Presentation of a Strategic Model for Electronic Banking Services in the Agricultural Bank of Iran

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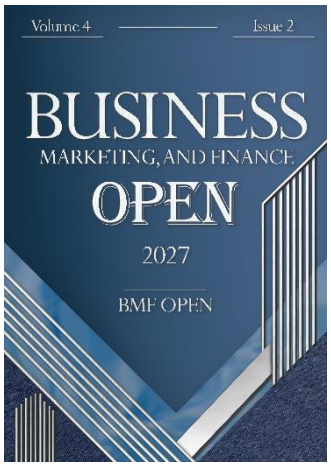

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Abstract: This study was conducted with the aim of presenting a strategic model for electronic banking services in the Agricultural Bank of Iran using an Interpretive Structural Modeling (ISM) approach. The data required for developing the model were collected through interviews with 16 academic experts familiar with issues related to electronic banking. In this study, Interpretive Structural Modeling (ISM) was employed for data analysis and model development. The results of the analysis indicated that the strategic factors, including market analysis and customer identification, technology development, service innovation, education and awareness, and digital marketing strategies, are located in the autonomous region. These factors exhibit very low dependence and relatively low driving power. The challenges, including lack of awareness and training, noncompliance with security and privacy issues, inadequate infrastructure, lack of regulation and regulatory frameworks, and insufficient financial resources and investment, are also located in the autonomous region. These factors similarly demonstrate very low dependence and relatively low driving power. The driving forces, including the development of emerging technologies, increased accessibility of digital tools and artificial intelligence, creation of a digital ecosystem, development of supportive laws and regulations, and establishment of strategic collaborations, are likewise situated in the autonomous region. These factors possess very low dependence and relatively low driving power. Finally, the findings showed that the future development of electronic banking services in the Agricultural Bank of Iran—including pervasive digital banking, the expansion of virtual-space-based banking, and the development of blockchain-based financial services, which are located in the dependent region and possess very low driving power but very high dependence compared with other factors—will be advanced through strategic factors and driving forces.

Keywords: Electronic banking, banking services, strategic map of banking services.

1. Introduction

The rapid digital transformation of the banking industry has fundamentally reshaped the nature of financial service delivery, customer interaction, operational architecture, and strategic competition. Electronic banking is no longer limited to the automation of traditional banking processes; rather, it has evolved into a multidimensional strategic system that integrates technology, service quality, customer experience, organizational innovation, regulatory adaptation, and future-oriented business modeling. In this context, banks are required to move beyond fragmented digital initiatives and adopt coherent strategic models that explain how electronic banking services can be developed, sustained, and aligned with changing customer expectations and technological capabilities. The expansion of digital banking channels,

mobile applications, online platforms, artificial intelligence, blockchain, and cloud-based infrastructures has intensified the need for banks to design integrated service strategies capable of improving accessibility, efficiency, customer satisfaction, profitability, and competitive advantage [1-3].

Electronic banking has become a central component of modern financial intermediation because it enables banks to deliver services independent of time and place, reduce transaction costs, increase operational speed, and expand the scope of customer access. Studies in different banking environments have shown that electronic banking services contribute to customer satisfaction, service convenience, and perceived service value when they are supported by reliable infrastructure, user-friendly platforms, and responsive service systems [4-6]. Customer satisfaction in electronic banking is strongly shaped by perceived service quality, system reliability, transaction security, responsiveness, ease of use, and trust. Therefore, the development of electronic banking should be understood not merely as a technological upgrade but as a customer-centered transformation that links digital service design to behavioral acceptance, loyalty, and long-term relationship management [7-9].

One of the main strategic concerns in electronic banking is the relationship between service quality and customer loyalty. As customers increasingly compare banking services with digital experiences provided by nonbanking platforms, service expectations have become more sophisticated. Electronic banking platforms must offer speed, simplicity, transparency, personalization, and secure access. Research indicates that e-banking and service quality can directly influence customer loyalty, particularly when digital channels reduce customer effort and improve the continuity of service experience [10]. Similarly, structural models of electronic banking have emphasized that customer satisfaction can function as a mediating mechanism through which dimensions of e-banking influence behavioral outcomes and continued usage [3]. These findings highlight the importance of designing a strategic model that connects technological factors with customer-oriented outcomes.

Despite its potential advantages, the development of electronic banking is accompanied by several challenges. Customers may avoid or underuse digital banking services when they perceive security risks, lack sufficient digital literacy, encounter technical complexity, or experience service failure. The technology acceptance of e-banking services is particularly sensitive in unstable or unfamiliar environments, where uncertainty may reduce customers' willingness to adopt digital channels [11]. In addition, barriers to digital e-banking services in cooperative and traditional banking contexts show that technological readiness, user awareness, institutional preparedness, and trust-building mechanisms are essential for effective adoption [12]. Therefore, any strategic model for electronic banking services must identify not only the drivers of digital transformation but also the obstacles that restrict implementation and customer acceptance.

From a managerial perspective, electronic banking creates opportunities for improving organizational performance through productivity enhancement, innovation, employee capability development, and more efficient service delivery. Recent evidence suggests that e-banking, innovativeness, productivity, and job security can be associated with organizational performance, indicating that digital banking transformation is also an internal organizational issue rather than only a customer-interface issue [2]. Similarly, the role of human capital and electronic banking in bank profitability shows that skilled employees, technological competence, and digital service infrastructure jointly affect banking outcomes [13]. Consequently, the strategic management of electronic banking requires alignment among human resources, technological development, organizational learning, investment decisions, and customer service strategies.

The profitability implications of electronic banking have also received growing attention. Digital banking can improve profitability by reducing branch-based costs, increasing fee-based services, expanding transaction volume,

and enabling more efficient customer segmentation. Evidence from Islamic banking in Sub-Saharan Africa suggests that e-banking can influence bank profitability, although the extent of its impact depends on financial determinants and institutional conditions [14]. Other studies have examined fee-based income, trading income, market performance, and risk in banking, indicating that nontraditional income streams and digital service channels may reshape the financial structure of banks [15]. These findings suggest that electronic banking strategy should be linked to both service development and financial sustainability.

In addition to profitability, customer behavior is a key dimension of electronic banking development. The transition from traditional banking to electronic banking changes the way customers search for information, evaluate services, complete transactions, and maintain relationships with banks. Two-dimensional analyses of customer behavior in traditional and electronic banking indicate that customers may behave differently across physical and digital channels, requiring banks to design channel-specific strategies rather than assuming that traditional service logic can simply be transferred to digital environments [16]. Similarly, customer experience management in electronic banking services requires a multilevel perspective that includes functional quality, emotional responses, digital interaction, service recovery, and long-term value perception [17]. Thus, strategic modeling in electronic banking should include customer experience as a core construct.

Service failures and recovery processes are particularly important in electronic banking because digital interactions often occur without direct human mediation. When customers face transaction errors, system failures, delayed responses, or security concerns, their emotional reactions can strongly influence satisfaction evaluation. Research on e-service failure and e-service recovery demonstrates that emotions play a significant role in customers' evaluation of electronic banking satisfaction [18]. This implies that electronic banking strategies should not be limited to technical efficiency; they must also include mechanisms for service recovery, communication, reassurance, and emotional trust restoration. In the banking sector, where trust is central, digital service failures can have broader consequences for loyalty and reputation.

The development of electronic banking also depends on market orientation and the ability of banks to understand evolving customer needs. An indigenous model of market orientation in the Iranian banking industry emphasizes the importance of aligning banking services with customer expectations, competitive conditions, and environmental dynamics [19]. For Iranian banks, including the Agricultural Bank of Iran, market analysis and customer identification are especially important because different customer groups may vary in digital readiness, financial needs, geographic access, and service expectations. Agricultural banking also involves clients who may be located in rural or semi-urban areas, making accessibility, digital literacy, and trust-building central to the design of electronic banking services.

Futures studies approaches have become increasingly relevant for banking strategy because digital transformation is shaped by uncertain technological, regulatory, economic, and social changes. Research on identifying payment systems in electronic banking through a futures studies approach highlights the need to anticipate alternative digital banking trajectories and prepare banks for emerging payment technologies [20]. Similarly, frameworks for identifying drivers affecting the future of the banking industry emphasize the role of financial technology, digital ecosystems, customer expectations, and regulatory transformation [21]. Such studies indicate that a strategic model of electronic banking should not only describe the current state of digital services but also identify future drivers and possible development pathways.

Technology lifecycle management is another important consideration in the development of banking services. Banking technologies pass through stages of emergence, adoption, expansion, maturity, and replacement. If banks

fail to manage this lifecycle strategically, digital services may become obsolete, fragmented, or misaligned with customer needs. Studies on lifecycle management models for banking service development emphasize the need to identify damages, weaknesses, and corrective strategies in the service development process [22]. This perspective is consistent with broader evidence from sustainable new product development, where product lifecycle management capabilities are necessary for achieving sustainable innovation outcomes [23]. Therefore, electronic banking service development requires systematic planning across the full lifecycle of digital products and services.

The growth of electronic banking among younger and educated users also reflects changing expectations in future banking markets. Educated teenagers and younger customers are increasingly familiar with digital platforms, mobile applications, and online transactions, making them a strategic segment for long-term banking transformation [24]. However, digital familiarity does not automatically guarantee trust or loyalty; banks must still provide security, usability, responsiveness, and meaningful value. Emerging concepts such as green gamified banking further show that affective and motivational factors can influence customer engagement with e-banking services, particularly when digital banking is connected to sustainability-oriented and interactive experiences [25]. These developments suggest that electronic banking strategies should incorporate both technological functionality and behavioral engagement mechanisms.

Mobile banking applications and web-based banking services have also changed the structure of digital channel competition. Evidence on digital banking and deposits indicates that mobile applications may substitute for web services, showing that customers increasingly prefer more convenient and accessible digital channels [1]. This substitution effect has strategic implications for banks because investment decisions must consider which digital platforms customers actually use and how channel preferences evolve over time. For banks seeking to develop electronic services, platform prioritization, mobile-first design, integrated digital ecosystems, and data-driven service personalization become essential.

In the Iranian banking context, the design of electronic banking strategies must also account for institutional constraints, regulatory requirements, investment limitations, infrastructure readiness, and customer diversity. Studies conducted in Iranian banks have examined customer satisfaction with electronic banking services, the effect of electronic banking service quality, customer experience management, market orientation, and future drivers of banking transformation [8, 9, 17, 21]. These studies collectively indicate that although electronic banking has expanded in Iran, there remains a need for integrated strategic models that organize key factors, challenges, drivers, and future development paths in a coherent structure.

The Agricultural Bank of Iran has a distinctive role in the Iranian banking system because it serves customers connected to agriculture, rural development, financing, production, and related economic activities. Therefore, the strategic development of electronic banking services in this bank requires sensitivity to both general digital banking trends and the specific needs of its customer base. Electronic banking can enhance access to financial services, reduce dependence on physical branches, facilitate faster transactions, support agricultural clients in dispersed geographic areas, and improve the efficiency of financial service delivery. However, these benefits can only be achieved if strategic factors such as market analysis, technology development, service innovation, education and awareness, and digital marketing are properly aligned with challenges such as insufficient infrastructure, lack of training, security concerns, regulatory gaps, and investment constraints.

Given the multidimensional nature of electronic banking, Interpretive Structural Modeling (ISM) provides a suitable methodological logic for identifying and structuring the relationships among strategic factors. ISM is useful when a research problem includes multiple interrelated factors and when expert judgment is required to determine

hierarchical relationships. In the context of electronic banking strategy, ISM can help clarify which factors are influential, which factors are dependent, and how different dimensions interact in shaping future service development. When combined with MICMAC analysis, it also enables classification of factors based on driving power and dependence, thereby supporting managerial prioritization and strategic decision-making. This is particularly important for banks operating in complex and changing environments where resources must be allocated carefully and transformation priorities must be clearly identified.

Accordingly, the present study aims to present a strategic model of electronic banking services in the Agricultural Bank of Iran using an Interpretive Structural Modeling approach.

2. Methodology

In terms of addressing the foundations for presenting a strategic model of electronic banking services in the Agricultural Bank of Iran, this study is considered exploratory research. Furthermore, due to the provision of practical recommendations, it is also classified as applied research. Therefore, the present study can be categorized as exploratory–applied research. In terms of its nature, the study is exploratory because it addresses an issue that had not previously been investigated in this form and at this level. For this purpose, a mixed-methods approach was employed, aiming to integrate qualitative and quantitative research methods to achieve an appropriate methodology for fulfilling the research objectives. In exploratory research designs, the researcher seeks to investigate an ambiguous situation. Accordingly, qualitative data are first collected. Conducting this stage enables the researcher to describe numerous aspects of the phenomenon under investigation. Through this initial identification process, the components required for model design become available to the researcher. Subsequently, the researcher designs the research model using Interpretive Structural Modeling (ISM).

The statistical population of the study consisted of academic experts and specialists familiar with electronic banking issues, including university faculty members holding the academic rank of associate professor or higher, as well as banking specialists possessing at least a master's degree and a minimum of 10 years of managerial experience in the Agricultural Bank of Iran. Considering the snowball sampling method and the criterion of theoretical saturation, 16 experts were selected as the research sample for interviews.

Table 1. Descriptive Statistics of the Experts

Variable	Category	Frequency	Relative Frequency (%)	Cumulative Frequency (%)
Gender	Male	14	87.5	87.5
Gender	Female	2	12.5	100
Gender	Total	16	100	-
Education Level	Doctoral Degree (PhD)	16	100	100
Education Level	Total	16	100	-
Work Experience	11–15 years	5	31.25	31.25
Work Experience	16–20 years	8	50	81.25
Work Experience	21–25 years	3	18.75	100
Work Experience	Total	16	100	-
Age	36–45 years	12	75	75
Age	46–55 years	4	25	100
Age	Total	16	100	-

In this study, interviews and questionnaires were utilized as data collection instruments.

Semi-structured interviews were employed for collecting preliminary information.

The Content Validity Ratio (CVR) questionnaire was used for component selection. The items extracted from the preliminary interviews with experts were presented to the experts through this questionnaire in order to achieve consensus among their viewpoints.

The Interpretive Structural Modeling (ISM) questionnaire possessed a matrix-based structure in which the investigated components were compared pairwise.

In this study, Interpretive Structural Modeling (ISM) was employed for modeling purposes. ISM is an analytical method that assists in identifying and analyzing relationships among variables within a complex system. This method is particularly applicable in management and social science studies and includes several distinct steps, each of which is explained below.

Step 1: Identification of Variables Relevant to the Problem

At this stage, researchers identify the key variables associated with the issue under investigation. These variables may include factors influencing a particular phenomenon, existing challenges, or opportunities within a system. Accurate identification of these variables is essential for subsequent stages because the quality of the final results depends on the precision and comprehensiveness of this phase. Utilizing expert opinions and previous analyses can contribute to better identification of these variables.

Step 2: Formation of the Structural Self-Interaction Matrix (SSIM)

Following the identification of variables, the next step involves constructing the Structural Self-Interaction Matrix (SSIM). This matrix is a square table in which variables are positioned in rows and columns, and the relationships among them are specified. At this stage, researchers determine the type of relationships between variables, typically through four different states (unidirectional influence, bidirectional influence, or no relationship). This matrix serves as the primary basis for subsequent modeling stages.

Step 3: Formation of the Initial Reachability Matrix

At this stage, the initial reachability matrix is developed to represent the relationships among variables based on the information contained in the SSIM. This matrix assists researchers in identifying direct and indirect effects among variables. Through analytical techniques, researchers can examine complex relationships among variables and identify the strengths and weaknesses of each variable.

Step 4: Development of the Final Reachability Matrix

After forming the initial reachability matrix, researchers develop the final reachability matrix. This stage involves applying transitivity relationships among variables; in other words, if variable A influences variable B and variable B influences variable C, then variable A will also influence variable C. This process contributes to a more accurate analysis of the relationships among variables and provides a basis for determining the different levels of variables.

Step 5: Determination of Relationships and Leveling of Indicators

At this stage, researchers determine the relationships among variables and classify them into different levels. This is accomplished by extracting the reachability sets (outputs) and antecedent sets (inputs) for each criterion. After identifying the first-level indicators, the process continues until all indicators are leveled. This classification assists managers in determining strategic priorities.

Step 6: Drawing the Final Model

After determining the levels and relationships among variables, the final model is developed. At this stage, the relationships among variables are represented graphically in order to provide greater clarity for the analyses. Drawing the final model facilitates a visual understanding of the complex relationships among different factors.

Step 7: Analysis of Driving Power and Dependence Using the MICMAC Diagram

In the final stage, the driving power and dependence level of each variable are analyzed. Using the MICMAC diagram, researchers are able to identify the strengths and weaknesses of each factor and formulate appropriate strategies for managing them. This analysis assists managers in making more informed decisions and allocating resources more effectively. By providing a systematic approach for analyzing relationships among complex variables, Interpretive Structural Modeling (ISM) offers an effective tool for managerial decision-making and helps organizations improve their strategies.

3. Findings and Results

At this stage, the content of each factor was determined using the CVR index (Content Validity Ratio). For this purpose, a questionnaire was designed and distributed among 16 experts. They were asked to evaluate each factor and dimension based on a three-point scale: "essential," "useful but not essential," and "not essential." Based on the established criteria, if the CVR value of each factor was higher than 0.49, the content validity of that factor was confirmed. The results obtained from this evaluation using the Content Validity Ratio (CVR) are presented in Table 2.

Table 2. CVR Value of Each Factor

No.	Factors	CVR	Result	Dimensions	CVR	Result
1	Market analysis and customer identification	1	Confirmed	Strategic factors	1	Confirmed
2	Technology development	1	Confirmed			
3	Service innovation	1	Confirmed			
4	Education and awareness	1	Confirmed			
5	Digital marketing strategies	1	Confirmed			
6	Lack of awareness and training	1	Confirmed	Challenges	1	Confirmed
7	Noncompliance with security and privacy issues	1	Confirmed			
8	Inadequate infrastructure	1	Confirmed			
9	Lack of regulation and regulatory frameworks	1	Confirmed			
10	Insufficient financial resources and investment	1	Confirmed			
11	Development of emerging technologies	1	Confirmed	Driving forces	1	Confirmed
12	Increased access to digital tools and artificial intelligence	1	Confirmed			
13	Creation of a digital ecosystem	1	Confirmed			
14	Development of supportive laws and regulations	1	Confirmed			
15	Establishment of strategic collaborations	1	Confirmed			
16	Pervasive digital banking	1	Confirmed	Future development of electronic banking services in the Agricultural Bank	1	Confirmed
17	Development of cyberspace-based banking	1	Confirmed			
18	Development of blockchain-based financial services	1	Confirmed			

As shown in the table above, 18 factors within four dimensions were confirmed by the experts. Therefore, these 18 factors are used for "presenting a strategic model of electronic banking services in the Agricultural Bank of Iran."

Step One: Identifying Factors Related to the Problem

The method of selecting the factors was fully explained in the previous section. Therefore, these 18 factors are used for "presenting a strategic model of electronic banking services in the Agricultural Bank of Iran."

Step Two: Formation of the Structural Self-Interaction Matrix

After determining the factors, the ISM questionnaire was designed, and the experts examined these factors pairwise and determined the relationships among them using the following symbols:

V: If factor i influences factor j

A: If factor j influences factor i

X: Mutual influence between factors i and j

O: If there is no relationship between factors i and j

The results obtained from the questionnaires regarding the examined factors are presented in Table 3.

Table 3. Results Obtained from the Questionnaires

No.	Factors	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	Market analysis and customer identification		X	X	X	X	O	O	O	O	O	O	O	O	O	O	V	V	V
2	Technology development			X	X	X	O	O	O	O	O	O	O	O	O	O	V	V	V
3	Service innovation				X	X	O	O	O	O	O	O	O	O	O	O	V	V	V
4	Education and awareness					X	O	O	O	O	O	O	O	O	O	O	V	V	V
5	Digital marketing strategies						O	O	O	O	O	O	O	O	O	O	V	V	V
6	Lack of awareness and training							X	X	X	X	O	O	O	O	O	V	V	V
7	Noncompliance with security and privacy issues								X	X	X	O	O	O	O	O	V	V	V
8	Inadequate infrastructure									X	X	O	O	O	O	O	V	V	V
9	Lack of regulation and regulatory frameworks										X	O	O	O	O	O	V	V	V
10	Insufficient financial resources and investment											O	O	O	O	O	V	V	V
11	Development of emerging technologies												X	X	X	X	V	V	V
12	Increased access to digital tools and artificial intelligence													X	X	X	V	V	V
13	Creation of a digital ecosystem														X	X	V	V	V
14	Development of supportive laws and regulations															X	V	V	V
15	Establishment of strategic collaborations																V	V	V
16	Pervasive digital banking																	X	X
17	Development of cyberspace-based banking																		X
18	Development of blockchain-based financial services																		

Step Three: Formation of the Initial Reachability Matrix

The initial reachability matrix is obtained by converting the Structural Self-Interaction Matrix into a binary matrix consisting of zero and one values. To replace the four symbols in Table 2 with zeros and ones and extract the initial reachability matrix, the following rules are applied:

If the entry (i, j) in the Structural Self-Interaction Matrix is V, then in the initial reachability matrix, entry (i, j) is assigned the value 1 and entry (j, i) is assigned the value 0.

If the entry (i, j) in the Structural Self-Interaction Matrix is A, then in the initial reachability matrix, entry (i, j) is assigned the value 0 and entry (j, i) is assigned the value 1.

If the entry (i, j) in the Structural Self-Interaction Matrix is X, then in the initial reachability matrix, both entry (i, j) and entry (j, i) are assigned the value 1.

If the entry (i, j) in the Structural Self-Interaction Matrix is O, then in the initial reachability matrix, both entry (i, j) and entry (j, i) are assigned the value 0.

Table 4 shows the initial reachability matrix.

Table 4. Initial Reachability Matrix

No.	Factors	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	Market analysis and customer identification	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	1	1
2	Technology development	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	1	1
3	Service innovation	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	1	1
4	Education and awareness	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	1	1
5	Digital marketing strategies	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	1	1
6	Lack of awareness and training	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	1	1	1
7	Noncompliance with security and privacy issues	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	1	1	1
8	Inadequate infrastructure	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	1	1	1
9	Lack of regulation and regulatory frameworks	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	1	1	1
10	Insufficient financial resources and investment	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	1	1	1
11	Development of emerging technologies	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
12	Increased access to digital tools and artificial intelligence	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
13	Creation of a digital ecosystem	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
14	Development of supportive laws and regulations	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
15	Establishment of strategic collaborations	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
16	Pervasive digital banking	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
17	Development of cyberspace-based banking	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
18	Development of blockchain-based financial services	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1

Step Four: Development of the Final Reachability Matrix

After the initial reachability matrix was obtained, the secondary relationships among the factors were examined. A secondary relationship means that if factor i leads to factor j and factor j also leads to factor k, then factor i will also lead to factor k. If this condition does not exist in the initial reachability matrix, the matrix must be modified and the omitted relationships must be added. This process is technically referred to as making the initial reachability matrix consistent. In this step, all secondary relationships among the factors were examined, but no secondary relationship was identified. Therefore, the final reachability matrix is the same as the initial reachability matrix. In this matrix, the driving power and dependence level of each factor are also shown. The driving power of a factor is obtained by summing the number of factors influenced by it together with the factor itself, and the dependence level of a factor is obtained by summing the factors from which it is influenced together with the factor itself.

Table 5. Final Reachability Matrix

No.	Factors	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Driving Power
1	Market analysis and customer identification	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	1	1	8
2	Technology development	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	1	1	8
3	Service innovation	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	1	1	8
4	Education and awareness	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	1	1	8
5	Digital marketing strategies	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	1	1	8
6	Lack of awareness and training	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	1	1	1	8
7	Noncompliance with security and privacy issues	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	1	1	1	8
8	Inadequate infrastructure	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	1	1	1	8
9	Lack of regulation and regulatory frameworks	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	1	1	1	8
10	Insufficient financial resources and investment	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	1	1	1	8
11	Development of emerging technologies	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	8
12	Increased access to digital tools and artificial intelligence	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	8
13	Creation of a digital ecosystem	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	8
14	Development of supportive laws and regulations	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	8
15	Establishment of strategic collaborations	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	8
16	Pervasive digital banking	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	3
17	Development of cyberspace-based banking	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	3
18	Development of blockchain-based financial services	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	3
	Dependence	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	18	18	18	-

Step Five: Determination of Relationships and Leveling of Factors

In this step, using the reachability matrix, after determining the input and output sets, the intersection of these sets is obtained for each factor.

The output set of a factor includes the factor itself and the factors it influences, which can be identified by the "1" values in the corresponding row.

The input set of a factor includes the factor itself and the factors by which it is influenced, which can be identified by the "1" values in the corresponding column.

After determining the input and output sets, their intersection is determined for each factor. Factors whose output set and intersection set are completely identical are placed at the highest level of the Interpretive Structural Modeling hierarchy. To identify the components of the next level of the system, the components at the highest level are removed from the mathematical calculations of the relevant table, and the process of identifying the components of the next level is carried out in the same way as the process used for identifying the highest-level components. This operation is repeated until the components of all system levels are identified. Table 5 shows the first iteration of leveling.

Table 6. Leveling: First Iteration

No.	Factors	Output Set	Input Set	Intersection Set	Level
1	Market analysis and customer identification	18, 17, 16, 5, 4, 3, 2, 1	5, 4, 3, 2, 1	5, 4, 3, 2, 1	
2	Technology development	18, 17, 16, 5, 4, 3, 2, 1	5, 4, 3, 2, 1	5, 4, 3, 2, 1	
3	Service innovation	18, 17, 16, 5, 4, 3, 2, 1	5, 4, 3, 2, 1	5, 4, 3, 2, 1	
4	Education and awareness	18, 17, 16, 5, 4, 3, 2, 1	5, 4, 3, 2, 1	5, 4, 3, 2, 1	
5	Digital marketing strategies	18, 17, 16, 5, 4, 3, 2, 1	5, 4, 3, 2, 1	5, 4, 3, 2, 1	
6	Lack of awareness and training	18, 17, 16, 10, 9, 8, 7, 6	10, 9, 8, 7, 6	10, 9, 8, 7, 6	
7	Noncompliance with security and privacy issues	18, 17, 16, 10, 9, 8, 7, 6	10, 9, 8, 7, 6	10, 9, 8, 7, 6	
8	Inadequate infrastructure	18, 17, 16, 10, 9, 8, 7, 6	10, 9, 8, 7, 6	10, 9, 8, 7, 6	
9	Lack of regulation and regulatory frameworks	18, 17, 16, 10, 9, 8, 7, 6	10, 9, 8, 7, 6	10, 9, 8, 7, 6	
10	Insufficient financial resources and investment	18, 17, 16, 10, 9, 8, 7, 6	10, 9, 8, 7, 6	10, 9, 8, 7, 6	
11	Development of emerging technologies	18, 17, 16, 15, 14, 13, 12, 11	15, 14, 13, 12, 11	15, 14, 13, 12, 11	
12	Increased access to digital tools and artificial intelligence	18, 17, 16, 15, 14, 13, 12, 11	15, 14, 13, 12, 11	15, 14, 13, 12, 11	
13	Creation of a digital ecosystem	18, 17, 16, 15, 14, 13, 12, 11	15, 14, 13, 12, 11	15, 14, 13, 12, 11	
14	Development of supportive laws and regulations	18, 17, 16, 15, 14, 13, 12, 11	15, 14, 13, 12, 11	15, 14, 13, 12, 11	
15	Establishment of strategic collaborations	18, 17, 16, 15, 14, 13, 12, 11	15, 14, 13, 12, 11	15, 14, 13, 12, 11	
16	Pervasive digital banking	18, 17, 16	18, 17, 16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1	18, 17, 16	1
17	Development of cyberspace-based banking	18, 17, 16	18, 17, 16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1	18, 17, 16	1
18	Development of blockchain-based financial services	18, 17, 16	18, 17, 16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1	18, 17, 16	1

As shown in the table above, the output sets of factors 16, 17, and 18 are identical. Therefore, these factors are placed at the first level as the most dependent factors. Accordingly, they must be removed from the table to continue the leveling process. The next table shows the second iteration of leveling.

Table 7. Leveling: Second Iteration

No.	Factors	Output Set	Input Set	Intersection Set	Level
1	Market analysis and customer identification	5, 4, 3, 2, 1	5, 4, 3, 2, 1	5, 4, 3, 2, 1	2
2	Technology development	5, 4, 3, 2, 1	5, 4, 3, 2, 1	5, 4, 3, 2, 1	2
3	Service innovation	5, 4, 3, 2, 1	5, 4, 3, 2, 1	5, 4, 3, 2, 1	2
4	Education and awareness	5, 4, 3, 2, 1	5, 4, 3, 2, 1	5, 4, 3, 2, 1	2
5	Digital marketing strategies	5, 4, 3, 2, 1	5, 4, 3, 2, 1	5, 4, 3, 2, 1	2
6	Lack of awareness and training	10, 9, 8, 7, 6	10, 9, 8, 7, 6	10, 9, 8, 7, 6	2
7	Noncompliance with security and privacy issues	10, 9, 8, 7, 6	10, 9, 8, 7, 6	10, 9, 8, 7, 6	2
8	Inadequate infrastructure	10, 9, 8, 7, 6	10, 9, 8, 7, 6	10, 9, 8, 7, 6	2

9	Lack of regulation and regulatory frameworks	10, 9, 8, 7, 6	10, 9, 8, 7, 6	10, 9, 8, 7, 6	2
10	Insufficient financial resources and investment	10, 9, 8, 7, 6	10, 9, 8, 7, 6	10, 9, 8, 7, 6	2
11	Development of emerging technologies	15, 14, 13, 12, 11	15, 14, 13, 12, 11	15, 14, 13, 12, 11	2
12	Increased access to digital tools and artificial intelligence	15, 14, 13, 12, 11	15, 14, 13, 12, 11	15, 14, 13, 12, 11	2
13	Creation of a digital ecosystem	15, 14, 13, 12, 11	15, 14, 13, 12, 11	15, 14, 13, 12, 11	2
14	Development of supportive laws and regulations	15, 14, 13, 12, 11	15, 14, 13, 12, 11	15, 14, 13, 12, 11	2
15	Establishment of strategic collaborations	15, 14, 13, 12, 11	15, 14, 13, 12, 11	15, 14, 13, 12, 11	2

As shown in the table above, the output sets of factors 1, 2, 3, …, and 15 are identical. Therefore, these factors are placed at the second level as the most influential factors. Accordingly, they must be removed from the table to continue the leveling process. As a result, the leveling process is completed.

Step Six: Drawing the Final Model

At this stage, an initial model is drawn based on the levels of the factors and the final reachability matrix, and the final model is obtained by removing transitivity from the initial model. Therefore, the ISM model derived from the factors affecting capital market financial indicators, elections, political uncertainty, and macroeconomic indicators under Iran's environmental conditions is drawn as Figure 1.

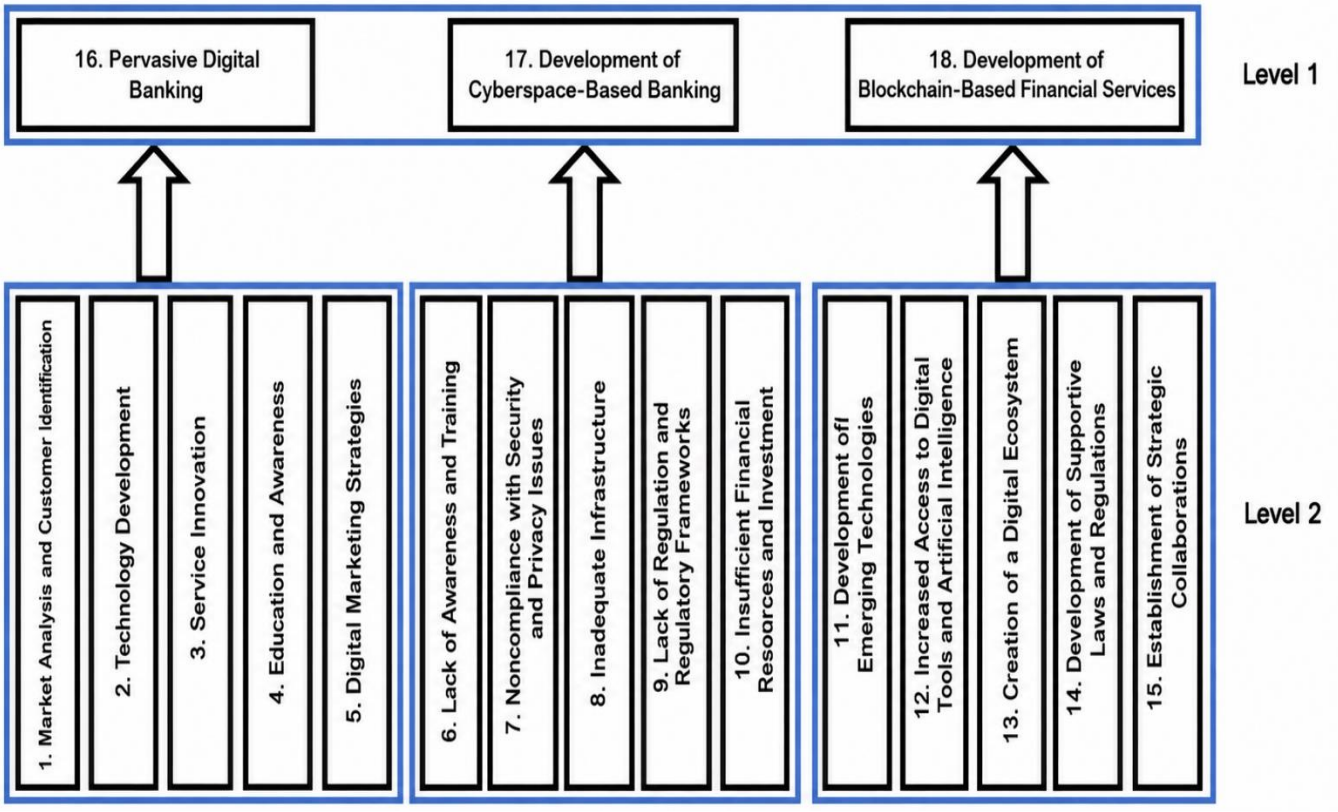

Figure 1. Initial ISM Model

As shown in the figure above, factors 16, 17, and 18 are placed at the first level. These factors are the most dependent factors in the model. Factors 1, 2, 3, …, and 15 are placed at the second level. These factors influence the first-level factors and are the most influential factors in the model. Based on the categorization of factors, the final ISM model is presented as Figure 2.

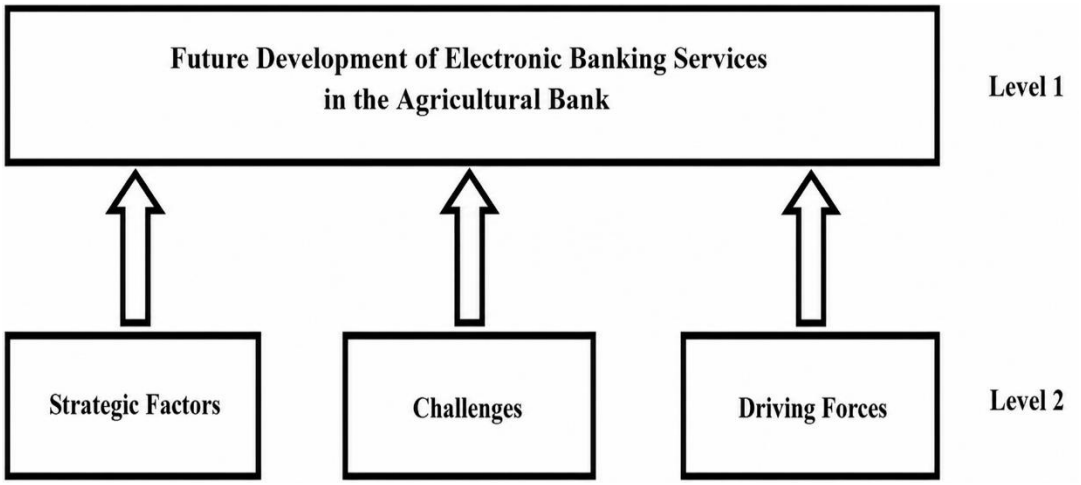

Figure 2. Final ISM Model

Step Seven: Analysis of Driving Power and Dependence Level (MICMAC Diagram)

At this stage, the factors are classified into four groups. The first group includes autonomous factors (Region 1), which have weak driving power and weak dependence. These factors are relatively disconnected from other factors and have limited relationships. The second group includes dependent factors (Region 2), which have weak driving power but high dependence. The third group consists of linkage factors (Region 3). These factors have high driving power and high dependence. In fact, any action on these factors leads to changes in other factors. The fourth group includes independent factors (Region 4). These factors have high driving power and low dependence. Factors with high driving power are technically referred to as key factors. Clearly, these factors are placed in either the independent or linkage group. By summing the "1" entries in each row and column, the driving power and dependence level of the factors are obtained. Accordingly, the driving power–dependence diagram is drawn.

Using the data obtained from Step Four, the studied factors can be classified into the following four levels based on each factor's driving power over other factors and each factor's dependence on other factors:

Autonomous factors: factors that have minimum dependence and driving power in relation to other factors.

Dependent factors: factors that have high dependence on other factors.

Linkage factors: factors that have a bidirectional relationship with other factors.

Independent factors: factors that exert considerable influence on other factors.

To determine the coordinates of each factor in the MICMAC matrix, the driving power and dependence level of that factor must be used. These values are obtained from the final reachability matrix. Table 7 shows the driving power and dependence level of each factor.

Table 8. Driving Power and Dependence Level of Each Factor

No.	Factors	Dependence	Driving Power
1	Market analysis and customer identification	5	8
2	Technology development	5	8
3	Service innovation	5	8
4	Education and awareness	5	8
5	Digital marketing strategies	5	8
6	Lack of awareness and training	5	8
7	Noncompliance with security and privacy issues	5	8
8	Inadequate infrastructure	5	8
9	Lack of regulation and regulatory frameworks	5	8
10	Insufficient financial resources and investment	5	8

11	Development of emerging technologies	5	8
12	Increased access to digital tools and artificial intelligence	5	8
13	Creation of a digital ecosystem	5	8
14	Development of supportive laws and regulations	5	8
15	Establishment of strategic collaborations	5	8
16	Pervasive digital banking	18	3
17	Development of cyberspace-based banking	18	3
18	Development of blockchain-based financial services	18	3

Using the coordinates of the factors presented in the table above, the MICMAC matrix is formed (Figure 3).

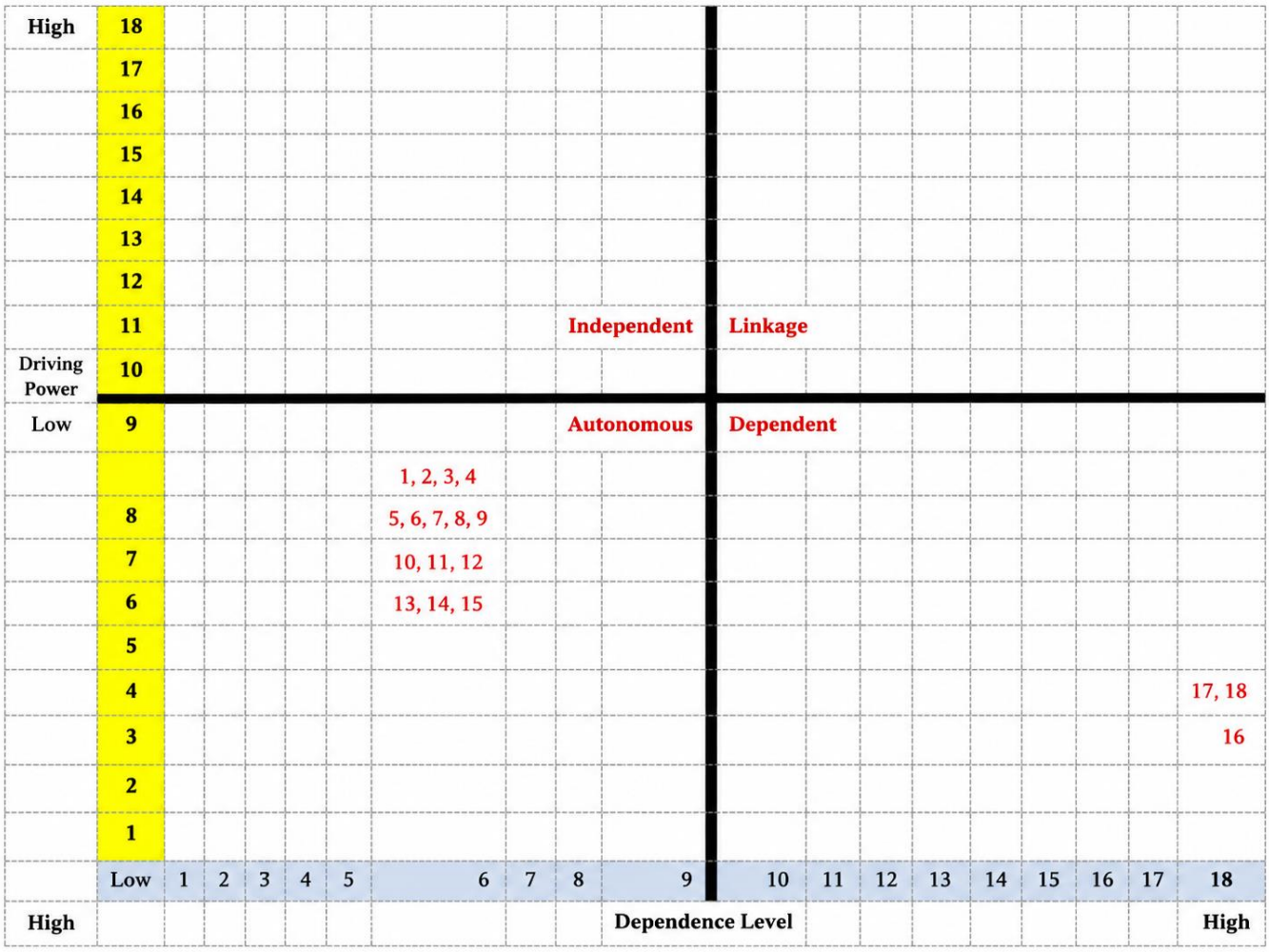

Figure 3. MICMAC Matrix

As shown in the figure above (MICMAC matrix), factors 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, and 15 are located in the autonomous region. These factors have very low dependence and relatively low driving power. Factors 16, 17, and 18 are located in the dependent region. These factors have very low driving power but very high dependence compared with other factors. At this point, the Interpretive Structural Modeling process for "presenting a strategic model of electronic banking services in the Agricultural Bank of Iran" is completed.

Scenario Writing for Electronic Banking Services in the Agricultural Bank of Iran

At the end of the study, a strategic map of electronic banking services in the Agricultural Bank of Iran is developed. Considering rapid technological developments and the growing needs of customers, this chapter

identifies the key factors, challenges, driving forces, and future of electronic banking services. The aim of this chapter is to create a comprehensive roadmap for developing and improving electronic banking services using a futures studies approach.

Strategic Factors

The strategic factors in drawing the strategic map of electronic banking services include the following:

Market analysis and customer identification: Accurate recognition of customers' needs and behaviors through data analysis and market research helps the bank provide services aligned with customer expectations.

Technology development: Investment in emerging technologies such as cloud computing, blockchain, and artificial intelligence is essential for upgrading banking infrastructure and providing better services to customers.

Service innovation: Designing and offering new and diverse services that respond to customers' specific needs can increase the bank's competitiveness.

Education and awareness: Holding training courses for employees and customers to increase awareness of digital services and how to use them is highly important.

The use of digital tools to attract and retain customers includes online advertising, content marketing, and the use of social networks.

Challenges

The challenges in the development of electronic banking services are as follows:

Lack of awareness and training: Many customers are still unfamiliar with digital services, which prevents them from fully using these services.

Noncompliance with security and privacy issues: Concerns about data security and privacy can reduce customer trust.

Inadequate infrastructure: The absence of appropriate information technology infrastructure can prevent the provision of high-quality services.

Lack of regulation and regulatory frameworks: The absence of appropriate legal frameworks to support digital banking can limit the development of this sector.

Insufficient financial resources and investment: A shortage of financial resources for investment in emerging technologies is another challenge.

Driving Forces

The driving forces that can accelerate the development of electronic banking services include the following:

Development of emerging technologies: Advances in information technologies such as artificial intelligence and blockchain can provide new capabilities for banks.

Increased access to digital tools: Expanding access to the Internet and digital tools will increase the use of online services.

Creation of a digital ecosystem: Cooperation among banks, information technology companies, and other stakeholders is essential for creating an efficient ecosystem.

Development of supportive laws and regulations: Establishing appropriate legal frameworks can facilitate digital banking activities.

Establishment of strategic collaborations: Cooperation with other institutions and companies can support better use of existing resources.

Future Development of Electronic Banking Services

The future development of electronic banking services in the Agricultural Bank of Iran will include the following:

Pervasive digital banking: Providing all banking services online to increase customer convenience.

Development of cyberspace-based banking: Creating platforms that enable direct interaction with customers.

Development of blockchain-based financial services: Using blockchain technology to increase transaction security and reduce costs.

Scenario Evaluation

In scenario evaluation, different aspects of each scenario should be considered.

The first scenario, pervasive digital banking, focuses on increasing access and convenience, but it requires strong infrastructure.

The second scenario, cyberspace-based banking, emphasizes direct interaction with customers, which may face challenges such as security.

The third scenario, blockchain-based financial services, focuses on innovation, but it may require more time for public acceptance.

Strategy Formulation

The proposed strategy includes the following stages:

Continuous market analysis: Conducting regular market research to identify new customer needs.

Investment in technology: Allocating an appropriate budget for developing information technology infrastructure.

Continuous training: Planning regular training courses for employees and customers.

Development of collaborations: Establishing partnerships with information technology companies to improve processes.

Targeted marketing: Designing marketing campaigns aligned with customers' local needs.

Timeline Model for the Probable Scenario

The following timeline model is proposed for implementing the probable scenario, namely pervasive digital banking.

Table 9. Timeline Model for the Probable Scenario

Time	Activity
0–6 months	Market analysis and identification of customer needs
6–12 months	Development of technology infrastructure
12–18 months	Training employees and customers
18–24 months	Implementation of a digital marketing campaign
24–36 months	Performance evaluation and strategy readjustment

The following evaluation matrix helps compare the scenarios.

Table 10. Evaluation Matrix for Scenario Comparison

Criterion	Scenario 1: Digital Banking	Scenario 2: Virtual Banking	Scenario 3: Blockchain
Cost	Moderate	High	High
Implementation Time	Short	Moderate	Long
Risk	Moderate	High	Low
Customer Impact	High	Very high	Moderate

Cost: Digital banking has lower implementation costs than the other scenarios, whereas implementing virtual banking and blockchain is more costly due to the need for technological infrastructure and fundamental changes.

Implementation time: Digital banking can be implemented faster because it uses existing infrastructure and improves processes. Virtual banking, and especially blockchain, require more time for development, implementation, and acceptance.

Risk: Digital and virtual banking face moderate to high risks, such as security and regulatory compliance risks. However, blockchain has lower risk due to its decentralized nature, transparency, and high security, and it reduces the likelihood of fraud and misuse.

Customer impact: Virtual banking has the greatest positive impact on customer satisfaction by providing fully online services and an advanced user experience. Digital banking also has a high impact; however, despite its security and transparency advantages, blockchain has a moderate impact on the current customer experience due to scalability challenges and technical complexity.

This matrix can be used as a tool for strategic decision-making in selecting the path of banking transformation.

4. Discussion and Conclusion

The present study aimed to provide a strategic model for electronic banking services in the Agricultural Bank of Iran using Interpretive Structural Modeling (ISM). The findings demonstrated that the identified factors could be classified into four major dimensions, including strategic factors, challenges, driving forces, and the future development of electronic banking services. The ISM analysis showed that strategic factors such as market analysis and customer identification, technology development, service innovation, education and awareness, and digital marketing strategies play a critical role in shaping the future of electronic banking services. In addition, the findings indicated that challenges such as lack of awareness and training, noncompliance with security and privacy principles, inadequate infrastructure, lack of regulatory frameworks, and insufficient financial resources significantly influence the effectiveness of electronic banking development. Furthermore, the study revealed that driving forces such as emerging technologies, digital tools, artificial intelligence, digital ecosystem formation, supportive regulations, and strategic collaborations facilitate the future expansion of electronic banking services. Finally, pervasive digital banking, cyberspace-based banking, and blockchain-based financial services were identified as the primary future outcomes of electronic banking development in the Agricultural Bank of Iran.

One of the major findings of the study was the central role of market analysis and customer identification in the strategic model of electronic banking services. This finding suggests that banks cannot successfully implement digital transformation without accurately understanding customer expectations, behavioral patterns, service preferences, and digital readiness. In modern banking systems, customers increasingly expect personalized, fast, accessible, and technology-driven services. Therefore, customer-oriented market analysis becomes a prerequisite for designing successful electronic banking strategies. This finding is consistent with the results of studies emphasizing the importance of market orientation and customer-centered service development in banking systems [19]. Similarly, research on customer satisfaction with electronic banking services demonstrated that banks capable of identifying customer expectations and aligning digital services with those expectations achieve higher levels of customer trust and satisfaction [8, 9]. The present finding also supports the argument that customer behavior in digital banking environments differs from traditional banking patterns and therefore requires specific analytical frameworks [16].

Another important finding of the study was the significance of technology development as a strategic factor. The results demonstrated that investment in emerging technologies such as blockchain, artificial intelligence, cloud systems, and digital infrastructures constitutes one of the most influential dimensions in the future development

of electronic banking services. This finding reflects the growing dependency of banking systems on digital infrastructure and technological innovation. In competitive financial markets, banks that fail to modernize their technological systems encounter operational inefficiency, customer dissatisfaction, and declining competitiveness. This finding is aligned with previous studies that emphasized the importance of financial technology and digital innovation in shaping the future of banking systems [21]. It is also consistent with findings demonstrating that mobile applications and digital banking platforms increasingly substitute for traditional web services and branch-based interactions [1]. Furthermore, studies on sustainable product and service development highlighted the necessity of integrating lifecycle management capabilities into technological innovation processes [23]. Therefore, the present findings confirm that technological development is not merely an operational necessity but rather a strategic driver for long-term banking transformation.

The results also identified service innovation as a strategic component influencing electronic banking development. Innovation in banking services allows financial institutions to adapt to rapidly changing customer needs and competitive pressures. Digital banking users increasingly demand flexible, personalized, and integrated financial solutions that extend beyond conventional banking transactions. The development of innovative digital services improves customer experience, enhances perceived value, and strengthens customer loyalty. This finding corresponds with studies showing that electronic banking service quality significantly influences customer satisfaction and continued usage intentions [3, 5]. Similarly, research on e-banking and customer loyalty demonstrated that innovative digital services contribute to customer retention and competitive advantage [10]. The present study therefore suggests that innovation should be integrated into strategic planning rather than treated as an isolated technological activity.

Another major finding was the importance of education and awareness in the development of electronic banking services. The findings revealed that both employees and customers require continuous training to effectively utilize digital banking systems. Electronic banking adoption is highly dependent on customers' digital literacy, trust in technology, and understanding of electronic service processes. In many developing banking environments, insufficient awareness remains a major obstacle to the widespread use of electronic banking services. This finding is consistent with studies indicating that technology acceptance in electronic banking depends heavily on users' familiarity with digital systems and their perception of ease of use [11]. Likewise, research on the growth of e-banking among educated teenagers emphasized the role of awareness, technological familiarity, and digital education in increasing banking adoption [24]. The present findings therefore indicate that successful electronic banking transformation requires educational investments alongside technological investments.

Digital marketing strategies were also identified as a strategic factor influencing the development of electronic banking services. The results suggest that digital marketing tools such as online advertising, content marketing, social media interaction, and customer communication platforms contribute significantly to customer attraction and retention. In digital banking environments, customer engagement increasingly occurs through electronic communication channels rather than traditional physical interactions. Consequently, banks must strengthen their digital presence and communication capabilities. This finding is compatible with studies emphasizing the role of customer engagement and emotional interaction in evaluating electronic banking satisfaction [18]. Furthermore, recent studies on green gamified banking highlighted the role of positive customer emotions and interactive digital experiences in enhancing banking engagement [25]. These findings collectively indicate that digital marketing strategies should be integrated into broader customer experience management systems.

The present study also identified several major challenges affecting electronic banking development. Among these challenges, lack of awareness and training, inadequate infrastructure, security and privacy concerns, regulatory weaknesses, and financial limitations were particularly significant. These findings indicate that the success of electronic banking is influenced not only by technological capabilities but also by institutional readiness, legal structures, and organizational resources. Concerns regarding data security and privacy can substantially reduce customer trust and willingness to use digital services. This finding aligns with studies showing that service quality, trust, and security are central determinants of customer satisfaction in electronic banking systems [4, 7]. Moreover, research on barriers to digital banking services demonstrated that technological obstacles, regulatory uncertainty, and institutional limitations often hinder effective implementation [12]. Therefore, the findings of the present study reinforce the argument that strategic banking transformation requires simultaneous attention to infrastructure, regulation, and trust-building mechanisms.

Another important finding was the identification of driving forces influencing the future of electronic banking services. Emerging technologies, artificial intelligence, digital ecosystems, supportive regulations, and strategic collaborations were recognized as the primary drivers of future banking transformation. These findings reflect the increasing interconnectedness between banking systems and broader technological ecosystems. Modern banking institutions no longer operate independently; instead, they function within networks involving technology companies, regulatory bodies, digital platforms, and customer communities. This finding supports previous research emphasizing the importance of digital ecosystems and financial technology in shaping the future of banking industries [21]. Similarly, studies on organizational performance indicated that electronic banking, innovativeness, and productivity jointly contribute to banking efficiency and institutional sustainability [2]. The results therefore suggest that banks must adopt collaborative and ecosystem-oriented strategies to remain competitive in digital financial markets.

The findings related to future electronic banking development demonstrated that pervasive digital banking, cyberspace-based banking, and blockchain-based financial services represent the most important future scenarios for banking transformation. Pervasive digital banking reflects the movement toward fully integrated online financial services capable of increasing customer convenience and accessibility. This finding is consistent with studies demonstrating that customers increasingly prefer digital and mobile-based banking services over traditional banking channels [1]. Cyberspace-based banking emphasizes direct digital interaction between customers and banks through online platforms and virtual environments. This trend reflects the broader digitalization of customer relationships and service delivery processes. Blockchain-based financial services represent a more advanced stage of banking innovation focused on transaction transparency, security, decentralization, and operational efficiency. Previous studies indicated that blockchain technologies and financial technology systems may significantly influence the future profitability and sustainability of banking institutions [14]. Thus, the future scenarios identified in the present study are strongly supported by existing evidence in the electronic banking literature.

The MICMAC analysis further demonstrated that strategic factors, challenges, and driving forces were located within the autonomous region, whereas future development factors were located within the dependent region. This finding indicates that the future outcomes of electronic banking transformation are highly dependent on current strategic decisions, technological investments, infrastructure readiness, and institutional adaptation. In other words, the future success of electronic banking services in the Agricultural Bank of Iran depends on how effectively current strategic drivers and challenges are managed. This interpretation is consistent with studies emphasizing

the importance of strategic lifecycle management in banking service development [22]. The findings therefore highlight the necessity of long-term strategic planning rather than short-term technological implementation.

Overall, the findings of the present study demonstrate that electronic banking development is a multidimensional phenomenon involving technological, organizational, behavioral, strategic, and regulatory dimensions. The proposed ISM model provides a structured framework for understanding the hierarchical relationships among these dimensions and clarifies the pathways through which strategic factors and driving forces influence future banking outcomes. The study contributes to the literature by integrating strategic factors, challenges, future drivers, and development scenarios into a comprehensive structural model specifically designed for the Agricultural Bank of Iran. The findings also emphasize that electronic banking transformation should not be viewed solely as a technological process but rather as an integrated organizational and strategic transformation affecting customers, employees, infrastructure, and institutional performance simultaneously.

One limitation of the present study was its reliance on expert opinions and qualitative judgments within the Interpretive Structural Modeling framework. Although the participating experts possessed substantial academic and professional experience in electronic banking, their evaluations may still involve subjective interpretations. In addition, the study focused specifically on the Agricultural Bank of Iran, which may limit the generalizability of the findings to other banking institutions with different organizational structures, customer bases, or technological capabilities. Another limitation relates to the rapidly changing nature of digital technologies, as future technological developments may alter some of the identified strategic relationships over time.

Future research is recommended to examine the proposed strategic model quantitatively using structural equation modeling or other advanced statistical techniques in broader banking populations. Researchers may also investigate customer perspectives directly in order to compare managerial and customer perceptions regarding electronic banking priorities and challenges. Comparative studies between public and private banks or between domestic and international banking systems may provide deeper insight into the contextual determinants of electronic banking development. In addition, future studies could investigate the effects of artificial intelligence, blockchain adoption, cybersecurity frameworks, and digital trust mechanisms on customer behavior and banking performance.

From a practical perspective, bank managers should prioritize continuous technological modernization and strengthen digital infrastructures to support sustainable electronic banking development. Managers should also invest in customer education programs, employee digital skills, cybersecurity systems, and customer relationship management processes to improve trust and service quality. Strategic collaborations with financial technology companies and digital service providers may help banks accelerate innovation and improve operational flexibility. Furthermore, policymakers and banking regulators should develop supportive legal frameworks and regulatory systems that facilitate secure and efficient digital banking activities while protecting customer privacy and financial stability.

Authors' Contributions

Authors equally contributed to this article.

Ethical Considerations

All procedures performed in this study were under the ethical standards.

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Conflict of Interest

The authors report no conflict of interest.

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