

## Original Research Article

# Developing a Model for Sustainable, Agile, and Resilient Banking

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Received: 18 Apr 2024

Approved: 09 Feb 2025

This paper aims to present a banking model based on Sustainability, Agility, and Resilience paradigms (SAR) employing a mixed research method. To achieve this goal, a meta-synthesis approach was used as a first phase of the study to extract codes, themes, and categories which finally led to a conceptual model of SAR banking. A total of 114 codes were extracted by reviewing related papers. In the following, according to the similarities, interpretations, and expert opinions, 23 final themes were formed which were summed up into 9 categories including economic, social, governance, and environmental sustainability, process, strategic, service agility, structural resilience, and economic resilience. Accordingly, as the second phase of the study, the PLS-SEM (Partial least squares-structural equation modeling) method was employed for model validation. Results disclosed that the coefficient of determination for the SAR banking construct is about 0.95 which is formed by agile, sustainable, and resilient banking constructs. In addition, the other validity indices such as Good of Fitness (GOF), Average Extracted Variance (AVE), and Composite Reliability (CR) ensure the achieved model validity. Ultimately, findings depict that SAR banking which is mainly affected by sustainable banking can assist the bank to survive through today's turbulent business world.

**Keywords:** Sustainability, Agility, Resilience, Banking Industry

**JEL Classification:** C02, G32, G21

## 1 Introduction

Given the increasing competition in the banking industry with the influx of new entrants, it is necessary to take an approach in which banks can increase their market share by responding quickly and flexibly to customer demands. Therefore, the agility paradigm is adopted in the banking context so that banks

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can quickly identify the changes that occur in the environment, technology and customer needs and respond to them promptly according to their capabilities. In this way, by gaining a competitive advantage, it can also increase the bank's share of the customer market (Aburub, 2015).

In fact, given the competitive environment in the banking industry, paying attention to sustainable competitive advantage has given way to unsustainable competitive advantage, and for gaining unsustainable competitive advantage, the concept of agility is an indispensable tool. Rapid changes in new banking technologies, the existence of multiple organizational structures in banks, rapid changes in customer banking needs, and reduced customer conversion costs have made moving to agile banking a necessity (Appelbaum, Calla, Desautels, & Hasan, 2017). In summary, the factors that have led banks to move towards agile banking include achieving competitive advantage, maintaining and increasing market share in a competitive environment, meeting explicit and implicit customer expectations and needs, diversifying product and service portfolios, increasing customer loyalty and profitability (Khoshlahn & Ardabili, 2016).

On the other hand, in response to world changes, many opportunities are constantly emerging. It also includes risks such as job losses, crimes, diseases, turbulence, and disturbances. If these risks are not taken into account, they will turn into a crisis which eliminates the benefits that have been achieved and creates challenges (Dalziell & McManus, 2004). After the financial crisis of 2007, the economic and banking sectors of many countries around the world faced problems, and although this disorder hurt the credibility of all countries, these effects were more severe in some countries and milder in others. To explain the severity of these shocks in different countries, the issue of resilience in the banking sector became very important. Since that, any resilient financial system can perform its key functions efficiently, including resource allocation, risk distribution, and settlement of payments under any circumstances (Vallascas & Keasey, 2012). Therefore, recognizing these threats and examining the bank's readiness to deal with them is vital (Azmeah, 2019). Given the financial and natural crises accompanying the re-emergence of banking sanctions on Iran, there is a need for a paradigm that makes the banks less vulnerable to these crises. Therefore, the resilience paradigm is an attempt to minimize the loss of these crises on the banks.

In addition, issues such as lack of natural resources, disregard for the rights of stakeholders, and community issues have led to new topics such as environmental-friendly activities, ethics, social responsibility, resource conservation for future generations of human beings, and the rights of all

shareholders in banks (Douglas, Doris, & Johnson, 2004). To address these issues, a sustainability paradigm needs to be considered. Sustainable banking provides financial products and banking services that meet the needs of its customers, protects the environment and generates profits at the same time (Liang, Chang, & Shao, 2018). Contrary to the previously held belief that banks did not play a significant role in sustainability, modern studies suggest that the role of banks in sustainable development is noteworthy since they play a mediating role in the economy.

The effects of banks are usually assumed to be quantitative but they are also qualitative in nature, as the bank affects the speed and direction of economic growth (Icke, Caliskan, Ayturk, & Icke, 2011). Therefore, given that very little attention is given to the sustainability paradigm in the banking industry, more research is needed on sustainable banking.

It is noteworthy to mention that the Central Bank of the Islamic Republic of Iran evaluates banks just based on financial indicators that lack a specific mechanism for nonfinancial performance measures such as environmental safety. As a result, many financial institutions and banks have gone bankrupt or engaged in the merging process for rehabilitation. Therefore, to prevent these problems, a comprehensive framework in the banking industry is needed to be able to examine banks from different aspects to guarantee long-term performance.

The idea of combining the above-mentioned paradigms in manufacturing, organization, and supply chain, has always existed, including the integration of business processes that lead to the integration process (Cooper, Lambert, & Pagh, 1997). However, the integration of these paradigms in service organizations, especially the bank, has not been studied much. Given that banks are the most important economic institution in any country and have an inevitable role in development, there is a need for an approach to deal with the above-mentioned paradigms in an integrated form. The goal of integrating paradigms is to ensure the efficiency and effectiveness of the bank's performance to maximize value for customers at the lowest cost and highest speed in a long-term operation.

Consequently, the paper aims to provide an integrated banking model that can simultaneously respond to changes in technology, market and customer needs (through the agility paradigm), against various financial, natural, and other crises with the least vulnerability and best response (through the resilience bank) and taking into account the social, ethical and environmental responsibilities for the future generations (through the sustainability paradigm). This mostly has been neglected by previous studies in the banking

industry. It is done in the present paper using a meta-synthesis qualitative approach which is followed by a quantitative validity analysis.

The subsequent sections of this paper delve into the foundational theoretical framework and a comprehensive literature review in Section 2. Section 3 meticulously examines the research methodology employed and the data collection process. The findings derived from meta-synthesis and structural equation modeling are presented in Section 4. Finally, Section 5 offers insightful conclusions and practical managerial implications based on the research outcomes.

## 2 Theoretical Foundations and Literature Review

### 2.1 Sustainable Banking

Weber & Feltmate (2016) define a sustainable bank as ‘a bank that, in its internal processes, payment facilities, and investments, considers environmental, natural resources, and human rights issues and strives to make it flourish with effective participation in society’ (Weber & Feltmate, 2016). For the banking industry it is important to achieve sustainable development due to its unique intermediation role in the economy, which is essential for mobilizing financial resources toward sustainable goals (Aracil, Nájera-Sánchez, & Forcadell, 2021).

There has been a lot of research in the field of sustainable banking. Özçelik and Öztürk (2014) examined the sustainability performance of banks in Turkey by using Grey Relational Analysis and examined the performance of banks based on 3 financial criteria, 2 social criteria, and 4 environmental criteria. Raut, Cheikhrouhou, and Kharat (2017) also presented a multi-criteria decision-making model for evaluating banks in India, and 6 Indian banks, based on the four main indicators of financial sustainability, customer relationship management, internal business process, and environmental management system and the results showed that Indian banks scored lower in the environmental management system than the other three indicators. As it is known, sustainable banking activities depend on the region, the level of economic and social development, customer priorities, and the legal environment in the country (UNEP, 2016).

Aras, Tezcan, and Furtuna (2018) reviewed multidimensional sustainability measures and provided a model for evaluating the company's sustainability performance for Turkish banks. Liang, Chang, and Shao (2018) investigated the profitability of sustainability in banks. In this study, they compared 36 banks that were on the DJSI list with 36 banks that were not on

the list by using stochastic frontier analysis. The results of this study showed that the banks on the list were more profitable. Hamidi and Worthington (2021) extended the conventional triple bottom line (TBL) framework (prosperity, people, and planet) to the quadruple bottom line (QBL) by newly adding a “prophet” dimension for Islamic banks seeking compliance with Islamic law in their pursuit of sustainability. Their findings suggested that most of the banks perform relatively poorly according to the “planet” (38%) and “people” (41%) dimensions and performed better on the “prosperity” (53%) and “prophet” (63%) dimensions. Similarly, Moufty et al. (2021) looked at four different dimensions of sustainability and examined their effects on bank performance in the United States of America and the European Union. The results of their study revealed a significant positive relationship between the internal social dimensions of sustainability and bank performance while no evidence was found for the relationship between the environmental dimensions of sustainability and bank performance.

## 2.2 Agile Banking

Encountering market turbulence, competitor challenges, and even devastating effects of the pandemic, an organization requires the capability and agility to respond to changes, perform certain adjustments and strengthen its innovation ability to maintain performance and sustainable competitiveness (Arsawan, ssy De Hariyanti, Atmaja, Suhartanto, & Koval, 2022). Agile Bank responds quickly to changes in customer needs, technology, rules and regulations, and a competitive environment, and strives to increase its profitability by gaining sustainable competitive advantage through agility (Ramadas, 2011).

A small amount of research in the banking industry deal with the presentation of the agility model, especially in banks, but in the field of organizations, there is a lot of research in general. Meredith and Francis (2000) introduced a reference model of agility, based on which they presented the policies and measures needed to support agility at the organizational level. Yaghoubi and Dahmardeh (2010) examined the factors affecting agility in organizations, and this study, and finally, 26 drivers, capabilities, and enablers were provided. Sanatigar, Peikani, and Gholamzadeh (2017) investigated components of organizational agility in the Iranian Pension Fund and presented an organizational agility model with 6 components, 23 factors, and 83 indicators; and finally, a new method for analyzing, measuring, and developing organizational agility in the governmental service sector was presented. Holbeche (2018) argued that with the expansion of globalization and concerns about the disregard for ethics and environmental issues, there is

a need for a new study of the effectiveness of the organization in which topics such as flexibility, talent, and agility. The researcher concluded that to achieve greater flexibility and higher speed, it is necessary to move toward organizational agility.

### 2.3 Resilient Banking

Banks are intrinsically fragile, given their inevitable leverage and maturity transformation (Igan, Mirzaei, & Moore, 2022). A resilient bank suffers minimal damage in the face of financial and non-financial crises and shocks, and in times of crisis, with the least impact of shocks, continues to perform its duties in the economy (Berry, Ryan-Collins, & Greenham, 2015). These banks have the trust of depositors and investors, so even during periods of tension, they can receive funds. Resilient banks have certain characteristics such as (Markman & Venzin, 2014): 1) Liquidity and capital buffer, 2) Profitability and 3) Good governance.

There has been a lot of research in the field of resilient and stable banking. Diaconu and Oanea (2014) conducted a study to determine the main factors in the stability of Romanian banks to use these factors to distinguish between commercial and cooperative banks. Their results indicated that the research model is suitable for cooperative banks while it is not suitable for commercial banks. The two factors that had the greatest impact on the financial stability of cooperative banks include Gross domestic product (GDP) growth and interest rates. Markman and Venzin (2014) introduced the lessons learned from banks that have survived economic crises as resilience. The obtained results showed that the results of the first stage are complementary to the traditional financial criteria in the second stage. Ghenimi, Chaibi, and Omri (2017) investigated the relationship between liquidity risk and credit risk on banks' stability in the Mena region. The results showed that liquidity risk and credit risk are not inversely related, but both risk and interaction between them affect the stability of banks. Rupeika-Apoga et al. (2020) examined the determinants of bank stability in a small post-transition economy, based on the case of Latvia. They found evidence of a negative significant relationship between size and bank stability, negative significant impact of liquidity risk on bank stability, a positive significant relationship between capital adequacy and bank stability, as well as a positive significant relationship between credit risk and stability.

### 3 Methodology

#### 3.1 Research Method

In the present study, a mixed research approach has been employed, according to which a qualitative approach for exploitation is followed by a quantitative approach for validity analysis. In the first phase, an attempt is made to extract the factors related to the agile, sustainable, and resilient paradigms in the banking industry by studying related articles and research employing the meta-synthesis approach. These factors will then be approved by experts and, based on the extracted factors, a questionnaire is designed and distributed among the banking managers and experts. Finally, in the second phase, the validity of the obtained conceptual model is measured using the PLS-SEM (Partial least squares-structural equation modeling) approach.

#### 3.2 Research Sampling

The study consists of two research populations. The population of the qualitative section is related to articles and research. It is explained in the relevant section based on the meta-synthesis approach. The statistical population of the study in the second phase includes all Iranian banking managers. Given the fact that reliance on small samples can provide poor results, larger samples make PLS estimates more reliable and the average absolute error in PLS decreases with increasing sample size, the study tried to increase the sample size to more than 100 people. Due to the specialization of the research topic, the targeted method of snowball was used to determine the sample size and 162 bank managers were sampled. Then, the questionnaire was distributed among 162 bank managers in Iran and 128 questionnaires with a response rate of 80% were returned as completed.

### 4 Finding

#### 4.1 Meta-Synthesis Analysis

As mentioned earlier, in the first phase of the research, the meta-synthesis approach has been used to achieve the conceptual research model. This approach was implemented three times for articles and research related to sustainable banking, agile banking, and resilient banking. Based on the seven-step method of Sandelowski and Barroso (2006), the initial questions that arise are 1) What are the factors related to sustainable banking? 2) What are the factors related to agile banking? 3) What are the Factors related to resilient banking? To answer these questions, the statistical population considered all

available articles between 1990 and 2022 on sustainable, agile, and resilient banking, and document analysis was used to analyze secondary data. The databases used to search were Science Direct, Springer, Emerald, and Google Scholar. Searching keywords were sustainable banking, sustainability in the bank, green banking, corporate social responsibility in the bank (for question 1), agile banking, agility in bank, agile organization, agile service firm, agile enterprise, agility enabler (for question 2) and resilient banking, resilience in the bank, bank crisis, bank fragility, bank stability (for question 3). In the initial search, 410 articles were obtained for sustainable banking, 371 articles for agile banking, and 541 articles for resilient banking, then, by screening these articles based on abstracts, methods, and content, 55 articles were selected for sustainable banking, 42 articles for agile banking and 106 articles for resilient banking were selected and finalized.

In the fourth step, open codes were extracted by examining the selected articles. In this regard, 228 open codes were extracted by reviewing articles related to sustainable banking, 106 open codes were extracted by reviewing articles related to agility in banking and service firms, and 82 open codes were extracted by reviewing articles related to Resilient Bank. So, a total of 416 codes were obtained. Then, due to the large number of open codes and their partiality, as well as the fact that in the next phase of research, these codes are used as an indicator to measure the validity of the concept model, it has been decided that the open code, which is common to each other in terms of meaning and concept, will be referred to as axial code. It should be noted that according to the concept of some open codes and not sharing a concept with other codes and its importance, the same open code is considered an axial code. Finally, out of 416 open codes, 114 axial codes were obtained.

Based on the fifth step, the meta-synthesis approach of axial codes based on the similarity in the concepts and conclusions of the researcher, 114 axial codes were placed in the form of 23 themes. These themes were grouped into a higher level category, and the total number of categories was 9. It should be noted that the themes and categories have been determined based on reference to the texts and the opinions of banking experts. Table 1 summarizes the above results.



Table 1

*Summary of meta-synthesis results*

Paradigm	Category	Theme	Number of axial codes	Number of open codes
Sustainability	Economic	Economic participation	2	4
		Financial performance	3	5
	Environmental	Energy consumption	3	11
		Environmental actions	11	45
	Social	Community participation	7	44
		Human resource development	11	44
		Human rights issues	2	9
		Products and Services	5	18
		Customer relationship	4	19
	Governance	Characteristics of governance	9	29
Agility	Strategic	Leadership and strategic characteristics	2	9
		Market Response	5	14
	Process	Agile culture	5	12
		New technologies and IT	2	8
		Employee empowerment	4	23
		Formation of a knowledge-based bank	1	6
		Organizational structure	3	13
	Services	Development of electronic capacity	2	4
		Development of services and products	6	17
Resilience	Economic	Financial and non-financial characteristics of the bank	11	32
		Monitoring macroeconomic conditions	1	8
	Structural	Bank management and governance	9	15
		Control and regulatory rules	6	27

Source: Research findings

In the sixth step, to increase the validity and credibility of the topics, several experts in the banking system were asked to write down their findings and criticize them. Also, the process of coding the themes and categories was done again by the researcher and the results were obtained as in the first place.

Also, in this study, the researcher used the comparisons of his opinions with another expert to control his extraction concepts, and regarding the extraction themes in all three paradigms, this evaluation was done separately with one expert and the results were evaluated through Cohen's Kapa coefficient (Sandelowski & Barroso, 2006). This value was obtained for sustainable banking themes of 0.8299, agile banking themes of 0.793, and resilient banking themes of 0.762, indicating that the agreement index between the two coders is valid because the value is between -1 and 1. The closer it is to the number 1, the greater the agreement between the respondents.

Finally, in the seventh step, the conceptual model in figure 1 was obtained.

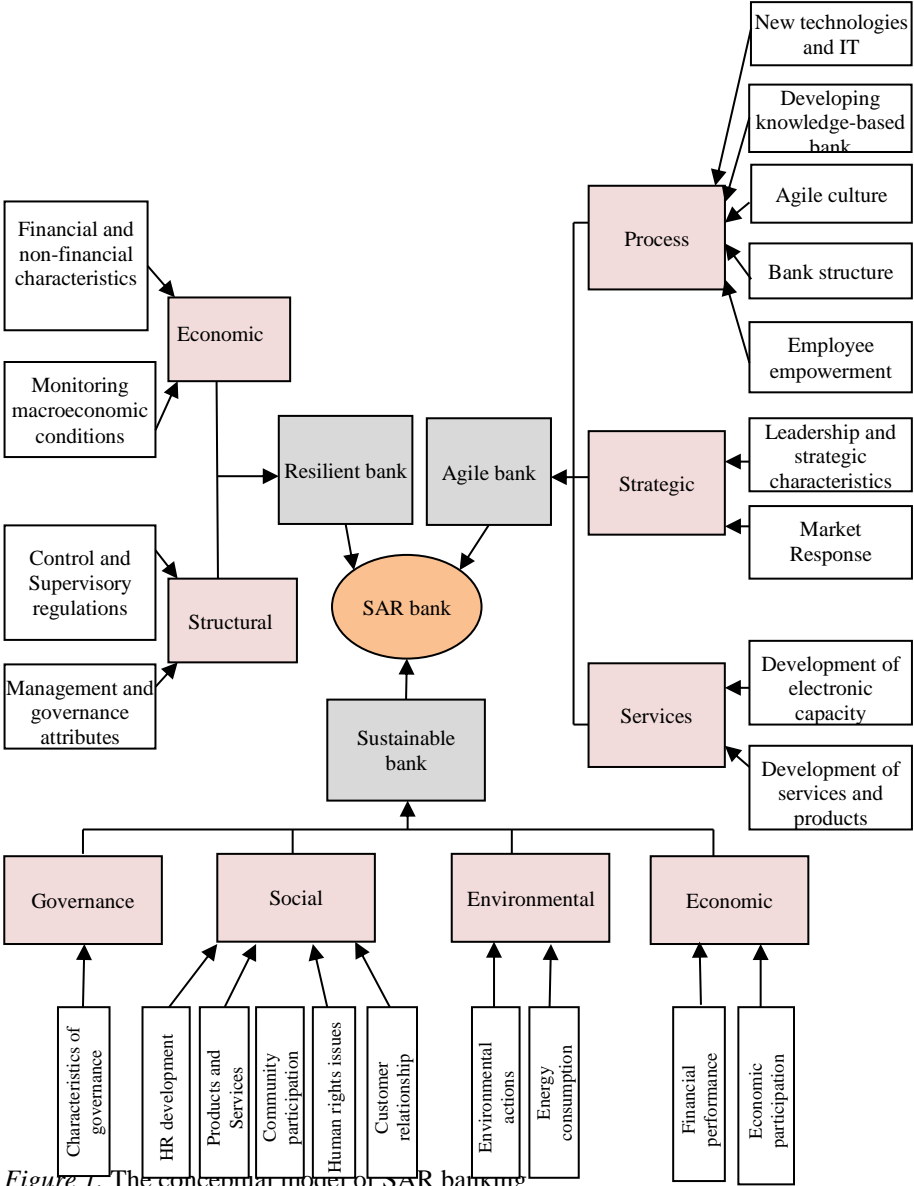


Figure 1. The conceptual model of SAR banking  
Source: Research findings

## 4.2 Structural equation modeling (SEM)

Structural equation modeling (SEM) is a statistical technique for testing and estimating causal relationships using a combination of statistical data and qualitative causal assumptions (Newman and Constantinides, 2021). In the second phase of the study, PLS-SEM was employed to validate the conceptual model of the qualitative phase (first). In this regard, first, a questionnaire was designed in three sections of sustainable, agile, and resilient banking with 119 indicators (based on the number of axial codes) and based on the snowball sampling, it was distributed among 162 Iranian banking managers and finally, 128 completed questionnaires were returned. To examine the content validity of the questionnaire, 9 banking managers in Iran were surveyed and the content validity of the questionnaire was confirmed by these managers. Cronbach's alpha coefficient was provided to evaluate the reliability of the questionnaire, considering that the values are above 0.7 (Hulland, 1999). The reliability of the questionnaire was also confirmed.

Bartlett and KMO tests were then used to evaluate the adequacy of sampling. Given that the KMO test index for the three sections of the questionnaire is more than 0.6 (Hair, Black, Babin, Anderson, & Tatham, 1998), it is indicative of adequate sampling and the significant number of Bartlett tests was less than 0.05, so it can be said that factor analysis to identify the structure (conceptual model) It is suitable. Table 2 below shows the values for the KMO index and the Bartlett test.

Table 2

*Bartlett test p-values and KMO index*

Section	KMO index	Bartlett test p-value
Sustainable bank	0.749	0.00
Agile bank	0.738	0.00
Resilient bank	0.777	0.00

Source: Research findings

The first issue for modeling is to determine whether a reflective or formative model. In this study, researchers decided to use a reflective-formative model based on the nature of the relationships between constructs. For the measurement model, as well as the relationship between the first-order constructs (theme) and the second-order constructs (category), the reflective model is the choice. Due to the nature of the metrics in the measurement

model, causality is from the constructs to the indicators, which means that the constructs are not just composed of the indicators which means the indicators are substitutable. Besides, the relationship between the second and third-order constructs, as well as the structural relationships are formative, because SAR banking means a bank that is sustainable, agile, and resilient, and the researcher can claim SAR banking consists of only these three paradigms, therefore causality is from the lower order constructs to the higher-order constructs.

Factor loading has been used to evaluate the reliability of the measurement model indicators. The appropriateness of the factor loading is 0.7 (Henseler, Ringle, & Sinkovics, 2009), and considering that the factor loading of all indicators is higher than 0.7, it can be concluded that the indicators of the measurement model have a suitable factor loading. On the other hand, t-values were used to determine the significance of factor values, and the results showed that all of the t-values are higher than 1.96, which indicates the significance of factor loading at the level of 0.05.

On the other hand, it is necessary to measure two types of reliability indexes, namely Cronbach's alpha and composite reliability (CR) for constructs, the value of these two indexes should be above 0.7 (Hair et al., 1998). Also, another value reported for measuring the convergence and one-dimensionality of hidden constructs in PLS is the rho\_A index, which should be higher than 0.7.

The next index is convergent validity. Convergent validity means that the set of indicators explains the main construct. Fornell and Larker (1981) suggest the use of the average extracted variance (AVE) as a criterion for convergent validity. A minimum of 0.5 AVE indicates sufficient convergence validity, meaning that a latent variable can explain, on average, more than half of the scattering of its indicators (Henseler, Ringle, & Sinkovics, 2009). These values are given in table 3:

Table 3

*Cronbach's alpha, rho\_A index, Composite Reliability (CR), and average extracted variance (AVE) of constructs*

Construct order	Construct	Cronbach's alpha	rho_A	CR	AVE	Construct order	Construct	Cronbach's alpha	rho_A	CR	AVE
Third order	Sustainable bank	0.901	0.928	0.908	0.577	First order	Development of services and products	0.87	0.884	0.906	0.661
Second-order	Governance	0.866	0.904	0.896	0.508	Second order	Strategic	0.822	0.831	0.865	0.584
First-order	Characteristics of governance	0.866	0.904	0.896	0.508	First order	Leadership and strategic characteristics	0.827	0.829	0.921	0.853
Second-order	Social	0.912	0.922	0.922	0.510	First order	Market Response	0.811	0.824	0.866	0.523
First-order	HR development	0.921	0.944	0.938	0.599	Second order	Process	0.868	0.898	0.892	0.795
First-order	Community participation	0.896	0.921	0.921	0.63	First order	New technologies and IT	0.906	0.925	0.955	0.914
First-order	Products and Services	0.853	0.939	0.891	0.626	First order	Agile culture	0.736	0.786	0.829	0.507
First-order	Human rights issues	0.956	0.956	0.979	0.958	First order	Developing knowledge-based bank	1	1	1	1
First-order	Customer relationship	0.711	0.967	0.864	0.712	First order	Employee empowerment	0.856	0.874	0.904	0.703
Second-order	Environmental	0.881	0.913	0.907	0.544	First order	bank structure	0.935	0.954	0.958	0.885
First-order	Environmental actions	0.901	0.932	0.924	0.554	Third order	Resilient bank	0.855	0.914	0.877	0.516
First-order	Energy consumption	0.769	0.874	0.863	0.681	Second order	Economic R2	0.909	0.943	0.923	0.556
Second-order	Economic S1	0.722	0.725	0.802	0.604	First order	Financial and non-financial characteristics	0.906	0.939	0.922	0.565
First-order	Financial performance	0.791	0.792	0.865	0.616	First order	Monitoring macroeconomic conditions	1	1	1	1
First-order	Economic participation	0.812	0.812	0.914	0.843	Second order	Structural	0.761	0.802	0.819	0.537
Second-order	Services	0.821	0.836	0.866	0.545	First order	Control and Supervisory regulations	0.76	0.909	0.849	0.562
Third-order	Agile bank	0.829	0.854	0.857	0.865	First order	Management and governance attributes	0.78	0.793	0.841	0.521
First-order	Development of electronic capacity	0.806	0.819	0.885	0.72	Fourth order	SAR banking	0.84	0.892	0.836	0.534

Source: Research findings

1. Economic Sustainability 2. Economic Resilience

Because all values of Cronbach's alpha, rho\_A, and CR for latent constructs are greater than 0.7. Therefore, the model status of this research is appropriate in terms of structural reliability. Also, according to Table 3, the AVE values for all constructs are higher than 0.5, so the convergent validity of the structures of this model is also appropriate.

The Fornell and Larker matrix has also been used for divergent validity (Hair et al., 1998). This criterion claims that a construct should have a greater distribution among its indicators than the indicators of other latent constructs. The values of this matrix for the constructs of this study show that the value of the square root of AVE (matrix diameter) of all the first-order constructs is greater than the value of their correlation in the lower and left houses of the main diameter of the matrix. So, it can be said, the divergent validity of first-order constructs is acceptable. The variance inflation factor (VIF) index was also used to examine the collinearity between the indicators, which was less than 10 for all indicators, indicating a lack of collinearity between the indicators (Hulland, 1999).

To assess the structural model, the criteria of determination coefficient ( $R^2$ ), path coefficient, and T-value are used (Henseler, Ringle, & Sinkovics, 2009). The path coefficients in the structural model are used to determine the contribution of each of the predictor variables in explaining the variance of the criterion variable. Also, to determine the significance of the path coefficient, the t-value for the path must be calculated and examined. In the following, Table 4 shows the values of the path coefficient and path t-value in the model.

Table 4

*Path coefficient and path t-value*

Path	Path coefficient	t-value	Path	Path coefficient	t-value
Characteristics of governance → Governance	0.999	971.133	Leadership and strategic characteristics → Strategic	0.706	13.769
Governance → Sustainable bank	0.245	4.145	Market Response → Strategic	0.937	88.263
HR development → Social	0.744	12.408	Strategic → Agile bank	0.402	5.781
Community participation → Social	0.627	6.489	New technologies and IT → Process	0.849	39.874
Products and Services → Social	0.644	11.186	Agile culture → Process	0.936	85.457
Human rights issue → Social	0.627	11.132	Developing knowledge-based bank → Process	0.782	21.091
Customer relationship → Social	0.654	11.148	Employee empowerment → Process	0.813	28.895
Social → Sustainable bank	0.552	7.560	bank structure → Process	0.771	21.533
Environmental actions → Environmental	0.967	248.568	Process → Agile bank	0.735	11.914
Energy consumption → Environmental	0.465	5.979	Agile bank → SAR bank	0.465	6.910
Environmental → Sustainable bank	0.506	7.728	Financial and non-financial characteristics → Economic R	0.993	626.216
Financial performance → Economic S	0.776	13.327	Monitoring macroeconomic conditions → Economic R	0.653	16.726
Economic participation → Economic S	0.748	21.622	Economic R → Resilient bank	0.908	24.803
Economic S → Sustainable bank	0.171	4.428	Control and Supervisory regulations → Structural	0.733	10.134
Sustainable bank → SAR bank	0.703	10.530	Management and governance attributes → Structural	0.801	16.766
Development of electronic capacity → Services	0.712	12.660	Structural → Resilient bank	0.313	5.300
Development of services and products → Services	0.885	34.070	Resilient bank → SAR bank	0.625	9.336
Services → Agile bank	0.365	4.529			

Source: Research findings

Given that the t-value of all paths between latent constructs was higher than 2.58, it can be concluded that the structural model of the research is significant at the level of 0.99 confidence.

The basic criterion for evaluating latent constructs is the determination coefficient ( $R^2$ ).  $R^2$  values equal to 0.67, 0.33, and 0.19 in PLS path models are strong, moderate, and weak, respectively (Henseler, Ringle, & Sinkovics, 2009). Table 5 shows the  $R^2$  value:



Table 5

*Constructs determination coefficient*

construct	R <sup>2</sup>	construct	R <sup>2</sup>	construct	R <sup>2</sup>
Sustainable bank	0.957	Financial performance	0.602	Developing knowledge-based bank	0.612
Characteristics of governance	0.998	Economic participation	0.559	Employee empowerment	0.661
HR development	0.554	Agile bank	0.990	bank structure	0.505
Community participation	0.393	Development of electronic capacity	0.507	Resilient bank	0.996
Products and Services	0.644	Development of services and products	0.783	Financial and non-financial characteristics	0.986
Human rights issues	0.391	Leadership and strategic characteristics	0.406	Monitoring macroeconomic conditions	0.426
Customer relationship	0.428	Market Response	0.879	Control and Supervisory regulations	0.537
Environmental actions	0.953	New technologies and IT	0.721	Management and governance attributes	0.642
Energy consumption	0.216	Agile culture	0.876	SAR banking	0.953

Source: Research findings

According to Table 5, the determination coefficient of all constructs except the energy consumption structure is more than 0.33, which indicates the appropriateness of fitting the structural model. Since the determination coefficient of energy consumption constructs is slightly higher than 0.19, then these constructs are also accepted.

In this study, the GOF (Good of Fitness) index was used to examine the validity or quality of the PLS model in general. Three values of 0.01, 0.25, and 0.36 are considered weak, medium, and strong values for GOF (Hair et al., 1998). The value of this criterion in this study was 0.48, which indicates the overall strong fit of the mode. Another index for the overall fit of the model in PLS is the SRMR (Standardized Root Mean Residual), which is considered to be less than 0.1 or 0.08 (Hulland, 1999). The value of this index in this study was 0.0772, which indicates the overall fit of the model.

According to the results of the PLS-SEM path coefficient, it can be concluded that the sustainable bank construct (path coefficient = 0.703,  $p < 0.01$ ) has the greatest impact on SAR banking. After that, the construct of the resilient bank (path coefficient = 0.625,  $p < 0.01$ ) and finally the agile bank construct (path coefficient = 0.465,  $p < 0.01$ ) affect the ultimate goal of this research, creating a model for SAR banking.

The most influential category of a sustainable bank is the social construct (path coefficient = 0.052,  $p < 0.01$ ), which is consistent with the findings of Ullah and Rahman (2015), Aras, Tezcan, and Furtuna (2018), and Goodman, Branco, and Rodrigues (2006). In this case, managers in the banking industry, to achieve sustainability, must pay special attention to participation in society, considering the rights of customers, employees, and other members of society. The second most influential construct on a sustainable bank is the environmental construct (path coefficient = 0.506,  $p < 0.01$ ), which confirms the findings of Islam, Fatima, and Ahmed (2011), Özçelik and Öztürk (2014), Hu and Scholtens (2014) and Kumar and Prakash (2019).

In agile banking, the most effective construct is the process agility construct (path coefficient = 0.735,  $p < 0.01$ ), which confirms the findings of Sanatigar, Peikani, and Gholamzadeh (2017) and Nejatian and Zarei (2013). Therefore, to achieve agility, banks must pay more attention to the use of information technology in internal processes and the use of flexible banking structures and strategies to make early changes in products and services, promote agile culture, and empower employees. The next construct that affects agile banking is the Strategic Agility construct, which is in line with the findings of Harraf, Wanasika, Tate, and Talbott (2015) and Menor, Roth, and Mason (2001).

In the resilient bank, as expected, the highest path coefficient is related to economic resilience (path coefficient = 0.735,  $p < 0.01$ ), which confirms the findings of the research of Altunbas, Binici, and Gambacorta (2018) and Bostandzic and Weiss (2018). In this regard, it is necessary to pay attention to the financial characteristics of the bank, such as capital adequacy, size, reducing various types of risks, etc., as well as monitoring the microeconomic condition.

## 5 Conclusion

The main purpose of this study is to provide an integrated model for the bank that can respond to changes in technology and market and customer needs (through the agility paradigm), against various financial, natural, and other crises with the least vulnerability and best response (through resilience paradigm) and take into account social, ethical, environmental, and future generations (through the sustainability paradigm). In this regard, in the first phase of this research, the factors and finally the conceptual model of SAR banking were obtained using a meta-synthesis qualitative approach. Based on this approach, the available articles and research related to these three paradigms in banking industry were examined and analyzed. First, 416 open

codes were extracted, and due to their partiality, it was decided to form axial codes based on sharing the concepts of open codes. These open codes were then categorized into 114 axial codes. At the next level, 23 themes were formed based on the similarity of the topics, interpretations, and inferences of the researcher based on the research literature and the opinions of experts, and finally, these themes were divided into 9 categories for 3 paradigms.

In this research, 4 main categories were obtained for a sustainable bank namely, *economic sustainability*, *environmental sustainability*, *social sustainability*, and *governance sustainability*. Economic sustainability is one of the most important factors in bank sustainability. This category reflects the economic consequences of the bank's sustainability activities and its impact on a wide range of stakeholders, as well as the impact of the bank's financial performance on its sustainable activities. This category consists of both economic participation and financial performance. The category of environmental sustainability is related to environmental issues and saving energy consumption in the internal processes of the bank and investments and payment of bank facilities. This category also consists of two themes: energy saving and environmental measures. The third category in the sustainability paradigm is related to social sustainability. This category is related to the bank's contribution to creating welfare in the community, helping to provide facilities, and taking into account the rights of all stakeholders (including customers, employees, and other members of the community). This category consists of 5 themes, all of which relate to the community and the bank's stakeholders. The fourth category of bank sustainability is governance. Compared to the other three categories, this category has recently been discussed in the literature on sustainability and has been considered one of the important issues of sustainable development (Saha, 2019). Therefore, due to the unique concept that this category has, it has only one theme. It can be acknowledged that sustainable development is pursued through sustainable governance, and sustainable development requires the institutionalization of the principles of sustainable governance in organizations (Nobahar, Dehghan Nayeri, & Azar, 2019).

For agile banking, 3 categories were obtained. The first category is strategic agility, which means intelligently identifying customer needs and environmental opportunities, and threats, and considering a scenario-based strategy in the bank's strategy to meet these changes. This category has two themes: Market Response and leadership and strategic characteristics. The second category is process agility. This type of agility is the most important part of agility in the banking industry and to some extent provides the basis

for the other two categories of agility. Process agility refers to the ability to quickly change and execute processes in the production and supply of products and services. This category has 5 themes. This category includes the development of e-capacity and the development of products and services.

The Resilient Bank has two main categories in this study: economic resilience and structural resilience. Economic resilience refers to the characteristics of the balance sheet and with the characteristics of the bank itself and the macroeconomic conditions of the country's economy. This category has two themes: financial and non-financial characteristics and monitoring of macroeconomic conditions. The second category is structural resilience. This category refers to the structural variables, internal and external rules, and regulations of the bank and the central bank, depending on what other internal and external structural features of the bank increase its resilience. One of the themes of this category is Management and governance attributes, and the second theme of this category is Control and Supervisory regulations, which are mostly considered by the central bank. Finally, the conceptual model of this research was presented based on Figure 1.

Then, the PLS-SEM method was used to check the validity of the conceptual research model. All values related to reliability, validity, convergent validity, and variable validity of the research model were acceptable in the spectrum. Another noteworthy point is that the determination coefficient of our target construct, namely SAR banking, is close to 0.95, which explains that in this model, 0.95 variable changes of SAR banking under the influence of agile bank and sustainable bank and resilient banking and only 0.05 of the SAR banking variable changes are influenced by other factors that are not considered in the model of this research. Therefore, this indicates that the constructs of this model explain 0.95 of the target construct and indicate the high validity of the model. The value of the coefficient of determination for the constructs of the agile, sustainable, and resilient bank is 0.996, 0.957, and 0.996, respectively, which indicates the quality of the research model. In addition, considering the path coefficient (effect coefficient) for the third-order to the fourth-order paths (due to the significance of *t* values), it can be interpreted that the research model is more influenced by sustainable bank activities (path coefficient = 0.703) and related factors. The agile bank has the least impact on the ultimate goal of this research (path coefficient = 0.465). furthermore, considering all *t* values of the paths, both in the measurement model and in the structural model, were higher than 2.56, which indicates the significance of both models in the confidence level of 0.99, respectively.

Considering the path coefficient in sustainable banking, the category of social sustainability has the greatest impact on bank sustainability. Therefore, to achieve sustainability in the banking industry, the country's banking managers need to pay special attention to participation in society, taking into account the rights of customers, employees, and other members of society, to make their bank sustainable. The second category is environmental sustainability, so banking industry activists should also pay special consideration to environmental activities and reduce energy consumption to achieve sustainability in banks.

In agile banking, the most effective construct is related to process agility. Therefore, the managers of the country's banking sector should consider the importance of process agility to achieve agility in banking. In this regard, paying attention to the use of information technology in internal processes and using flexible banking structures and strategies to make early changes in products and services, considering components of agility culture and employee empowerment are the most effective elements to achieve agility in the bank.

In resilient banking, as expected, the highest path coefficient is related to economic resilience. Therefore, in order to increase resilience and deal with shocks caused by crises and sanctions, bank managers should not neglect the importance of economic resilience in banking and consider the issues in this research and the Basel committee.

In this study, we faced some limitations. One of the limitations of this research was the lack of access to banking professionals who have enough information about these three paradigms in the banking industry. The second limitation was related to the validity of the conceptual model using bank managers in Iran. Therefore, other researchers can examine the validity of the conceptual model of this research in other countries and compare the results with this research.

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