained from various sources such as politics, economy, society and culture, it depends on which one of these dimensions people play a role in. Also, in the development of financial entrepreneurial activities, one of the most important benefits for the beneficiaries will be the social prestige and dignity resulting from the interaction with businesses.
Financial value addition	By expanding the field of activities, entrepreneurial companies provide the field of double value creation by investing in new and attractive businesses, especially when they use appropriate strategies for growth and development.
Increase profitability	Reducing the cost price of the product will be a solution to lower the price and satisfy the customer and encourage him to introduce the product to others and buy more.
strategic planning	Paying attention to the trends facing the business during the crisis and post-corona period.
Risk management allocation budget	Budgeting requires knowledge, the ability to understand the main and common concepts in economics, accounting, behavioral sciences and finance, and it is expected that the employees of the company will employ educated and skilled people in this direction.
Improving methods and processes	Developing and applying a leadership style appropriate to crisis conditions, authoritarian or collaborative style
Exploitation of unknown business opportunities	Recognizing an opportunity or identifying a chance to combine resources in a way that leads to profit creation is the main aspect of entrepreneurship that causes the business to overcome its current conditions.
Ability to accept risk	Increasing the tolerance of ambiguity empowers managers to face the challenges caused by the crisis
Attention to social responsibilities	Appropriate treatment of employees at work, paying attention to their feelings and proper training of employees will have positive effects on how to deal with customers. Here, it is necessary to pay attention to this matter.
Business security development	In order to invest in a specific country or industry, the "feeling of security" on the part of people who apply for investment is relevant. This is achieved through increased resilience.
Creative and innovative atmosphere	Paying attention to the creative and innovative atmosphere causes transformational leadership to stimulate creativity, innovation and entrepreneurship in choosing competent employees to guide transformation in the company.
Entrepreneur's strategic perspective	It is important to have recovery policies that are integrated and in line with the policies of the organization in resilience
International conditions	Creating a creative way for financial transfers using various tools and mechanisms

Table 4: Formation of general classes of categories

Dimension	Component
consequences	Improving the social image of the beneficiaries
	Increase profitability
	Business security development
	Legitimacy and establishing the position of beneficiaries
Strategies	Financial value addition
	strategic planning
background conditions (generally)	International conditions
	Political/legal conditions
	Socio-cultural conditions
Causal conditions	Ability to accept risk
	Entrepreneurial culture
	Stakeholder participation
	Cooperation among entrepreneurs

A) Forming a paired matrix of experts' opinions

In this stage, the desired components are first grouped in related dimensions and then important and priority components are identified for each group separately. For this purpose, a square matrix was formed in each group with **n** components extracted from the consensus of experts (**n** number of extracted components of each group) and their opinions were obtained from the experts regarding the importance of the components relative to each other. In the following, the fuzzy numbers of experts' opinions were

determined in three parts: low limit, middle limit and high limit, and the mean of fuzzy numbers was determined, which is described in five parts:

1- **Causal conditions:** the prioritization of causal conditions was determined with the following steps: First, the average fuzzy numbers of the experts' opinions about the six final components were determined, which are specified in Table 5.

Calculation of the fuzzy weight of the components: after forming the fuzzy pair matrix, in this step, the fuzzy weight of the components or Z_i was determined, whose values are specified in Table .⁷

De-weighting of components and prioritization: Finally, after determining the de-fuzzified value of component weight (Wi), the importance of each research component was determined, the results of which are shown in Table 7 and Table 8.

As it is clear in the above table, according to the experts, the most important causal factor affecting the development and increase of financial resilience of entrepreneurial businesses is institution building, followed by entrepreneurial awareness.

Table 5: Average fuzzy numbers related to causal conditions

AVERAGE	cat.1	cat.1	cat.1	cat.2	cat.2	cat.2	cat.3	cat.3	cat.3	cat.4	cat.4	cat.4	cat.5	cat.5	cat.5	cat.6	cat.6	cat.6
cat.1	1.000	1.000	1.000	0.500	0.725	0.892	0.333	0.583	0.808	0.583	0.808	0.950	0.443	0.642	0.803	0.193	0.417	0.667
cat.2	2.000	1.379	1.121	1.000	1.000	1.000	0.193	0.417	0.667	0.417	0.667	0.867	0.500	0.725	0.892	0.276	0.500	0.725
cat.3	3.000	1.714	1.237	5.181	2.400	1.500	1.000	1.000	1.000	0.500	0.725	0.892	0.193	0.417	0.667	0.583	0.808	0.950
cat.4	1.714	2.400	1.053	2.400	1.500	1.154	2.000	1.379	1.121	1.000	1.000	1.000	0.276	0.500	0.725	0.250	0.500	0.750
cat.5	1.237	1.500	1.237	2.000	1.379	1.121	5.181	2.400	1.500	3.619	2.000	1.379	1.000	1.000	1.000	0.583	0.808	0.950
cat.6	1.053	1.153	1.500	3.619	2.000	1.379	1.379	1.714	1.053	4.000	2.000	1.333	1.714	1.237	1.053	1.000	1.000	1.000

Table 7: Fuzzy weight of causal condition components

Z	L	M	U
Z1	0.45	0.671	0.85
Z2	0.53	0.72	0.87
Z3	0.98	1.001	1.01
Z4	0.91	1.037	0.95
Z5	1.73	1.415	1.18
Z6	1.88	1.385	1.2

Table 8: weighting of components and ranking

Wi	L	M	U
sum of Zi	6.49	6.228	6.06
W1	0.07	0.108	0.14
W2	0.08	0.116	0.14
W3	0.15	0.161	0.17
W4	0.14	0.166	0.16
W5	0.27	0.227	0.2
W6	0.29	0.222	0.2

Table 9: Priority of components of causal conditions

component	rank	Non-fuzzy weight
Technological capabilities of the organization	6	0.101494
Characteristics of entrepreneurs	5	0.110489
Ability to accept risk	3	0.159151
Acquiring and creating new financial opportunities	4	0.154218
Entrepreneurial consciousness	2	0.227942
institution building	1	0.23423

Intervening conditions

Similar to the process of prioritizing the causal conditions, it was also implemented for the intervening conditions, which is mentioned below:

First, the average fuzzy numbers of the experts' opinions about the final five components were determined, which is specified in Table 9.

Calculating the fuzzy weight of the components: after forming the fuzzy pair matrix, the fuzzy weight of the

components or Z_i was determined, whose values are specified in Table 10.

De-weighting of the components and prioritization: Finally, after determining the de-fuzzified value of the weight of the components (W_i), the importance of each of the research components was determined, the results of which are shown in Table 11 and Table 12.

As it is clear in the above table, according to experts, the most important intervening factor affecting the development and increase of financial resilience of entrepreneurial businesses is the appropriate budget and financing for resilience activities, and in the next rank, the participation of stakeholders to deal with A crisis has occurred.

Table 9: Average fuzzy numbers related to intervention conditions

AVERAGE	cat.1	cat.1	cat.1	cat.2	cat.2	cat.2	cat.3	cat.3	cat.3	cat.4	cat.4	cat.4	cat.5	cat.5	cat.5
cat.1	1.000	1.000	1.000	0.583	0.808	0.95	0.500	0.725	0.892	0.360	0.558	0.750	0.443	0.642	0.808
cat.2	1.714	1.237	1.053	1.000	1.000	1.000	0.500	0.725	0.893	0.583	0.808	0.950	0.583	0.783	0.917
cat.3	2.000	1.379	1.121	2.000	1.379	1.121	1.000	1.000	1.000	0.360	0.588	0.750	0.360	0.583	0.783
cat.4	2.78	1.714	1.333	1.714	1.237	1.053	2.780	1.791	1.333	1.000	1.000	1.000	0.417	0.642	0.833
cat.5	1.791	1.237	1.237	1.714	1.277	1.091	2.780	1.714	1.277	2.400	1.558	1.200	1.000	1.000	1.000

Table 10: Fuzzy weight of the components of the intervening conditions

Z	L	M	U
Z1	0.54	0.732	0.88
Z2	0.78	0.893	0.96
Z3	0.88	0.909	0.94
Z4	1.41	1.195	1.09
Z5	1.83	1.334	1.16

Table 11: weighting of components and ranking

W_i	L	M	U
sum of Z_i	5.44	5.062	5.03
W1	0.1	0.145	0.17
W2	0.14	0.176	0.19
W3	0.16	0.18	0.19
W4	0.26	0.236	0.22
W5	0.34	0.263	0.23

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component	rank	Non-fuzzy weight
Organizational credibility	5	0.135841
Entrepreneurial culture	4	0.16923
Cooperation among entrepreneurs	3	0.175662
Stakeholder participation	2	0.236866
Risk management allocation budget	1	0.273223

Background conditions or the ruling platform

Similar to the process of prioritizing the previous factors, the aforementioned process was also implemented for the background conditions. First, the average of the fuzzy numbers of experts' opinions about the three final components was determined, which is specified in Table 13.

Calculating the fuzzy weight of the components: after forming the fuzzy pair matrix, the fuzzy weight of the components or Z_i was determined, whose values are specified in Table 14.

De-weighting of the components and prioritization: Finally, after determining the de-fuzzified value of the weight of the components (W_i), the importance of each of the research components was determined, the results of which are shown in Table 15 and Table 16.

As it is clear in the above table, according to the experts, the most important factors affecting the development and increase of the financial resilience of entrepreneurial businesses are the political and legal

conditions governing the society and related to entrepreneurial businesses for resilience activities in the ranking First and in the next rank is the condition of science and technology.

Table 17: Average fuzzy numbers related to the ruling platform

AVERAGE	Category 1	Category 1	Category 1	Category 2	Category 2	Category 2	Category 3	Category 3	Category 3
Category 1	1	1	1	0.5	0.725	0.892	0.417	0.667	0.867
Category 2	2	1.379	1.122	1	1	1	0.136	0.333	0.583
Category 3	2.4	1.5	1.154	7.353	3	1.714	1	1	1

Table 18: Fuzzy weight of the components of the intervening conditions

Z	L	M	U
Z1	0.593	0.785	0.918
Z2	0.648	0.772	0.868
Z3	2.603	1.651	1.255

Table 19: Weighting of components and ranking

Wi	L	M	U
sum of Zi	3.844237	3.207561	3.041059
W1	0.154209	0.244666	0.301759
W2	0.168544	0.240624	0.285461
W3	0.677247	0.51471	0.41278

Table 20: Priority of the components of the ruling platform

component	rank	Non-fuzzy weight
Economic conditions	3	0.224965
Scientific-technological conditions	2	0.226221
Political/legal conditions	1	0.524014

Strategies or actions and interactions

Similar to the process of prioritizing the previous factors, in order to prioritize the implementation strategies and successful implementation of resilience in entrepreneurial businesses in the conditions before and after failure, a process was implemented as follows:

First, the average fuzzy numbers of the experts' opinions about the final five components were determined, which is specified in Table 17.

Calculating the fuzzy weight of the components: After forming the fuzzy pair matrix, in this step, the fuzzy weight of the components or Zi was determined, whose values are specified in Table 18.

De-weighting of the components and prioritization: Finally, after determining the de-fuzzified value of the weight of the components (Wi), the importance of each

of the research components was determined, the results of which are shown in Table 19 and Table 20.

As it is clear in the above table, according to the experts, the most important strategy for developing and increasing the financial resilience of entrepreneurial businesses is managing the cash flow of entrepreneurial businesses for resilience activities, and the next step is creating virtual networks.

Table 19: Average fuzzy numbers related to strategies

AVERAGE	cat.1	cat.1	cat.1	cat.2	cat.2	cat.2	cat.3	cat.3	cat.3	cat.4	cat.4	cat.4	cat.5	cat.5	cat.5
cat.1	1.000	1.000	1.000	0.667	0.867	0.975	0.417	0.667	0.867	0.526	0.700	0.833	0.193	0.417	0.667
cat.2	1.500	1.154	1.026	1.000	1.000	1.000	0.500	0.725	0.892	0.583	0.783	0.917	0.500	0.750	0.925
cat.3	2.400	1.500	1.154	2.000	1.379	1.121	1.000	1.000	1.000	0.333	0.583	0.808	0.526	0.700	0.833
cat.4	1.900	1.714	1.200	1.714	1.277	1.091	3.000	1.714	1.237	1.000	1.000	1.000	0.193	0.417	0.667
cat.5	1.429	1.277	1.500	2.000	1.333	1.081	1.900	1.429	1.200	5.181	2.400	1.500	1.000	1.000	1.000

Table 18: Fuzzy weight of strategy components

Z	L	M	U
Z1	0.49	0.7	0.86
Z2	0.74	0.868	0.95
Z3	0.97	0.967	0.97
Z4	1.14	1.093	1.02
Z5	1.95	1.423	1.24

Table 19: weighting of components and ranking

Wi	L	M	U
sum of Zi	5.28	5.051	5.04
W1	0.09	0.139	0.17
W2	0.14	0.172	0.19
W3	0.18	0.191	0.19
W4	0.22	0.216	0.2
W5	0.37	0.282	0.25

Table 20: Priority of strategy components

component	rank	Non-fuzzy weight
Financial value addition	3	0.189148
Cash flow management	1	0.294666
Knowledge management and education	5	0.129982
Creating virtual networks	2	0.210938
strategic planning	4	0.165463

Consequences

Similar to the process of prioritizing the previous factors, the priority of the consequences resulting from the flexibility and successful implementation of the resilience project in entrepreneurial businesses in the conditions before and after the failure, a process was implemented as follows:

First, the average fuzzy numbers of the experts' opinions about the five final components were determined, which are specified in Table 21.

Calculation of the fuzzy weight of the components: after forming the fuzzy pair matrix, in this step, the

fuzzy weight of the components or Zi was determined, whose values are specified in Table 22.

De-weighting of components and prioritization: Finally, after determining the de-fuzzified value of component weight (Wi), the importance of each of the research components was determined, the results of which are shown in Table 23 and Table 24.

As it is clear in the above table, according to experts, the most important consequences of the development and increase of financial resilience of entrepreneurial businesses are the increase in profitability and the next rank is the satisfaction of the stakeholders.

Table 11: Average fuzzy numbers related to outcomes

AVERAGE	cat.1	cat.1	cat.1	cat.2	cat.2	cat.2	cat.3	cat.3	cat.3	cat.4	cat.4	cat.4	cat.5	cat.5	cat.5
cat.1	1.000	1.000	1.000	0.333	0.583	0.808	0.136	0.333	0.583	0.360	0.558	0.750	0.219	0.417	0.642
cat.2	3.000	1.714	1.237	1.000	1.000	1.000	0.250	0.500	0.750	0.360	0.853	0.783	0.667	0.867	0.975
cat.3	7.353	3.000	1.714	4.000	2.000	1.333	1.000	1.000	1.000	0.667	0.867	0.975	0.583	0.808	0.950
cat.4	2.750	2.780	1.333	2.780	1.714	1.277	1.500	1.154	1.026	1.000	1.000	1.000	0.360	0.558	0.750
cat.5	1.791	1.714	1558.000	1.500	1.154	1.026	1.714	1.237	0.053	2.780	1.791	1.333	1.000	1.000	1.000

Table 12: Fuzzy weight of outcome components

Z	L	M	U
Z1	0.32	0.538	0.74
Z2	0.71	0.846	0.93
Z3	1.63	1.333	1.16
Z4	1.33	1.252	1.06
Z5	1.67	1.344	1.18

Table 13: weighting of components and ranking

Wi	L	M	U
sum of Zi	5.66	5.312	5.07
W1	0.06	0.101	0.15
W2	0.13	0.159	0.18
W3	0.29	0.251	0.23
W4	0.24	0.236	0.21
W5	0.29	0.253	0.23

Table 14: Priority of outcome components

component	rank	Non-fuzzy weight
Increase profitability	1	0.258451
Exploitation of unknown business opportunities	4	0.154354
Stakeholder satisfaction	2	0.254813
The prosperity of the local economy	3	0.225947
Strengthening and increasing business stability	5	0.094775

Research model fit

SmartPLS software was also used in the test of the final model for the degree of fit of the conceptual model with the data of the statistical population. In the early stages of data collection, the researcher was able to test his model in the above software by taking 100 complete questionnaires. As can be seen in the figure, the path coefficients of the causal conditions and the central phenomenon are equal to 63 percent and the path coefficient of the effect of the central phenomenon on the strategy is 76 percent and the effect of the implementation of strategies on the consequences is 72 percent. Also, the effect of the intervening conditions on the implementation of the strategy is more than the effect of the background

conditions. Also, the average explained variance related to the development of resilience, and the consequences of implementing the strategy is in the appropriate range, and the variance of the causal conditions, background conditions and the interventionist is relatively in the average range. Cronbach's alpha coefficient and composite reliability are also shown on the figure.

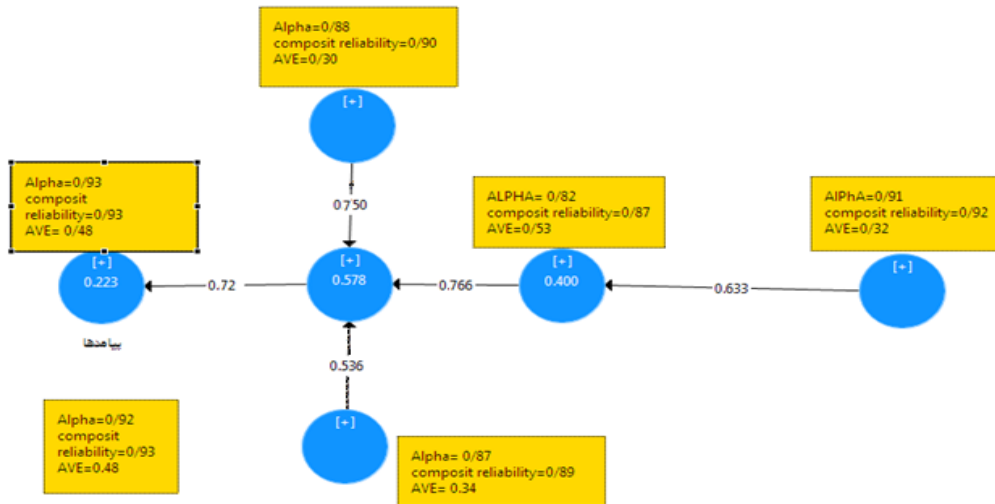


Figure 1: The final research model in SMART PLS software

Conclusion and suggestions

In the current research, after extracting the concepts and categories from the coding done in the grounded theory method, the researcher started to present a conceptual framework based on the developed models of financial resilience of entrepreneurial businesses with the risk management approach by previous researchers, so that after developing the framework and examining all On their part, they can use the developed framework as the basis of research in order to compile and explain the conceptual model. For this reason, the main findings of the research are presented in two sections: conceptual framework (theoretical literature and research background) and conceptual model (interviews and experts). Before examining the two introduced sections, it is stated that the presented model has improved the financial resilience of entrepreneurial businesses with a risk management approach, because in this model, in addition to special emphasis on political and legal conditions; Scientific and technological conditions and economic conditions and attention to accounting and financial management expert associations have been emphasized as one of the main infrastructures for the development of financial resilience in entrepreneurial businesses, which can play a role in the problem identification phase.

After running the models in SMART PLS software, the significance of the regression weights and factor loadings were tested, and the results at the 95% error

level indicate the fit of the measurement and structural models with the research data. According to the final model of the research, the coefficient of the path between the causal conditions and the central phenomenon is 77 percent. This value shows that more than fifty percent of the variance of resilience development in entrepreneurial businesses is covered by drivers in this research. Also, the path coefficient between the main phenomenon (resilience of entrepreneurial businesses) and strategy is 76 percent. Also, the intensity of the impact of strategies to create resilience in crisis conditions with its consequences is 72 percent, which is equivalent to 52 percent of the variance of the consequences. Finally, between background conditions and intervening conditions, it can be said that intervening conditions explain 75% and macro background conditions explain 53% of strategy variance. The results obtained from the software indicate a good fit of the obtained research model.

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