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Investigating the Role and Position of Virtual Banking on Financial Performance with an Emphasis on Marketing Capabilities and Financial Technologies of Banks Admitted to the Tehran Stock Exchange

Behroz Bahlakeh[1], Hossein Eslami Mofid Abadi[2,*]

[1] Department of Financial Management, Shahryar Branch, Islamic Azad University, Shahryar, Iran; behrozbahlakeh@gmail.com.

[2] Department of Accounting and Management, Shahryar Branch, Islamic Azad University, Shahryar, Iran; hossein.eslamimofidabadi@iau.ac.ir.

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Abstract

The primary objective of this study is to examine the role and significance of virtual banking in financial performance, with an emphasis on marketing capability and Financial Technologies (FinTech), in banks listed on the Tehran Stock Exchange. In line with its purpose, the research is applied in nature and, in terms of methodology, follows a descriptive–correlational design. The statistical population includes customers, experts, and managers of the listed banks, and using Cochran's formula, the sample size was determined to be 384 participants. Based on a review of the theoretical foundations, a conceptual model was developed and five hypotheses were formulated. Questionnaires were distributed among the managers and experts of the selected banks, and the proposed hypotheses were empirically tested. Since the data were not normally distributed, Structural Equation Modeling (SEM) was employed using PLS software (version 2). The results confirmed all five hypotheses. The statistical analysis revealed that virtual banking significantly influences marketing capability ($\beta = 0.722$), financial performance ($\beta = 0.688$), and FinTech ($\beta = 0.732$). Furthermore, marketing capability exerts a positive impact on financial performance ($\beta = 0.628$), while FinTech strongly affect organizational performance ($\beta = 0.741$). Accordingly, the findings highlight that the adoption of virtual banking, with a focus on strengthening marketing capabilities and leveraging FinTech, can considerably enhance the financial performance of banks listed on the Tehran Stock Exchange.

Keywords: Virtual banking, Financial performance, Financial technology, Marketing capabilities.

1 | Introduction

Commercial enterprises play a critical role in economic development, and sustainable growth cannot be achieved without consistent business performance [1]. Among these enterprises, banks are particularly

Corresponding Author: hossein.eslamimofidabadi@iau.ac.ir

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influential due to their intermediary function between savers and borrowers, their role in financing economic projects, and their capacity to foster corporate innovation and investment. Consequently, banks have a significant impact on sustainable development. In recent years, Financial Technologies (FinTech) have emerged as powerful drivers of transformation in the financial sector, enhancing efficiency, innovation, and sustainability outcomes [2]. Previous research has explored the relationship between FinTech and financial services, highlighting its potential to promote innovation and improve performance [3]. However, empirical evidence remains limited regarding the combined effect of FinTech adoption and marketing capabilities on organizational financial performance. Moreover, studies often overlook the dual role of FinTech as both a potential disruptor and a collaborator within the banking and financial sectors [4–6].

Luthria and Rabhi [7] argue that business-related incentives drive the adoption of infrastructural technologies in financial service institutions. Similarly, the empirical findings of Deng et al. [8] indicate that FinTech and their associated benefits can serve as enablers of sustainable development. In general, business drivers are variables that influence organizational performance sustainability, a phenomenon that is often observed in conventional business models [9]. On the other hand, some of the key challenges highlighted in this line of research include the potential disruptive effects of FinTech as well as the prospects for collaboration and integration with traditional banking and financial sectors [6]. Addressing this research gap, the present study investigates the impact of virtual banking on financial performance, emphasizing the roles of marketing capability and FinTech adoption in banks listed on the Tehran Stock Exchange. By integrating these dimensions, this study provides novel insights into how technological innovation and marketing strategies jointly influence sustainable financial outcomes, offering both theoretical contributions and practical implications for banking practitioners and policymakers.

2 | Literature Review

2.1 | Virtual Banking

The banking industry is shifting from traditional physical banking toward virtual banking. Virtual banks deliver all their services entirely online. The most significant advantage of virtual banking lies in its lower cost for customers. When a bank does not operate through physical branches, its operational expenses are reduced, and these savings can be transferred to customers, for instance, in the form of lower interest rates on loans. Virtual banking refers to the absence of a physical presence or branchless banking. In contrast, electronic banking (e-banking) refers to accessing various banking services through electronic channels such as ATMs, telephones, personal computers, or the Internet. In fact, many organizations today invest in developing websites as a channel for delivering their marketing messages. Currently, about 63% of all businesses in the United Kingdom have their own dedicated websites. The simplest form of electronic banking is the provision of basic information about the bank, its products, and services through the world wide web [10].

2.2 | Financial Technology Services

FinTech services gradually entered the banking sector in the 1950s, beginning with the adoption of credit cards, which soon became widespread among consumers. In the 1960s, the use of Automated Teller Machines (ATMs) emerged, followed by the introduction of electronic stock trading in the 1970s. During the 1980s, network technologies, data recording, and information systems significantly expanded, paving the way for electronic and internet-based business models in the 1990s. The participation of retail investors in online stock trading in the 2000s further highlighted the expansion of FinTech services [11]. In the early stages of the Internet revolution of the 1990s, global financial markets were deeply influenced by the reduction in transaction costs. Advances in technology, along with internet adoption, transformed the financial services industry and accelerated the growth of the digital economy. E-commerce encompassed a variety of financial services within banking, insurance, and stock trading, enabling access to accounts, business transactions, financial information, and services without the need for physical presence or direct contact with financial institutions. During this period, new forms of banking emerged, including online banking, online brokerage

services, mobile payments, and mobile banking. These developments led to a decline in the number of physical bank branches, while offering significant advantages such as lower operating costs, faster transaction times, real-time management information, enhanced organizational communication, improved customer interaction, and value-added services such as access to professional financial expertise.

The mid-2000s witnessed rapid growth in smartphone adoption, allowing financial institutions to provide customers with the ability not only to access account information but also to execute transactions such as bill payments and money transfers via mobile devices. Following the global financial crisis of 2008, FinTech innovation accelerated in Europe through the integration of e-commerce, internet technologies, social media platforms, artificial intelligence, and big data analytics. FinTech startups distinguished themselves by offering personalized services, data-driven solutions, innovative organizational cultures, and agile structures [12]. Over the past five decades, innovators have developed advanced tools for treasury management, risk management, data analytics, and transaction processing, enabling financial service providers and banks to operate more efficiently [13]. Today, retail financial services are undergoing digital transformation through platforms such as crowdfunding, robo-advisors for retirement and wealth planning, mobile payment applications, and digital wallets. Alternative investment opportunities and private-sector expansion have further facilitated the rise of online lending platforms [11]. As an emerging technical concept, FinTech encompasses a wide range of operations aimed at enhancing service quality through the use of information technology applications. Continuous growth in investment has driven the development of IT innovations across various domains, including mobile networks [14], big data, trade credit management, embedded mobile systems, image processing, and data analytics techniques [15].

2.3 | Performance

Definitions of performance generally revolve around two key concepts: efficiency and effectiveness. According to Drucker [16], effectiveness forms the foundation of success, while efficiency represents the minimum condition required for survival after success has been achieved. Efficiency is associated with doing things right, whereas effectiveness refers to doing the right things. Although in everyday language these two terms are often used interchangeably—and at times understood as profitability or goal-oriented behavior—they embody distinct managerial perspectives [17].

2.4 | Financial Performance

Among the Key Performance Indicators (KPIs) of firms, financial indicators are of particular importance, as they enable a relatively accurate comparison among companies operating within the same industry. This is primarily because such firms are exposed to similar operational conditions and rely on comparable accounting practices. Performance measurement criteria can generally be categorized into two groups: Financial and non-financial. Non-financial indicators include marketing, production, administrative, and social measures, while financial indicators often involve techniques such as financial ratios, which provide valuable insights into a firm's profitability, liquidity, leverage, and overall financial health [18].

2.5 | Marketing Capability

Da Costa et al. [19] argue that marketing capabilities consist of two main dimensions: innovation capability and brand capability. Marketing capabilities represent coherent and integrated processes designed to leverage a firm's collective skills, knowledge, and resources. These capabilities enable firms to enhance the value of their goods and services, adapt to changing market conditions, capitalize on emerging opportunities, and effectively respond to competitive threats. Marketing capabilities are generally classified into three categories: Comprehensive, internal, and external capabilities. Both scholars and practitioners have widely emphasized the importance of marketing capabilities. Capabilities are viewed as complex bundles of skills and knowledge assets that allow firms to sustain long-term competitive advantages. Considering marketing capabilities as a firm's distinctive competencies in understanding customer needs and the factors shaping consumer behavior during the decision-making process provides valuable insights into strengthening market performance [20].

2.6 | Previous Studies

Akbari et al. [21] conducted a comprehensive study on the factors influencing the adoption of virtual banking and its subsequent outcomes. Recognizing the growing significance of virtual services in the banking industry, their research adopted a mixed-method approach to provide both exploratory and confirmatory insights. In the qualitative phase, 14 academic and banking experts from Tehran Province were engaged through purposive sampling. Data obtained via semi-structured interviews were analyzed through grounded theory coding (open, axial, and selective), leading to the identification of a conceptual framework for virtual banking adoption. In the quantitative phase, the study surveyed 350 employees and 385 customers of Saderat Bank branches in Tehran Province. Using a researcher-developed questionnaire, the authors established validity through expert evaluation and reliability via Cronbach's alpha ($\alpha = 0.976$). Structural Equation Modeling (SEM) with the PLS technique, applied through SmartPLS 3 software, further validated the model.

The findings revealed 36 subcategories organized under six main dimensions: causal conditions, contextual conditions, intervening conditions, core phenomena, strategies, and outcomes. This integrated model not only emphasizes the complexity of factors driving virtual banking adoption but also highlights its organizational and customer-level implications. Overall, Akbari et al. [21] research provides a robust framework that enriches the literature on electronic and virtual banking adoption, offering valuable insights for both academic discourse and practical banking strategies.

Recent studies have extensively examined the role of FinTech and virtual banking in enhancing financial performance. Pahlevanian et al. [22] found that international technological pressures and weaknesses in traditional financial systems have stimulated the adoption of FinTech. However, citizen distrust has hindered widespread acceptance. The study emphasizes that bridging this gap requires participatory financial approaches, raising awareness among citizens, and engaging them as customers, feedback providers, or service advocates. Such participation can foster the expansion of FinTech startups, enable financing, develop innovative financial services, and ultimately facilitate a successful transition to FinTech.

Rajabzadeh [23] highlighted that one of the main challenges in FinTech adoption is the lack of comprehensive and precise information. This study reviewed key concepts and influential factors in the FinTech industry, analyzed the role of shadow banking as a significant aspect of global banking innovation, examined associated challenges and risks, and provided future perspectives. The findings indicate that FinTech have a positive effect on financial performance. Mirazi [24] analyzed the role of FinTech in future financial markets using a descriptive-analytical approach. The study identified Peer-to-Peer (P2P) lending and equity crowdfunding as the primary focus areas of FinTech in emerging markets. FinTech aims to reshape the financial industry by reducing intermediary costs, improving service quality, and enhancing efficiency. Despite growing investment and global attention in this sector—including accelerators, idea exchanges, and venture capital funds—the potential of FinTech remains far from fully realized.

Baker et al. [13] examined the impact of FinTech in virtual banking on business environment indicators and financial performance. The results showed a significant positive effect of FinTech on eight key business indicators, with the most significant effects on credit acquisition, business startup, contract execution, and licensing. Furthermore, the study confirmed that virtual banking positively influences business performance. Darziyan-Azizi et al. [25] investigated the role of traditional and virtual banking dimensions in electronic banking. They found that traditional banking features did not significantly affect customer trust, whereas website characteristics positively and significantly contributed to building trust in electronic banking.

Kim et al. [26] identified success factors in startups aimed at improving organizational performance, highlighting technology, entrepreneurship, economic factors, and innovation, with innovation and entrepreneurship being the most critical factors. Laage-Hellman et al. [27] emphasized that technology can facilitate early customer engagement, the selection of target regions, and reciprocal selection processes, fostering collaboration in product development networks. Lee and Shin [12] examined FinTech ecosystems, business models, investment decisions, and marketing strategies. They evaluated startup business models,

investment options, and operational challenges for both FinTech startups and traditional firms, providing insights into managerial decision-making.

Agarwal et al. [28] studied customer perspectives on virtual banking in an emerging economy (India) and concluded that security and trust are the most critical factors influencing adoption. Based on the literature, the present study proposes a research model in which virtual banking serves as the independent variable, financial performance as the dependent variable, and marketing capabilities and FinTech as mediating variables. This model integrates prior empirical findings and addresses the research gap concerning the combined effect of digital banking, FinTech adoption, and marketing capability on organizational financial performance.

Fig. 1. Conceptual framework of the research [6].

3 | Research Methodology

3.1 | Type and Purpose of Research

Based on the research objective, this study is classified as an applied research. The findings of this research can contribute to improving organizational performance.

3.2 | Research Approach

In terms of research design, this study is descriptive–correlational. The relationships among variables are not manipulated; instead, they are examined in natural settings rather than artificial conditions. Since events and circumstances are considered as they occur and the collected data are immutable, the primary purpose is to investigate the relationships and their potential effects on one another. Accordingly, data collection and implementation are conducted through a survey method.

3.3 | Statistical Population and Sample

The statistical population includes managers and experts of the headquarters of banks listed on the Tehran Stock Exchange, comprising more than 10,000 individuals. Using Cochran's formula for sampling, the sample size was determined as 131 participants. In the present research, the statistical population consists explicitly of managers and experts of the central headquarters of Saman Bank, totaling around 200 individuals. The sample size, determined by Cochran's formula, was 384 respondents. Questionnaires were distributed among them through accessible random sampling.

3.4 | Data Collection Tool

The primary tool for data collection is a structured questionnaire. After reviewing the theoretical foundations and previous studies, the dimensions, components, and indicators of each variable under investigation were identified and categorized. For measuring the variable innovation, a questionnaire was designed. Responses to all variables were measured using a five-point Likert scale.

3.5 | Validity and Reliability

To enhance the validity of the questionnaire, the questions were designed to be clear and straightforward. The questionnaire was reviewed under the supervision of academic experts and specialists, and the final

version was confirmed for content validity. Furthermore, factor analysis was applied to ensure construct validity.

I. Questions related to virtual banking were adopted from [12].

II. Questions for marketing capability were taken from [29].

III. Questions for financial performance were based on [30].

IV. Questions for FinTech were adapted from [31].

To evaluate the reliability of the variables in the empirical model, Cronbach's alpha was applied. The results, presented in *Table 1*, confirmed acceptable levels of reliability for all variables of the research model.

Table 1. Results of Cronbach's alpha test for research variables.

Variable	Cronbach's Alpha	Variable	Cronbach's Alpha
Virtual Banking	0.787	FinTech	0.858
Marketing capability	0.764	Financial performance	0.873

Source: Using SPSS and PLS Software.

4 | Research Findings

In this study, both descriptive and inferential statistical methods were employed to analyze the data collected from the sample.

I. Descriptive statistics: Initially, descriptive statistics were applied to summarize and describe the demographic characteristics of the research sample, including gender, educational level, and work experience. For this purpose, the SPSS software was used to conduct the analyses in this section.

II. Inferential statistics: Subsequently, the research hypotheses were examined using inferential statistical methods. In this regard, correlation tests, t-tests, the Kolmogorov–Smirnov test, and the SEM approach were applied. For these analyses, SPSS and PLS2 software were utilized.

III. Demographic analysis: Accordingly, in the first part of this section, descriptive analyses of the demographic variables (age, gender, and education) derived from the distribution of the research sample, based on the responses to the questionnaire items, are presented.

Table 2. Descriptive analysis of demographic variables.

Demographic Variable	No. of Observations	Category	Absolute Frequency	Relative Frequency
Gender	384	Male	265	69%
		Female	119	31%
Education level	384	Bachelor's degree	134	35%
		Master's degree	152	40%
		PhD (doctorate)	98	25%
Age	384	Under 24 years	32	8%
		25–34 years	65	17%
		35–44 years	76	20%
		45–54 years	115	30%
		Above 55 years	96	25%

Source: Using SPSS and PLS software.

In the second stage, inferential statistical methods were employed for analyzing the data and testing the research hypotheses. Before selecting the type of statistical tests and conducting the main hypothesis tests, several preliminary analyses were carried out, including the Kolmogorov–Smirnov test, Confirmatory Factor Analysis (CFA), Composite Reliability (CR), convergent validity, and discriminant validity based on the Fornell–Larcker criterion. According to the results presented in *Table 3*, the significance level (sig) values for all variables were less than 0.05. Therefore, there was no evidence to reject the null hypothesis (H_0), indicating that the variables do not follow a normal distribution.

Table 3. Kolmogorov–Smirnov test.

Data (Variables)	Significance Level (Sig.)	Test Result	Type of Distribution
Virtual banking	0.000	Accept H_1	Non-Normal
Marketing capability	0.000	Accept H_1	Non-Normal
FinTech	0.000	Accept H_1	Non-Normal
Financial performance	0.000	Accept H_1	Non-Normal

Source: Using SPSS and PLS Software.

Confirmatory factor analysis

Given that the research questionnaire was developed based on the existing literature in the field, it already possesses a predefined structure. However, to further examine the validity and reliability of the questionnaire, CFA was conducted. Although the construct validity of the questionnaire was previously confirmed by Cronbach's Alpha, CFA was applied to provide a more rigorous evaluation. In the first stage of CFA, it is determined whether the designed questions for each construct are capable of appropriately explaining and measuring the intended variable. In other words, this analysis evaluates whether the questions and indicators considered for each construct have the required validity. The results of the CFA for the research variables are presented in this section. Furthermore, the findings related to CR and convergent validity Average Variance Extracted (AVE) are displayed in *Table 4*.

Table 4. Composite reliability and convergent validity.

Construct / Factor	Average Variance Extracted
Virtual banking	0.512
Marketing capability	0.633
FinTech	0.591
Financial performance	0.561

Source: Using SPSS and PLS software.

Table 5. Discriminant validity results (Fornell–Larcker criterion).

Variable/Construct	Virtual Banking	Marketing Capability	FinTech	Financial Performance
Virtual banking	0.751	–	–	–
Marketing capability	0.321	0.619	–	–
FinTech	0.498	0.419	0.627	–
Financial performance	0.521	0.331	0.265	0.841

Source: Using SPSS and PLS software.

Table 5 presents the results of discriminant validity assessment using the Fornell–Larcker criterion. As observed, the square root of the AVE for each construct, located on the diagonal cells of the matrix, is greater than the correlations between constructs, which are placed in the off-diagonal cells below and to the right of the main diagonal. Therefore, it can be concluded that in the current model, the constructs (latent variables) are more strongly associated with their own indicators than with other constructs. In other words, the model demonstrates an acceptable level of discriminant validity. Finally, considering the presence of a mediating variable, hypothesis testing was conducted using path analysis and SEM. The tests were performed based on standardized estimates and the significance of the model, with the results illustrated in *Figs. 2* and *3*.

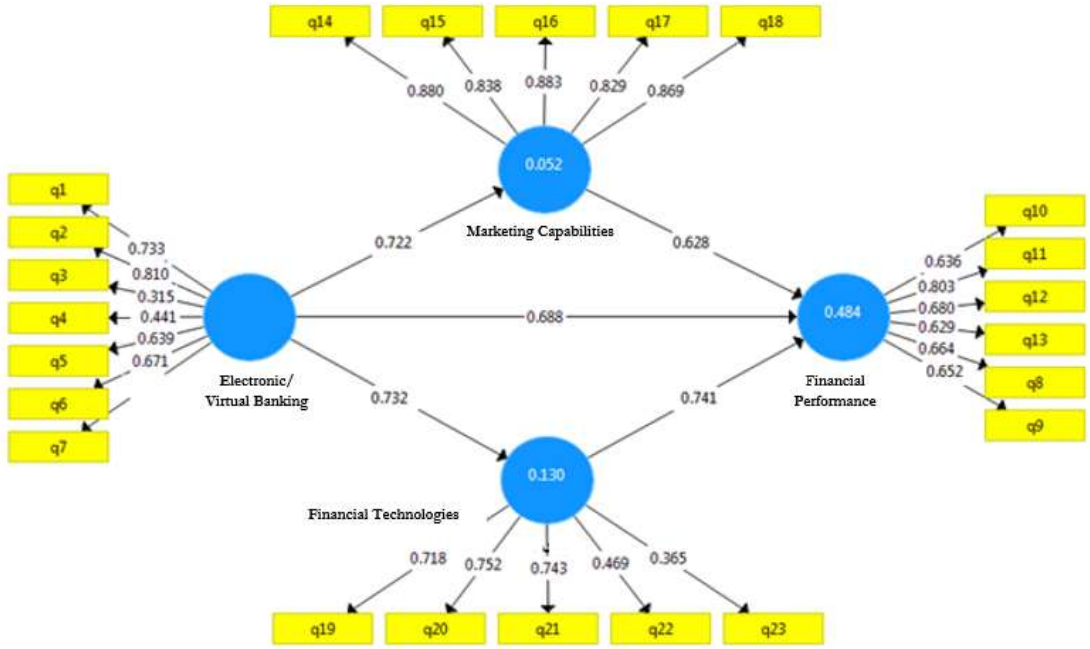

Fig. 2. Standardized estimation of the empirical research model.

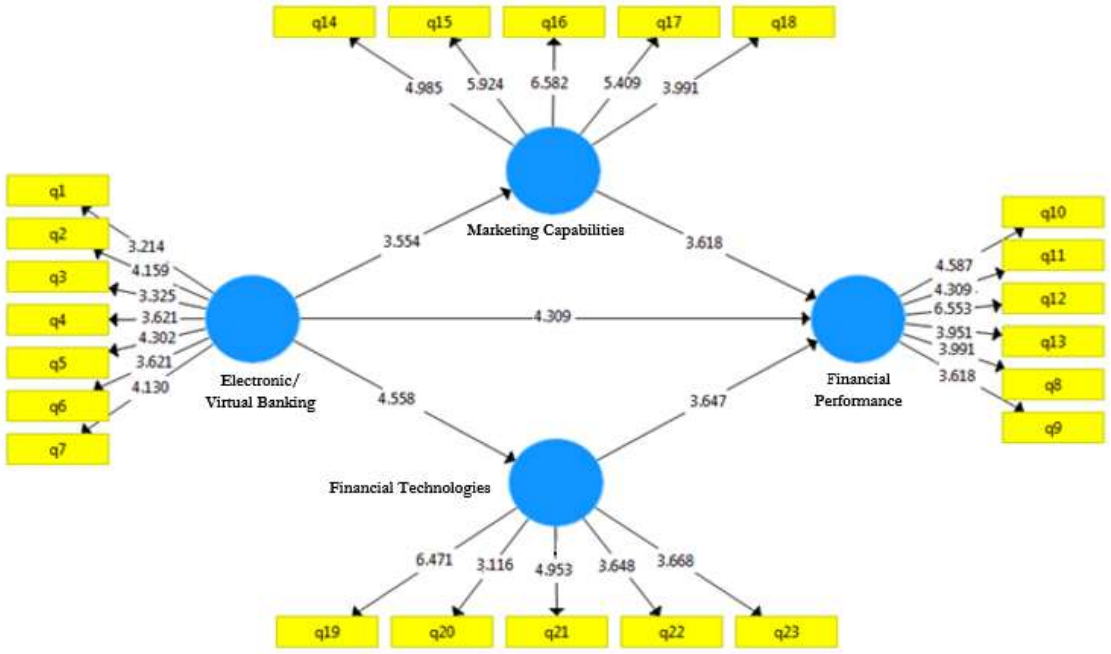

Fig. 3. Significance estimation of the empirical research model.

Furthermore, to evaluate the quality of the measurement model, the Cross-Validated Communality Index (Cv-Com) was applied. This index essentially measures the model's ability to predict observed variables through their corresponding latent constructs. A positive value of this index indicates that the measurement model meets the required quality standards. To assess the overall quality of the measurement model, the mean value of Cv-Com is calculated; if the mean is positive, the entire measurement model is considered satisfactory. The results of this test are reported in *Table 6*. As presented, the index is positive for all variables included in the study, confirming that the measurement models demonstrate an acceptable level of quality.

Table 6. Results of the measurement model quality test (cv-com index).

Construct	Cv-Com	Construct	Cv-Com
Virtual banking	0.42	FinTech	0.23
Marketing capabilities	0.66	Financial performance	0.31

Source: Using SPSS and PLS software.

In addition, to evaluate the quality of the structural model, which focuses on the relationships between exogenous (independent) and endogenous (dependent) latent variables, only the latent constructs and their interrelations are examined. One of the key criteria for assessing the structural model is the predictive relevance index (Q^2), introduced [32]. This index measures the predictive capability of the model with respect to the endogenous variables. According to their view, structural models with an acceptable level of fit must be able to predict the indicators related to endogenous constructs. In other words, if the relationships among constructs are correctly specified, the constructs should exert sufficient influence on each other's indicators, thereby leading to the confirmation of the proposed hypotheses. The Q^2 values for endogenous constructs are typically assessed at three threshold levels: 0.02 (weak predictive relevance), 0.15 (moderate predictive relevance), and 0.35 (strong predictive relevance).

Table 7. Q^2 Coefficients of the research variables.

Variable	Q^2	Variable	Q^2
Virtual banking	0.42	FinTech	0.62
Marketing capability	0.55	Financial performance	0.38

Source: Using SPSS and PLS Software.

The Q^2 values for the main endogenous variables of the model are presented in *Table 4*. Based on the thresholds introduced earlier in this section, it can be concluded that these values are at an acceptable level, indicating that the model demonstrates satisfactory predictive power for these variables. The Goodness of Fit (GOF) index was also employed in this analysis, reflecting the overall fit between the structural model and the measurement model. A GOF value above 0.4 is generally considered indicative of an acceptable model fit. In this study, the GOF index was calculated as 0.56, exceeding the 0.4 threshold, which confirms the adequacy of the model. In other words, the data align well with both the factor structure and the theoretical foundation of the research. *Table 8* provides a summary of the results obtained from the hypothesis tests.

Table 8. Summary of hypothesis test results.

No.	Research Hypotheses	T-value	Path Coefficient	Direction of Effect	Result
1	Virtual banking has an effect on the marketing capabilities of banks listed on the Tehran Stock Exchange.	3.552	0.722	Positive and Direct	Hypothesis Supported
2	Virtual banking has an effect on the financial performance of banks listed on the Tehran Stock Exchange.	4.309	0.688	Positive and Direct	Hypothesis Supported
3	Virtual banking has an effect on the FinTech of banks listed on the Tehran Stock Exchange.	4.558	0.732	Positive and Direct	Hypothesis Supported
4	Marketing capabilities have an effect on the financial performance of banks listed on the Tehran Stock Exchange.	3.608	0.628	Positive and Direct	Hypothesis Supported
5	FinTech have an effect on the financial performance of banks listed on the Tehran Stock Exchange.	3.642	0.741	Positive and Direct	Hypothesis Supported

Source: Using SPSS and PLS Software.

6 | Conclusion

Today, both service and manufacturing companies strive to achieve optimal performance. However, the contextual factors affecting this goal may vary from one company in a particular industry to another in a different sector, and research findings are generally not generalizable to all companies. Therefore, to address this issue, theoretical models need to be tested individually. Accordingly, the present study aimed to examine the role and impact of virtual banking on financial performance, with a focus on marketing capabilities and FinTech of banks listed on the Tehran Stock Exchange. Based on the research objective, this study is classified as applied research and, in terms of methodology, as descriptive-correlational. The statistical population included customers, experts, and managers of banks listed on the Tehran Stock Exchange. Using the Cochran formula, the sample size was determined to be 384 individuals.

A conceptual model was designed based on the theoretical foundations, and five hypotheses were formulated. The hypotheses were tested through the distribution and collection of questionnaires among the managers and experts of the selected banks. Due to the non-normality of the data distribution, SEM using PLS version 2 was employed. The results of the hypothesis tests are presented below, with comparisons to previous studies.

Hypothesis 1. posited that virtual banking affects the marketing capabilities of banks listed on the Tehran Stock Exchange. According to the results, virtual banking has a direct and positive effect on marketing capabilities, with a path coefficient of 0.722 and a T-value of 3.554, significant at the 95% confidence level. Therefore, this hypothesis is supported, in line with the findings of [33], [34].

Hypothesis 2. stated that virtual banking impacts the financial performance of banks listed on the Tehran Stock Exchange. The results indicate that virtual banking positively and directly affects financial performance, with a path coefficient of 0.688 and a T-value of 4.309, significant at the 95% confidence level. This hypothesis is thus supported, consistent with [33], [34].

Hypothesis 3. proposed that virtual banking influences the FinTech of banks listed on the Tehran Stock Exchange. The findings show that virtual banking has a positive and direct effect on FinTech, with a path coefficient of 0.732 and a T-value of 4.558, significant at the 95% confidence level. Hence, the hypothesis is confirmed, consistent with the studies of [33], [34].

Hypothesis 4. stated that marketing capabilities affect the financial performance of banks listed on the Tehran Stock Exchange. The results reveal a direct and positive relationship, with a path coefficient of 0.628 and a T-value of 3.608, significant at the 95% confidence level. Therefore, this hypothesis is supported, aligning with prior research [33], [34].

Hypothesis 5. suggested that FinTech influence the financial performance of banks listed on the Tehran Stock Exchange. The analysis shows a positive and direct effect, with a path coefficient of 0.741 and a T-value of 3.647, significant at the 95% confidence level. Accordingly, this hypothesis is supported, consistent with the findings of [33], [34].

Based on the results of the hypothesis testing and path analysis, the following recommendations are proposed for managers and supervisors of banks listed on the Tehran Stock Exchange:

I. Design websites to facilitate easy access to electronic services for customers.

II. Educate customers on virtual banking methods through various channels, including social networks.

III. Promote the benefits of virtual banking through traditional media, such as widely circulated newspapers.

IV. Take necessary measures to improve the performance of systems providing virtual banking services, especially ensuring stable internet connectivity.

V. Assure customers that their privacy and data security are maintained in online banking, similar to traditional banking.

VI. Consider alternative systems to interbank networks to ensure continuity in case of network failure.

VII. Encourage customers to adopt online banking by emphasizing its environmentally friendly, "green banking" aspects.

Furthermore, future research is recommended to investigate the role of virtual banking in financial performance, with an emphasis on strategic capabilities, innovation capabilities, and FinTech of banks listed on the Tehran Stock Exchange, using alternative data collection methods based on documents and records.

Author Contributions

Both authors made equal contributions to the conceptual design, modeling, analysis, and drafting of the article.

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Data Availability

The data utilized in this research can be obtained from the corresponding author upon a reasonable request.

Conflicts of Interest

The authors report no conflicts of interest.

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