



ORIGINAL CONTRIBUTION

## Unpacking the Role of Leadership and Entrepreneurial Skills: Mediation Moderation Enhancing the Firm Innovativeness

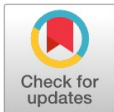
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**Abstract**— New managerial skills are necessary for the development of innovative and effective business models, but the literature currently in publication does not empirically comprehend managerial skills as precursors to strategy transformation and firm innovative performance. This essay makes the case that management human capital, which is made up of leadership and entrepreneurial abilities, is a crucial enabler of novel and efficient BMI and the ensuing creative performance of the company. It does this by drawing on the dynamic managerial capacities hypothesis. Additionally, the research model suggests that the relationship between human capital and novel and effective BMI is favourably moderated by managerial cognition. The study's findings, which were derived from a sample of 312 IT and technology-related SMEs in the Philippines, offer fresh perspectives on the value of managerial skills in a digital economy. This study contributes to management literature by showing that the advantages of managers' human capital for novel and efficient BMI depend on its form: leadership skills have no effect on firm innovative performance, either directly or indirectly through novel and efficient BMI, whereas entrepreneurial skills which is essential for firm innovative performance. As a result, this study offers compelling proof of the value of entrepreneurial abilities in promoting novel and efficient BMI to improve firm innovative performance. Overall, this study confirms the importance of managers' performance advantages and their dynamic capacities for strategic change made possible by novel and efficient BMI, but it also shows that the effect mechanisms are different from those observed in non-digital research contexts. .

**Index Terms**— Managerial human capital, Leadership skills, Entrepreneurial skills, Managerial cognition, Novel business model innovation, Efficient business model innovation, Firm innovative performance

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### Introduction

Managers are under pressure to digitally transform the business model (BM) in order to stay up with technology advancements, as ongoing digitalization continues to fundamentally disrupt competition (Heubeck, 2023b; Ren et al., 2022). A key component of competitiveness in dynamic and unpredictable business contexts is a company's capacity to maintain creative performance. By influencing strategy choices, resource allocation, and the adoption of innovative practices, managerial human capital in particular, leadership and entrepreneurial skills plays a critical role in fostering innovation. There is a dearth of empirical studies on the connections between firm-level techniques and individual-level managerial capabilities, despite the literature's suggestion that managers with outstanding dynamic abilities have the

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expertise needed to support organisational change in dynamic settings (Heubeck, 2023b; Lingens, 2023; Shahzad et al., 2021; Tasheva & Nielsen, 2022).

This study investigates managers' individual-level dynamic skills as drivers of firm-level variability, building on Xu and Li (2023) managerial human capital paradigm. Three separate managerial resources are proposed as components managerial human capital, which emphasises the importance of individual managerial competencies in the context of organisational change: managerial human capital (which includes leadership and entrepreneurial skills), and managerial cognition (Mendes et al., 2024). Thus, dynamic managerial capability theory is especially well-suited to obtaining empirical understanding of the extremely difficult, yet essential, task of business model (Han et al., 2024; Lingens, 2023) and those specific managerial skills that support this procedure (Haaker et al., 2021; Latifi et al., 2021; Saraji et al., 2021).

Unexpected developments linked to digital technology are fast changing industries and enabling businesses to undertake a number of activities to investigate and capitalise on the advantages that these technologies offer (Haaker et al., 2021; Lingens, 2023; Usai et al., 2021). Innovation is the engine of economic growth in economic development. Innovation is the process of modifying or discovering ideas so that they might grow from business, and it is characterised as a knowledge base to generate something beneficial (Han et al., 2024; Ren et al., 2022; Snihur & Zott, 2020). Modern societal evolution, which some studies refer to as an innovation-based economy, depends heavily on invention (Ghasemaghaei & Calic, 2020; Parida et al., 2019). Innovation can be defined as a company's ability to compete in both new and existing markets and provide new products in a better way (Latifi et al., 2021). There is no clause addressing how SMEs' innovations are measured using subjective comparisons of SMEs, such as whether they introduced new services and products before other businesses.

This study hypothesizes that strong novel business model innovation and efficient business model innovation serve as the foundation for better firm innovative performance in light of the current digital economy. The results of this study provide important support for the little-known role that managerial dynamic capabilities at the individual level play in fostering innovative and effective business model innovation, which serves as the cornerstone of superior firm performance (Saraji et al., 2021; Setini et al., 2020; Yang et al., 2019). Thus, this book contributes to the corpus of literature on strategic management by offering a perspective on innovative and effective business model innovation. Given the greater difficulty of attaining successful firm innovative performance (Han et al., 2024; Xu & Li, 2023) and the need for new managerial capabilities required by innovativeness (Han et al., 2024; Xu & Li, 2023), this recognition is extremely important. The following research question is the result of this debate:

Does novel business model innovation has mediating impact between leadership skills and firm innovative performance? Does novel business model innovation has mediating impact between entrepreneurial skills and firm innovative performance? Does efficient business model innovation has mediating impact between leadership skills and firm innovative performance? Does efficient business model innovation has mediating impact between entrepreneurial skills and firm innovative performance?

The importance of dynamic capabilities as enabling precursors to innovative and effective business model innovation is confirmed by findings from Philippine SMEs in the technology and IT sector. This study specifically shows that managers who possess strong entrepreneurial skills that is, the exploratory abilities needed to pursue innovative ideas are essential for achieving both efficient and novel business model innovation, which serve as the foundation for innovative performance within the company (Heubeck, 2023b; Xu & Li, 2023). Furthermore, the findings indicate that managers' cognitive abilities determine how much of an impact they can have on the development of innovative and successful business models. This study shows that, contrary to previous research (Han et al., 2024; Heubeck, 2023b; Mendes et al., 2024; Xu & Li, 2023), leadership skills that is, managerial abilities focused on the effective commercialization of current value potentials through efficient resource management (Hopp & Pruschak, 2023; Ren et al., 2022) are not essential for promoting innovative and successful business model innovation in an era of digital competition.

These results demonstrate the increased complexity and dynamic nature of the modern digital economy, where the ability to be an entrepreneur is crucial to keeping businesses' business models up to date with environmental and technical advancements. Despite the findings indicating a novel and effective business model boosts a company's innovative performance, leadership abilities, in contrast to entrepreneurial abilities. Additionally, by providing fresh perspectives on how they interact, the work advances DMC theory. In particular, the findings demonstrate that managerial cognition strengthens the beneficial impact of entrepreneurial abilities on firm innovative performance via NBMI and EBMI, supporting the idea that strategic transformation is an intrinsically social process. This result emphasises how entrepreneurial management faces pressure to make decisions quickly in the fast-paced world of today. Thus, the results corroborate the hypothesis of Xu and Li (2023) that companies may frequently only gain an edge over rivals when managers integrate their entrepreneurial abilities with their pre-existing expertise to speed up the process of making choices.

This is how the rest of the paper is organised. By explaining how business models are constructed and digitalized, Section 2 provides an overview of the theoretical framework. The three capability subcomponents of the dynamic management capability theory are then described. The research hypotheses are derived in Section 3 by tying DMCs to innovative firm performance through a creative and effective business model. The sample and study technique are explained in Section 4. Results of the hypothesis test are shown in Section 5. The results, their implications for management practice and literature, and the limitations of the study are covered in Section 6. Section 7 provides a summary remark at the end of the paper.

## Theoretical Background

### Business model

#### General business model concept

Business model innovation has received a lot of attention in the academic literature over the last ten years (Anwar & Ali Shah, 2020; Snihur & Zott, 2020). Researchers have established explanations to fit their studies with little connection to other studies, which is why the majority of the studies are theoretical, conceptualized, or based on case investigations with little evidence to support them (Latifi et al., 2021; Lingens, 2023). According to Haaker et al. (2021), a business model is a system of boundary-spanning activities that revolves around a focal firm and may also include actions taken by its suppliers, consumers, and partners in an effort to create and capture value. The selection of activities carried out within the system is referred to as content; control, or who is in charge of what action, is referred to as governance; and the relationships between activities are referred to as structure (Lingens, 2023). The process of producing, delivering, and collecting value is another definition of business models given by researchers (Han et al., 2024). Thus, according to Heubeck (2023b), a business model is a representation of the "business logic." Business model innovation, according to Bocken and Snihur (2020), is basically the identification of alternative methods for value generation, value proposition, and value capture in an already-existing company. All of the researchers concur that even if just one component of a business model is altered, business model innovation can still take place (Bashir & Farooq, 2019; Happonen et al., 2020; Parida et al., 2019). Scholars generally agree that BMs offer a comprehensive explanation of how businesses function to commercialize their value offerings (Anwar and Ali Shah (2020), despite the fact that the concept is still ambiguous due to the wide range of approaches to defining BMs (Bocken and Snihur (2020) and the disagreement over its constituents (Latifi et al., 2021). Furthermore, BMs are essential to commercializing innovation, and they can also be the subject of innovation themselves (Haaker et al., 2021; Happonen et al., 2020; Snihur & Zott, 2020). For these reasons, the BM concept is central to innovation literature (Heubeck, 2023b; Latifi et al., 2021; Saraji et al., 2021; Shahzad et al., 2021).

#### Digital business model

The current study includes a comprehensive assessment of the literature with an emphasis on studies pertaining to digitalization and business models in order to improve knowledge about commercializing digitalization initiatives. A systematic review is different from a general review, according to Heubeck (2023b), since it uses a clear, rigorous, and replicable methodology based on a theoretical synthesis of previous research. Bias is reduced and the validity of data analysis is strengthened in this way. Many conceptualizations have developed over time as a result of the comprehensive and interdisciplinary nature of digital BMs (Bocken & Snihur, 2020; Han et al., 2024; Lingens, 2023). Digital BM definitions highlight that BMs are digital if they use digital technologies to generate, propose, or capture value or if any of the three BM building blocks have been significantly changed by digital technologies. Digital technologies are therefore "an integral part of the business and organisation," which decision-makers must acknowledge (Saraji et al., 2021). Digitalization at the firm-internal level requires incorporating digital technologies into a comprehensive business model design that takes into account their interdependencies (Lingens, 2023; Snihur & Zott, 2020). Organisations can gain from engaging in digitally enabled business ecosystems or establishing mutually beneficial customer relationships at the firm-external level. Few research have examined potential BMI drivers in terms of more general triggers or specific antecedents. Economic crises (Parida et al., 2019), shifting consumer preferences (Shahzad et al., 2021), entry into low-income markets (Bashir & Farooq, 2019), or technology advancements are a few examples of exogenous triggers that have been linked to an increase in BMI. Although these triggers facilitate BMI, they do not provide a systematic explanation for it. Furthermore, researchers have hypothesised that BMI can be promoted by individual-level cognition via creativity, mindfulness, or analogical thinking (Bocken & Snihur, 2020; Heubeck, 2023b). These studies highlight how crucial founders are to BMI.

#### Dynamic managerial capabilities

Dynamic capabilities theory's primary emphasis is shifted from the level of businesses to that of individual managers by DMC theory. Because managers are entrusted with the responsibility of "building, integrating, and reconfiguring organisational resources and competences," this perspective posits that organisational heterogeneities stem from distinctive managerial capacities (Prüfer & Prüfer, 2020). Managers' main responsibility is to properly coordinate a company's resource portfolio in order to implement and initiate strategic transformation (Heubeck, 2023a). The ability of managers to adapt to changing circumstances is especially beneficial since it enables businesses to match organisational strategies with their competitive landscape (Heubeck, 2023b). The notion of dynamic management capacities expands on the idea of dynamic capabilities by concentrating on how managers help businesses adjust to shifting conditions. This idea, which has its roots in strategic management, highlights how managers' strategic decisions and actions greatly influence a company's capacity to reallocate resources, grasp opportunities, and counteract dangers in dynamic and cutthroat marketplaces. According

to (Chen et al., 2023; Heubeck & Meckl, 2022), in settings with quick changes in the market, competitive challenges, and technology, dynamic managing skills are essential for maintaining a competitive edge. Strong dynamic managers are able to recognise opportunities, take advantage of them by allocating resources strategically, and adjust organisational procedures to suit shifting circumstances.

Fundamentally, DMC theory suggests that managers' personal skills impact strategic change by influencing strategic choices (Tasheva & Nielsen, 2022). On the other hand, these various organisational styles influence how well a company performs in times of transition (Chen et al., 2023; Heubeck, 2023a). According to Ambrosini and Altintas (2019), "corporate managers matter", just as "corporate strategy does in fact matter", for business performance. Therefore, by connecting firm-level strategic change and individual-level management qualities as the determinant of firm performance in dynamic contexts, DMC theory offers a multi-level approach. A summary of these correlations can be found in Fig. 1. These three competence types enable businesses to achieve and maintain competitive advantage in the digital age when combined with an appropriate organisational strategy (Chen et al., 2023; Tasheva & Nielsen, 2022). In particular, robust sensing capabilities aid in the improvement of digital transformation processes (Ambrosini & Altintas, 2019) and allow for the precise forecasting of technology trends (Chen et al., 2023). Strong grasping capabilities guarantee that managers, based on the specific characteristics of the organisation, make wise investment choices to commercialize previously identified opportunities. Lastly, since reconfiguration deals with the actual realization of strategy change, robust reconfiguration capabilities are needed to harness both sensing and seizing capabilities (Prüfer & Prüfer, 2020).

Understanding, competence, and abilities gained through either informal or formal education are included in management human capital, the first DMC subcomponent (Hopp & Pruschak, 2023). Because of their intrinsic connection to innovation, two different forms of human capital leadership and entrepreneurial skills are frequently discussed in management literature. The exploratory talents of managers that enable the effective coordination of a company's resource portfolio are referred to as leadership skills (Anwar & Ali Shah, 2020; Chen et al., 2023). According to Ahmad et al. (2019); Prüfer and Prüfer (2020), entrepreneurial skills comprise the exploratory abilities managers use to explore new markets, create new goods, or address unmet customer demands. Thus, whereas entrepreneurial skills create new competitive advantages or preserve current ones, leadership skills solidify competitive advantage. DMC theory also incorporates this dual-edged concept of managerial human capital, emphasising that in order to achieve effective strategic change, managers must exhibit both leadership and entrepreneurial skills (Heubeck & Meckl, 2022).

Lastly, the cognitive basis for strategic decision-making is built by management cognition, which makes up DMCs (Xu & Li, 2023). Cognitive processes how managers pay attention to, identify, analyse, and retain information and cognitive structures simplified or abstracted representations of reality make up managerial cognition (Xu & Li, 2023). The dual-edged aspect of management cognition is the reason for its increased interest. Though crucial for speeding up decision-making, cognitive structures and processes can also seriously impair decision-making quality by restricting information searches and skewing cognitive processing.

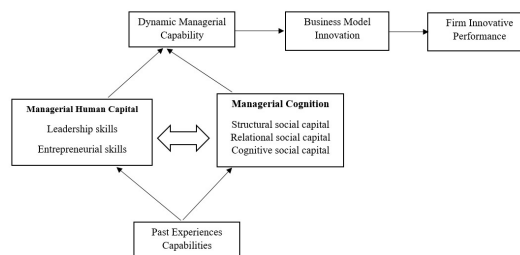


Fig. 1 *Dynamic managerial capabilities*

**Hypothesis development**

This portion develops a study model that the linkages between management human capital, novel and efficient business model, specifically managerial cognition and firm innovative performance (see Fig. 2).

In order for enterprises to create and maintain competitive edge, the hypothesis development first suggests that creative performance is improved by novel and efficient business models (De Bruyn & Mestry, 2020). The research model suggests managerial human capital and its subcomponent as a key antecedent to firm innovative performance based on this basic reasoning. To gain insight into the particular management capabilities needed to realise a novel and efficient business innovation model as the foundation for firm innovative performance, the previously defined types of managerial human capital that is, leadership skills and entrepreneurial skills are specifically examined. First, strategic transformation is driven by excellent managerial human capital, which enhances managers' capacity to recognise opportunities and challenges, take advantage of identified commercial potentials, and properly realign a company's resource portfolio (Cripe & Burleigh, 2022; Hopp & Pruschak, 2023). Second, according to Benitez et al. (2022), one of the key success

variables influencing managerial cognition in the modern economy is human capital. As a result, this study adds to the growing body of capability-based literature on managerial human capital by attempting to identify the particular managerial skills necessary for novel and efficient business model innovation (De Bruyn & Mestry, 2020; Guzmán et al., 2020).

Furthermore, by putting out the idea that managerial decision-making concerning strategic change is influenced by the interactions among the concept's three subcomponents, this study seeks to further dynamic managerial capability theory (Heubeck, 2023b). Strong social capital and cognition, according to the assumptions, enhance managers' capacity to support the development of new and effective business models, which serve as the foundation for innovative performance inside the company. In particular, because of their potential advantages for sensing, seizing, and reconfiguration, strong managerial cognition is suggested to improve human capital with innovative and effective business model innovation relationships. Ghasemaghaei and Calic (2020) conclusion that "it is relevant to explore their interaction" is reflected in this conceptualization. Furthermore, this study adds to the growing body of holistic research by responding to Usai et al. (2021) request for studies that investigate at the consequences of the interactions between the novel and efficient business models (Ghasemaghaei & Calic, 2020; Setini et al., 2020).

The following succinctly describes the format of the section on developing hypotheses. Hypotheses 1 and 2 establish the fundamental connection between managerial human capital as subcomponents of leadership and entrepreneurial skills and the firm innovative performance. Dynamic managerial capability theory, Hypothesis 3 and 4 established the relationship on managerial cognition moderation impact among leadership skills with firm innovative performance, while Hypothesis 5 and 6 investigates the relationship on managerial cognition moderation impacts among entrepreneurial skills with firm innovative performance. Hypothesis 7 and 8 novel business model innovation mediates among leadership and entrepreneurial skills with firm innovative performance. Finally, Hypothesis 9 and 10 efficient business model innovation mediates among leadership and entrepreneurial skills with firm innovative performance. According to the study framework, managers' interactions with one another's human managerial capital result in observable business results. In particular, it is suggested that managerial cognition be used to strengthen the beneficial impact of human capital on the development of innovative and effective business models with firm performance.

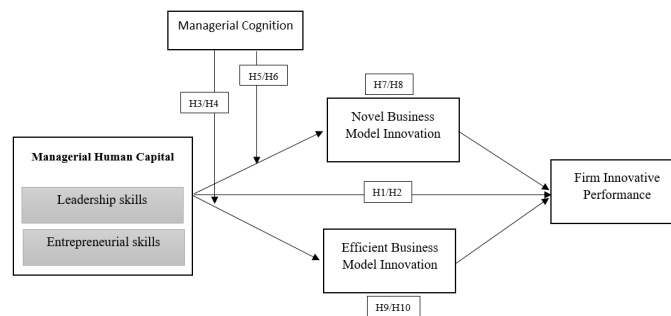


Fig. 2 Theoretical model: NBMI, EBMI and firm innovative performance

## Managerial human capital and firm innovative performance

The foundation of dynamic managerial capability theory is the idea that managers influence organisational results by choosing strategic change as a mediating element (Usai et al., 2021). In other words, rather than innovative performance differences between businesses, novel and efficient business model innovation have an indirect impact on performance through their influence on human capital (Ren et al., 2022; Tasheva & Nielsen, 2022). Accordingly, a "two-step approach that first analyses their impact on subsequent results in the form of modifications to strategy and then evaluates the impact of these modifications on evaluations of firm innovative performance" should be used to analyse the firm-level effects of novel and efficient business model (De Bruyn & Mestry, 2020; Guzmán et al., 2020). As a result, managers' capacity to create successful organisational plans and guarantee timeliness depends on their dynamic managing skills. Businesses may create and execute corporate plans more effectively and adaptably when they have strong dynamic managerial capabilities (Jardim, 2021; Prüfer & Prüfer, 2020). The following two assumptions, which are based on the core reasoning of DMC theory, assert that managerial human capital leadership and entrepreneurial skills has a direct impact on the innovative performance of businesses. This idea is in line with the discovery made by Cripe and Burleigh (2022); Shahzad et al. (2021) that the benefits of human management capital in terms of performance are best characterised by their influence on intermediary elements like strategy or innovation. Accordingly, our study suggests that company innovative performance is not immediately improved by exceptional leadership abilities or the entrepreneurial capabilities that underpin management human capital. Originally referred to as:

**H1:** Leadership skills, the first dimension of managerial human capital, have direct effect on firm innovative performance. **H2:** En-

entrepreneurial skills, the second dimension of managerial human capital, have direct effect on firm innovative performance.

### **Moderation effect of managerial cognition**

In order to create value, obtain a competitive edge, improve firm innovative performance, and spur entrepreneurial growth, business model innovation is essential (Mendes et al., 2024). First, the introduction of new goods and services and the exploitation of new market areas to reach suppliers, partners, and potential customers are the main goals of innovative business model innovation (Happonen et al., 2020). Businesses can acquire wealth and revenue beyond organisational borders by efficiently allocating resources and collecting value-added in the original market (Yang et al., 2019). Additionally, new business model innovation helps companies create new incentive and trade models that improve client experiences, transaction techniques, and value development procedures. This raises the value of potential assets in current markets and helps them perform better (Haaker et al., 2021). Additional differences in managers' capacities to support innovative business model innovation that stems from their human capital may result from the interplay between the dynamic managerial capabilities. Therefore, managerial cognition is likely to have an impact on how managerial human capital influences creative performance within the company through the development of new business models. Because cognitive mechanisms and procedures record how information is processed, managerial cognition is also anticipated to play a crucial role in opportunity sensing and seizing as well as resource reconfiguration in the context of the digital economy (Ren et al., 2022; Usai et al., 2021). High cognitive talents enable managers to pay attention to and analyse a wider range of information while identifying opportunities and dangers (Heubeck, 2023b; Tasheva & Nielsen, 2022). The impact of leadership and entrepreneurial abilities on the development of new business models may also be shaped by management cognition in terms of grabbing opportunities and reallocating resources. High levels of cognition will enable managers to make more thorough decisions on innovative business models, even though their decisions are, at least in part, always founded on cognitive reductions. Through comprehensive data analysing, highly intellectually talented managers are better able to realign their cognitive frameworks and procedures with the facts and have a more realistic perspective of their company's present business model (Han et al., 2024; Lingens, 2023).

**H3:** Managerial cognition has moderating impact among leadership skills and firm innovative performance, and indirect impact of leadership skills and novel business model innovation.

**H4:** Managerial cognition has moderating impact among entrepreneurial skills and firm innovative performance, and indirect impact of entrepreneurial skills and novel business model innovation.

Managers are under pressure to constantly improve their thinking in order to make wise decisions on human capital because of the rising demands on data processing placed on them by the modern economy (Happonen et al., 2020; Usai et al., 2021). These claims suggest that the degree to which managers' leadership and entrepreneurial skills are used to support effective business model innovation will depend on how they view their company's business model and how actively they adjust this subjective conceptualization to new environmental facts. The BM schema, a highly subjective view of how the company generates, proposes, and captures value as well as how those components relate to one another and the outside world, influences the manager's capacity for detecting, seizing, and reconfiguring (Heubeck, 2023b; Ren et al., 2022; Tasheva & Nielsen, 2022). Business model innovation, according to Haaker et al. (2021), is a deliberate process of altering a company's fundamental components and business logic, with a focus on planned, original, and significant modifications to the main components of a firm's business model and/or the architecture connecting these components. Business model innovation was divided into two categories by Prüfer and Prüfer (2020) efficient business model innovation, which aims to increase efficiency and lower transaction costs, and novel business model innovation, which concentrates on adding unique transaction content and techniques. While efficient business model innovation focusses on transaction cost minimization to increase efficiency (Heubeck, 2023b; Tasheva & Nielsen, 2022), novel business model innovation aims to redefine economic transactions with partners by providing new methodologies or value propositions. Because it results in more updated and realistic BM schemes and increases managers' willingness to use their skills to drive efficient business model innovation, superior managerial cognition may allow managers to use their leadership and entrepreneurial skills more effectively during efficient business model innovation (Ghasemaghaei & Calic, 2020; Hahn et al., 2020). The following two theories are the result of this argument:

**H5:** Managerial cognition has moderating impact among leadership skills and firm innovative performance, and indirect impact of leadership skills and efficient business model innovation.

**H6:** Managerial cognition has moderating impact among entrepreneurial skills and firm innovative performance, and indirect impact of entrepreneurial skills and efficient business model innovation.

### **Mediation effect of efficient and novel business model innovation**

Based on an individual manager's prior experiences Yang et al. (2019), managerial human capital is likely to improve the managerial capacity for sensing, seizing, and reconfiguring, which in turn is likely to enhance the development of novel and efficient business models

(Bocken & Snihur, 2020). The importance of leadership and entrepreneurial skills in creating the basis for today's competitive advantage, such as BM innovation, has been recognised in the literature (Ghasemaghaei & Calic, 2020). Three key mechanisms suggest that leadership abilities will likely play a major role in fostering the development of innovative company models. First, leadership and entrepreneurial skills improve resource acquisition, integration, and layout required for realizing the very complicated, extensive, and interconnected task of novel business model innovation (Happonen et al., 2020). Therefore, by guaranteeing the continuous availability of suitable resources, leadership and entrepreneurial skills facilitate the implementation of strategies and open the door for novel business model innovation (Haaker et al., 2021; Latifi et al., 2021; Snihur & Zott, 2020). Second, by facilitating the exploitation of fresh chances via a suitable digital business model design, leadership and entrepreneurial skills enhance entrepreneurial endeavors (Shahzad et al., 2021; Usai et al., 2021). Third, because of their advantages for cross-organizational resource and knowledge transaction, leadership and entrepreneurial skills are a key enabler of novel business model innovation and are necessary for effective collaboration in networks as today's firms find one another integrated into industry-spanning business networks (Heubeck, 2023b; Tasheva & Nielsen, 2022). In particular, effective integration and leveraging of external resources require strong leadership abilities, which enables businesses to build value-generating relationships through suitable business model design (Han et al., 2024; Lingens, 2023). According to these ideas, in today's digital economy, novel business model innovation is a key precondition for greater business performance, and leadership and entrepreneurial skills may be essential for enabling it. Formally speaking:

**H7:** Novel business model innovation has mediating impact between leadership skills and firm innovative performance.

**H8:** Novel business model innovation has mediating impact between entrepreneurial skills and firm innovative performance.

By using their leadership and entrepreneurial skills as the catalyst for strategic change, managers can also significantly influence the effective business model innovation process (Snihur & Zott, 2020). Since entrepreneurial executives are more aware of external developments, more tolerant of inconsistencies, better at developing new means-ends-hypotheses, and generally more open to change, leadership and entrepreneurial skills first enhance a manager's ability to recognise possibilities as well as hazards (Ghasemaghaei & Calic, 2020; Hahn et al., 2020). As a result, leadership and entrepreneurial skills make it easier to identify opportunities and combine them in ways that promote effective business model innovation (Shahzad et al., 2021; Usai et al., 2021). In addition to identifying an opportunity, managers must also commercialize it in order to benefit commercially from it. Due to an entrepreneur's intense drive for success, leadership and entrepreneurial skills are essential for grasping chances when they arise (Heubeck, 2023b; Tasheva & Nielsen, 2022). These arguments suggest that because entrepreneurial skills enhance managers' ability to recognise and seize opportunities, they are a crucial driver of the novel business model innovation needed to appropriate value from new products, services, or processes (Han et al., 2024). In a time when digitalization is pervasive, managers with leadership and entrepreneurial abilities will probably be better able to spot new opportunities and support the development of innovative business models to take advantage of them. Entrepreneurial skills and new business model innovation result in more fundamental changes than other types of strategic transformation (Heubeck, 2023b; Lingens, 2023). The following two theories are the result of these arguments:

**H9:** Efficient business model innovation has mediating impact between leadership skills and firm innovative performance.

**H10:** Efficient business model innovation has mediating impact between entrepreneurial skills and firm innovative performance.

## Research Methodology and Sample

### Data collection and sample description

Data for the study was gathered from businesses mostly in the Philippines' SMEs in the IT and technology sectors. These companies are especially appropriate given the research goal since continuous digitalization and globalization need the development of innovative and effective business models in order to keep up with the widespread rate at which these sectors use digital technologies. In order to increase the efficiency and scalability of their production processes while also enhancing flexibility, decentralization, and customizability, the IT and technology sectors are digital pioneers that integrate digital technologies throughout their whole value chain. The IT and technology sectors participated, adhering to the key informant strategy (Happonen et al., 2020). 312 questionnaires were returned as a result of this process (87.19% response rate). The following criteria were used to filter the returned questionnaires: (7) Insufficient responses about DMCs (32 responses); (5) incomplete responses about novel and efficient BMI (3 responses); (9) absent firm innovative performance data (16 responses); (4) insufficient responses about the moderation variables (14 responses); (1) responses that were started but not completed (30 responses); and (5) responses from medium-level managers without managerial responsibilities (17 responses). 312 of the 358 questionnaires that were initially returned might eventually be used for regression analysis.

## **Measurement of variables**

### **Study variables**

The theoretically inferred dualism of leadership and entrepreneurial skills captures the independent variable, managerial human capital. The study employed an English translation of the items created by Heubeck (2023b), as detailed in Appendix 1. The BM framework served as the conceptual framework for the first moderator, managerial cognition. The study employed a modified five-item measure developed by Heubeck (2023b) for this purpose. The degree to which the respondent uses automated versus controlled information processing during BM reevaluation was measured by managerial cognition; small values suggested automated processing, while large values suggested that managers purposefully process BM-related data in a controlled processing mode (Han et al., 2024).

Using a five-point Likert scale, respondents were asked to assess their company's major BM on each of the BM canvas's dimensions as novel and efficient BMI (Han et al., 2024). The complete operationalization of every BM dimension is listed in Appendix 1. In the last stage, NBMI was computed based on the individual assessment of the four-item scale and EBMI having four-item scale. Heubeck (2023b) used a four-item scale to measure the dependent variable, firm innovation performance.

### **Statistical procedure**

SmartPLS Statistics 3.0 was utilised to conduct principal axis confirmatory factor analysis (CFA) using rotation in order to evaluate the hypotheses. According to Hair et al. (2024), the first is the data's eligibility for reliability, validity, AVE, and discriminant validity. Generally speaking, all constructed factors have to include a minimum of three items with factor loadings greater than 0.30. Third, the developed factors' quality criteria were evaluated. Cronbach's alpha coefficients  $>0.70$  are required for reliability, whereas the average variance extracted (AVE) of a factor must be greater than 0.50, all factor loadings must be greater than 0.50, and the Fornell-Larcker (FL) criterion must be met for validity (Fornell & Larcker, 1981). Furthermore, a standard test scenario, impartial analysis, and objective interpretation of the findings ensured the study's general validity. Additionally, the impacts of mediation and moderation were examined. The regression employed a bootstrapping technique based on 5000 bootstrap samples at 90% confidence intervals to evaluate the mediating role of innovative and effective business model innovation in the relationship between the two dimensions of managerial human capital and firm innovative performance (Hair et al., 2024). A moderated analysis was carried out using SmartPLS to examine the moderating impacts of managerial cognition on the indirect impact of the two managerial human capital dimensions on firm performance through innovative and effective business model innovation.

## **Results**

### **Measurement model**

There are five items in the first dimension, which is leadership skills (Appendix 2). There are five items on the entrepreneurial skills assessment scale. There are five items on the management cognition measurement scale. Additionally, every factor solution meets the quality standards of the study. The results of the reliability and validity tests conducted on the study's model structure. Furthermore, the dependability of the indicators is supported by the fact that all items in the five variables had factor loadings higher than 0.7 (Hair et al., 2024). However, all variables had Cronbach's alpha ( $\alpha$ ) values greater than 0.8, which is in line with the interval that ought to be greater than 0.7. Additionally, the scale's construct reliability is excellent, as seen by the composite reliability (CR) values above 0.8, which is higher than the minimal standard threshold of 0.5. Lastly, the measuring model is sufficient because the author met all requirements for objectivity in the creation and analysis of the data.

### **Descriptive statistics and hypothesis test results**

The sample's Philippines SMEs related to technology and IT sector are qualified as important informants because, on average, they have been with the company. An overview of the demographic characteristics of the participants is provided in Table 1. Table 2 provides a summary of the descriptive statistics and bivariate findings. The results of the hypothesis test, which are shown in greater detail below and are graphically represented in Figs. 3 and 4, are compiled in Table 3.



Table I  
Demographic characteristics of respondents

Variables	Absolute Frequency	Relative Frequency
Gender	312	100.00%
Male	214	68.58%
Female	98	31.41%
Management Level	312	100.00%
Owner	59	18.91%
Top Managers	86	27.56%
Middle Managers	111	35.57%
Lower Managers	56	17.94%
Education Level	312	100.00%
Primary School	66	21.15%
Secondary School	84	26.92%
Graduation	97	31.08%
Diploma in IT	65	20.83%

As seen in Table 2, the study concludes by analysing the discriminant validity between the variables. Each construct's AVE should be compared to all other reflectivity metrics in the structural model as well as the squared inter-structural correlation (a measure of shared variance) for that same construct. Furthermore, none of the model configurations' shared variances should exceed their AVE (Hair et al., 2024). The scale's discriminant validity is demonstrated by the fact that all of the correlations' Heterotrait-Monotrait (HTMT) ratios fall below the 0.85 criterion (Hair et al., 2024).

Table II  
Discriminant validity, mean and standard deviation

	Mean	SD	EBMI	ES	FIP	LS	MC	NBMI
Efficient Business Model Innovation	4.98	1.47	0.906					
Entrepreneurial Skills	3.65	1.87	0.728	0.845				
Firm Innovative Performance	4.18	1.97	0.761	0.537	0.869			
Leadership Skills	3.75	1.85	0.480	0.647	0.475	0.768		
Managerial Cognition			0.549	0.483	0.672	0.467	0.741	
Novel Business Model Innovation	4.82	1.98	0.753	0.672	0.763	0.439	0.722	0.915

First, table presents the findings pertaining to the direct impact hypotheses. According to Cohen (1988), effect sizes are categorized as follows: A minor influence is indicated by  $\beta > 0.02$ , a moderate effect by  $\beta > 0.15$ , and a significant effect by  $\beta > 0.35$ . According to Hypothesis 1, leadership abilities were linked to the innovative performance of the company ( $b = 0.208, p = 0.000$ ), but Hypothesis 2 demonstrated a relationship between entrepreneurial abilities and the innovative performance of the company ( $b = -0.297, p = 0.000$ ). The moderating effect of managerial cognition with leadership skills on the novel business innovation model is contrary to the predictions of Hypothesis 3 ( $b = 0.554, p = 0.000$ ). The third hypothesis is validated. The efficient business innovation model is significantly improved by the moderating influence of managerial cognition with leadership skills ( $b = -0.187, p = 0.002$ ), supporting Hypothesis 4. Additionally, Hypothesis 5: The moderating influence of entrepreneurial skills and managerial cognition on the innovative business innovation model ( $b = 0.447, p = 0.002$ ). Moderating effect of managerial cognition with entrepreneurial skills have a considerably favourable influence on efficient business innovation model ( $b = 0.647, p = 0.000$ ), Hypothesis 6 is supported.

The hypothesis of mediation is next evaluated. Hypothesis 7: The relationship between leadership abilities and innovative performance in a corporation is influenced by a novel business innovation model ( $b = -0.068, p = 0.013$ ). The eighth hypothesis is validated. Hypothesis 8 is supported by the novel business innovation model effect between entrepreneurial skills and firm innovative performance ( $b = 0.243, p = 0.000$ ). Hypothesis 7: Effective business innovation model relationship between firm innovative performance and leadership skills ( $b = -0.082, p = 0.003$ ). The ninth hypothesis is validated. Hypothesis 10 is validated by the efficient business innovation model effect between entrepreneurial talents and firm innovative performance ( $b = 0.323, p = 0.000$ ).

Table III  
Summary of hypothesis results

Hypothesis	Direct effects	Results
Hypothesis 1	Leadership skills, the first dimension of managerial human capital, have direct effect on firm innovative performance.	Supported
Hypothesis 2	Entrepreneurial skills, the second dimension of managerial human capital, have direct effect on firm innovative performance.	Supported
Moderation effects		
Hypothesis 3	Managerial cognition has moderating impact among leadership skills and firm innovative performance, and indirect impact of leadership skills and novel business model innovation.	Supported
Hypothesis 4	Managerial cognition has moderating impact among entrepreneurial skills and firm innovative performance, and indirect impact of entrepreneurial skills and novel business model innovation.	Supported
Hypothesis 5	Managerial cognition has moderating impact among leadership skills and firm innovative performance, and indirect impact of leadership skills and efficient business model innovation.	Supported
Hypothesis 6	Managerial cognition has moderating impact among entrepreneurial skills and firm innovative performance, and indirect impact of entrepreneurial skills and efficient business model innovation.	Supported
Mediation effects		
Hypothesis 7	Novel business model innovation has mediating impact between leadership skills and firm innovative performance.	Supported
Hypothesis 8	Novel business model innovation has mediating impact between entrepreneurial skills and firm innovative performance.	Supported
Hypothesis 9	Efficient business model innovation has mediating impact between leadership skills and firm innovative performance.	Supported
Hypothesis 10	Efficient business model innovation has mediating impact between entrepreneurial skills and firm innovative performance.	Supported

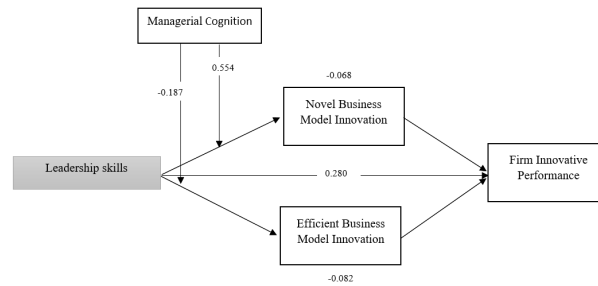


Fig. 3 Hypothesis results with independent variable leadership skills

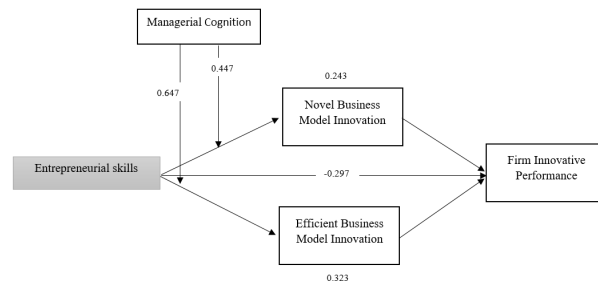


Fig. 4 Hypothesis results with independent variable entrepreneurial skills

## Discussion and Contribution

### Discussion

In particular, it is noted that one of the most important factors influencing a firm innovative performance is its human capital (Han et al., 2024; Xu & Li, 2023). However, neither practice nor research fully understands which particular managerial skills lead to novel and effective BMI (Han et al., 2024; Heubeck, 2023b). This study developed a multi-level research model by drawing on the dynamic managerial capability theory of Ambrosini and Altintas (2019). This study originally hypothesised the relationship between innovative firm performance with novel and efficient business model innovation. Dynamic managerial capability theory was later proposed as a central level antecedent to these crucial firm-level outcomes, complementing the adopted approach. As the foundation for superior firm innovative performance, it was hypothesised that managers with strong human capital had the skills required to propel innovative and effective business model innovation. By suggesting and examining the ways in which the other dynamic managerial capability influence the indirect performance-enhancing effects of strong managerial human capital on innovative and efficient business model innovation, the research model offered a comprehensive view of dynamic managerial capability on innovative and efficient business model innovation as well as how managerial capabilities impact firm innovative performance. The results of this study show that innovative firm performance is strongly and favourably impacted by novel and efficient business model innovation. The idea that new and effective business model innovation boosts firm innovative performance is supported by this result, which further emphasises how crucial it is to digitally improve a firm's BM in order to guarantee firm innovative success (Heubeck, 2023b).

According to earlier research Guzmán et al. (2020); Hahn et al. (2020), leadership and entrepreneurial skills have emerged as a crucial managerial task to ensure firms' long-term survival in dynamic environments, as evidenced by the strong correlation between innovative performance and the development of novel and efficient business models. Digital business models are crucial success factors in today's dynamic economy, as evidenced by the overall high performance-enhancing effects of innovative and efficient business model innovation for firm innovative performance (Cripe & Burleigh, 2022; Jardim, 2021). In particular, new and effective business model innovation improves company performance by closing the growing divide between the company and its human resources and between organisational strategies and procedures (Akhmetshin et al., 2019; De Bruyn & Mestry, 2020). According to this research, entrepreneurial managers with high managerial cognition are even more advantageous for novel and efficient BMI, even when entrepreneurial abilities are already advantageous for organisational outcomes. Second, the study adds to cognitive BM research by providing fresh evidence regarding the function of managerial cognition in novel and efficient BMI (Anwar & Ali Shah, 2020; Heubeck, 2023b; Xu & Li, 2023). Despite the negligible overall moderating influence of management cognition, conditional effects analysis shows that the favourable relationship between novel and efficient BMI with entrepreneurial skills is strengthened when managerial cognition levels decline. This finding contributes to a more detailed knowledge of how managers' thoughts influence their strategic choices. More specifically, by making information processing more effective and simpler, cognition helps entrepreneurial managers make strategic decisions more quickly (Xu & Li, 2023). The study demonstrates that managerial cognition influences entrepreneurial managers' ability to drive novel and efficient BMI because of the moderating influence of low and medium levels of managerial cognition. The importance of cognitive processes that underlie managers' strategic decision-making in promoting performance is thus highlighted by this study (Mendes et al., 2024; Xu & Li, 2023).

Additionally, this study provides fresh proof of the specific managerial human capital categories that are advantageous to novel and efficient BMI. The results show that firm innovative performance is unaffected by managers' leadership skills. As the foundation for firm innovative performance in today's digitally-driven economy, novel and efficient BMI requires entrepreneurial skills rather than leadership skills. The study demonstrates that many forms of human capital are needed in the digital economy, even though it supports the idea put forth by other researchers (Heubeck, 2023a, 2023b) that strong human capital drives firm innovative performance through novel and efficient BMI. In particular, this study provides fresh perspectives on the particular managerial competencies needed for novel and efficient BMI: whereas leadership skills do not directly affect these firm-level results, entrepreneurial skills are the driving force behind novel and efficient BMI and the ensuing innovative firm performance.

### Theoretical contribution

As requested by researchers, this paper bridges the research and advanced management literature (Heubeck, 2023b; Xu & Li, 2023). The empirical findings support a thorough comprehension of the particular managerial skills needed for novel and effective BMI. These findings yield few theoretical insights.

First, this study confirms that managerial skills at the individual level are important for organisational transformation in dynamic contexts by empirically analysing the impact of various forms of human capital for novel and efficient BMI and company performance. The findings of the study corroborate the core tenet of DMC theory, which holds that "managers matter", but that managers' capacities to make strategic choices that constitute the foundation of organisational performance in dynamic contexts vary (Chen et al., 2023). This study shows that by influencing strategic decision-making, variations in managers' DMCs cause performance disparities amongst organisations.

Stated differently, different organisational strategies that in turn stem from widely dispersed DMCs are the source of firm innovative performance. According to this study, managers' entrepreneurial abilities, which support human capital, improve business performance by enabling novel and effective BMI. Unlike previous research (Anwar & Ali Shah, 2020; Chen et al., 2023), the findings show no connection between leadership abilities and novel and effective BMI or firm innovative performance. Research must therefore take into account the particular type of human capital when examining its potential benefits for strategic transformation in an era of digital competition, even though it may improve firm innovative performance by promoting novel and effective BMI.

Furthermore, by offering empirical evidence in favor of the performance advantages of raising novel and effective BMI discovered in earlier research (Cripe & Burleigh, 2022; Heubeck & Meckl, 2022), this work contributes to the body of knowledge in BM. Novel and efficient BMI is a crucial coping strategy against the constantly shifting demands of today's fast-paced digital economy, as evidenced by the significant impact it has on business inventive performance. This study demonstrates that novel and efficient BMI improves firm innovative performance by coordinating the BM architecture with the competitive environment, as confirmed by earlier studies (Anwar & Ali Shah, 2020; Happonen et al., 2020). Therefore, in order to achieve the efficiency and flexibility needed for successful novel and efficient BMI, managers rely more on their entrepreneurial than their leadership skills (De Bruyn & Mestry, 2020; Guzmán et al., 2020).

Therefore, another source of heterogeneity that contributes to variations in firm innovative performance is the interactions of certain dynamic managerial capability theory. By empirically proving that the human managerial capital subcomponents interact individually to shape novel and efficient BMI, the work specifically enhances dynamic managerial capability theory: While entrepreneurial skills have a greater positive impact on novel and efficient BMI under lower managerial cognition levels than under higher ones, managerial social capital amplifies the beneficial effect of entrepreneurial skills on novel and efficient BMI, and this effect becomes even more pronounced as human capital levels rise. The study highlights the intrinsically social character of change processes (Timothy, 2022; Xu & Li, 2023) by confirming the need of human capital for achieving strategic change.

### **Managerial implications**

Additionally, this study offers helpful recommendations for managerial practice. First, by enabling businesses to construct BMs that provide competitive advantage through their digitally enabled architecture or commercialize technologies through their BM, novel and efficient BMI serves as a key means of achieving superior financial performance. As a result, novel and efficient BMI avoids any possible mismatch between environmental requirements and BM design that could firm innovative performance. These results suggest that managers ought to give managerial human capital top priority when making strategic choices.

Second, our study confirms that certain managers' individual-level dynamic characteristics are crucial drivers of novel and efficient BMI to achieve improved firm innovative performance, both alone and in combination. Given their advantages for identifying and grabbing opportunities and rearranging a firm's resource portfolio in a paradigm of digital competition, strong entrepreneurial abilities are essential to pursuing novel and efficient BMI. Therefore, when making wise hiring selections that support strategy change through novel and efficient BMI, businesses should be endowment of their managers. The results, for instance, show that companies seeking to promote novel and efficient BMI would be better served hiring an entrepreneurial CEO rather than a managerial one.

Third, the findings do not disprove the fundamental advantages of managers' leadership skills in the context of novel and efficient BMI, even while they do not support the direct advantages of such abilities for novel and efficient BMI. The results pertaining to novel and efficient BMI, as a particular consequence of strategy shift, reflect the exploratory rather than exploitative nature of performance. Leadership abilities may not directly affect novel and efficient BMI, but they may still be crucial to firm innovative performance since it enables businesses to make money off of their current value offerings and enables managers to effectively manage the firm's resource portfolio.

The study's overall conclusions highlight the significance of managers and their entrepreneurial skills in supporting novel and efficient BMI as the foundation for superior business performance and provide a number of noteworthy recommendations for managerial practice. The study also demonstrates that managers with entrepreneurial skills are more equipped to digitally alter the BM when they have high and low cognitive capabilities. Accordingly, the results show that businesses should promote an entrepreneurial culture that permits social interactions and empowers managers to cultivate an entrepreneurial mindset in order to aid in decision-making. In order to maintain competitiveness in an era of widespread digitalization, firms and managers faced with the critical challenge of digitally altering their firm's business model can benefit greatly from the advice provided by this study.

### **Research limitations and recommendations**

Despite its many noteworthy contributions to the management literature, particularly with regard to the preceding function of DMCs in supporting novel and efficient BMI as the foundation for company performance, this article has many drawbacks. These restrictions do, however, present a number of promising avenues for further investigation. There are methodological drawbacks to this study as well.

First, given the research purpose, the sample, which consists mainly of Philippine SMEs in the technology and IT industry, provides an appropriate research context. However, given the potential influence of cultural variations on strategic decision-making, more research is required to determine whether the findings are applicable across national borders. Additionally, the sample primarily consists of male managers who carry out output-related tasks. Future research could specifically look at the role gender might play in the DMC framework, even though this composition is not surprising given the preponderance of male executives in developed economies' manufacturing industries and the model included managers' gender as a control variable. Lastly, it is suggested that future researchers use the study design to perform larger-scale surveys over a longer period of time or to retest the model later on to account for the intrinsic dynamism of the modern economy.

## **Conclusion**

Since its inception, discussions about the sources of establishing and sustaining competitive edge have characterised the literature on managerial human capital (Han et al., 2024; Heubeck, 2023b). The research model demonstrated the particular DMCs that are essential for businesses seeking a competitive edge, bridging the gap between the organizations. The study demonstrated that organisations may achieve novel and efficient BMI, which is essential to financial performance in the current digital economy, thanks to managers' entrepreneurial talents. Furthermore, the study clarified how the two HMC subcomponents relate to one another. In particular, the findings show that as social capital increases, novel and efficient BMI is further facilitated by high levels of entrepreneurial abilities. Conversely, the beneficial effects of business abilities on novel and efficient BMI are amplified by lower rather than greater levels of cognition. By showing that leadership abilities neither directly nor indirectly improve firm performance by influencing novel and efficient BMI, the study also advanced DMC theory. This study thus contributes new empirical evidence to the specific types of human capital needed to foster business performance through strategic change in the altered setting of today's digital economy. By illuminating whether and to what degree individual-level DMCs translate into firm-level strategies that is, novel and efficient BMI as the foundation for improved firm performance in the contemporary era of digital competition, the findings therefore update dynamic capability theory.

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Appendix

Table IV  
Questionnaire items

Constructs	Items
	Managerial human capital
Leadership skills	<p>One of my greatest strengths is getting results by organizing and motivating people.</p> <p>One of my greatest strengths is organizing resources and coordinating tasks.</p> <p>One of my greatest strengths is my ability to delegate effectively.</p> <p>One of my greatest strengths is my ability to monitor, influence, and lead people.</p> <p>I make resource allocation decisions that achieve maximum results with limited resources.</p>
Entrepreneurial Skills	<p>I like to think about new ways to do business.</p> <p>I frequently identify opportunities to start new businesses (although I may not pursue them).</p> <p>I often identify ideas that can be turned into new products or services.</p> <p>I keep my eyes open for previously unnoticed entrepreneurial opportunities.</p> <p>I see myself as a creator of entrepreneurial opportunities (entrepreneur)</p>
Managerial cognition	<p>When redesigning the business model in part or in whole, I consciously evaluate alternatives to a very high extent with regard to Value offering evaluation customer problems and needs.</p> <p>When redesigning the business model in part or in whole, I consciously evaluate alternatives to a very high extent with regard to Value offering evaluation linking business participants together in novel ways.</p> <p>When redesigning the business model in part or in whole, I consciously evaluate alternatives to a very high extent with regard to Value offering evaluation taking over new value propositions or substituting existing parts of the value chain.</p> <p>When redesigning the business model in part or in whole, I consciously evaluate alternatives to a very high extent with regard to Value offering evaluation applying new revenue streams.</p> <p>When redesigning the business model in part or in whole, I consciously evaluate alternatives to a very high extent with regard to Value offering evaluation resource requirements for all business aspects.</p>
Novel Business Model Innovation	<p>The business model of the corporation can reintegrate the output services and products.</p> <p>The corporation would use innovative incentive measures to increase the enthusiasm of business model participants.</p> <p>The business model of the corporation has the most significant number of products or the most styled participants in history.</p> <p>The focal firm has continuously introduced innovations in its business model.</p>
Efficient Business Model Innovation	<p>The business model of the corporation can avoid errors in the transaction process as much as possible</p> <p>The business model of the corporation is highly applicable, able to handle large-scale or small-scale transaction activities</p> <p>The business model of the corporation can summarize the information, participants and services of the corporation in a larger area</p> <p>Overall, our business model can enable us to attain faster transaction efficiency</p>
Firm Innovative Performance	<p>Compared with competitors in the industry, the corporation has better profitability</p> <p>Compared with competitors in the industry, the corporation has higher profit margins</p> <p>Compared with competitors in the industry, the corporation has a higher market share</p> <p>Compared with competitors in the industry, the corporation has a higher sales growth rate</p>



Table V  
Result of the factor loadings

Constructs	Items	FL
<b>Managerial human capital</b>		
Leadership skills (AVE = 0.821; $\beta$ = 0.928; $\alpha$ = 0.927)	LS1	0.819
	LS2	0.729
	LS3	0.734
	LS4	0.817
	LS5	0.737
	LS1	0.819
Entrepreneurial Skills (AVE = 0.713; $\beta$ = 0.908; $\alpha$ = 0.899)	ES1	0.851
	ES2	0.830
	ES3	0.873
	ES4	0.884
	ES5	0.781
Managerial cognition (AVE = 0.548; $\beta$ = 0.795; $\alpha$ = 0.781)	MC1	0.737
	MC2	0.791
	MC3	0.760
	MC4	0.799
	MC5	0.820
Novel Business Model Innovation (AVE = 0.837; $\beta$ = 0.936; $\alpha$ = 0.935)	NBMI1	0.923
	NBMI2	0.912
	NBMI3	0.914
	NBMI4	0.912
Efficient Business Model Innovation (AVE = 0.821; $\beta$ = 0.928; $\alpha$ = 0.927)	EBMI1	0.863
	EBMI2	0.917
	EBMI3	0.924
	EBMI4	0.919
Firm Innovative Performance (AVE = 0.756; $\beta$ = 0.901; $\alpha$ = 0.892)	FIP1	0.887
	FIP2	0.795
	FIP3	0.896
	FIP4	0.895