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THE ROLE OF INNOVATION CULTURE IN INNOVATION CAPABILITY AND PERFORMANCE AT VIETNAMESE COMMERCIAL BANKS

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ABSTRACT

The research was conducted to examine the effect of bank culture on bank innovation and bank performance. In order to evaluate the relationship and impact among these factors, structural equation modeling (SEM) method was used to test the research hypotheses and path relationships in the proposed model. The data collected from 198 bank officers of 8 commercial banks in Vietnam through the survey were analyzed to examine the relationships. The results show that in the banking sector of Vietnam, organizational culture and innovation have a direct and positive effect on the firm performance aspects of a bank, product innovation. However, organizational innovation was found to have an insignificant regression coefficient on the dimensions of market and finance of a bank's performance. Research results contribute to adding valuable insights for organizations to compete and adapt to changes in the environment, especially in the banking industry. Identifying and strengthening the bank's innovation culture will create value and sustain competitive advantages, which is one of the key factors contributing to the success of Vietnamese commercial banks.

Keywords: Bank sector, Culture, Innovation, Firm performance.

INTRODUCTION

In recent years, Vietnam has been rated as one of the countries with great economic openness, located in the most dynamic economic region in the world. To adapt to the speed of economic development, Vietnam's commercial banking system must actively recognize and participate in the integration process of reaching out to the world market. In the face of increasingly fierce competitive pressure from domestic and international competitors, organizations need to self-innovate to adapt and survive. Especially in the banking sector where providing high-value and high-risk services is more necessary than ever. Under the effect of globalization and adaptation to changes, the organizational culture in Vietnamese commercial banks has shifted to support innovation and development (Lam *et al.*, 2021). The scope of operation of Vietnamese commercial banks is not only limited to domestic but also extends to foreign markets, subject to competition from domestic and foreign banks. Therefore, banks need to continuously improve and innovate to adapt to all markets and circumstances.

The literature has looked at organizational culture as a factor that affects a firm's performance. According to recent research on innovation, firm innovation has a significant effect on an organization's performance and competitiveness (Azeem *et al.*, 2021). In addition, it is

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frequently implied in the literature on innovation that the organization's culture has a significant effect on innovation (Naveed *et al.*, 2022). But there are only a few studies that have explicitly demonstrated and experimentally explored the connection between organizational culture, its innovation capability, and its performance (Saunila, 2020). In addition, there are few empirical studies on the relationship between bank performance and culture. Furthermore, there have been several studies on the role of innovation in organizational performance as a driver of competitiveness and sustainable development, but few studies on the banking sector have been conducted (Pundziene *et al.*, 2022). Therefore, examining the relationship between organizational culture, innovation capacity, and performance will provide useful knowledge to enhance organizational performance in general and the banking sector in particular (Imran *et al.*, 2022).

The objective of this study is to identify the relationship among banks' culture, bank's innovation, and bank's performance. Based on collected data and analysis results by the PLS-SEM method to propose solutions and recommendations to improve banks' performance. This research will make an important contribution to the existing innovation and performance literature.

Literature Review

Innovation Capacity

According to the OECD (2005), the four types of innovation are product innovation, process innovation, marketing innovation, and organizational innovation. According to competency-based theory, innovation capacity is an essential resource for developing and commercializing new services and solutions to create value for customers and organizations (Lin *et al.*, 2010). Innovation competencies include many intangible assets of the organization to create future values for the organization. Pundziene *et al.* (2022) argue that an organization's innovation capacity arises from its skills and ability to use resources, reflecting its ability to continuously translate knowledge and ideas into new products, processes, and systems to benefit the organization and its stakeholders. Liao *et al.* (2007) define innovation competency as the skills and knowledge needed to absorb, master, and effectively improve current technologies and create new ones.

The theory of competence states that competency differentials enable organizations to achieve sustainable competitive advantage through a range of differentiated capabilities (Azeem *et al.*, 2021). This theory also argues that an organization's innovation capacity is the ability of an organization to apply knowledge, skills, and resources to innovative activities related to products, services, processes, management, marketing, and new operating systems, to add value to the organization and its stakeholders (Scaliza *et al.*, 2022). This perspective provides an overview of innovation capacity, including not only innovation activities, but also implications for effectiveness.

Organizational Culture with Innovative Capacity

Organizational culture is one of the important factors affecting the innovation capacity of commercial banks. Individual and empirical studies have emphasized the importance of corporate culture as one of the determinants of corporate creativity (Ernest Chang & Lin, 2007; Scaliza *et al.*, 2022). The organizational culture of each bank plays a decisive role in the bank's ability to innovate. The motivation to develop and implement new ideas comes from the belief



and values of the bank, the personal development of the staff is the origin of the bank's innovations (Imran *et al.*, 2022).

However, innovation in the banking sector is very complex and risky, therefore, the culture of a bank plays a role in determining how far that bank is innovative, within its safety limits since each bank has a different risk appetite. However, banks must still maintain safety limits in accordance with the standards and requirements of regulatory authorities. The bank has a culture of always supporting innovative activities, expressed from the vision, which is reflected in the determination of the executive leadership team and the actions of employees at all levels (Imran *et al.*, 2022).

The organization has a culture that always supports innovation activities, demonstrating from the vision to determination of the executive leadership team and the actions of employees at all levels, the bank's innovation activities will be promoted. Organizations with strong cultures will have trust and sharing, mutual respect creates an environment that encourages individuals to confidently practice new ideas without fear of repercussions, thereby strengthening the innovation capacity of (Imran *et al.*, 2022). In this research, we examined the influence of bank culture on banks' innovation and bank's performance. There, these hypotheses were proposed as the following:

H1: Bank culture has a positive effect on a bank's innovation capabilities

H1.1: Bank culture has a positive effect on a bank's product innovation

H1.2: Bank culture has a positive effect on a bank's process innovation

H1.3: Bank culture has a positive effect on a bank's marketing innovation

H1.4: Bank culture has a positive effect on a bank's organizational innovation



The Effect of Innovation Capacity on Organizational Performance

Studies have found a strong relationship between innovation capacity and bank performance (YuSheng & Ibrahim, 2020). Although in the short term, innovation activities can lead to increased costs, even losses in business (Pundziene *et al.*, 2022) in the long term, the effect of innovation capacity on organizational performance is proven to be positive.

Innovation competencies are seen as a key driver of an organization's long-term success, especially in a dynamic and competitive market (Zegdenizova *et al.*, 2021). Innovation capabilities help businesses cope with turbulence, changes, and complexities in the external business environment. Then, enterprises with innovation capabilities will be able to respond to challenges faster, produce rapidly improved products, and exploit business opportunities more effectively than non-innovative enterprises (Pundziene *et al.*, 2022).

Financial performance: The effect of innovation capacity on financial performance is shown by the majority of studies that have shown a significant effect on profitability, market share, and return on investment as well as profitability (Karabulut, 2015).

Market efficiency: Innovation capabilities also affect non-financial aspects of the business such as customer satisfaction (Azeem *et al.*, 2021). Market efficiency is reflected in the fact that the business attracts many new customers, increases customer satisfaction and loyalty, and market share of the business compared to other competitors (Oh *et al.*, 2014). Therefore, based on the above analysis, the following hypotheses are proposed:

H2: Innovation capacity has a positive effect on the bank's performance

H2.1a: Product Innovation has a positive effect on the bank's market performance

- H2.1b: Product Innovation has a positive effect on the bank's financial performance
 H2.2a: Process Innovation has a positive effect on the bank's market performance
 H2.2b: Process Innovation has a positive effect on the bank's financial performance
 H2.3a: Marketing Innovation has a positive effect on the bank's market performance
 H2.3b: Marketing Innovation has a positive effect on the bank's financial performance
 H2.4a: Organization Innovation has a positive effect on the bank's market performance
 H2.4b: Organization Innovation has a positive effect on the bank's financial performance

Organizational Culture and Firm Performance

Based on the theory of resource-based view (RBV), organizational culture was identified as one of the resources that help businesses gain and maintain competitive advantage (Azeem *et al.*, 2021). Organizational culture was considered an asset, an intangible resource that has a positive relationship with organizational performance (Scaliza *et al.*, 2022). Organizational culture was made up of four components: collaboration, innovation, consistency, and effectiveness (Ernest Chang & Lin, 2007).

The relationship between firm performance and organizational culture has been examined in the literature. The support of organizational culture on firm performance has been found in most previous studies (Tan, 2019). According to Scaliza *et al.* (2022), market-related performance benefits from an adaptable culture. Imran *et al.* (2022) also discovered a link between company performance and organizational culture. As a result, we offer the hypotheses:

- H3: Bank culture has a positive effect on a bank's performance
 H3.1: Bank Culture has a positive effect on the bank's market performance
 H3.1: Bank Culture has a positive effect on the bank's financial performance

MATERIALS AND METHODS

Measure Scale

Organizational culture is manifested in 5 aspects Ernest Chang and Lin (2007): Team activities, creative incubation, decentralized decision-making, identification in strategy, and implementation of innovation.

The innovation capability of the bank is based on the inheritance of existing research Liao *et al.* (2007), Lin *et al.* (2010), and OECD (2005). Product innovation capacity measures 3 aspects: improving product quality; adding new features; and adding new products. Measurement process innovation capacity on 3 aspects: eliminate activities that do not add value, reduce operating costs, and shorten service delivery time. Marketing innovation capacity through 4 aspects: distribution channel innovation, innovation in product promotion, innovation in pricing, and marketing strategy innovation. Organizational innovation has 5 measurement aspects: innovation in business methods, innovation in interaction with suppliers in the supply chain, innovation in quality management systems, innovation in human resource management, and innovation in information systems of banks.

Bank performance was measured on two dimensions: Financial performance and Market efficiency according to (Oh *et al.*, 2014) and (Karabulut, 2015).

Proposed Research Model



Based on the background theory of resource and innovation, based on inheriting previous studies on the factor that affect firm performance in the field of banking services, the authors propose a model of relation as **Figure 1** follows:

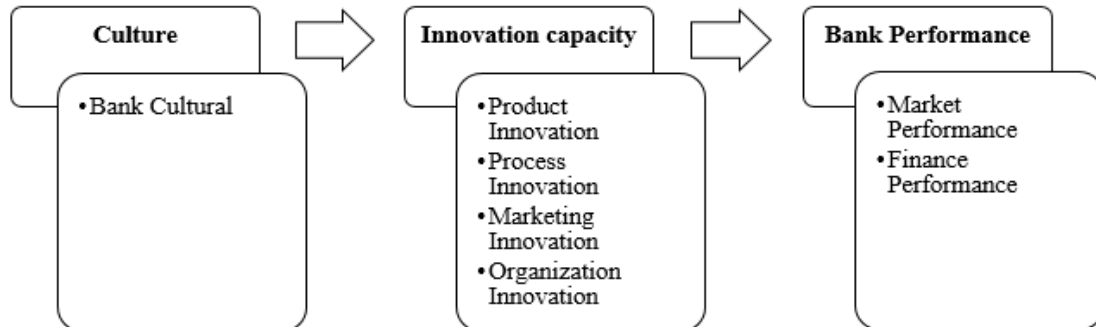


Figure 1. Research model

Data Collection

The data was collected by questionnaire survey using a 5 Likert scale (from 1= strongly disagree to 5 = strongly agree). In the list of commercial banks in Vietnam, we randomly selected 8 banks that are in the list of "Top 10 Prestigious Vietnamese Commercial Banks 2021". The respondents were randomly chosen from a list of branches in selected banks, and they responded voluntarily to the questionnaire. The person selected to survey was adapted to 3 conditions: officials working at the bank; with positions either senior, middle, or employee. Data for the study were collected from June to August 2022.



Research Sample Information

Respondents were employees working at Vietnamese banks who were invited to participate in the survey through the human resources department of the bank's headquarters. The survey questionnaire was sent to 300 employees and 213 people agreed to participate. Data is collected through a questionnaire. The participants state their opinions about the degree of agreement with the statements in the questionnaire which are observed variables of the scale in the research. Data from 198 responses were analyzed after excluding 5 unsatisfactory observations due to lack of data since participants not answering all the questions. The response rate reached 66%.

The demographic information including gender, age, and education level was gathered through the questionnaire survey. **Table 1** presents the segment attributes of respondents, and it shows that the dissemination of people is generally equivalent. Which, the respondents accounted for a large proportion were employees with 64.14 % of the total, and 47.98% working for less than 3 years.

Table 1. Research sample information

Criteria	Character	Quantity (N)	Percentage %
1. By gender			
	Male	97	48.99
	Female	101	51.01

2. By Age		
Under 25	10	5.05
From 25 to 30	59	29.80
From 31 to 40	75	37.88
From 41 to 50	49	24.75
Older than 50	5	2.53
3. Working position		
Senior management	12	6.06
Middle management	59	29.80
Employee	127	64.14
4. Working experience		
Over 10 years	95	16.67
From 6 to 10 years	41	14.65
From 3 to under 6 years	29	20.71
Less than 3 years	33	47.98
4. Total	357	100

Data Analysis Methods

Data analysis was performed according to the PLS-SEM method by Smart PLS V3 software. PLS-SEM is a partial least squares structural equation analysis method. PLS-SEM is applied to estimate structural models, allowing the estimation of complex models with many structures, indicator variables, and structural paths without imposing distributional assumptions on the data (Hair *et al.*, 2019). It is a combination method that promotes its superiority when conducting research in the field of social sciences with survey data of a small sample size compared to the real population. PLS-SEM analysis was performed in 2 stages (Hair *et al.*, 2017). Phase 1 evaluates the measurement model to assess the reliability, validity, and discriminant of the scale used for the research. Phase 2 evaluates the structural model to identify research hypotheses.

RESULTS AND DISCUSSION

Assessing the Measurement Model

Reliability and Validity: The sufficiency of the estimation model was assessed on the rules of reliability, convergent validity, and discriminant validity. The dependability esteem shows the degree to which the action yields similar outcomes on rehashed preliminaries. To test the reliability, the external stacking, Cronbach's alpha, and Composite Reliability (CR) values were determined for each variable. According to Hair *et al.* (2017), loadings above 0.708 indicate that the construct accounts for more than 50% of the indicator's variance, resulting in acceptable item reliability. The Cronbach's Alpha ≥ 0.7 (DeVellis, 2012) and Composite Dependability CR ≥ 0.7 (Clark & Watson, 2019) demonstrate acceptable levels of reliability. Cronbach's alpha was greater than 0.7, the min factors loading was 0.764, and the CR values ranged from 0.900 to 0.971, as shown in **Table 2**.

Table 2. Instrument descriptive statistics, reliability, and factor loadings

Scale	Construct	Number of items	AVE	Composite Reliability (CR)	Cronbach's Alpha	Outer Loadings		Items Source
						Max	Min	
OIC	Organization Culture	5	0.748	0.937	0.915	0.901	0.822	Ernest Chang and Lin (2007)
SP	Product Innovation	3	0.751	0.900	0.833	0.924	0.764	
QT	Process Innovation	4	0.861	0.940	0.915	0.921	0.841	Liao <i>et al.</i> (2007), Lin <i>et al.</i> (2010), and OECD (2005)
MK	Marketing Innovation	4	0.827	0.950	0.930	0.938	0.807	
TC	Organization Innovation	5	0.861	0.969	0.959	0.947	0.895	
MKP	Market Performance	4	0.797	0.961	0.946	0.943	0.906	Karabulut (2015)
FP	Finance Performance	4	0.893	0.971	0.960	0.966	0.911	Oh <i>et al.</i> (2014)

Convergence Validity: The degree to which a construct converges to explain the variance of its items is known as convergent validity. The measurement utilized for assessing a development's merged legitimacy is the typical fluctuation separated (AVE) for all things on each build. An adequate AVE is 0.50 or higher demonstrating that the build makes sense of no less than 50% of the fluctuation of its things. All of the AVE values in **Table 2** were greater than 0.5 and ranged from 0.751 to 0.893.

Discriminant Validity: Discriminant validity suggests that the proportions of a given development vary from those of others in the primary model. To test the discriminant legitimacy of the scales, we utilized the rule proposed by (Henseler *et al.*, 2015) and (Garson, 2016). The correlations' heterotrait-monotrait (HTMT) ratio was what they came up with. furthermore, propose that the discriminant esteem between two dormant factors is ensured when the HTMT record is under 1. The outcome in **Table 3** showed, that the scale is substantial and solid, and the developments have concurrent validity.

Table 3. Heterotrait - Monotrait Ratio (HTMT)

Factor	Culture	Finance Performance	Market Performance	Marketing Innovation	Organization Innovation	Process Innovation	Product Innovation
Culture							
Finance Performance	0.682						
Market Performance	0.637	0.885					
Marketing Innovation	0.685	0.755	0.794				



Organization Innovation	0.769	0.779	0.811	0.836		
Process Innovation	0.760	0.880	0.844	0.789	0.852	
Product Innovation	0.755	0.861	0.830	0.823	0.861	0.971

Assessing the Structural Model

Underlying model coefficients for the connections between the develops are gotten from assessing a progression of relapse conditions. Prior to evaluating the primary connections. Collinearity should be analyzed to ensure it doesn't inclination the relapse results. the indicator develops in a fractional relapse are utilized to work out the VIF values. In a perfect world, the VIF values ought to be near 3 or lower (Hair *et al.*, 2017). All of the Inner VIF Values in the PLS Algorithm's output are zero. In the structure model, there is therefore no collinearity between the latent variables.

Table 4. Path Coefficients - Total Effects

Path Coefficients	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Culture -> Finance Performance	0.628	0.627	0.037	17.040	0.000
Culture -> Market Performance	0.630	0.630	0.033	19.086	0.000
Culture -> Marketing Innovation	0.637	0.638	0.041	15.532	0.000
Culture -> Organization Innovation	0.726	0.726	0.033	22.197	0.000
Culture -> Process Innovation	0.700	0.702	0.033	21.438	0.000
Culture -> Product Innovation	0.666	0.667	0.045	14.688	0.000
Marketing Innovation -> Finance Performance	0.149	0.145	0.071	2.093	0.037
Marketing Innovation -> Market Performance	0.236	0.230	0.075	3.155	0.002
Organization Innovation -> Finance Performance	0.114	0.132	0.100	1.134	0.258
Organization Innovation -> Market Performance	0.240	0.254	0.082	2.931	0.004
Process Innovation -> Finance Performance	0.487	0.474	0.095	5.125	0.000
Process Innovation -> Market Performance	0.347	0.343	0.069	5.064	0.000
Product Innovation -> Finance Performance	0.165	0.162	0.077	2.147	0.032
Product Innovation -> Market Performance	0.094	0.089	0.087	1.083	0.279



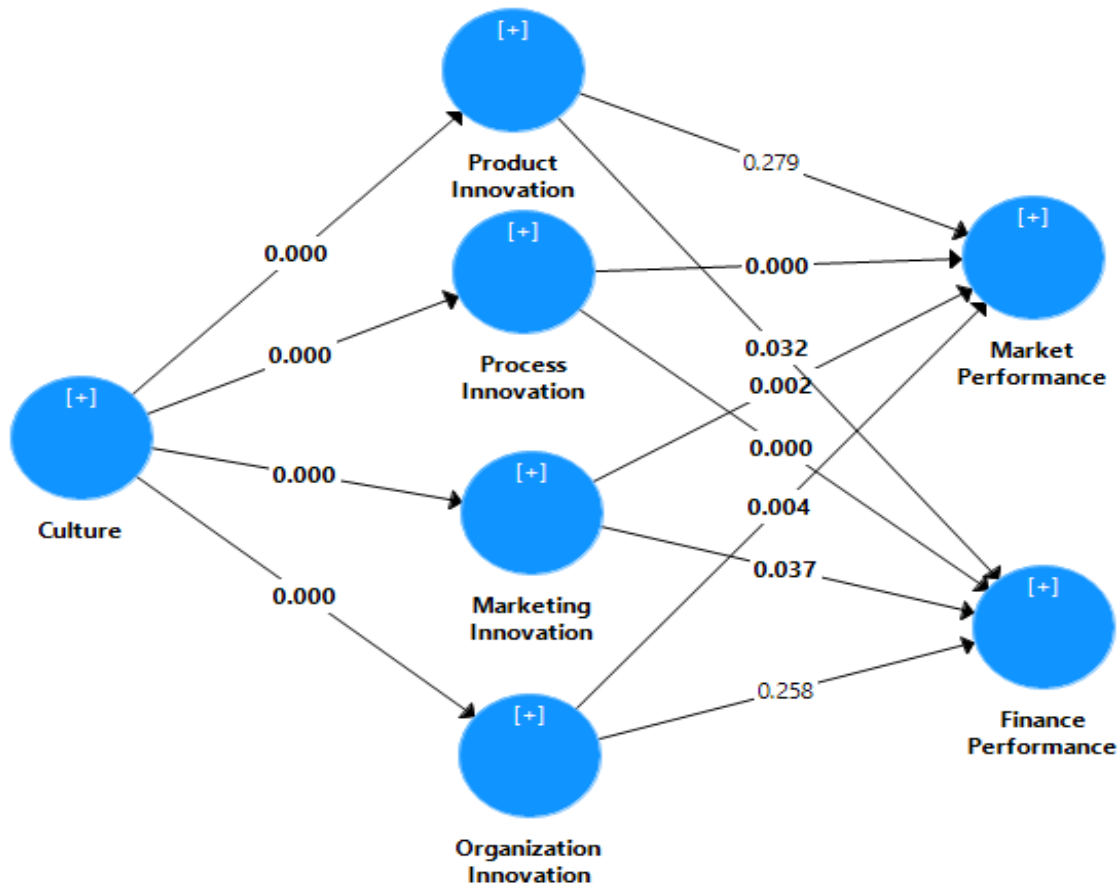


Figure 2. Path Model result

Testing the Hypotheses

We have calculated the direct effects to test the research hypotheses H1–H3. **Table 4** and **Figure 2** demonstrate the structure model's variables' direct effect relationship. The findings demonstrate a positive and significant relationship between innovative organizational culture, four types of innovation, and two dimensions of bank performance. Culture is the primary factor that has a positive impact on the innovation and performance of banks with a P value below 1% in the context of Vietnamese banking. The minimum values of R Square and R Square Adjusted for Performance, which are measures of the model's explanatory power, were 0.708 and 0.702, respectively, when examining the value of the endogenous R2 construct(s); 0.406 for innovation and 0.403. In this way, the clarification of the model came to 70.2%

Banks' financial and market performance are significantly and positively correlated with process innovation and marketing. While item advancement is decidedly and fundamentally connected with the bank's monetary exhibition, and emphatically and inconsequentially connected with the bank's market execution (Pvalue = 0.279 > 0.05). Organization Innovation, on the other hand, has no significant impact on the bank's financial performance but has a positive and significant impact on the bank's market performance (Pvalue = 0.258 > 0.05).

Table 5. Results of testing research theories

Name	Hypothesis	P value	Conclude
H1	Organizational culture has a positive effect on a bank's innovation capabilities.	0.000	Positive effect
H1.1	Bank culture has a positive effect on a bank's product innovation	0.000	Positive effect
H1.2	Bank culture has a positive effect on a bank's process innovation	0.000	Positive effect
H1.3	Bank culture has a positive effect on a bank's marketing innovation	0.000	Positive effect
H1.4	Bank culture has a positive effect on a bank's organizational innovation	0.000	Positive effect
H2	Innovation capacity has a positive effect on the bank's performance	0.020	Positive effect
H2.1a	Product Innovation has a positive effect on the bank's market performance	0.279	Reject
H2.1b	Product Innovation has a positive effect on the bank's financial performance	0.032	Positive effect
H2.2a	Process Innovation has a positive effect on the bank's market performance	0.000	Positive effect
H2.2b	Process Innovation has a positive effect on the bank's financial performance	0.000	Positive effect
H2.3a	Marketing Innovation has a positive effect on the bank's market performance	0.002	Positive effect
H2.3b	Marketing Innovation has a positive effect on the bank's financial performance	0.037	Positive effect
H2.4a	Organization Innovation has a positive effect on the bank's market performance	0.004	Positive effect
H2.4b	Organization Innovation has a positive effect on the bank's financial performance	0.258	Reject
H3	Bank culture has a positive effect on a bank's performance	0.000	Positive effect
H3.1	Bank Culture has a positive effect on the bank's market performance	0.000	Positive effect
H3.1	Bank Culture has a positive effect on the bank's financial performance	0.000	Positive effect

The reason for our review was to look at the connections between authoritative culture, bank advancement, and banks' exhibitions in the Vietnamese business bank setting by testing the hypotheses with results summarize in **Table 5**. Supporting H1 (H1.1, H1.2) and H3 (H3.1, H3.2), our study's findings demonstrate the positive impact of a bank's innovative culture on innovation and performance. Our study's findings are consistent with those of previous research that has demonstrated a positive connection between innovation, performance, and organizational culture (Lin *et al.*, 2010). This indicates that a bank's innovations in product innovation, process innovation, marketing innovation, and organizational innovation are significantly influenced by organizational culture. A bank's market and financial performance are also significantly influenced by its innovative culture.

Our findings indicate that process innovation and marketing innovation are significant predictors of both financial performance and market performance in the Vietnamese banking

sector, lending support for H2.2a, H2.2b, H2.3, and H2.3b, in relation to the relationship between organizational innovation and organizational performance. The findings are in line with those of earlier research (Lin *et al.*, 2010) which looked into the connections between organizational innovation and performance.

Although our findings are consistent with previous empirical support (Imran *et al.*, 2022), they also provide empirical evidence on the links between product innovation and banks' financial performance (H2.1b) and organization innovation and banks' market performance (H2.4a). 2013). Item development applied no huge impact on banks' market execution and the unimportant connection between association advancement and banks' monetary presentation, loaned no help for H2.1a and H2.4b. These outcomes may be justified by the possibility that in a developing nation like Vietnam, product innovation may not be able to attract customers due to the inconvenience and inability to adapt to new products. In the financial area, there are numerous administrative requirements to guarantee risk evasion (Zedgenizova *et al.*, 2021). Restructuring innovation in bank organizations also requires a significant financial investment, which reduces financial efficiency. This indicates that improving performance in the Vietnamese banking sector does not always result from introducing new organizational models.

CONCLUSION

Innovation is one of the most important ways for commercial banks to remain competitive and perform well. Establishing a culture within an organization that promotes long-term success takes a lot of time and effort. The focus of this investigation was on the connections that exist between the advancements of innovative organizational culture and its presentation. The general reason for the tried model was that a bank's development can be impacted emphatically by cultivating an imaginative culture, which thus is connected to a decent bank's exhibition. The banking industry in Vietnam can completely benefit from our findings. We anticipate, however, that the findings may also apply to the banking industry in other cultures due to the extensive literature review that was conducted for this study; notwithstanding, further examination is expected for such generalizability. The end underscores that systems to energize and encourage an imaginative culture in the association are probably going to work with developments and result in the accomplishment of predominant hierarchical execution.

Almost of the relationships that were hypothesized in our model were found to have positive outcomes in our study. Bank performance in financial and market dimensions was significantly correlated with a bank's marketing and process innovations. Innovation Bank's culture also had a significant and positive connection to the bank's innovation. Additionally, and perhaps most importantly, our findings demonstrate that an innovative bank's culture in supporting the bank's innovation and the bank's performance. The bank's performance dimensions were significantly explained by the bank's innovation.

Establishing mechanisms and structures that encourage innovative concepts, approaches, and methods of operation is beneficial for businesses to cultivate an innovative organizational culture, as this is likely to boost firm performance, according to our findings. We found that an inventive hierarchical culture encourages development. We can make critical administrative ideas for improving firm execution and advancements. We concluded that there is a connection between innovation and organizational culture that managers can capitalize on.



Managers should encourage an innovative culture across all organizational levels and departments. The right organizational culture can influence the generation of innovations. Teamwork, open communication, work autonomy, commitment, employee involvement, flexibility, creativity, and responsibility are all hallmarks of a strong culture. will positively affect both innovation and company performance. The presence of an environment that is portrayed by genuine direction, client center, consistent learning, risk-taking, versatility, pioneering mentality, execution motivators, energy, work commitment, navigation, showcasing direction, and elevated expectations and values, is of outrageous significance to the firm accomplishment at various levels. In addition, the findings offer insight into the banking industry, which strives to successfully adopt innovation to adapt to challenging environments.

Limitations and Dimensions for Future Research

However, since we used data from the banking industry as a research sample, our findings are constrained. Therefore, the findings are most applicable to the banking sector in Vietnam. Although our investigation of the writing in this space drives us to expect that our discoveries are probably going to apply to a few different businesses, future examinations ought to test the speculation with information from different settings. Further research with a wider range of industries and a larger sample size will also make it possible to compare the results, making it easier to see the connections. The impact of additional constructs on organizational innovation, such as entrepreneurship, organizational learning, or knowledge management, can also be tested in future research.

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