

BUSINESS MODEL INNOVATION OF ENTREPRENEURIAL FIRMS IN VIETNAM: THE MODERATING ROLE OF INFORMATION EXCHANGE AND MARKET DYNAMISM

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Abstract:

This study examines the impact of managerial ties (government ties, social ties, and business partner ties) on entrepreneurial performance through the mediating role of business model innovation (BMI) and the moderating roles of information exchange and market dynamism. The study employed the PLS-SEM method to evaluate the research hypotheses using data from 425 entrepreneurs in Vietnam. The results of the study show that managerial ties positively impact BMI and entrepreneurial performance. Additionally, BMI is positively related to entrepreneurial performance. Information exchange and market dynamism play a positive moderating role in the relationships between managerial ties and BMI, as well as between BMI and entrepreneurial performance. The findings provide valuable insights for managers of entrepreneurial firms, emphasizing the importance of building networking and implementing BMI to enhance entrepreneurial performance. Additionally, managers should actively engage in information exchange within their networks and capitalize on market dynamism to further improve entrepreneurial performance.

Key words: business model innovation, entrepreneurial performance, information exchange, managerial ties, market dynamism

INTRODUCTION

Entrepreneurship illustrates the deliberate effort to initiate creative enterprises [1]. Entrepreneurial firms represent the initial stage in the formation, development, and eventual maturation of enterprises [2]. In Vietnam, the success rate of entrepreneurial firms remains very low. The reason businesses fail is their inability to innovate business models in alignment with the market. In the early stages, businesses lack the necessary resources to support business model innovation [3]. Although entrepreneurial firms receive incentives from government support policies, social attention, and assistance from relevant entities [4]. Nevertheless, enterprises continue to encounter numerous obstacles in obtaining pertinent information and external support mechanisms essential for the innovation of their business models. Business model innovation (BMI) is important because it determines the survival and development of entrepreneurial firms [5]. In order for entrepreneurial enterprises to obtain data and assets from external entities and organizations, managerial ties

are essential in implementing BMI and improving entrepreneurial performance, especially in the current context in Vietnam.

Some recent studies have been linked to BMI. For example, Guo, Zhao [6] examine the influences of human capital and social capital on the innovation of business models; Anwar and Ali Shah [7] conducted an assessment regarding the influence of financial networks, political affiliations, and business collaborations on BMI. Some studies such as Zott and Amit [8]; Aspara, Hietanen [9]; Heij, Volberda [10], Guo, Pang [11]; Futterer, Schmidt [12], and Anwar [13] found that BMI had a positive impact on business performance. Patzelt, Zu Knyphausen-Aufseß [14] found no relationship between BMI and firm performance. Otherwise, the relationship between BMI and firm performance is still unclear [15]. Bhatti, Santoro [16] demonstrate that the innovation of business models serves as a mediating variable between the capacity for knowledge absorption, organizational agility, the mindfulness of senior management, and the performance of the

firm. Furthermore, market dynamics pertains to the regularity and magnitude of alterations occurring within the external environment surrounding a business entity [17], such as changing customer preferences [18]. Baden-Fuller and Mangematin [19] and Spieth and Schneider [20] argue that BMI is necessary to meet or adapt to changing environmental conditions. Market dynamism may require businesses to adapt or fundamentally modify their business models [21].

Some of the foundational theories have been applied from previous studies. Social network theory suggests that businesses build relationships with other societal stakeholders to obtain information quickly [22]. Businesses implement BMI through the relationships of senior managers [13]. The theoretical framework of social capital posits that the social capital possessed by individuals or organizations in conjunction with pertinent stakeholders facilitates their efficient access to external resources, enables the identification of viable business opportunities, and promotes the pursuit of advantageous partnerships [23]. Businesses implement BMI thanks to social capital and the skills of managers [6].

The preceding analysis suggests that the methodology grounded in institutional theory and social network theory to elucidate BMI and enhance the operational efficacy of entrepreneurial enterprises, particularly within developing nations, has not been extensively implemented. This will provide a new perspective on the research issue. Institutional theory explains how to increase the level of social acceptance (from stakeholders, the public, and the government) of entrepreneurial firms [4]. Once accepted by society, these firms can access information and resources to implement BMI. Furthermore, due to the incomplete institutional environment in developing countries, managerial ties are given significant attention [24]. Furthermore, the intermediary function of information exchange in the context of managerial relationships and BMI, along with the moderating influence of market dynamism on BMI and entrepreneurial performance, has not been extensively recognized in prior scholarly investigations. Finally, the mediating role of BMI between managerial ties and entrepreneurial performance in entrepreneurial firms has not been emphasized in previous studies. To fill the research gap, the aim of study examines the influence of managerial ties (government ties, social ties, and business partner ties) on entrepreneurial performance through the mediating role of BMI and the moderating influences of information exchange and market dynamism in entrepreneurial firms in Vietnam.

This study makes important theoretical contributions. It integrates institutional theory and social network theory to explain how managerial ties influence BMI and entrepreneurial performance in a dynamic market environment. By doing so, the research extends the existing literature on entrepreneurial networks by demonstrating that different types of managerial ties (government, social, and business partner ties) play a crucial role in fostering innovation and performance in entrepreneurship. Regarding originality, this study is among the first to examine

these relationships in the context of entrepreneurial firms in Vietnam, an emerging market characterized by rapid economic transformation and institutional complexity. The findings provide empirical evidence that extends previous research, offering fresh perspectives on the role of networks, innovation, and environmental dynamics in improving entrepreneurial performance. Subsequent to the introductory section, the research will delineate a comprehensive literature review, methodologies, a presentation of findings, a critical discussion, and a synthesis of conclusions.

LITERATURE REVIEW

Institutional theory

North [25] characterizes institutions as "the rules of society," which encompass the regulations and constraints established by humans to direct and govern the actions that individuals are permitted or prohibited to undertake under specific circumstances. The conceptualization of institutional theory posits that any enterprise adhering to institutional constraints will gain societal acceptance (legitimacy) [26]. When endorsed by the community, enterprises exhibit a heightened probability of enduring and flourishing. Institutional theory has become widely used in entrepreneurship research [27, 28]. The utilization of this theoretical framework within the domain of entrepreneurship research has demonstrated considerable efficacy, as it is instrumental in elucidating the development of entrepreneurial resources that extend beyond the confines of organizational resources [24]. The characteristics of formal institutions in transition economies in general, and in Vietnam in particular, remain weak. Informal institutions have a significant impact on both the behavior and strategies of managers. Therefore, informal institutions (personal networks, connections, and relationships) are nurtured by managers and entrepreneurs [29].

Social network theory

Powell [30] posits that within an environment characterized by uncertainty, organizations are inclined to depend on managerial networks. Entrepreneurs encounter a significant potential for failure during the initial phases of their ventures; consequently, the cultivation of professional networks is strongly advocated [31]. Social networks are considered particularly important for business innovation activities, especially for science and technology enterprises [32]. Shaw [33] posits that entrepreneurs depend on their networks to obtain essential resources. Social networks are regarded as a fundamental framework that facilitates managers in procuring resources from various sources, encompassing financial capital, pertinent information and counsel, emotional sustenance, as well as affirmation and endorsement [34]. Small enterprises frequently depend on the interpersonal connections established by their management personnel, a tendency that is congruent with the cultural norms prevalent in Vietnam [35].

Definition of research concepts

Managerial ties include government, social and business partner ties. Government affiliations encompass interactions with governmental representatives, including individuals in leadership roles across multiple tiers of the administration [24]. Social ties encompass affiliations with family members and companions, in addition to associations with participants of social organizations and clubs [36]. Business partner ties include relationships with customers, suppliers, and competitors [24].

Business model innovation: Baden-Fuller and Mangematin [19] as well as Spieth and Schneider [20] delineate three essential elements of the business model: the generation of value, the value proposition, and the appropriation of value. The integration of these three elements constitutes the innovative business model of organizations [37]. The implementation of BMI necessitates a critical re-evaluation of the existing business model and mandates modifications to the three aforementioned components [38]. BMI has been underscored as a critical dynamic capability that facilitates enhanced responsiveness to external environmental fluctuations and fosters the establishment of a competitive edge [39].

Firm performance is the achievement of the goals of the business [40] and it is the result obtained when the firm's resources are used effectively [41]. In the context of this research, entrepreneurial performance is conceptualized as the attainment of the predetermined objectives (such as revenue, market share, etc.) and is significantly valued by stakeholders [42].

Hypotheses development

The affiliations with governmental entities are acknowledged as beneficial due to their enhancement of the operational efficacy of an enterprise [43]. According to institutional theory, connections with government officials increase the acceptance of a business and enhance its ability to access external financial resources, helping to reduce transaction costs such as accessing information, land, and other necessary permits. Such relationships with government ties can reduce bureaucratic hurdles and create a more favorable environment for business growth [44]. Wang, Yao [45] conducted a study that revealed enterprises exhibiting favorable affiliations with governmental entities are likely to augment new investment initiatives and secure bank financing, optimize corporate governance frameworks, and mitigate information asymmetry, consequently fostering enhanced entrepreneurial outcomes.

H_{1a}: Government ties are positively related to entrepreneurial performance

A government-supported incubator can enhance the acceptance of entrepreneurial businesses [46]. Consequently, entrepreneurial enterprises will be afforded training aimed at augmenting their competencies (knowledge/expertise, adaptability to environmental fluctuations, etc.), assistance for the enhancement and advancement of technological innovations. Political ties will enhance firm innovativeness through government

support [47]. Government ties provide businesses with access to critical resources such as funding, information, and technology, thereby fostering BMI [48].

H_{1b}: Government ties are positively related to BMI

The significance of social connections has been empirically demonstrated to contribute to the success of SMEs across various contexts [49]. In order to secure the requisite assistance, entrepreneurs must engage in interactions with relatives, acquaintances, professional associates, and similar parties [50]. Numerous investigations have substantiated that tightly integrated networks can augment sustainable profitability and facilitate business expansion [33] and sales growth [51].

H_{2a}: Social ties are positively related to entrepreneurial performance

Social ties, such as connections with family, friends, colleagues, and industry partners, serve as valuable channels for resource sharing [52]. Entrepreneurs with strong social ties can access information about market trends, customer preferences, and technological advancements, thereby boosting BMI [53]. Family firms with strong social networks can easily establish partnerships to promote BMI [54].

H_{2b}: Social ties are positively related to BMI

Enterprises that cultivate robust relationships with suppliers, clients, and competitors are perceived as possessing advantageous prospects or as a mechanism to diminish transaction costs [55]. Businesses with strong partnerships have the opportunity to access critical resources such as capital, technology, and expertise, which help improve firm performance [56]. Businesses with strong relationships in alliance networks facilitate their operations by leveraging exploratory and exploitative knowledge, contributing positively to efficiency growth [57].

H_{3a}: Business partner ties are positively related to entrepreneurial performance

Emerging enterprises that cultivate positive affiliations with executives of well-established organizations can readily obtain novel information, resources, and expertise, which will substantially affect their innovative capacity [58]. Proprius [59] posits that the phenomenon of process innovation is intrinsically linked to the engagement in collaborative efforts with suppliers. Businesses strengthening relationships with customers will positively affect product innovation activities [60]. Businesses with strong relationships among senior managers will boost BMI [6]. The formulation of an innovative business model necessitates that enterprises possess extensive knowledge regarding their clientele, suppliers, and market competitors [61]. Consequently, enterprises that cultivate interactions with clientele, vendors, and rivals will exert a substantial influence on BMI within SMEs [62].

H_{3b}: Business partner ties are positively related to BMI

BMI generates four times the profit compared to innovation based solely on products or services [63]. SMEs that implement BMI achieve higher firm performance compared to other enterprises [12]. Venture capital enterprises that adopt BMI are poised to secure a competitive edge and ensure enduring viability within an ever-

evolving marketplace [64]. The business model constitutes a significant determinant in enhancing organizational performance [65].

H₄: BMI is positively correlated with entrepreneurial performance

The network of relationships provides resources such as knowledge, information, and financial support, creating the foundation for creativity and business model innovation [66]. Businesses with close relationships with partners and customers often discover unmet needs, thereby stimulating the innovation process [67]. facilitates organizations in adjusting to fluctuations within the business landscape and proficiently capitalizing on prospects arising from the network [68].

Relationships with governments can provide businesses with access to preferential policies, financial support, and opportunities to collaborate on development initiatives [69]. Businesses leverage the benefits from their relationship with the government and implement BMI more effectively, creating value and enhancing entrepreneurial performance. Businesses that apply BMI often achieve higher performance by offering unique value propositions and improving cost structures [70]. BMI is a tool that transforms resources from the network of relationships into competitive advantages and positive entrepreneurial performance [71]. The innovation process creates differentiation in how businesses generate value, thereby enhancing business performance [72].

H_{5a}: BMI serves as a mediating variable in the correlation between government ties and entrepreneurial performance

H_{5b}: BMI serves as a mediating variable in the correlation between social ties and entrepreneurial performance

H_{5c}: BMI serves as a mediating variable in the correlation between business partner ties and entrepreneurial performance

In a fluctuating market environment, the adoption of BMI is imperative to supplant the current business model in order to effectively address emerging threats. [10], creating alignment with the new environment and pursuing sustainable existence [15]. Therefore, in a dynamic market, BMI has a stronger impact on business performance than in a less dynamic market. In the context of a dynamic marketplace, the execution of BMI is essential for capitalizing on opportunities to generate value for clients and enhance entrepreneurial efficacy [20].

H₆: Market dynamism serves to moderate the relationship between BMI and entrepreneurial performance

Networks provide a platform for interactions among parties, which can lead to changes in perceptions and redesigns of business models [73]. Interaction in networks can lead to the redesign of business models by shaping approaches to market, product/service delivery, and reputation, thereby enhancing value creation [74]. Wang [48] surveyed 201 Chinese companies and found that information exchange within external social networks significantly enhances firms' access to necessary knowledge and resources, thereby positively impacting BMI. Effective information sharing in the network helps businesses

improve performance and drive BMI. According to social exchange theory, the sharing of information between individuals or organizations serves to build and maintain relationships, while also promoting operational efficiency and innovation. This exchange enables parties to access essential knowledge and resources, facilitating collaboration and development. In a business context, the sharing of information between companies and their partners can foster BMI.

H_{7a}: Information exchange serves as a moderating variable in the association between government ties and BMI

H_{7b}: Information exchange serves as a moderating variable in the association between social ties and BMI

H_{7c}: Information exchange serves as a moderating variable in the association between business partner ties and BMI

Based on the argument in hypothesis development, this study proposes the research model shown in Figure 1.

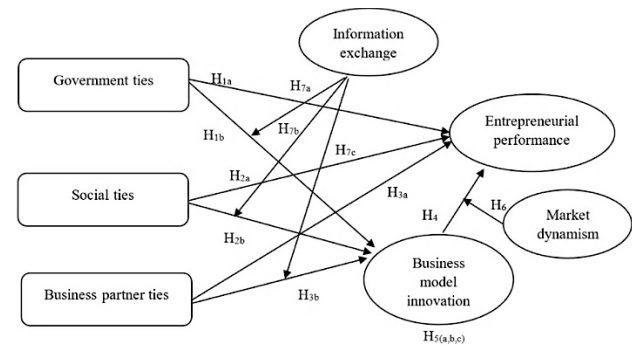


Fig. 1 Proposed research model

METHODS

Data collection

The study designed a questionnaire and collected data through both online and offline methods. For the online method, the questionnaire was sent to entrepreneurial firms via email and social media platforms. For the offline method, the study conducted face-to-face interviews with entrepreneurs at various entrepreneurship and innovation events and conferences. The criteria for the research sample comprise entrepreneurial firms operating in Vietnam for 1 to 5 years across various industries. The study employed a convenience sampling method, reaching out to entrepreneurial firms that we could contact through existing relationships, events, and seminars. The study employs a closed-ended questionnaire, in which survey questions are measured using a 5-point Likert scale ranging from 1 – Strongly Disagree to 5 – Strongly Agree.

Measures

Government ties scale consists of 3 observed variables inherited from Peng [24], business partner ties consists of 4 items inherited from Peng [24], the social ties scale consists of 4 items inherited from Le, Venkatesh [36]. The entrepreneurial performance scale comprises 4 items, adapted from the study by Ju, Zhou [42]. The market dynamism construct is based on the study Crick, Friske [75], includes 3 observation variables. Finally, the BMI scale is inherited from Latifi, Nikou [76] comprising 7 items and

the information exchange scale includes 3 items adapted from the study by Kwok, Sharma [77].

Common method bias

Common method bias (CMB) often occurs during data collection [78]. The research investigated the significance of a comprehensive collinearity assessment predicated upon variance inflation factors (VIFs). CMB is not violated because VIF values are less than 3.3 [79] (Table 1).

Table 1
Full collinearity statistics (VIF)

	BMI	EP
BMI		1.354
MD		1.115
EP		
GT	1.147	1.197
IE	1.013	
BPT	1.140	1.303
ST	1.175	1.198
IE x ST	1.231	
IE x GT	1.215	
IE x BPT	1.108	
MD x BMI		1.037

The examination of a factor derived from Harman's test indicates that the most substantial unrotated factor contributes merely 37.47%, which falls short of the 50% criterion [80].

Data analysis method

Research using SmartPLS version 4.0.9.2 applies the Partial Least Squares (PLS) methodology to Structural Equation Modeling (SEM). This approach has been empirically validated as appropriate for estimating models across diverse contexts [81]. PLS-SEM possesses the capability to concurrently assess both the measurement model and the structural model. Moreover, PLS-SEM is favored when the path model exhibits complexity, encompassing numerous interconnections, and it facilitates the management of limited sample sizes and variables that do not adhere to a normal distribution. It is also convenient for testing mediation and moderation effects [82].

RESULTS

Characteristics of the study sample

The research sample is classified by type of enterprise, business field and labor size (Table 2).

Table 2
Characteristics of the study sample

Category	Sub-category	Frequency	%
Type of operation	Private enterprise	156	37
	Limited liability company	153	36
	Joint-Stock Company	76	18
	Other types	40	9
Area of operation	Manufacturing	122	29
	Services	123	29
	Trading	145	34
	Other	35	8
Labor size	Under 10	88	21
	From 11 to 30	96	22
	From 31-50	132	31
	51 and above	109	26

The research sample includes businesses of various types. Among them, private enterprises account for the highest proportion at 37%, followed by limited liability companies (36%). Joint-stock companies make up 18%, while other types account for only 9%. Regarding the area of operation, the trading sector holds the largest proportion at 34%, followed by services (29%) and manufacturing (29%), while other sectors account for only 8%. Regarding workforce size, businesses with 31 to 50 employees account for the highest proportion at 31%. Companies with 11 to 30 employees make up 22%, while those with fewer than 10 employees represent 21%, and businesses with more than 51 employees account for 26%.

Measurement model

Internal consistency

Cronbach's alpha (α) and composite reliability (CR) serve as metrics for assessing internal consistency reliability. The presence of α and CR values exceeding the requisite threshold of 0.7 across all constructs is indicative of adequate internal consistency [83] (Table 3).

Convergent validity

All external loadings and extracted average variance extracted (AVE) values are employed to assess convergent validity [83]. All external loading coefficients exceed 0.7, and AVE values surpass 0.5 (Table 3). As a result, the convergent validity of the constructs has been substantiated [84].

Table 3
Outer loadings, Cronbach's Alpha, CR and AVE

Constructs	Outer loadings	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
Business model innovation		0.866	0.871	0.55
BMI1	0.736			
BMI2	0.778			
BMI3	0.753			
BMI4	0.738			
BMI5	0.725			
BMI6	0.720			
BMI7	0.741			
Market dynamism		0.803	0.804	0.718
MD1	0.822			
MD2	0.856			
MD3	0.863			
Entrepreneurial performance		0.846	0.848	0.684
EP1	0.802			
EP2	0.846			
EP3	0.830			
EP4	0.829			
Government ties		0.844	0.848	0.762
GT1	0.874			
GT2	0.893			
GT3	0.851			
Information exchange		0.846	0.859	0.762
IE1	0.869			
IE2	0.870			
IE3	0.880			
Business partner ties		0.877	0.884	0.731
BPT1	0.885			
BPT2	0.890			
BPT3	0.853			
BPT4	0.788			
Social ties		0.838	0.847	0.672
ST1	0.795			
ST2	0.863			
ST3	0.792			
ST4	0.826			

Discriminant validity

The study evaluates the discriminant validity through the application of the Fornell-Larcker criterion (refer to Table 4) and the Heterotrait-Monotrait ratio (HTMT) (refer to Table 5) [81]. Table 4 illustrates that all emphasized values located on the diagonal, which represent the square roots of the Average Variance Extracted (AVE) values, exceed the correlations observed among the constructs, thus fulfilling the Fornell-Larcker criterion [85].

In Table 5, each value within the HTMT matrix is inferior to 0.90 [81], indicating that the HTMT criteria have been satisfactorily fulfilled. Consequently, this investigation can assert that the findings derived from the Fornell-Larcker criterion and the HTMT evaluation robustly endorse the discriminant validity among the constructs within the proposed framework.

Table 4
Discriminant validity assessment using the Fornell-Larcker test

	BMI	MD	EP	GT	IE	BPT	ST
BMI	0.742						
MD	-0.263	0.847					
EP	0.657	-0.437	0.827				
GT	0.288	-0.223	0.384	0.873			
IE	0.348	-0.085	0.16	0.064	0.873		
BPT	0.433	-0.151	0.504	0.217	0.1	0.855	
ST	0.26	-0.194	0.393	0.311	0.035	0.284	0.82

Table 5
Evaluation of discriminant validity employing
the HTMT criterion

	BMI	MD	EP	GT	IE	BPT	ST	IE x ST	IE x GT	IE x BPT	MD x BMI
BMI											
MD	0.311										
EP	0.756	0.53									
GT	0.339	0.271	0.451								
IE	0.38	0.101	0.197	0.078							
BPT	0.475	0.179	0.584	0.254	0.124						
ST	0.299	0.238	0.458	0.369	0.054	0.324					
IE x ST	0.135	0.095	0.14	0.04	0.032	0.107	0.044				
IE x GT	0.197	0.116	0.103	0.129	0.029	0.047	0.044	0.39			
IE x BPT	0.15	0.015	0.024	0.07	0.042	0.152	0.106	0.255	0.213		
MD x BMI	0.049	0.087	0.254	0.126	0.081	0.158	0.125	0.019	0.007	0.035	

The Model Fit assessment results indicate that the model has a relatively good fit with the data (Table 6).

Table 6
Model fit test

	Saturated model	Estimated model
SRMR	0.066	0.068
d_ULS	1.772	1.889
d_G	0.593	0.596
Chi-square	1580.547	1572.645
NFI	0.759	0.76

The SRMR values are 0.066 (Saturated) and 0.068 (Estimated), both below the 0.08 threshold, indicating a good model fit [86]. The two indices, d_ULS (1.772 and 1.889) and d_G (0.593 and 0.596), have low values, indicating that the deviation between the observed and predicted covariance matrices is negligible [81]. The Chi-square values (1580.547 and 1572.645) are for reference, indicating relative stability between the two models. Finally, the NFI values (0.759 and 0.76) fall within the acceptable range of 0.70 to 0.90, although they have not reached the ideal threshold of 0.90 [87]. In summary, these indices indicate that the model has a relatively good fit with the actual data, meeting the evaluation criteria in PLS-SEM.

Structural model assessment

Direct effects

Table 7 elucidates the direct influences among the latent constructs within the research model. The seven proposed hypotheses (H1a, H1b, H2a, H2c, H3a, H3b, and H4) receive strong support at the 1% and 5% significance levels. Regarding the link between managerial ties, BMI, and entrepreneurial performance, the results indicate that BMI has the most significant impact on EP ($\beta_{\text{BMI} \rightarrow \text{EP}} = 0.44$, $p < 0.01$), followed by business partner ties (BPT) ($\beta_{\text{BPT} \rightarrow \text{EP}} = 0.198$, $p < 0.01$) and social ties (ST) ($\beta_{\text{ST} \rightarrow \text{EP}} = 0.13$, $p < 0.01$) and finally government ties ($\beta_{\text{GT} \rightarrow \text{EP}} = 0.105$, $p < 0.01$). In relation to the correlation between managerial ties and BMI, the findings indicate that business partner ties have the strongest impact on BMI

($\beta_{\text{BPT} \rightarrow \text{BMI}} = 0.326$, $p < 0.01$), followed by government ties ($\beta_{\text{GT} \rightarrow \text{BMI}} = 0.148$, $p < 0.01$), and finally social ties ($\beta_{\text{ST} \rightarrow \text{EP}} = 0.129$, $p < 0.01$).

Table 7
Direct effects

Hypotheses	Paths	β	SD	t-Value	P-values	Conclusion
H1a	GT $\rightarrow$ EP	0.105***	0.036	2.924	0.004	Supported
H1b	GT $\rightarrow$ BMI	0.148***	0.043	3.420	0.001	Supported
H2a	ST $\rightarrow$ EP	0.13***	0.038	3.407	0.001	Supported
H2b	ST $\rightarrow$ BMI	0.100**	0.048	2.090	0.037	Supported
H3a	BPT $\rightarrow$ EP	0.198***	0.036	5.459	0.000	Supported
H3b	BPT $\rightarrow$ BMI	0.326***	0.045	7.295	0.000	Supported
H4	BMI $\rightarrow$ EP	0.440***	0.035	12.461	0.000	Supported

Note: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

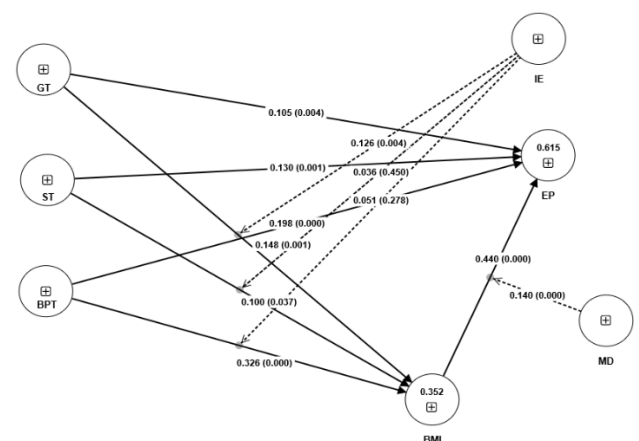


Fig. 2 SEM results

Indirect effects

A Bootstrapping test, as advocated by Bentler and Bonett [87] was employed to investigate the mediating influence of BMI on the interrelations between managerial connections and entrepreneurial performance. Three indirect paths were found to be statistically significant at the 5%

and 1% levels. Table 7 shows that the direct effects between GT, BPT, ST, and EP are statistically significant. The

positive values of all beta coefficients (both direct and indirect effects) are confirmed, according to Bentler and Bonett [87], BMI serves a function as a partial mediator in the relationships among as illustrated in Table 8.

Table 8
Indirect effects

Hypotheses	Path	β	SD	T-value	P values	Conclusion
H _{5a}	GT → BMI → EP	0.065***	0.020	3.233	0.001	Accepted
H _{5b}	BPT → BMI → EP	0.143***	0.023	6.333	0.000	Accepted
H _{5c}	ST → BMI → EP	0.044**	0.021	2.095	0.036	Accepted

Note: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Predictive capability evaluation

The coefficient of determination (R^2) along with the Stone-Geisser Q^2 are two prevalent metrics utilized for assessing the predictive efficacy of a structural equation modeling (SEM) framework. According to Chin and Marcoulides [88], The R^2 values of 0.67, 0.33, and 0.19 associated with endogenous constructs are regarded as substantial, moderate, and weak, correspondingly. Therefore, the R^2 value of EP is 0.61, indicating a high level of predictive accuracy. Hair, Hult [83] articulated that Q^2 values of 0.02, 0.15, and 0.35 signify small, moderate, and substantial predictive relevance, correspondingly. Specifically, the Q^2 statistic for the endogenous construct of EP has been measured at 0.413, surpassing the established threshold of 0.35, which consequently affirms a substantial degree of predictive relevance for this latent construct. Therefore, in light of the R^2 and Q^2 metrics, one can deduce that the proposed model possesses adequate predictive efficacy (Table 9).

Table 9
Predictive capability

	R-square	R-square adjusted	$Q^2 (= 1 - SSE/SSO)$
EP	0.615	0.61	0.413
BMI	0.352	0.341	0.178

Moderating effect

According to the findings presented in Table 10, the interaction between MD and BMI in the context of predicting EP exhibits statistical significance ($\beta = 0.142$; $p < 0.01$).

Table 10
Moderating effects of information exchange and environment dynamic

Hypotheses	Paths	Coefficient (β)	SD	T-statistics	P values	Conclusion
H ₆	MD x BMI → EP	0.142	0.029	4.939	0.000	Supported
H _{7a}	IE x GT → BMI	0.126	0.043	2.911	0.004	Supported
H _{7b}	IE x ST → BMI	0.036	0.047	0.755	0.450	Unsupported
H _{7c}	IE x BPT → BMI	0.051	0.047	1.084	0.278	Unsupported

In Figure 3, it is evident that the correlation between BMI and EP becomes more pronounced at elevated levels of MD, thereby suggesting that the influence of BMI on EP is moderated by ED. Consequently, the hypothesis H6 is deemed to be supported.

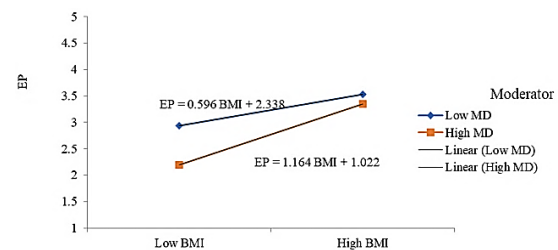


Fig. 3 The moderating role of MD in BMI-EP relationship

The interaction term of IE × GT in influencing EP is statistically significant ($\beta = 0.126$, $p < 0.01$) (Table 10). This moderation role was illustrated in the plotting graph (Figure 4).

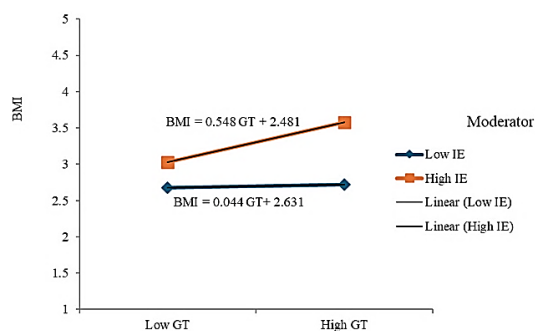


Fig. 4 The moderating role of IE in GT-BMI relationship

The relationship between GT and BMI becomes stronger when IE is high, indicating that the effect of GT on BMI is moderated by IE. Therefore, hypothesis H7a is supported. However, hypotheses H7b and H7c are not supported in this study.

DISCUSSION

The relationships between managers and government ties, business partner ties, and social ties positively impact BMI. The research findings align with previous studies, suggesting that external support can have varying degrees of influence on BMI [89, 90]. Close collaboration between managers and external support parties can create an innovative environment where new ideas are developed and rapidly transformed into BMI [91].

The research findings indicate that managerial ties are a crucial factor in enhancing entrepreneurial performance. Through these networks, entrepreneurial firms can access resources, information, and opportunities that are not readily available, thereby fostering innovation and growth [92]. Business networks have been proven to have a positive relationship with entrepreneurial performance [92]. Moreover, the ability to connect within these networks is essential for companies to commercialize new ideas and technologies, which can lead to improved performance [93].

The empirical evidence suggests that BMI exerts a beneficial influence on entrepreneurial performance. This result aligns with previous studies, which have shown that BMI positively influences entrepreneurial performance by enabling companies to leverage their networking and learning capabilities [93]. Additionally, BMI contributes to both short-term and long-term growth and operational efficiency, particularly in family businesses [54].

BMI serves as a crucial mediator that enhances the impact of managerial ties on entrepreneurial performance. The research findings align with previous studies. For instance, Yang, Likai [62] [62] demonstrated that BMI mediates the association between customer, supplier, and competitor relationships and firm performance, highlighting that strong external connections are essential for SMEs to innovate their business models and achieve growth. Market dynamism serves as a moderating variable influencing the relationship between BMI and entrepreneurial performance. The results of the research are consistent with earlier investigations, suggesting that in the realm of entrepreneurship, environmental dynamism enhances the association between BMI and performance metrics [94].

Finally, information exchange positively moderates the relationship between managerial ties with government ties, social ties, business partner ties, and BMI. Information exchange plays a crucial role in strengthening the relationships between managers and external stakeholders by facilitating communication, enhancing understanding, and promoting collaboration [95]. It acts as a bridge connecting different parties, enabling the sharing of information, knowledge, and expectations, which is essential for building trust and achieving common goals. Information exchange enhances innovation capabilities and enables organizations to respond quickly to market changes, thereby reinforcing relationships with associated parties [96].

Theoretical contribution

This research presents numerous significant theoretical advancements. Initially, it amalgamates institutional theory alongside social network theory to elucidate the manner in which managerial connections impact business model innovation (BMI) and entrepreneurial performance. Institutional theory provides insights into the behaviors and strategies of entrepreneurial managers in developing countries like Vietnam. In this study, managerial ties (networking) are viewed as a strategic approach that entrepreneurial firms use to leverage support from the government, society, and business partners. Social network theory offers a foundation for understanding how managerial ties enable firms to access information, resources, and opportunities for BMI. The findings reveal that managerial networks not only have a direct impact on entrepreneurial performance but also an indirect effect through BMI.

Second, this study provides empirical evidence on how BMI serves as a mediating mechanism between managerial ties and entrepreneurial performance. While previous research has primarily focused on the direct impact of managerial networks on business performance, this study highlights that BMI is a crucial mechanism through which entrepreneurial firms effectively leverage resources from managerial ties. This finding expands the understanding of how managerial ties not only provide access to resources but also drive firms to develop innovative business approaches to achieve higher entrepreneurial performance.

Third, this study highlights the moderating role of information exchange in the relationship between managerial ties and BMI. Previous research has not clearly explained how information exchange influences this relationship. This study proposes that when the level of information exchange is high, the impact of managerial ties on BMI becomes stronger, enabling firms to better utilize resources and seize opportunities for BMI.

Finally, this study highlights the moderating role of market dynamism in the relationship between BMI and entrepreneurial performance. In a highly dynamic market environment, entrepreneurial firms may face numerous challenges but also have opportunities to leverage BMI to gain an entrepreneurial performance. This research

contributes to the understanding that as market volatility increases, BMI plays a crucial role in transforming the advantages gained from managerial ties into improved entrepreneurial performance.

Practical contribution

The research findings indicate that managerial ties play a crucial role in influencing entrepreneurial performance. Therefore, entrepreneurship founders and managers should proactively build and maintain relationships with strategic partners, including government agencies, customers, suppliers, investors, and the business community. Instead of relying on personal connections, managers should leverage these networks to gain knowledge, exchange information, and explore opportunities for BMI.

The study highlights that BMI serves as a crucial bridge between managerial ties and entrepreneurial performance. Therefore, entrepreneurial firms should not only focus on maintaining relationships but also on transforming the benefits of these networks into practical innovations in their business models. Entrepreneurs can experiment with flexible business models, adopt new technologies, and continuously adjust their strategies to align with market demands.

Information exchange plays a crucial moderating role in the relationship between managerial ties and BMI. Therefore, businesses should establish effective information-sharing mechanisms with partners, employees, and customers to quickly capture market trends and adjust their strategies accordingly. Entrepreneurs can leverage tools such as knowledge management systems, internal communication platforms, or organize networking events to optimize information flow.

In a volatile market environment, entrepreneurs need to focus on optimizing their business models to quickly adapt to changes. The study highlights that the more dynamic the market, the more critical BMI becomes in helping businesses achieve higher entrepreneurial performance. This suggests that entrepreneurial firms should proactively monitor market trends, anticipate risks, and develop flexible strategies to navigate uncertainties effectively.

CONCLUSION

This study has shed light on the crucial role of managerial ties in entrepreneurial performance through the mediating mechanism of BMI and the moderating effects of information exchange and market dynamism. By applying the PLS-SEM method to data collected from 412 entrepreneurs, the research findings confirm that relationships with government ties, business partner ties, and social ties have a positive impact on BMI and entrepreneurial performance. At the same time, the study reveals that BMI serves as a partial mediator in the relationship between managerial ties and entrepreneurial performance, highlighting that BMI is a crucial factor in leveraging the advantages of networking. Furthermore, information exchange and market dynamism are identified as positive moderators, strengthening the impact of managerial ties

on BMI and the effect of BMI on entrepreneurial performance.

These findings not only contribute to the theoretical foundation of managerial ties, BMI and entrepreneurial performance but also carry important practical implications. Entrepreneurs should focus on building and leveraging their networks to drive BMI while also enhancing information exchange and adaptability to a market dynamism to maximize entrepreneurial performance.

Although this study provides empirical evidence on the positive relationships between managerial ties, BMI, and entrepreneurial performance, as well as the moderating roles of information exchange and market dynamism in a developing country like Vietnam, the role of resource access from managerial ties – based on social network and institutional theory – has yet to be fully explored. In the early stages, entrepreneurial firms often lack the necessary resources for innovation. Therefore, to implement BMI, they require external support. However, this study has not clearly identified the role of external resources in driving BMI. Consequently, future research could further clarify the mediating role of resource access between managerial ties and BMI. Finally, market dynamism can both hinder and facilitate networking connections, BMI, and sustainable performance, presenting an interesting avenue for future investigation [97].

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