



Research paper

High-involvement HRM practices stimulate incremental and radical innovation: The roles of knowledge sharing and market turbulence

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ABSTRACT

There is a lack of study examining the relationship between high-involvement HRM practice and innovation capability as mediated by knowledge sharing. So, the motivation of this paper is to study and explore potential intermediating roles of explicit and tacit knowledge sharing in linking high-involvement HRM practice and innovation capability under the possible moderator of market turbulence. Analysis of Moment Structures was used to measure validation and test the structural model based on the questionnaire surveys of 333 participants in 119 Vietnamese manufacturing and service enterprises from May to July 2021. The collected data were inspected and analyzed using SPSS and AMOS software version 22. The result advocates the proposed hypotheses relating to the intermediating role of KS in the HRM practices-innovation relationship. It spotlights the crucial character of market turbulence in driving the domination of high-involvement HRM practice on incremental and radical innovation. This paper remarkably increases the insights of the precursor role of high-involvement HRM practice, intermediating mechanism of KS activities, and the regulating influence of market turbulence in predicting and fostering radical and incremental innovation, thereby pushing forward the theory of HRM and innovation management.

1. Introduction

Innovation capability is widely accepted as a dynamic competence allowing firms to adjust and evolve their services and products aimed at meeting customers' needs (Le, 2021; Gui et al., 2022). Accordingly, firms are attempting to improve its innovation capability to succeed in dealing with the external turbulences and environments that might induce negative effects on organizational performances (Cao et al., 2021; Edeh et al., 2022). However, it is an obstacle for organizations in developing and emerging markets to become real innovators rather than imitators due to majority of these firms are medium and small size, with the lack of resources and capital for successful innovation (Lei et al., 2020; Gui et al., 2021). Such situation has required researchers and practitioners to devote more effort to detecting the finer antecedents, new mechanism, and optimal solutions to improve innovation competence for organizations in these nations (Le, 2021; Than et al., 2022). Among the source of predicting innovation capability of firms, scholars highlight the crucial role of human and knowledge capital as the strategic forces for organizations to pursue and improve its

innovation competence (Singh et al., 2021; Gui et al., 2022). Consequently, to shed light on the characters and influences of these possible constructs, the paper attempts to elucidate the direct and indirect effects of high-involvement human resource management (HRM) practice on specified forms of innovation capacity that is incremental and radical innovation via the mediators of explicit and tacit knowledge sharing (KS). This study is anticipated to increase the theory and initiatives of innovation management by clarifying the contributions of HRM practices and KS by several reasons.

First, the knowledge capital and human resource are regarded as one of the valuable sources for organizations to initiate worth and attain competitive advantage in swiftly shift environments (Le and Lei, 2019; Singh et al., 2021). HRM practice serves as the foremost drives for organizations to formulate and evolve necessary attitudes, skills and behaviors of followers for pursuing innovation and achieving key outcomes (Cao et al., 2021; Than et al., 2022). Though, whilst there has a widespread recognition of the significant attributes of HRM practice for the key goals of organizations of productivity, flexibility, and performance, very few empirical research is interested in explaining the latent

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impacts of high-involvement HRM practice on firms' innovation competence (Waheed et al., 2019; Cao et al., 2021). Specially, literature indicated that the feasible distinctive impacts of HRM practices on certain forms of innovation have not yet been adequately investigated by earlier studies (Park et al., 2019; Lei et al., 2021). For that reason, one of the most important motivations of the current research is to increase the understandings of possible consequences of high-involvement HRM practice on certain facets of innovation such as incremental and radical innovation by finding the answer for the first research question: *RQ1. Are high-involvement HRM practices significantly associated with incremental and radical innovation?*

Second, literature has emphasized the value of HRM application in creating the relevant mechanism and climate to cultivate employees' behaviors of sharing knowledge and ideas for achieving significant changes and innovations (Beddow, 2021; Singh et al., 2021). Relatively few works have explained how HRM practices directly and indirectly influence innovation competence of firms via KS behaviors (Kaabi et al., 2018; Beddow, 2021; Cao et al., 2021). Remarkably, Than et al. (2021) underscored the necessity of filling theoretical and practical gaps about the role of HRM practice and KS behavior in relation to organizational capability for innovation. For such reason, this paper will explore the possibility of intermediating mechanism of explicit and tacit KS in the HRM practices-innovation correlation. Such findings are expected to contribute to new understandings for scholars and practitioners about the mechanisms that drive innovation through the mediating role of specific KS behaviors. Accordingly, this study attempts to answer the second research question: *RQ2. Do tacit and explicit KS intermediate the impact of high-involvement HRM practices on incremental and radical innovation?*

Third, emerging and developing economies are supposing an increasingly preminent spot in the globe economy. Firms in these nations are facing many great challenges with the resource scarcities and the instability of the business environment (Le and Le, 2022; Than et al., 2022). Prior studies revealed that environmental factors are some of the important ones that affect efforts of organizations to pursue innovation (Naranjo-Gil, 2009; Iqbal et al., 2021). Market turbulence is one of the major environmental variables that considerably controls the innovation outcomes and degrees of firms (Iqbal et al., 2021; Sung and Choi, 2021). It is involved persistent shifts in the dislikes and likes of customers, cost/price systems, and the pattern of competing firms (Silva and Caetano, 2014; Iqbal et al., 2021). Accordingly, if firms are capable of anticipating market turmoil accurately, they will promote the solutions to stimulate KS activities aimed at attaining opportunities of innovation and adapting to changing environments (Le and Le, 2022). However, the sparseness of research on the regulatory role of market turbulence has limited our understanding of how market turbulence can inhibit or promote innovation capability (Shehzad et al., 2022; Le and Le, 2022). From this fact, this study strives to clarify and explain the possible moderating mechanism of market turbulence in the KS-innovation connection. The findings of such efforts are expected to assist firms in emerging and developing economies having proper knowledge of environmental influences for successful innovation. Accordingly, third research question is formed: *RQ3. Does market turbulence significantly enhance the KS-innovation relationship?*

To address above research questions, the paper applied the Structural Equations Modeling (SEM) to inspect the correlation between the research variables based on a data of 333 participators in 119 Vietnamese manufacturing and service companies. This study is predicted to enrich the theory of innovation management by showing a new approach to follow and foster innovation potential for organizations in developing and emerging nations.

2. Review of the literature

2.1. The impact of high-involvement HRM practices on innovation capability

Innovation has long regarded as a key competitiveness element for firms to overcome its main competitors (Arias-Pérez et al., 2021; Edeh

et al., 2022; Phan, 2019). Strengthening innovation competence enables organizations to form dynamic capabilities and achieve a high level of competitive advantage both in the international and national market (Lei et al., 2020; Le and Le, 2022).

Current literature showed many perspectives on innovation capability of firms (Lei et al., 2020; Saunila, 2020). However, it is widely accepted as the capabilities of firms in generating new services and products, working operation, and management processes to increase performance and attain competitiveness (Drucker, 2014; Than et al., 2022). Prior studies distinguish innovation capability into different categories (Tsai et al., 2001; Anderson et al., 2014). However, incremental and radical innovation are recognized as two distinct and crucial degrees of innovation that allow firm to adapt to the swiftly change and turbulence of market (Le et al., 2020; Le and Le, 2022). Agreeing with previous studies on incremental and radical innovation (e.g., Sheng and Chien, 2016; Lei et al., 2019), Le and Le (2022) supposed that "radical innovation is the high degree of novelty that changes the whole order of things referring to the acquisition and application of new knowledge to develop completely new products or services for new customers or emerging markets, where as incremental innovation is the low degree of novelty given from small changes in technology and product improvements" (p. 4). To put it simply, radical innovation involves the core and fundamental innovation, and incremental innovation refers to minor innovation originating from available products, services, knowledge and platforms.

Regarding to HRM practices, the strategic literature showed two main perspectives by which firms can apply to govern and establish connections with individuals in organization (Camelo-Ordaz et al., 2011). First, the perspective basing on transaction cares about the implementation of HRM practice to stimulate the short-term interchange among individuals as well as the relationship between employees and organization. In contrast, high-involvement HRM practice perspective that emphasizes the need for developing the long-term exchange relationships between employees and the organization (Cao et al., 2021). Literature has recognized high-involvement HRM as a useful management method that emphasizes the involvement of employees as a key expediency of practice to enrich skills, knowledge, and motivation of employees (Rubel et al., 2017; Shin et al., 2018). The significant findings on the effect of HRM practices showed that firms should focus on developing the available assets including HRM practices and knowledge resources to stimulate innovation competence and competitive advantages (Shin et al., 2018; Than et al., 2021).

HRM practice serves as an apparatus for organizations to leverage human and other organizational resources to drive innovation capability. As expected, many previous studies on this topic have indicated the meaningful influence of HRM practice on innovation capacity. For instance, based on the empirical data of 174 Spanish companies, Jimenez-Jimenez and Sanz-Valle's (2008) pointed out that by establishing a suitable HRM system firms can pursue and enhance their ability to innovate in different paradigms. Chen and Huang (2009) spotlighted the important role of HRM practices as a strategic approach that influence and transform capacities, behaviors, and attitudes of employees towards and compatible with certain goals of organizations such as innovation. In other words, effective HRM practices help firms create catalysts and appropriate climate to cultivate innovation activities among employees in organizations. De Winne and Sels's (2010) study using the data of 637 firms in Belgium revealed that HRM practice acts as a decisive antecedent of innovation initiatives in Belgian start-ups. Their research findings underscored the benefits and importance of a high range of HRM practices in comparison with low human resource of Belgian start-ups in pushing innovation. Diaz-Fernandez et al.'s (2017) longitudinal study using a survey of industrial strategic behavior from 2001 to 2008 in Spanish firms found that HRM practices significantly contribute to increasing innovation because it helps firms effectively employ all available assets and resources for prompting the innovation competence. According to Aman et al.

(2018), one of the important aims of HRM practices are to bring a conducive climate to foster necessary skills and abilities of employees for pursuing innovation. Their findings showed the benefits of HRM practice in actively increasing employee knowledge and innovation abilities in the Banks of Vehari, Pakistan. Notably, [Camelo-Ordaz et al. \(2011\)](#) indicated a proof of considerable effect and significant link of high-involvement HRM practice with the degree of knowledge sharing and innovation of organizations. Similarly, according to [Yasir and Majid \(2020\)](#), firms might apply high-involvement human resource approach to improve their innovation outcomes by transforming existing capabilities into superior competencies and behaviors from employees for innovation. Recently, the findings of [Cao et al.'s \(2021\)](#) research in the context of developing country pointed out that high-involvement HRM practice is very necessary and a smart choice to boost innovation competence for organizations with limited resources in capital and technology because it allows firms to maximize the potential capabilities of employees for innovation.

Although previous studies have devoted much effort and made much progress in explaining the relationship between HRM practices and innovation, the influencing mechanisms underlying the positive effects of high-involvement HRM practices to specific forms of innovation are still limited ([Beddow, 2021; Cao et al., 2021](#)). Therefore, the paper formulates the hypothesis as follows:

H1a. High-involvement HRM practice considerably predicts radical innovation.

H1b. High-involvement HRM practice considerably predicts incremental innovation.

2.2. Intermediating role of KS between high-involvement HRM practice and innovation

Knowledge sharing plays a crucial role of knowledge management and the level of effectiveness in knowledge sharing will govern the extent and success of innovation of organizations. Accordingly, how to improve KS activities among employees is a very topical and well-discussed subject among scholars and practitioners in the field of organizational behavior ([Phong and Son, 2020; Le et al., 2022](#)). Scholars defined knowledge sharing as the processes of exchanging knowledge among employees that includes both process of providing knowledge to others and searching for knowledge from others to mutually generate new knowledge among individuals in an organization ([Wang and Noe, 2010; Le and Nguyen, 2022](#)). Knowledge sharing involves both behaviors of sharing explicit and tacit knowledge aimed at developing knowledge capital to contribute to key outcome and progress of organizations ([Le et al., 2020; Cao et al., 2021](#)). According to [Cao et al. \(2021\)](#), explicit KS involves the behaviors of sharing formal knowledge and information like reports and documents, policies and procedures, and handbooks. These knowledge and information are shared and transmitted officially among individuals within the organization. In contrast, tacit KS relates to behaviors of sharing informal expertise, experiences, insights, and intuitions which are formed through accumulation and personal experience of employees.

HRM practices involve the management procedures that enable firms to take possession of exceptional and valued knowledge as well as higher innovative performance ([Singh et al., 2021; Than et al., 2022](#)). HRM practice plays an important role in constituting a meaningful environment which is favorable and convenient to foster KS behaviors and initiatives among individuals in organizations ([Cao et al., 2021; Singh et al., 2021](#)). As claimed by [Soliman and Spooner \(2000\)](#), HRM practice helps organizations detect knowledge-related gaps, support process of acquiring, promoting, applying as well as regenerate knowledge capital of employees. In addition, HRM practices also assist organization in creating a positive climate to stimulate information flows that meet knowledge needs and are aligned with organizational

goals. According to [Camelo-Ordaz et al. \(2011\)](#), HRM practice boosts the formation of a social environment within organization that gives support and promotion of sharing personal knowledge and expertise among individuals for the total objective and development. Their findings revealed the substantial effect of high-involvement HRM practice on employee willingness for sharing knowledge and expertise. [Jimenez-Jimenez and Sanz-Valle \(2013\)](#) asserted that firms need to develop an appropriate HRM approach to increase KS activities because it helps firms create a beneficial climate for employees to acquire and share tacit and explicit knowledge. Based on a qualitative approach, [Gope et al. \(2018\)](#) contended that the important achievement in knowledge resources as a result of HRM practices because an effective human resource practice will inspire and motivate employees to share knowledge or skills with colleagues. Especially, [Cao et al. \(2021\)](#) asserted that HRM practice is optimal solution for organizations to strengthen knowledge resources and capital. Their findings revealed the considerable and significant consequence of high-involvement HRM practice on both explicit and tacit KS. These arguments support positive link between HRM practices and KS, so following hypothesis is proposed:

H2a. High-involvement HRM practices are positively associated with tacit KS.

H2b. High-involvement HRM practices are positively associated with explicit KS.

With regard to the relationship between KS and innovation, many previous academic works have denoted a significant effect of KS on innovation ([Sáenz et al., 2012; Wang and Hu, 2020](#)). Trully, [Jansen et al.'s \(2006\)](#) findings showed the significant KS-innovation relationship because the interchange of information and knowledge enables organizations to desist from being controlled “inside their knowledge boundaries”, by that means producing opportunity to extend understandings for evolving further services and products. [Sáenz et al. \(2012\)](#) indicated that processes of sharing knowledge among individuals in organization such as mentoring, coaching, communities of practice, and action of rotating are some of the major approaches for Colombian and Spanish high-tech companies to exert and enhance their innovation competence. As reported by [Choi et al. \(2016\)](#), process of sharing task-oriented knowledge allows individuals to generate many occasions to enrich their knowledge and novel method of working, and thereby enhance the organizational ability to innovate. [Le et al. \(2020\)](#) pointed out that individuals' processes of sharing tacit and explicit knowledge contribute to creating new ideas and solutions that are the basic basis for organizations to increase their incremental and radical innovation capacity. [Nguyen et al. \(2021\)](#) justified that by sharing new and available knowledge within organization, individuals can learn, combine, and enhance their value of knowledge resource, and be able to translate novel ideas into capability of incremental and radical innovation. From these discussions, this study argues that process of interacting and sharing explicit and tacit knowledge among employees help organizations to augment the capability to delineate work-related problems and utilize new knowledge to develop new products or services at different degrees of novelty. Accordingly, the paper hypothesizes that ([Fig. 1](#)):

H3a.b. Tacit KS behaviors remarkably affect incremental and radical innovation.

H3c.d. Explicit KS behaviors remarkably affect incremental and radical innovation.

The above-mentioned hypotheses and discussions bridge the HRM practice-innovation relationships via intermediating mechanism of KS behaviors. In other words, KS might serve as a mediating factor to connect relationship between high-involvement HRM practice and certain forms of innovation. Additionally, [Camelo-Ordaz et al. \(2011\)](#) manifested that high-involvement HRM practice is effective to

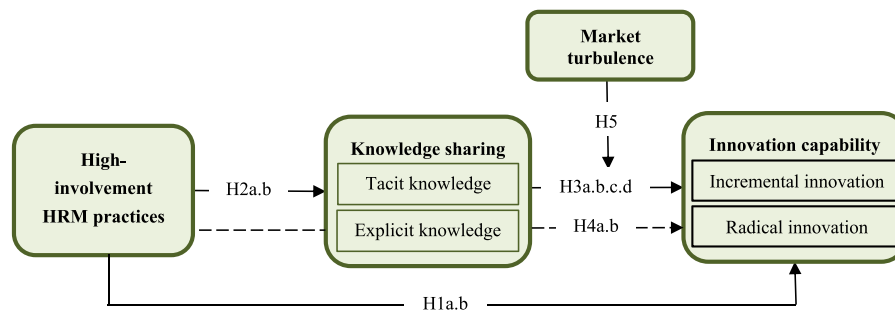


Fig. 1. The proposed research model. Note: ——— indirect effect.

encourage and cultivate KS processes of employees, thereby boosting innovation performance of organizations. According to Al-Bahussin and El-Garaihy (2013), HRM practice act as a precondition for promoting knowledge management and KS climate, thereby generating a positive associate with organizational innovation. The findings of empirical study of Kaabi et al. (2018) from organizations in the United Arab Emirates showed that KS activities significantly mediate the impacts of HRM practices on innovation performance. Moreover, being aware of the importance of KS activities in connecting the predecessors and fruits of organizations, previous studies have emphasized the need to study the potential mediating roles of KS behaviors in order to identify a more favorable mechanism for enhancing innovation (Kaabi et al., 2018). The findings of such investigation might provide insights on effective pathways to stimulate specific aspects of firm capability for innovation. So, this study suggests the following hypotheses:

H4a.b. KS behaviors intermedate the high-involvement HRM practice's influences on incremental and radical innovation.

2.3. Moderating role of market turbulence in the KS-innovation relationship

Environmental turbulence is frequently examined as unpredictable and discrete occurrences in the business environs including boycotts by environmentalists, dramatic changes in economic, significant technological changes, customer needs, and so on (Calantone et al., 2003; Dost et al., 2019; Sung and Choi, 2021). According to Le and Le (2022), market turbulence is a kind of important environmental element hat alters the influence of dynamic competence, and organizational factors on key outcomes and effectiveness of organizations. As a consequence, how to succeed in dealing with the instability and turbulent contexts is the primary priority and concern list of business leaders (Le and Le, 2022).

Market turbulence is extremely challenging and diverse. Hence, leaders are increasingly focusing on the role of innovation in strategic directions, exceptionally in enhancing and evolving new services and products, optimizing operation conditions, and improving reputation of organization (Li, 2022; Le and Le, 2022). Previous studies revealed that the level of market movement opens up opportunity for organizations to utilize knowledge and intelligence collected from multifarious agents and sources to innovate (Dost et al., 2019; Le and Le, 2022). In other words, market volatilization intensifies the influence of knowledge sources and KS activity on innovation. Recently, Shehzad et al. (2022) justified that activities of sharing explicit and tacit knowledge from superiors and peers inside organization help prior knowledge base and expertize become more accurate and pertinent for fostering innovation capability, and their interaction effects on innovation are more significant during market uncertainty. Based on these discussions, this paper poses the hypotheses that:

H5a.b. Market turbulence strengthens the impact of explicit and tacit KS on radical innovation.

H5c.d. Market turbulence strengthens the impact of explicit and tacit KS on incremental innovation.

3. Research methodology

3.1. Sample and data collection

A questionnaire survey instrument is applied to gather data and examine the validity of proposal hypotheses in the research model. This study collected data from May to July in the summer 2021 through a survey of 119 Vietnamese manufacturing and service enterprises. We randomly select these companies from the yellow pages of the Vietnamese business directory with 250,000 enterprises. The authors made contact with representatives of these enterprises to elucidate the research's significance, pledge to keep the survey information confidential for participants, suggest for assisting in handing out and gathering questionnaires. The participants in this study are Directors, Deputy managers/directors, or Head of some important offices like R&D and administration ones to guarantee having all key information and full comprehension of the business situation of firms. The observable variables are utilized in this research modified from previous studies to evolve the preliminary list of measurement. Basically, the authors handed out 620 question sheets and acquired 465 question sheets in the official survey. Finally, the study collected 333 valid questionnaires, corresponding to the rational rate of 53.7 %.

3.2. Measurement

The observable variables using in this paper have been developed and utilized by previous studies that is measured through a five-point Likert-type scale ranging from "1" (strongly disagree) to "5" (strongly agree). Specifically, this paper utilized six observable variables from Camelo-Ordaz et al.'s (2011) research to estimate the perception of participants of high-involvement HRM practice in organizations. A sample of observable variable is "Training activities in my company focus on team building and interpersonal relations"; Thirteen observable variables adapted from Lei et al.'s (2019) study are applied to estimate two distinct behaviors of KS. Of which, seven observable variables are used to measure tacit KS, and six observable variables are used to measure explicit KS. The sample of observable variables of tacit and explicit KS are "People in my organization frequently share knowledge of know-where or know-whom with colleagues" and "People in my organization frequently share official reports and documents that they prepare by themselves with colleagues" respectively. Ten observable variables developed from the research of Sheng and Chien (2016) are used to evaluate incremental and radical innovation. Of which, five observable variables are applied to estimate radical innovation, a sample of a scale is "we invent new products and services"; five remaining ones are utilized to estimate incremental innovation, an example of observable variable is "we frequently refine the provision of existing products and services". This study utilized three observable variables originated from the Calantone et al.'s (2003) study to estimate market turbulence with a sample of observable variable is "We cater to many of the same customers as in the past." Finally, this study considered industry type of firms as a control variable to clarify the distinctions in companies' ability to innovate (Wang et al., 2018).

3.3. Data analysis methods

Analysis of Moment Structures (AMOS) was used to measure validation and test the structural model using the questionnaire surveys of 333 participants in 119 manufacturing and service firms. Data analysis was conducted using SPSS and AMOS version 22. In addition, previous research suggested that structural equation model (SEM) is appropriate to demonstrate and explain the flexible regression correlations on a sole model and analysis (Kline, 2015). According to Le and Lei (2019), SEM is also practical and fit to examine the mediation and interaction effects. So, this paper applied SEM model and procedure of maximum likelihood estimation to put to trial propositional hypothesis.

4. Data analysis and results

4.1. Measurement model

As shown in Table 1, this study examines the Cronbach's alpha coefficient (C α) of every one variable to test the reliability of the measurement of the research factors. The statistical results range from .90 to .95 that exceed the Nunnally and Bernstein's (1994) recommendation of .7. In addition, to examine the discriminant and convergent validity of total measurement model, this study continuously evaluate confirmatory factor analysis (CFA) as recommendation of Brown (2015).

Table 1
Standardize loading and reliability of measurement model.

Constructs	Items	Standardize loadings	t-value	AVE	CR	C α
High-involvement HRM practice (HRM)	6	-	-	0.73	0.94	0.94
	HRM1	.874***	21.9			
	HRM2	.829***	19.8			
	HRM3	.850***	20.7			
	HRM4	.872***	21.8			
	HRM5	.850***	20.7			
Tacit knowledge sharing (TKS)	7	-	-	0.72	0.94	0.94
	TKS1	.855***	21.0			
	TKS2	.881***	22.4			
	TKS3	.803***	18.9			
	TKS4	.835***	20.4			
	TKS5	.843***	20.7			
	TKS6	.845***	20.8			
Explicit knowledge sharing (EKS)	6	-	-	0.63	0.91	0.91
	EKS1	.818***	17.4			
	EKS2	.821***	17.5			
	EKS3	.714***	14.4			
	EKS4	.820***	17.5			
	EKS5	.824***	17.6			
	TKS7	.788***	16.5			
Radical innovation (RI)	5	-	-	0.76	0.94	0.94
	RI1	.851***	20.4			
	RI2	.885***	22.0			
	RI3	.891***	22.3			
	RI4	.882***	21.9			
	RI5	.862***	22.4			
Incremental innovation (II)	5	-	-	0.66	0.90	0.90
	II1	.820***	26.0			
	II2	.824***	26.1			
	II3	.813***	16.7			
	II4	.878***	18.6			
	II5	.737***	14.6			
Market turbulence (MT)	3	-	-	0.86	0.95	0.95
	MT1	.922***	31.8			
	MT2	.918***	31.4			
	MT3	.955***	31.9			

Notes: C α \geq .7; CR \geq .7; AVE \geq .5; *** p < .001.

4.1.1. Convergent validity

With respect to convergent validity, Table 1 shows that statistical indicators satisfy important standards of convergent validity as suggested by Hair et al. (2006). Specifically, factor loadings range from .714 to .855; CR values range from .90 to .95; and the AVE values range from .63 to .86.

4.1.2. Discriminant validity

This study continues to check the discriminant validity of the factors by examining criteria as recommended by Fornell and Larcker (1981). As shown in Table 2, the AVE's square root of each variable are all higher than the inter-construct correlations. So, discriminant validity is satisfied. Consequently, these findings show secure supports for both the latent variables' reliability and the discriminant validity of measurements.

4.1.3. Satisfactory of measurement model

This study judges the good fit of measurement model through investigating both incremental and absolute fit values. Table 3 manifested that all fit indicators of the measurement model are acceptable. Hence, the model is consistent with the data and reliable.

4.2. Structural model and findings

The fit indicators of the structural model are good enough ($\chi^2 = 853.32$; df = 478; RMSEA = .049; GFI = .865; CFI = .961;

Table 2
Descriptive statistics and correlations.

Constructs	Mean	S.D	HRM	TKS	EKS	RI	II	MT
High-involvement HRM practice (HRM)	3.35	.58	.85					
Tacit knowledge sharing (TKS)	3.51	.61	.55***	.84				
Explicit knowledge sharing (EKS)	3.51	.58	.62***	.72***	.79			
Radical innovation (RI)	3.83	.60	.68***	.68***	.73***	.87		
Incremental innovation (II)	3.53	.62	.64***	.67***	.73***	.69***	.81	
Market turbulence (MT)	3.83	.76	.10	.02	.04	.03	.5	.92

Notes: S.D: standard deviation; Diagonal elements are AVE's square root; *** $p < .001$.

Table 3
The fit indicators of CFA model.

Fit index	Scores	Proposal threshold values
<i>Absolute fit values</i>		
Chi-square/df - (CMIN/df)	1.594	$\leq 2^a$; $\leq 5^b$
Goodness of fit index - (GFI)	.881	$\geq .90^a$; $\geq .80^b$
Root mean square error of approximation - (RMSEA)	.043	$\leq .08^a$; $\leq .10^b$
<i>Incremental fit values</i>		
Incremental fit measures including normed fit index - (NFI)	.930	$\geq .90^a$;
Adjusted goodness of fit index - (AGFI)	.859	$\geq .90^a$; $\geq .80^b$
Comparative fit index - (CFI)	.972	$\geq .90^a$;

Notes: a and b: good and acceptable fit.

TLI = .957), advocating that correlation coefficients among research variables fit the data.

4.2.1. Test direct effects

As shown in Fig. 2 and Table 4, standardized regression coefficients of direct influences are meaningful and compatible with the stated hypotheses. Specifically:

Hypothesis H1a and H1b relating to the connection between high-involvement HRM practice and firm capacity for innovation, Table 4 shows the significant influence of high-involvement HRM practice on radical innovation ($\beta = 0.328$; $p < 0.001$), and incremental innovation ($\beta = 0.263$; $p < 0.001$). Thus, Hypotheses H1a and H1b are supported.

With reference to hypotheses H2a and H2b, the result supports the significant influences of high-involvement HRM practices on explicit and tacit knowledge. Specifically, the effect of high-involvement HRM

practice on explicit KS ($\beta = .580$; $p < .001$) is more meaningful than its influences on tacit KS ($\beta = .641$; $p < .001$).

Regarding the KS-innovation correlation, findings also verify the hypotheses H3a, H3b, H3c, and H3d. Particularly, it shows that explicit KS induces larger impacts on radical innovation ($\beta = .363$; $p < .001$) and incremental innovation ($\beta = .389$; $p < .001$) compared to the influence of tacit KS on radical innovation ($\beta = .266$; $p < .001$) and incremental innovation ($\beta = .282$; $p < .001$). It underlines the considerable influence of explicit KS in stimulating incremental and radical innovation.

With respect to the control role of industry type, the findings did not favor its control role on innovation capability of organization because regression coefficients are insignificant statistical. Hence, industry type does not signal a difference in innovation capability among organizations.

4.2.2. Test mediating effects

As shown in Table 5, to evaluate and provide the proof reflecting the mediating role of KS in the HRM practice-innovation relationship, this paper tries the method of bootstrap confidence intervals with 5000 repetitions as recommended by previous works to affirm the statistical significance of indirect influences (Preacher and Hayes, 2008).

The findings in Table 5 supported indirect influence of high-involvement HRM practice on radical innovation ($\beta = .387$; $p < .001$) as well as incremental innovation ($\beta = .412$; $p < .001$) because the regression coefficient of the indirect effects ensures significant statistical and lies in allowed confidence interval. So, the result provides the proof to affirm the intermediating mechanism of KS behaviors which connect high-involvement HRM practice and certain types of innovation including incremental and radical innovation.

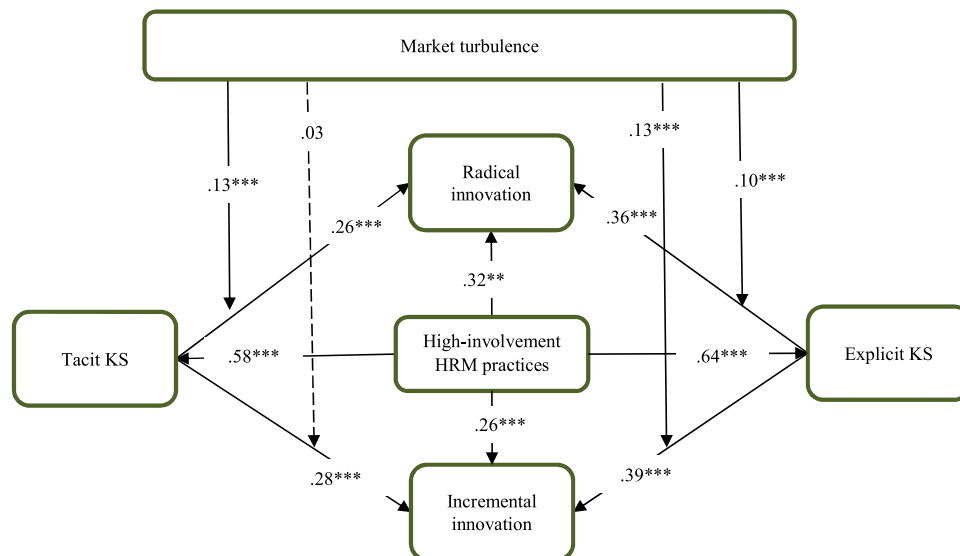


Fig. 2. Results of structural model. Notes: *** $p < .001$; ** $p < .05$; — Non-significant paths.

Table 4
Results of the direct relationships and moderation.

Relationships	Beta	Standard error	t-value	Results
HRM → Incremental innovation	.263***	.071	3.890	Supported
HRM → Radical innovation	.328***	.062	5.273	Supported
HRM → Tacit knowledge sharing	.580***	.062	10.714	Supported
HRM → Explicit knowledge sharing	.641***	.058	11.398	Supported
TKS → Incremental innovation	.282***	.049	5.235	Supported
TKS → Radical innovation	.266***	.043	5.449	Supported
EKS → Incremental innovation	.389***	.063	6.328	Supported
EKS → Radical innovation	.363***	.055	6.516	Supported
MT * TKS → Incremental innovation	.039	.035	1.130	Not Supported
MT * TKS → Radical innovation	.135***	.035	3.908	Supported
MT * EKS → Incremental innovation	.106***	.024	4.458	Supported
MT * EKS → Radical innovation	.139***	.023	6.168	Supported
Industry type → Incremental innovation	.001	.050	.985	Not Supported
Industry type → Radical innovation	.002	.044	.959	Not Supported

Notes: *** $p < .001$.

4.2.3. Test moderating effects

To examine the possible moderating capacity of market turbulence, this study calculates the interaction impact of MT * TKS on each form of innovation. The findings in Table 4 manifested that the interaction effect of MT * TKS on incremental innovation ($\beta = .039$; $p > .1$) is insignificant statistical. So, H5a is not supported. In contrast, the interaction impact of MT * TKS on radical innovation ($\beta = .135$; $p < .001$) is significant statistical. Hence, H5b is supported (see Fig. 3). The research results also bolster the interaction effect of MT * EKS on both radical ($\beta = .106$; $p < .001$) and radical innovation ($\beta = .139$; $p < .001$), accordingly, hypothesis H5c and H5d are confirmed (see Figs. 4 and 5). Generally, the findings disclose that market turbulence can act as a moderator to enhance KS behaviors-innovation correlations.

5. Discussions

5.1. Theoretical and practical contributions

Literature highlighted the necessity of advancing innovation capability as one of the top priorities for organizations to attain competitive advantage in the compound and quickly changes of technology environment, customer needs and competitive situation (Cao et al., 2021). This study aims to elaborate the association between high-involvement HRM practice and certain types of innovation capabilities through the mediator of KS behaviors and moderator of market turbulence. The analysis and testing of hypotheses developed in the proposed research model actively contributes to enriching practical and theoretical insights regarding the roles of HRM and initiatives on knowledge management in fostering innovation.

First, one of the first important contributions of this study is to confirm the benefits of high-involvement HRM practices for innovation. Indeed, although extant studies on precursors and outcomes of innovation have attracted increasing interest from academics and business leaders due to its benefits for competitive advantage and organizational growth (Khan et al., 2019; Vladić et al., 2021). Notwithstanding, they still have difficulty and

Table 5
Confidence interval of indirect influences.

Paths	Direct effects	Indirect effects	Total effects	Bias-corrected confidence interval	
				Lower confidence level	Upper confidence level
HRM→KS behaviors→RI	.328***	.387***	.715***	.313	.477
HRM→KS behaviors →II	.263***	.412***	.675***	.346	.500

Note: *** $p < .001$.

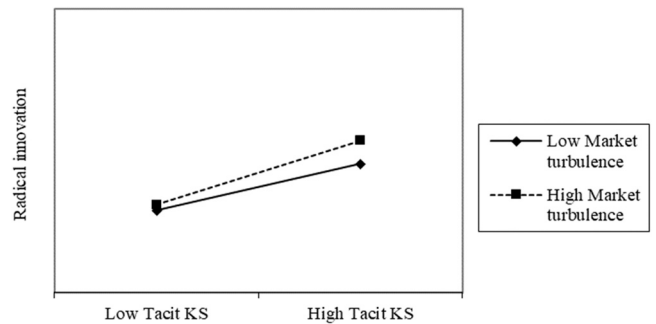


Fig. 3. The moderating influence of MT in the TKS-Radical innovation relationship.

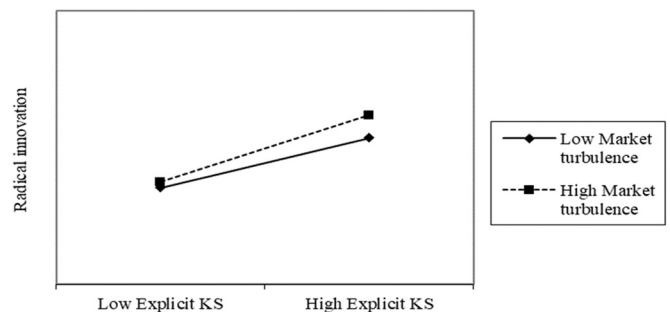


Fig. 4. The moderating influence of MT in the EKS-Radical innovation relationship.

confusion in identifying the core factors affecting and fostering each specific aspect of innovation, such as incremental and radical innovation (Shehzad et al., 2021; Le and Le, 2022). In addition, although effective HRM practices is widely recognized as a decisive precursor to fostering innovation and contributing to important organizational outcomes, research on the role and impact of high-involvement HRM practice for the innovation competence of enterprises is still very modest and limited

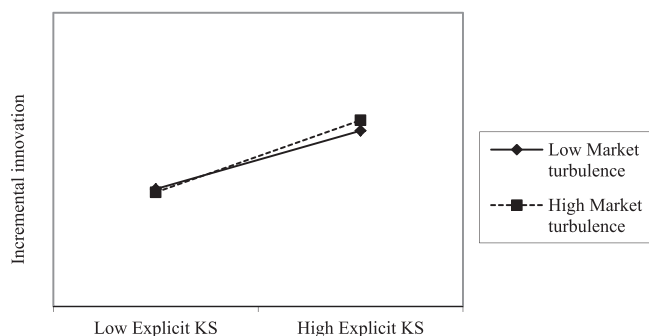


Fig. 5. The moderating influence of MT in the EKS-Incremental innovation relationship.

(Chang et al., 2011; Waheed et al., 2019; Cao et al., 2021). Than et al. (2021) indicated that “several scholars proposed the relationship between HRM and knowledge management capability based on the literature. However, stronger empirical confirmation is required”. Accordingly, by paying attention to clarifying the antecedent role of high-involvement HRM practice in predicting innovation outcomes, this study has brought the insights and causal mechanism of this relationship. The findings have verified the significant and positive impacts of high-involvement HRM practice on incremental and radical innovation and disclosed that high-involvement HRM practice might be most appropriate means of advancing organizational capability for incremental and radical innovation.

Second, KS activities help increase knowledge capital of organizations that are considered an important prerequisite for innovation (Gui et al., 2021; Le and Le, 2022). Yet, the empirical research that clarified and justified the impacts of KS behaviors on private forms of innovation is still sparse (Yao et al., 2020; Than et al., 2021). By examining the effect of explicit and tacit KS on incremental and radical innovation, the findings have endorsed the crucial role of KS behaviors in predicting innovation capability. It also revealed and affirmed the more significant role of explicit KS behaviors in inducing more meaningful influences on both types of innovation. Such findings are meaningful and valuable because it helps scholars and practitioners to have detailed insights into effective pathways to driving both incremental and radical innovation. Consistent with the research findings of Than et al. (2021) in the context of emerging market, the paper demonstrates the implication that promoting KS is a right choice and opens up opportunities for firms in emerging nations to make fundamental changes in technological trajectory and operation to improve competitive advantage and better penetrate the existing market.

Third, scholars argued that innovation capability might be formed as the HRM-related fruit or consequence, by means of which HRM practice induces significant effects on innovation capability directly or indirectly through multifarious mediators and determining by various boundary circumstances and conditions (Kaabi et al., 2018). Especially, KS activities were found to actively mediate the effects of organizational factors such as transformational leadership (Al-Husseini et al., 2021), organizational justice (Akram et al., 2020), and organizational culture (Le et al., 2020) on innovation capability. However, with the exception the work of Cao et al. (2021) on the effects of HRM practices and KS on product and process innovation, very few studies have analyzed and elaborated the potential intermediating role of certain features of KS activities between HRM practice-innovation relationship regarding incremental and radical innovation. The result from this paper has asserted that KS behaviors significantly intermediate the influence of high-involvement HRM practice on incremental and radical innovation. It also reported that high-involvement HRM practice will positively predict firms’ innovation competence directly or indirectly due to its meaningful influence on employee’s enthusiasm and behavior towards KS.

Fourth, scholars highlight the need and urgency of determining mechanisms of how market turbulence drives as a moderator in the

correlations between behavior variables and organizational factors, such as KS-innovation correlation (Li, 2022; Le and Le, 2022). Hence, by investigating the regulating effect of market turbulence in KS-innovation linkage, this study has provided theoretical basis and shown the proof for its moderating role and spotlighted that market turbulence can acts as a situational variable and together with KS activity creates a reciprocal effect to drive incremental and radical innovation. Consistent with the work of Shehzad et al. (2022), the paper attempts to clarify the contact of market turbulence to operating context of organizations. The paper revealed crucial and relevant contingent role of market turbulence in affecting innovation outcomes by which the leaders or managers need to critically consider in the process of defining their innovation strategies.

Finally, the paper increases the understanding on the correlations among HRM practice, KS and innovation associated with firm contexts in the developing and emerging markets. Vietnam is known as a promising country with many driving forces for economic development and stable economic growth in recent years. Yet, Vietnamese enterprises are facing many difficultness and barriers in terms of physical resources and assets to innovate (Le, 2020; Cao et al., 2021; Pham and Hoang, 2019; Cong and Thu, 2021). Most enterprises in emerging markets like Vietnam have limited capital and technology to pursue innovation (Nguyen et al., 2021; Le and Le, 2022). Such status quo and circumstance require greater motivation to research and discover less expensive and more viable solutions to innovation by organizations from emerging markets against firms in developed ones (Gui et al., 2021; Le and Le, 2022). Therefore, the findings have opened up a novel strategy and pathway for organizations in emerging markets to promote innovation with available and more feasible resources and capabilities such as focusing on high-involvement HRM practices, motivating employees to share explicit and tacit knowledge, and concerning with the impact of contextual factors.

5.2. Limitations and directions for future research

Besides contributing to improving the understanding of the relationship between latent variables in the research model, the research has certain constraints that require to be overcome. Firstly, the research utilized the cross-sectional approach for testing the relations among the latent factors, so it might not rule out likelihood that the correlations will emerge and change in the long run. A longitudinal study is necessary to address this restriction and confirm the research findings. Second, this study is implemented in a developing country setting, which may have potential implications for research results compared to other research settings. Therefore, the paper recommends that future studies should persist in testing the correlation between the mentioned factors in the new context such as developed countries to clarify and strengthen the research results. Third, literature highlighted open innovation as a holistic approach to innovation management by “systematically encouraging and exploring a wide range of internal and external sources for innovation opportunities, consciously integrating that exploration with firm capabilities and resources, and broadly exploiting those opportunities through multiple channels (West and Gallagher, 2006, p. 2). According to Skordoulis et al. (2020), if open innovation is executed effectively, its dynamics can lead to significant growth for SMEs, even becoming the world leaders. Therefore, future research should explore and clarify the potential role of high-involvement HRM practice in creating a culture that promotes open innovation dynamics. Finally, innovation effort and strategy of organizations in emerging and developing markets tend to be influenced by environmental turbulences and resource-constraints (Le et al., 2022). The paper suggests that future works should focus on exploring available constructs like HRM practices and knowledge resources to promote appropriate innovation models such as frugal innovation to overcome challenges of resource scarcity.

Generally, this paper significantly pushes forward theory of innovation by proffering a complete model to combine high-involvement

HRM practice and particular forms of innovation through the mediator of explicit and tacit KS and moderating role of market turbulences. The paper is distinctive and valuable by its efforts in exposing and bringing a deeper insight of a new approach to boost incremental and radical innovation for enterprises in the emerging markets.

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