Impact of managerial skills and ties on business model innovation: the role of exploitative and explorative learning

Abstract

Purpose: Research in the area of business model innovation has focused on theoretical and exploratory discussions, thereby creating a lack of empirical evidence on the role of top management in business model innovation. The current study focuses on this research gap and provides empirical evidence by studying the impact of top managers' managerial skills, managerial ties and entrepreneurial skills on business model innovation. It also seeks to explore the mediating influence of explorative and exploitative learning.

Design/methodology/approach: Data were collected from 200 respondents from top multinational firms in India covering six sectors, which was analyzed using structural equation modeling.

Findings: The findings reveal significant positive relationships of business model innovation with managerial skills, entrepreneur skills and managerial ties and these relationships are found to be mediated by exploitative and explorative learning.

Practical implications: Given the increasing importance of BMI to organizational success, the study has highlighted that top managers' skills and ties favourably influence BMI. Organizations can make related investments in training and capacity building by instituting appropriate programs in their organizations. In addition, organizations can exercise caution during recruitment by recruiting and selecting managers in top management teams who excel in managerial skills.

Originality/value: This study is one of the few to validate a comprehensive measurement model that highlights the influence of managerial skills, entrepreneur skills, and managerial ties on business model innovation, explaining these associations with the mediating role of exploitative and explorative learning.

Keywords: Business model innovation, managerial skills, entrepreneurial skills, managerial ties, exploitative learning, explorative learning, innovation, business model.

Introduction

In existence since the pre-classical times (Wirtz et al., 2016; Müller, 2019; Foss and Saebi, 2018; Hock-Doepgen et al., 2021), the 'business model' (BM hereafter) as a concept has attracted significant attention as a source of value creation and a strong base for developing sustainable competitive advantage (Hacklin et al., 2018; Müller, Buliga and Voigt, 2018; Hock-Doepgen et al., 2021; Latifi et al., 2021). Several studies have explored BM effectiveness and allied theories in varied contexts, such as e-commerce, strategy and technology management (Moellers et al., 2019; Müller, Buliga and Voigt, 2018), sustainability (Bashir et al., 2022), and BM innovation (BMI) experimentation (Nicolas et al., 2020). This has led to the evolution of the literature on BM (Wirtz, et al., 2016).

The current body of literature explores several factors that can affect BMI[1][2][3]. However, a review of the related literature shows that little attention has been paid to exploring the influence of managers' individual characteristics on BMI (Guo, Zhao, and Tang, 2013; Wang et al., 2017). According to the Upper Echelons theory, top management's experience, skills, knowledge, and characteristics directly influence organizational outcomes (Andries and Debackere, 2013; Hambrick, 2007; Sosna et al., 2010; Narayan et al., 2021). The theory emphasizes exploring the influence of top managers' individual characteristics on organizational outcomes and highlights the impact of externalities on managerial discretion (Hambrick, 2007).

The role and influence of top management – due to their ability to effectively manage and allocate resources – in firm innovation has often been highlighted (DiMaggio and Powell, 1983; Ireland et al., 2003; Zhang and Li, 2010; Narayan et al., 2021). Although there is extant research on BMI and its effectiveness, the role of top managers in shaping organizational outcomes, including BMI is still unclear (Clauss et al., 2019, Groskovs and Ulhøi, 2019). Considering the massive organizational changes BMI entails that can be quite demanding for

[1] Zhao, X., Chang, T., Hwang, B. G., & Deng, X. (2017). Critical factors influencing business model innovation for sustainable buildings. *Sustainability*, *10*(1), 33.

[2] Foss, N. J., & Saebi, T. (2017). Fifteen years of research on business model innovation: How far have we come, and where should we go?. *Journal of management*, *43*(1), 200-227.

[3] Xue, L. L., Shen, C. C., Lin, C. N., & Hsieh, K. L. (2019). Factors affecting the business model innovation employed by small and micro travel agencies in the Internet+ era. *Sustainability*, *11*(19), 5322.

the top management (Foss and Stieglitz, 2014), understanding the relationships between top management's human and social capital and BMI can help enhance the BMI outcomes. Guo et al. (2013) studied the role of top managers' human and social capital in BMI and found that top managers' managerial skills and entrepreneurial skills and their interactions are significant predictors of BMI. Wang et al. (2017) explored the relationship between managerial ties, organizational learning (explorative and exploitative learning), and opportunity recognition and reported them as significant predictors of BMI. However, both Guo et al. (2013) and Wang et al. (2017) called for further investigation to explore the antecedents of BMI. Responding to these calls for further research, this paper speaks to the managerial characteristics aspects of BMI (Massa and Tucci, 2013; Foss, and Saebi, 2018) and examines the BMI antecedents, presenting a holistic framework that builds on the works of Guo et al. (2013) and Wang et al. (2017). The comprehensive framework presented in this paper provides an integrative understanding of BMI antecedents by including managerial skills, entrepreneurial skills (taken from Guo et al., 2013; but not studied by Wang et al., 2017) and managerial ties (taken from Wang et al., 2017; but not studied by Guo et al., 2013). Specifically, we examine the impact of top managers' managerial skills, entrepreneurial skills, and managerial ties on business model innovation.

Further, recent research suggests that BMI alone may not improve a firm's performance (Latifi et al., (2021). Arguably, the top managers' human and social capital ─ in isolation ─ are unlikely to lead to BMI. This necessitates an examination of the intervening mechanisms that can affect BMI and performance (Guo et al., 2017). Since the scope for trial and error can be crucial for transforming top managers' human and social capital into BMI (Andries et al., 2013; Sosna et al., 2010), exploitative and explorative learning assume a vital role in BMI. We therefore take a nuanced approach and study the mediating roles of exploitative learning and explorative learning in the relationship of BMI with managerial skills, entrepreneurial skills and managerial ties.

The findings of the study contribute to theory and practice. First, the paper develops and empirically tests a model using a rich dataset that explains the combined impact of top managers' social and human capital on firm's BMI. Second, exploring the direct and indirect effects of top manager's managerial skills, entrepreneurial skills and managerial ties on BMI helps develop a comprehensive understating of the linkages between the variables of interest. The findings of this study offer counsel for the practitioners who can benefit by paying attention

to enhancing managerial skills, entrepreneurial skills and managerial ties for improved BMI outcomes. The study also expands our understanding of the role of exploitative and explorative learning in BMI. This study shows that top managers' managerial skills, entrepreneur skills and ties might not optimally result in BMI unless they are channelized through exploitative and explorative learning. The findings suggest encouraging firms' exploitative and explorative learning activities to facilitate and realize the benefits of BMI. These findings provide a way for top managers to devise optimal innovation strategies by incorporating an integrative understanding of BMI antecedents and outcomes.

Theoretical background and hypotheses

Upper Echelon Theory

The hypotheses in this paper are explained through the lens of the Upper Echelons Theory (Hambrick and Mason, 1984). The Upper Echelons Theory highlights that the actions of the top managers depend on their analysis of the situations they encounter and, on their experiences, expertise, personalities and values. These actions affect the organizational procedures, ultimately affecting the organisations' profitability, growth and survival (Hambrick and Mason, 1984). Using the Upper Echelons Theory, the present research examines the influence of top managers' human and social capital on BMI, an essential aspect of organisations' profitability, growth and survival in the current business environment.

BMI and its antecedents

The effect of Human Skills and Social Capital on BMI

Extant research suggests that both managerial skills and entrepreneurial skills of top managers directly influence the ability of the firm to innovate (Marvel and Lumpkin, 2007; Tang et al., 2012; Kraus et al., 2021) and to establish firms' competitive advantage by enhancing its ability to exploit new business opportunities (Ireland et al., 2001). Sirmon et al., (2011) calls for resource coordination and configuration as two important supporting skills for BMI and managerial skills enable managers with the same to realize firm strategy (Casadesus-Masanell and Ricart, 2010). The need for interaction between the focal firm and its environment for acquiring knowledge and resources is another reason why managerial skills are likely to promote BMI (Sirmon et al., 2010; Guo, Zhao, Tand ang, 2013; Wang, Guo, and Liu, 2017; Hock-Doepgen et al., 2021). Therefore, within a value network, good managerial skills help

effectively incorporate and control resources and connect the principal firm with its members in the innovative process. Further, to seize the monetary value of entrepreneurial opportunities, firms needs to design and exploit new business models (George and Bock, 2011). In doing so, the managerial skills of top managers aid the organizations by effectively conjoining and organising internal and external resources to avail opportunities (Zott and Amit, 2010). Recent studies have found that managers who gain more skills in terms of knowledge and experience over their lifetime are generally found to promote more innovations in their organizations. Managers, therefore, incentivize firms to pursue more exploratory knowledge research activities (Custódio, Ferreira, and Matos, 2019). Therefore, the above discussion leads to the following hypothesis:

H1: Managerial skills are positively related to BMI.

Entrepreneur Skills and BMI

Entrepreneur skills have been defined as "identifying customer needs, technical or market opportunities, and pursuing opportunities" (Hayton, 2015: P. 3). Previous scholars have highlighted that entrepreneur skills can help in generating new ideas and ability to envision and recognize potential opportunities (Ardichvili et al., 2003). Gina et al. (2018) found that perceived behavioral control (i.e. self-efficacy & self-confidence) and positive attitude is always high in people with entrepreneurial skills. Entrepreneurial skills also can impact BMI forcing the firm to reinvent its existing BM (Guo et al., 2013). Firms often rely on boundary-spanning organizational structures to create BM ideas (Bock et al., 2012; Johnson et al., 2008) and/or to exploit existing opportunities (Geroge and Bock, 2011). Managers' use of entrepreneurial skills in such situations helps firms capitalize upon such opportunities in the form of new products, processes, or services, forcing a firm to invent its business model (Tang et al, 2012). Given this, we propose that:

H2: Managers' entrepreneurial skills are positively related to BMI.

Managerial ties & BMI

The social capital of firms' refers to "a manager's ability to cultivate personal social connections with key external entities, such as ties with managers of business partners (buyers, suppliers, or competitors), or ties with government officials" (Guo et al., pp. 452). Managerial ties are regarded as a crucial external trigger for BMI since they help the managers to get in touch with business partners to gain access to external information and resources (Gao et al.,

2008; Li et al., 2013; Li and Zhang, 2007; Peng and Luo, 2000; Naqshbandi and Kaur, 2014; Naqshbandi, 2016). Their role becomes even more important for firms in developing nations since the dependence is more on network-based strategies and not on their weak formal structures for achieving the firm's goals (Guo et al., 2013). Shu et al., (2012) used social network theory (Burt, 1992; Granovetter, 1973) to argue that managerial ties have the potential to provide managerial opportunities for exploiting external information and resources. Previous research has applied social network theory to explore the important role played by managerial ties in facilitating innovation by contributing to organizational learning, skill complementarity, technological product/process innovations, gaining access to external information and resources that help a firm for filing patents, building capability and develop skill complementarity (Shu et al.., 2012; Li et al., 2013). Recently, Wang, Guo, and Liu (2017) argued in favor of exploiting managerial ties and suggested two "conduits" for facilitating BMI: one information-based and one resource-based (pp. 782). Information-based conduit consists of gaining information from external stakeholders like business partners, customers, competitors, and government officials (Guo et al., 2013; Wang, Guo, and Liu, 2017) whereas resource-based conduit consists of providing managers with opportunities to exploit resource based networks and improve firms' ability to gain access to valuable information and/or resources (Peng and Luo, 2000; Siu and Bao; 2008). This is further corroborated by recent research, which suggests that managerial ties are important for firms to acquire and synergize resources as a prerequisite for BMI (Yi et al., 2020). Therefore, firms focusing on managerial ties have an advantage while convincing their stakeholders and promoting their new business models. Therefore, we propose that:

H3*:* Managerial ties are positively related to BMI.

Exploitative learning and Business Model Innovation

"Exploitation arises out of a necessity for new ventures to fully use limited resources in existing technology and product-market domains" (Atuahene-Gima and Murray, 2007, pp. 9). It provides greater opportunities for new combinations and recombination of existing knowledge from which new insights may emerge (Atuahene-Gima and Murray, 2007). March (1991) argued that exploitative learning is related to "refinement, improvement and extension of existing resource and capabilities within the firm" (pp. 85). Further, Chesbrough (2007) suggested that exploitative learning is vital to open innovation because of external knowledge acquisition, utilization and dependence on external knowledge (Chen and Vanhaverbeke,

2011). Exploitative learning improves problem-solving skills and knowledge depth for challenging or unusual tasks (Bierly and Daly 2007). Through exploitative learning, entrepreneurs can amass a thorough knowledge base and skill set in a specific industrial industry (Zhou and Li 2012). Due to the wide information base, entrepreneurs can learn more about current markets and technology (Zhou and Li 2012). Tripsas and Gavetti (2000) claim that with this knowledge and abilities, business owners can establish a successful system and routine that can help with the successful application of BMI. Exploitative learning has fewer risk as compared to explorative learning. However, it can still influence BMI in firms by changing customer interface, capabilities, and network value (Hamel, 2001; Li et al., 2022). Therefore, taking these arguments together, we propose the following hypothesis:

H4: Exploitative learning of managers within the organization is positively related to BMI.

Explorative Learning and Business Model Innovation

Explorative learning has been defined as the search, variation, risk-sharing, and discovery search for new knowledge to create new products and processes (Levinthal and March, 1993; March, 1991). Explorative learning helps develop new products and processes by experimentation, discovery, and filtering technological and market trends, which can be crucial for long-term performance (Lumpkin and Lichtenstein, 2005). Identifying new knowledge in external sources, openness towards external knowledge sources, recognition of external knowledge sources and motivation to use external knowledge sources can help firms develop new BMs. Explorative learning offers managers diverse knowledge and abilities, which allows them to identify and solve new problems (McGrath, 2001), which can be crucial for innovative outcomes (Vargas et al., 2018). Explorative learning promotes managers' ability to identify customers' potential needs by expanding their cognitive range (Taylor and Greve, 2006). The knowledge base and abilities acquired through explorative learning increase the willingness of managers to try out new business opportunities or new ways of value creation (Liao et al., 2017). Therefore, this may eventually lead them to BMI. Recent research suggests that explorative learning can help firms to overcome barriers in terms of existing capabilities and thereby help in BMI (Li et al., 2022). Therefore, based on the above arguments, we propose:

H5: Explorative learning of managers within the organization is positively related to BMI.

Mediating role of Exploitative learning

The literature recognizes organizational learning as the missing link which transforms social capital into BMI (Zhao et al., 2014; Khan et al., 2020). It can be argued that exploitative learning works as a mediating variable between human skills and BMI, and two reasons can be cited in favor of this mediation. First, managerial skills, entrepreneurial skills and managerial ties are conducive to exploitative learning, having potential of an indirect impact on external stakeholders to give the firm access to required external knowledge, resources and/or competencies leading the way to efficient and effective implementation of new ideas (Atuahene-Gima and Murray, 2007; Wang, Guo, and Liu, 2017). The second reason is the direct contribution of exploitative learning to BMI since the former is directly associated with incremental changes in technology or product/process (Auh and Menguc, 2005). Research suggests that managerial ties can facilitate technology and knowledge exchange (Sheng, Zhou and Li, 2011; Park and Luo, 2001) which can facilitate cooperation among firms. These specialist market resources support learning processes for new product innovation knowledge generation and assist businesses in capturing product information and customers' evolving needs (Zhao, Li and Liu, 2016). Managerial ties can help local firms to develop linkages with external firms, which can become pivotal to acquiring external knowledge that can be used to build exploitative learning (Khan et al., 2019).

Furthermore, based on the Knowledge-based view of the firm, learning can help managers to build a knowledge base which can help the firm to enhance its innovative ability and then help managers to gain control over their future situation. This transformation of knowledge into abilities will help managers try out new activities, new governance of transactions and connecting structures ─ in other words, BMI. Exploitative learning increases knowledge depth and problem-solving proficiency for complex or uncommon tasks (Bierly and Daly 2007). Through exploitative learning, entrepreneurs can acquire a comprehensive knowledge base and skill set in a particular industrial industry (Zhou and Li 2012). Thanks to the extensive information base, entrepreneurs can learn more about current markets and technologies (Zhou and Li 2012). According to Tripsas and Gavetti (2000), this knowledge and skills enable business owners to adopt an effective procedure and routine that can aid the successful implementation of BMI . Therefore, exploitative learning supports business model innovation (Wang and Liu, 2017; Khan et al., 2020; Zhao et al., 2021),

H6: Exploitative learning mediates the relationship between managerial skills, managerial ties, entrepreneur skills and BMI.

Mediating Role of Explorative Learning

Managerial skills directly and positively impact BMI, which is mediated by explorative learning for the following reasons. Resource coordination and configuration are the two important supporting skills for BMI, both can be improved through explorative learning because it includes a quest for experimentation and discovery. Second, the need for interaction between the focal firm and its environment for acquiring knowledge and resources is another reason why managerial skills are likely to promote BMI through explorative learning (Sirmon et al., 2010; Guo, et al., 2013; Wang, Guo, and Liu, 2017; Zott and Amit, 2010). Explorative learning can impact the search for new knowledge that will bring better entrepreneur skills to top managers. Furthermore, studies have shown that organizational learning can act as a mediator which can help firms transform corporate social capital into BMI (Zhao et al., 2014; Khan et al., 2020).

Explorative learning also mediates the relationship between managerial ties and BMI because ties with suppliers contribute to exploring new material for production. Managerial ties can help local firms to develop linkages with external firms, which can become pivotal to acquiring external knowledge that can be used to build explorative learning (Khan et al., 2018). Exploratory learning requires more specialized complementary resources like market intellige nce and technology transfer because it goes beyond the existing knowledge domain and invol ves the pursuit of search and experimentation (March, 1991; Atuahene-Gima and Murray, 20 07). These resources may also aid in developing new knowledge (Sheng, Zhou, and Li, 2011) which can be instrumental in pursuing BMI. Therefore, firms need to understand the importance of managerial ties in promoting exploratory learning. Furthermore, research in the context of emerging economies has highlighted that managerial ties can help business partners transfer expertise and acquire technology, introduce innovative ideas for generating new goods through communication, and win the confidence and support of customers and suppliers (Rindfleisch and Moorman, 2001). This managerial-based knowledge transfer will provide new perspectives on the recombination and reconfiguration of the current knowledge and assist businesses in developing new product innovation knowledge and skills. Therefore, managerial ties can help businesses increase innovation opportunities based on exploratory learning (Kessler and Chakrabarti, 1996; Zhao et al., 2016). Taking these arguments together, we argue that:

H7: Explorative learning mediates the relationship between managerial skills, managerial ties, entrepreneur skills and BMI.

Insert Figure 1

Methodology

Sample Description

The study used a questionnaire method to collect the data. The questionnaires were distributed to top and senior management of the firms working in 6 sectors in India: information technology, telecommunication, banking, media & entertainment, insurance and publishing. The rationale for choosing these industries can be drawn from the *Economist Intelligence Unit* report (2012) report titled "Agents of change: The future of technology disruption in business," which highlighted that these six sectors would have a significant technological disruption in coming years. The senior and middle level of management is considered to be an appropriate sample for a study on BMs because many researchers, like Gua, et al., (2013) have suggested that this is the level of management which have a clarity regarding not only the expectations of the top management but also the clarity required for effective implementation. The respondents selected were primarily the top managers or heads responsible for the company's strategic orientation, like the director of strategic development and chief operating officer. The sample description constituted of 28% upper-level of management (e.g. CEO's, COO's and CSO's), 72% from senior management (e.g. GM's, Vice presidents and Project heads), which is in line with the suggestions of various researchers like Clauss (2018) and Guo, et al., (2013). The questionnaire was distributed to about 500 respondents. Finally, 200 valid responses were received, with a response rate of 40 %. (Table I)

Measurements

The concept of BMI is developing, and most studies are either conceptual or based on case studies with little empirical support. Therefore, a rigorous review of the literature was undertaken to compile the items of the latent variables so that the relationship between top manager's managerial ties, managerial skills, entrepreneur skills and BMI is established along with the mediating role of exploitative learning. The measures used in this study have been adopted from previous studies. Table 1 highlights the items used in the study along with the composite reliability scores, average variance extracted and Cronbach's alpha.

Managerial skills: Managerial skills in this study have been defined as top managers' ability to manage people and firm resources. A five-item scale measuring managerial skills used in this study has been adopted from the works of Chandler and Hanks, (1998).

Entrepreneurial Skills: Entrepreneurial skills in this study has been conceptualized as the ability of top managers to recognize entrepreneurial opportunities. A five-item scale adopted from Chandler and Hanks, (1998) has been used in this study to measure top managers' entrepreneur skills.

Managerial Ties: A four-item scale measuring managerial ties has been adopted from Peng and Luo, (2000). This four items scale measures managerial ties of top manager with customer, suppliers, competitors and even government officials.

BMI: A nine item scale measuring BMI was adopted from Guo et al., (2013). The scale measures value proportion by two items, "our business model offers new combinations of products, services and information", and "our business model attracts a lot of new customers." Value creation was measures by two items, "our business model bonds participants together in novel ways", and "we frequently introduce new operational processes, routines, and norms into our business model." Finally the value capturing was measured with the help of following items "our business model links participants to transactions in novel ways.

Psychometric properties of measures

Researchers have used confirmatory factor analysis using AMOS 19.0. To avoid redundancy researchers have used the model fit guidelines for model fit as recommended by Hair et al., (2010) with three indices (i.e., $\chi 2/df$, CFI and RMSEA). The first attempt did not generate a good model fit $\chi 2/df=3.19$, CFI=0.854 and RMSEA=0.076. The inspection of modification indices highlighted there were some redundant items. Therefore, co-variances were used between e3 and e4, e12 and e13, e21 and e22, e26 and e27 and e26 and e28. Thus, in the second attempt the results generated a good mode fit $\chi 2/df=2.420$, CFI=0.916, and RMSEA=0.056.

3.5. Construct and Discriminant validity

All the items measuring the constructs like managerial skills, managerial ties, entrepreneurial skills, BMI and exploitative learning have an average variance extracted score which is greater than .50 (Table II). As per the suggestions of Fornell and Larcker, (1981) an average variance score of greater than .50 provides sufficient evidence of the construct validity. Discriminant

validity was established by comparing the shared variance between each pair of constructs against the AVE's (Bove et al. 2009). The shared correlation between the constructs was less than the average variance extracted score for each construct, giving evidence of discriminant validity (Fornell and Larcker, (1981). Further, the inter-correlation among the variables is statistically significant, suggesting a lower chance of multicollinearity (Table III).

Insert Table II

Insert Table III

Hypothesis Testing

Researchers accessed the model fit of the structural model before testing the hypothesis. The initial try out generated a good model fit ($\chi 2/df=2.76$, CFI=0.923, RMSEA=0.040. Next, the predicted direct relationship between managerial skills, entrepreneur skills, managerial ties and BMI were tested. The paths that were significant are those from managerial skills to BMI ($\beta=.721$, $p<0.00$), entrepreneur skills and BMI ($\beta=.659$, $p<0.00$), managerial ties and BMI ($\beta=.451$, $p=0.001$), explorative learning and BMI ($\beta=.211$, $p<0.00$) and exploitative learning ($\beta=.127$, $p<0.00$).

Mediation Results

Table III highlights the results of three hypotheses which proposed the mediating role of exploitative learning between managerial skills, entrepreneur skills, managerial ties and BMI. Researchers conducted individual mediation tests to avoid suppression of one path on another, by using Baron and Kenny's (1986) approach. The results suggest that after introducing the mediating variable the relationship is still significant for managerial skills, entrepreneur skills and managerial skills. However, the magnitude of the relationship has reduced. The mediation results show that the individual paths between managerial skills / BMI are partially mediated by exploitative learning while that between managerial ties and BMI is fully mediated by exploitative learning (Table IV). Further, the paths between managerial skills / BMI and managerial ties and BMI are fully mediated through explorative learning, while that of entrepreneur skills and BMI is partially mediated.

Insert Figure II

Insert Table IV

Discussion

Previous studies on the role of top management in BMI have been mainly based on theoretical and exploratory discussion rather than on empirical testing (DaSilva and Trkman, 2014; Foss and Saebi, 2017; Evans et al., 2017). There is a dearth of empirical studies exploring top management's role in BMI. This paper adds to the existing knowledge by investigating the direct and indirect effects of top manager's managerial skills, managerial ties and entrepreneur skills on BMI. The paper's main contribution lies in highlighting the combined impact of top managers' social and human capital on a firm's BMI efforts. It also explored the role of exploitative leaning and explorative learning which mediates the relationship between top managers' managerial skills, managerial ties and entrepreneur skills with BMI. The findings revealed overall support for all of the hypotheses formulated after a rigorous and thorough literature review.

The first and second hypothesis proposed that top managers' entrepreneurial and managerial skills directly and positively influence BMI. Results support both these hypotheses. Thus, managers who can effectively organize, allocate, and configure various firm resources enjoy a greater chance of bringing changes in the BMs than managers who lack these abilities. Top managers' entrepreneurial skills will help the firm to capitalize on the opportunities in the external environment, which can result in inventing new products, services and processes. Entrepreneurial skills also can impact BMI forcing the firm to reinvent its existing BM (Guo, Zhao, and Tang, 2013).These findings support past research highlighting the direct and positive impact of entrepreneurial and managerial skills on BMI (Sirmon et al., 2010; Guo, Zhao, and Tang, 2013; Wang, Guo, and Liu, 2017; Zott and Amit, 2010).

The third hypothesis proposed that top managers' managerial ties positively and directly influence BMI. The results indicate support for this hypothesis. Thus, managers who enjoy strong managerial ties, such as a personal touch with buyers, suppliers and competitors, promote BMI. The role of managerial ties becomes particularly important in the context of India. This is because the appropriability regimes are weaker in developing countries than in developed countries (Naqshbandi and Kaur, 2011).Additionally, in developing countries, the dependence is more on network-based strategies and not on weak formal structures for achieving the firm's goals (Guo et al., 2013. Therefore, the ties of managers can go a long way in accruing favorable outcomes for the firm. This finding is consistent with the findings of

other studies (c.f. Gao et al., 2008; Li et al., 2013; Li and Zhang, 2007; Peng and Luo, 2000; Wang and Chung, 2013; Wu, 2011) that have pointed towards the important role of managerial ties in varied situations and contexts.

The fourth and fifth hypotheses proposed that exploitative and explorative learning positively influence BMI. The results indicate support for these hypotheses. Several studies on organizational learning have shown that exploitative and exploratory learning increase an organization's capacity for innovation (Choi and Chandler 2015; Valaei et al. 2017a; 2017b) (Atuahene-Gima and Murray, 2007). Previous studies have demonstrated a nonlinear relationship between the performance of new products and search depth and scope, which correlate to exploitative and exploratory learning (Katila and Ahuja, 2002; Li et al., 2010). However, this study extends the literature on BMI by developing a link between organizational learning and BMI. Therefore, managers should look for new ways of combining and recombining existing knowledge, which might give new insights towards BMI. The knowledge base and abilities acquired through explorative learning will increase the willingness of managers to try out new business opportunities or new ways of value creation (Liao et al., 2017).

Finally, by testing the mediated effect of exploitative and explorative learning in the relationship between managerial skills, entrepreneur skills, managerial ties and BMI, this study shows how exploitative and explorative learning play a role in BMI. The results revealed partial support for these hypotheses. This implies that managerial skills, entrepreneur skills and managerial ties might not result in BMI unless they are channelized through exploitative and explorative learning. Thus, resources alone are not sufficient for BMI. Firms need to develop the capabilities which can help them orchestrate the resources to convert them into outputs (Hsu and Wang, 2012; Yuan et al., 2021). According to Demil et al. (2015), firms must recombine resources to support the new value creation process. We suggest that both exploitative and explorative learning as a dynamic capability can help firms to facilitate the reconfiguration and redeployment of the resources provided by stakeholders (García-Morales et al., 2008; Santos-Vijande et al., 2012). Hence, exploitative and explorative learning is an important contingent condition for the relationship between human and social skills and BMI. The finding that exploitative and explorative learning mediate the relationship between managers' human and social skills and BMI provides new insights, thus enriching the BMI literature.

Theoretical Implications

BMI has received considerable attention over the years (Chesbrough, 2010). Despite the surge in academic and non-academic literature on BMI, there is a degree of newness and ambiguity associated with the subject. This paper extends the literature in three broad areas of BMI, human capital, and social network theory. Not many studies have studied the linkages examined in this study. Therefore, one of the main contributions of this study lies in forwarding an integrated model highlighting the impact of top managers' human and social capital on BMI and explaining the mediating role of exploitative and explorative learning in these relationships. By adopting the lens of the Upper Echelons Theory, the study contributes to the existing literature on BMI by spotlighting the factors that can improve BMI outcomes.

The extant literature on BMI provides scant clarity on the antecedents and consequences of BMI (Sosna et al., 2010; Zott et al., 2011). The present study has responded to this call by measuring the influence of top managers' human and social capital on BMI. The proposed model adds to the existing body of research by highlighting what can be called the drivers of BMI. To the best of our knowledge, this study is one of the first to examine these issues empirically. The study contributes to the Upper Echelons research theme and helps understand the role of top managers in the allocation of organizational resources, that is, utilizing top managers' managerial skills, their ties and entrepreneurial skills, which ultimately affect the BMI. The study extends the previous studies that highlight the importance of social and human capital in technological innovation (Marvel and Lumpkin, 2007; Tang and Murphy, 2012). The findings of this study add greater clarity to the extant literature by concluding that the top manager's entrepreneurial skills, managerial skills and managerial ties can facilitate BMI which - several studies show - ultimately contribute to organizational performance.

The third contribution of the study lies in expanding the understanding of the effects of exploitative leaning and explorative learning between top managers' managerial skills, managerial ties and entrepreneur skills with BMI. Previous studies have highlighted the mediating role of exploitative and explorative learning in the relationship between managerial ties and BMI (Wang et al., 2017). However, to the best of our knowledge, no study has highlighted the significance of exploitative and explorative learning in the context of top manager's managerial skills, entrepreneur skills, managerial ties and BMI. Our findings highlight the impact of exploitative and explorative learning through two paths: one direct path and one indirect path. Through exploitative learning for BMI, entrepreneurs can amass a

thorough knowledge base and skill set in a certain industrial industry (Zhou and Li 2012). On the other hand, explorative learning offers managers diverse knowledge and abilities, which helps them to identify and solve new problems (McGrath, 2001), which can be crucial for innovative outcomes (Vargas et al., 2018). Also, managers' human and social skills might not optimally result in BMI unless they are channelized through exploitative and explorative learning.

Managerial Implications

This study has several important implications for managerial practice. In view of the increasing importance of BMI to organizational success, the study has highlighted that top managers' skills and ties favorably influence BMI. This calls for an organized effort on the organizations' part to enhance managerial ties, managerial skills and entrepreneurial skills among their managers. Organizations can make related investments in training and capacity building by instituting appropriate programs in their organizations. In addition, organizations can exercise caution during recruitment by recruiting and selecting managers in top management teams who excel in managerial skills. The findings of this study also suggest that firms with top managers with entrepreneurial skills are better off managing BMI. Thus, it logically follows that firms should have managers with entrepreneurial skills in their top management teams who can help exploit opportunities in the marketplace (Bock et al., 2012; Johnson et al., 2008), which is a critical aspect of BMI. Therefore, it is also imperative for top managers to cultivate their entrepreneurial skills to sense, identify, and shape such opportunities.

This study also highlighted the role of top managers' managerial ties in favorably affecting BMI. Managers must establish strong and meaningful ties with financial institutions, suppliers, competitors, customers, government bodies, universities and other research centers. Managerial ties are also crucial for newly established ventures because they will help them access valuable resources that can be crucial for long-term survival. This provides an important insight for practitioners and calls for an effort on the part of the organizations to strengthen managerial ties. Past research has also shown that such types of managerial ties are important for innovation as developing such ties corresponds to better information flows about the business environment, which can result in new ways of value creation and value capture (Naqshbandi, 2016).

While these are important insights for practice, this study also shows that it is crucial for organizations to factor in the role of exploitative learning and explorative learning. Explorative learning can help managers to develop new value propositions, which can be crucial in the long

run. Such opportunities may include refinements, improvements or even extensions of existing resources and capabilities within a firm. The study suggests that managers should encourage exploitative learning activities through effective managerial ties, which can later facilitate BMI. To be effective in doing so, organizations may need to develop the capacity and infrastructure to enhance their exploitive learning and explorative learning capacity to realize the benefits of BMI. Further, indirectly the mediation tests advance the previous knowledge by showing that the existence of top managers' human and social skills per se might not help in BMI unless it is channelized through exploitative and explorative learning, which in turn, influences BMI.

Limitations & Scope for Future research

Like all studies, this study has some limitations. First, the data collected for this study was drawn from only one country (i.e., India). Therefore, the findings' generalizability to other contexts must be viewed cautiously. Further studies can test the model by collecting data from other emerging and developed economies to explore the differences, if any. Second, this study tests a causal model using cross-sectional data, while longitudinal data is more appropriate for testing causal models. However, recent related studies, including those emerging out of the Indian context (c.f. Naqshbandi and Tabche, 2018), have used cross-sectional data. To comprehensively understand the issue, future research may rely on a bigger dataset collected longitudinally.

References

Andries, P., Debackere, K. and Looy, B. (2013), "Simultaneous experimentation as a learning strategy: Business model development under uncertainty", *Strategic Entrepreneurship Journal*, Vol. 7 No. 4, pp. 288-310.

Ardichvili, A., Cardozo, R. and Ray, S. (2003), "A theory of entrepreneurial opportunity identification and development", *Journal of Business venturing*, Vol. 18 No. 1, pp. 105-123.

Atuahene-Gima, K. and Murray, J. Y. (2007), "Exploratory and exploitative learning in new product development: A social capital perspective on new technology ventures in China", *Journal of International Marketing*, Vol. 15 No. 02, pp. 1-29.

Auh, S. and Menguc, B. (2005), "Top management team diversity and innovativeness: The moderating role of interfunctional coordination", *Industrial Marketing Management*, Vol. 34 No. 3, pp. 249-261.

Bashir, M. and Verma, R. (2019), "Internal factors & consequences of business model innovation", *Management Decision*, Vol. 57 No. 1, pp. 262-290.

Bashir, M., Alfalih, A. and Pradhan, S. (2022), "Sustainable business model innovation: Scale development, validation and proof of performance", *Journal of Innovation & Knowledge*, Vol. 7 No. 4, p.100243.

Bierly III, P. E. and Daly, P. S. (2007), "Alternative knowledge strategies, competitive environment, and organizational performance in small manufacturing firms", *Entrepreneurship theory and practice*, Vol. 31 No. 4, pp. 493-516.

Bierly III, P.E. and Daly, P.S. (2007), "Alternative knowledge strategies, competitive environment, and organizational performance in small manufacturing firms", *Entrepreneurship theory and practice*, Vol. 31 No. 4, pp.493-516.

Bove, L. L., Pervan, S. J., Beatty, S. E. and Shiu, E. (2009), "Service worker role in encouraging customer organizational citizenship behaviors", *Journal of Business Research*, Vol. 62 No. 7, pp. 698-705.

Burt, R. S. (1992), *The social structure of competition. In Nohria, N., & Eccles, R. (Eds.). Networks and organizations: Structure, form, and action, pp 57–91*. Boston, MA: Harvard Business School Press

Casadesus-Masanell, R. and Ricart, J. E. (2010), "From strategy to business models and onto tactics", *Long range planning*, Vol. 43 No. 2-3, pp. 195-215.

Chan, F.T., Chong, A.Y.L. and Zhou, L. (2012), "An empirical investigation of factors affecting e-collaboration diffusion in SMEs", *International Journal of Production Economics*, Vol. 138 No. 2, pp.329-344.

Chandler, G. N. and Hanks, S. H. (1998), "An examination of the substitutability of founders human and financial capital in emerging business ventures", *Journal of business venturing*, Vol.13 No. 5, pp. 353-369.

Chen, J., Chen, Y. and Vanhaverbeke, W. (2011), "The influence of scope, depth, and orientation of external technology sources on the innovative performance of Chinese firms", Technovation, Vol. 31 No. 8, pp.362-373.

Chen, J.-S., Kerr, D., Chou, C.Y. and Ang, C. (2017), "Business co-creation for service innovation in the hospitality and tourism industry", International Journal of Contemporary Hospitality Management, Vol. 29 No. 6, pp. 1522-1540.

Chesbrough, H. (2007), "BMI: it's not just about technology anymore", *Strategy & leadership*, Vol. 35 No. 6, pp. 12-17.

Chesbrough, H. (2010), "Business model innovation: opportunities and barriers", *Long range planning*, Vol. 43 No. 2-3, pp.354-363.

Choi, T. and Chandler, S.M. (2015), "Exploration, exploitation, and public sector innovation: An organizational learning perspective for the public sector", *Human Service Organizations: Management, Leadership & Governance*, Vol. 39 No. 2, pp.139-151.

Clauss, T., Abebe, M., Tangpong, C. and Hock, M. (2019), "Strategic agility, business model innovation, and firm performance: An empirical investigation", *Ieee Transactions on Engineering Management*, Vol. 32, pp. 1-18

Custódio, C., Ferreira, M. A. and Matos, P. (2019), "Do general managerial skills spur innovation?.", *Management Science*, Vol. 65 No. 2, pp. 459-476.

DaSilva, C. M. and Trkman, P. (2014), "Business model: What it is and what it is not", *Long range planning*, Vol. 47 No. 6, pp. 379-389.

Demil, B., Lecocq, X., Ricart, J.E. and Zott, C. (2015), "Introduction to the SEJ special issue on business models: business models within the domain of strategic entrepreneurship", *Strategic entrepreneurship journal*, Vol. 9 No. 1, pp.1-11.

DiMaggio, P. and Powell, W. W. (1983), "The iron cage revisited: Collective rationality and institutional isomorphism in organizational fields", *American sociological review*, Vol. 48 No. 2, pp. 147-160.

Economist Intelligence Unit (2012), Agents of change: The future of technology disruption in business, Retrieved from http://www.economistinsights.com/sites/default/files/downloads/ EIU_Agent%20of%20change_WEB_FINAL.pdf (accessed 12 June 2018)

Evans, S., Vladimirova, D., Holgado, M., Van Fossen, K., Yang, M., Silva, E. A. and Barlow, C. Y. (2017), "BMI for sustainability: towards a unified perspective for creation of sustainable business models", *Business Strategy and the Environment*, Vol. 26 No. 5, pp. 597-608.

Fornell, C. and Larcker, D. F. (1981), "Structural equation models with unobservable variables and measurement error: Algebra and statistics", *Journal of marketing research*, Vol. 18 No. 1, pp. 382-388.

Foss, N. and Stieglitz, N. (2014), "BMI: the role of leadership", Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2393441

Foss, N. J. and Saebi, T. (2017), "Business models and BMI: Between wicked and paradigmatic problems", *Long Range Planning*, Vol. 51 No. 1, pp. 9-21.

Foss, N. J. and Saebi, T. (2017), "Fifteen years of research on BMI: how far have we come, and where should we go?", *Journal of Management*, Vol. 43 No. 1, pp. 200-227.

Foss, N. J. and Saebi, T. (2018), "Business models and business model innovation: Between wicked and paradigmatic problems", *Long Range Planning*, Vol. 51 No. 1, pp. 9–21.

Gao, S., Xu, K. and Yang, J. (2008), "Managerial ties, absorptive capacity, and innovation", *Asia Pacific Journal of Management*, Vol. 25 No. 3, pp. 395-412.

García-Morales, V.J., Lloréns-Montes, F.J. and Verdú-Jover, A.J. (2008), "The effects of transformational leadership on organizational performance through knowledge and innovation", *British journal of management*, Vol. 19 No. 4, pp.299-319.

Geletkanycz, M. A. and Hambrick, D. C. (1997), "The external ties of top executives: Implications for strategic choice and performance", *Administrative Science Quarterly*, 654-681.

George, G. and Bock, A. J. (2011), "The business model in practice and its implications for entrepreneurship research", *Entrepreneurship theory and practice*, Vol. 35 No. 1, pp. 83-111.

Gina Santos & Carla S. Marques and João J. M. Ferreira, (2018), "What are the antecedents of women's entrepreneurial orientation?," *International Entrepreneurship and Management Journal*, Vol. 14 No. 4, pp. 807-821.

Global Perspective, 7th ed., Pearson Prentice Hall, Upper Saddle River, NJ.

Granovetter, M. (1973), "The strength of weak ties", *American Journal of Sociology*, Vol.78 No. 6, pp. 1360-1380.

Groskovs, S. and Ulhøi, J. S. (2019), "The middle manager in search of business model innovation", *Journal of Business Strategy*, Vol. 40 No. 4, pp. 3-10

Guo, H., Tang, J., Su, Z. and Katz, J.A. (2017), "Opportunity recognition and SME performance: The mediating effect of business model innovation", *R&D Management*, Vol. 47 No. 3, pp.431-442.

Guo, H., Zhao, J. and Tang, J. (2013), "The role of top managers' human and social capital in BMI", *Chinese Management Studies*, Vol. 7 No. 3, pp. 447-469.

Hacklin, F., Björkdahl, J. and Wallin, M.W. (2018), "Strategies for business model innovation: how firms reel in migrating value", *Long Range Planning*, Vol. 51 No. 1, pp. 82-110.

Hair, J.F., Black, W.C., Babin, B.J. and Anderson, R.E. (2010), Multivariate Data Analysis – A

Hambrick, D. C. (2007), "Upper echelons theory: An update", *Academy of management review*, Vol. 32 No. 2, pp. 334-343.

Hambrick, D. C. and Mason, P. A. (1984), “Upper echelons: The organization as a reflection of its top managers”, *Academy of management review*, Vol. 9 No. 2, pp. 193-206.

Hamel, G. (2001), "Leading the revolution: an interview with Gary Hamel", Strategy & Leadership, Vol. 29 No. 1, pp. 4-10.

Hayton, J. (2015), “Leadership and Management Skills in SMEs: Measuring Associations with Management Practices and Performance”, Retrieved May 31, 2020, from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/407624/BIS-15-95_Leadership_and_Management_Skills_in_SMEs.pdf

Hock-Doepgen, M., Clauss, T., Kraus, S. and Cheng, C. F. (2021), “Knowledge management capabilities and organizational risk-taking for business model innovation in SMEs”, *Journal of Business Research,* Vol. 130, pp. 683-697.

Hsu, L.C. and Wang, C.H. (2012), “Clarifying the effect of intellectual capital on performance: the mediating role of dynamic capability”, *British journal of management*, Vol. 23 No. 2, pp.179-205.

Ireland, R. D., Hitt, M. A. and Sirmon, D. G. (2003), “A model of strategic entrepreneurship: The construct and its dimensions” *Journal of management,* Vol. 29 No. 6, pp. 963-989.

Johnson, M. W., Christensen, C. M. and Kagermann, H. (2008), “Reinventing your business model”, *Harvard business review,* Vol. 86 No. 12, pp. 57-68.

Katila, R. and Ahuja, G. (2002), “Something old, something new: A longitudinal study of search behavior and new product introduction”, *Academy of management journal*, Vol. 45 No. 6, pp.1183-1194.

Kessler, E.H. and Chakrabarti, A.K. (1996), “Innovation speed: A conceptual model of context, antecedents, and outcomes”, *Academy of management review*, Vol. 21 No. 4, pp.1143-1191.

Khan, S.H., Majid, A., Yasir, M. and Javed, A. (2021), "Social capital and business model innovation in SMEs: do organizational learning capabilities and entrepreneurial orientation really matter?", European Journal of Innovation Management, Vol. 24 No. 1, pp. 191-212.

Khan, Z., Lew, Y.K. and Marinova, S. (2019), “Exploitative and exploratory innovations in emerging economies: The role of realized absorptive capacity and learning intent”, *International Business Review*, Vol. 28 No. 3, pp.499-512.

Latifi, M. A., Nikou, S. and Bouwman, H. (2021), “Business model innovation and firm performance: Exploring causal mechanisms in SMEs”, *Technovation*, Vol. 107, pp. 102274.

Li, C.R., Chu, C.P. and Lin, C.J. (2010), “The contingent value of exploratory and exploitative learning for new product development performance”, *Industrial Marketing Management*, Vol. 39 No. 7, pp.1186-1197.

Li, H. and Zhang, Y. (2007), “The role of managers' political networking and functional experience in new venture performance: Evidence from China's transition economy”, *Strategic management journal*, Vol. 28 No. 8, pp. 791-804.

Li, X., Qiang, Q., Huang, L. and Huang, C. (2022), “How Knowledge Sharing Affects Business Model Innovation: An Empirical Study from the Perspective of Ambidextrous Organizational Learning”, *Sustainability*, Vol. 14 No. 10, p.6157.

Li, Y., Wei, Z., Zhao, J., Zhang, C. and Liu, Y. (2013), “Ambidextrous organizational learning, environmental munificence and new product performance: Moderating effect of managerial ties in China”, *International Journal of Production Economics*, Vol. 146 No. 1, pp. 95-105.

Liao, S. H., Chen, C. C., Hu, D. C., Chung, Y. C. and Yang, M. J. (2017), “Developing a sustainable competitive advantage: absorptive capacity, knowledge transfer and organizational learning”, *The Journal of Technology Transfer*, Vol. 42 No. 6, pp. 1431-1450.

Lopez-Nicolas, C., Nikou, S., Molina-Castillo, F.-J. and Bouwman, H. (2020), "Gender differences and business model experimentation in European SMEs", *Journal of Business & Industrial Marketing*, Vol. 35 No. 7, pp. 1205-1219.

Lumpkin, G.T. and Lichtenstein, B.B. (2005), “The role of organizational learning in the opportunity–recognition process”, *Entrepreneurship theory and practice*, Vol. 29 No. 4, pp.451-472.

March, J. G. (1991), “Exploration and exploitation in organizational learning”, *Organization science*, Vol. 2 *No.* 1, pp. 71-87.

Marvel, M. R. and Lumpkin, G. T. (2007), “Technology entrepreneurs' human capital and its effects on innovation radicalness”, *Entrepreneurship Theory and Practice*, Vol. 31 No. 6, pp. 807-828.

Massa, L. and Tucci, C. L. (2013), BMI. *The Oxford Handbook of Innovation Management, Oxford University Press, Oxford*, 420-441.

McGrath, R.G. (2001), “Exploratory learning, innovative capacity and managerial oversight”, *Academy of Management Journal*, vol. 44, no. 1, pp. 118-131.

Müller, J. M. (2019), “Business model innovation in small- and medium-sized enterprises Strategies for industry 4.0 providers and users”, *Journal of Manufacturing Technology Management*, Vol. 30 No. 8, pp. 1127-1142.

Müller, J.M., Buliga, O. and Voigt, K.I. (2018), “Fortune favors the prepared: how SMEs approach business model innovations in Industry 4.0”, Technological Forecasting and Social Change, Vol. 132, pp. 2-17.

Naqshbandi, M M. and Kaur, S. (2014), “Do managerial ties support or stifle open innovation?”, *Industrial Management & Data Systems*, Vol. 114 No. 4, pp. 652-675.

Naqshbandi, M. M. (2016)”, Managerial ties and open innovation: examining the role of absorptive capacity”, *Management Decision*, Vol. 54 No. 9, pp. 2256-2276.

Naqshbandi, M. M. and Kaur, S. (2011), “Effects of managerial ties and appropriability regimes on open innovation”, *World Applied Sciences Journal*, Vol. 15 No. 2, pp. 271-278.

Naqshbandi, M. M. and Tabche, I. (2018), “The interplay of leadership, absorptive capacity, and organizational learning culture in open innovation: Testing a moderated mediation model”, *Technological Forecasting and Social Change*, Vol. 133, pp.156-167.

Park, S.H. and Luo, Y. (2001), “Guanxi and organizational dynamics: Organizational networking in Chinese firms”, *Strategic management journal*, Vol. 22 No. 5, pp.455-477.

Peng, M. W. and Luo, Y. (2000), “Managerial ties and firm performance in a transition economy: The nature of a micro-macro link”, *Academy of management journal*, Vol. 43 No. 3, pp. 486-501.

Rindfleisch, A. and Moorman, C. (2001), “The acquisition and utilization of information in new product alliances: A strength-of-ties perspective”, *Journal of marketing*, Vol. 65 No. 2, pp.1-18.

Ritter, T. and Lettl, C. (2018), “The wider implications of business-model research”, *Long Range Planning*, Vol. 51 No. 1, pp. 1-8.

Santos-Vijande, M.L., López-Sánchez, J.Á. and Trespalacios, J.A. (2012), “How organizational learning affects a firm's flexibility, competitive strategy, and performance”, *Journal of business research*, Vol. 65 No. 8, pp.1079-1089.

Sheng, S., Zhou, K.Z. and Li, J.J. (2011), “The effects of business and political ties on firm performance: Evidence from China”, *Journal of Marketing*, Vol. 75 No. 1, pp.1-15.

Shu, C., Page, A. L., Gao, S. and Jiang, X. (2012), “Managerial ties and firm innovation: is knowledge creation a missing link?”, *Journal of Product Innovation Management*, Vol. 29 No. 1, pp. 125-143.

Sirmon, D. G., Hitt, M. A., Ireland, R. D. and Gilbert, B. A. (2011), “Resource orchestration to create competitive advantage: Breadth, depth, and life cycle effects”, *Journal of management*, Vol. 37 No. 5, pp. 1390-1412.

Sirmon, D.G., Hitt, M.A., Arregle, J.L. and Campbell, J.T. (2010), “The dynamic interplay of capability strengths and weaknesses: investigating the bases of temporary competitive advantage”, *Strategic Management Journal*, Vol. 31 No. 13, pp.1386-1409.

Siu, W.S. and Bao, Q. (2008), “Network strategies of small Chinese high-technology firms: a qualitative study”, *Journal of Product Innovation Management*, Vol. 25 No. 1, pp.79-102.

Sosna, M., Trevinyo-Rodríguez, R. N. and Velamuri, S. R. (2010), “BMI through trial-and-error learning: The Naturhouse case”, *Long range planning*, Vol. 43 No. 2-3, pp. 383-407.

Tang, J. and Murphy, P. J. (2012), "Prior knowledge and new product and service introductions by entrepreneurial firms: the mediating role of technological innovation", *Journal of Small Business Management*, Vol. 50 No. 1, pp. 41-62.

Tang, J., Kacmar, K. M. M. and Busenitz, L. (2012), "Entrepreneurial alertness in the pursuit of new opportunities", *Journal of Business Venturing*, Vol. 27 No. 1, pp. 77-94.

Taylor, A. and Greve, H.R. (2006), "Superman or the fantastic four? Knowledge combination and experience in innovative teams", *Academy of management Journal*, Vol. 49 No. 4, pp.723-740.

Thompson, J. D. and MacMillan, I. C. (2010), "Business models: Creating new markets and societal wealth", *Long Range Planning*, Vol. 43 No. 2-3, pp. 291-307.

Tripsas, M. and Gavetti, G. (2000), "Cognition, capabilities and inertia: evidence from digital imaging", *Strategic Management Journal*, Vol. 21 No. 10/11, pp.1147-1161.

Valaei, N., Rezaei, S. and Emami, M. (2017b), "Explorative learning strategy and its impact on creativity and innovation: an empirical investigation among ICT-SMEs", *Business Process Management Journal*, Vol. 23 No. 5, pp. 957–983.

Valaei, N., Rezaei, S. and Ismail, W.K.W. (2017a), "Examining learning strategies, creativity, and innovation at SMEs using fuzzy set Qualitative Comparative Analysis and PLS path modelling", *Journal of Business Research*, Vol. 70, pp. 224–233.

Vargas, N., Lloria, M. B., Salazar, A. and Vergara, L. (2018), "Effect of exploitation and exploration on the innovative as outcomes in entrepreneurial firms", *International Entrepreneurship and Management Journal*, Vol. 14 No. 4, pp. 1053–1069

Wang, C. L., & Chung, H. F. (2013), "The moderating role of managerial ties in market orientation and innovation: An Asian perspective", *Journal of Business Research*, Vol. 66 No. 12, pp. 2431-2437.

Wang, D., Guo, H. and Liu, L. (2017), "One goal, two paths: How managerial ties impact BMI in a transition economy", *Journal of Organizational Change Management*, Vol. 30 No. 5, pp. 779-796.

Wirtz, B. W., Pistoia, A., Ullrich, S. and Göttel, V. (2016), "Business models: Origin, development and future research perspectives", *Long Range Planning*, Vol. 49 No. 1, pp. 36-54.

Wu, J. and Liu Cheng, M. (2011), "The impact of managerial political connections and quality on government subsidies: Evidence from Chinese listed firms", *Chinese Management Studies,* Vol. 5 No. 2, pp. 207-226.

Yi, Y., Chen, Y. and Li, D. (2022), "Stakeholder ties, organizational learning, and business model innovation: A business ecosystem perspective", *Technovation*, Vol. 114, p.102445.

Yi, Y., Wang, Y. and Shu, C. (2020), "Business model innovations in China: A focus on value propositions", *Business Horizons,* Vol. 63 No. 6, pp.787-799.

Yuan, C., Xue, D. and He, X. (2021), "A balancing strategy for ambidextrous learning, dynamic capabilities, and business model design, the opposite moderating effects of environmental dynamism", *Technovation,* Vol. 103, p.102225.

Zhang, Y. and Li, H. (2010), "Innovation search of new ventures in a technology cluster: the role of ties with service intermediaries", *Strategic Management Journal,* Vol. 31 No. 1, pp. 88-109.

Zhao, J., Li, Y. and Liu, Y. (2016), "Organizational learning, managerial ties, and radical innovation: Evidence from an emerging economy", *IEEE Transactions on Engineering Management,* Vol. 63 No. 4, pp.489-499.

Zhao, J., Li, Y. and Liu, Y. (2016), "Organizational learning, managerial ties, and radical innovation: Evidence from an emerging economy", *IEEE Transactions on Engineering Management*, Vol. 63 No. 4, pp.489-499.

Zhao, W., Yang, T., Hughes, K.D. and Li, Y. (2021), "Entrepreneurial alertness and business model innovation: the role of entrepreneurial learning and risk perception", *International Entrepreneurship and Management Journal,* Vol. 17 No. 2, pp.839-864.

Zhou, K. Z. and Li, C. B. (2012), “How knowledge affects radical innovation: Knowledge base, market knowledge acquisition, and internal knowledge sharing”, Strategic Management Journal, Vol. 33 No. 9, pp. 1090– 1102.

Zott, C. and Amit, R. (2010), “Business model design: an activity system perspective”, *Long range planning*, Vol. 43 No. 2-3, pp. 216-226.

Zott, C., Amit, R. and Massa, L. (2011), “The business model: recent developments and future research”, *Journal of management*, Vol. 37 No. 4, pp.1019-1042.

Tables Used in the Study:

Table 1: Sample Description

Industry	Frequency	%	Years Served in the firm	Frequency	%
Information Technology	38	19	0-5 Years	16	8
Telecommunication	36	18	6-10 Years	60	30
Banking	34	17	11-15 Years	53	26.5
Media & Entertainment	30	15	Above 16 years	71	35.5
Insurance	36	18	**Firm Age**	**Frequency**	**%**
Publication	26	13	0-10 Years	0	0
Senior Managers	56	28	10-20 Years	1	3
Middle Level Managers	144	72	20-30 Years	14	43.75
			31 Years and above	17	53.12

Table 2: Factor loading (λ), composite reliability (CR), average variance extracted (AVE), and Cronbach's alpha values

ITEMS	λ	CR	AVE	α
Managerial skills		.74	.68	.860
One of my greatest strengths is achieving results by organizing and motivating people	.73			
One of my greatest strengths is organizing resources and coordinating tasks	.62			
One of my greatest strengths is my ability to delegate effectively	.82			

One of my greatest strengths is my ability to supervise, influence, and lead people	.85			
I make resource allocation decisions that achieve maximum results with limited resources	.86			
Entrepreneurial skills		.79	.70	.94
I enjoy thinking about new ways of doing businesses	.72			
I frequently identify opportunities to start new businesses (even though I may not pursue them)	.77			
I frequently identify ideas that can be converted into new products or services	.80			
I am alert to previously unnoticed entrepreneurial opportunities	82			
I see myself as creating entrepreneurial opportunities	79			
Managerial Ties		.81	.71	.85
I have cultivated close connections with our buyers	.72			
I have cultivated close connections with our suppliers	.88			
I have cultivated close connections with our competitors	.81			
I have cultivated close connections with various levels of government officials	.75			
Exploitative Learning		.78	.67	.75
Upgraded current knowledge and skills for familiar products and technologies	.82			
Invested in enhancing skills in exploiting mature technologies that improve productivity of current operations	.76			
Enhanced competencies in searching for solutions to customer problems that are near to existing solutions	.78			
Upgraded skills in product development processes in which the firm already possesses significant experience	.75			
Strengthened knowledge and skills for projects that improve efficiency of existing activities	.89			
Explorative Learning		.80	.76	.86
Acquired manufacturing technologies and skills entirely new to the firm	.86			
Learned product development skills and processes entirely new to the industry	.81			
Generated creative ideas among firm members	.73			
Acquired entirely new managerial and organizational skills	.82			
Business Model Innovation		.74	.65	.96

Our business model offers new combinations of products, services and information	.83
Our business model attracts a lot of new customers	.79
Our business model attracts a lot of new suppliers and partners	.85
Our business model bonds participants together in novel ways	.78
Our business model links participants to transactions in novel ways	.69
We frequently introduce new ideas and innovations into our business model	.71
	.74
We frequently introduce new operational processes, routines, and norms into our business model	.78
We are pioneers of the business model	.74
Overall, our business model is novel	.80

Table 3: Correlation Matrix

	Mean	SD	BMI	MS	MT	ES	EL	EPL
BMI	3.43	.645	**.806**					
MS	3.53	.651	.604**	**.824**				
MT	3.38	.743	.706**	.615**	**.842**			
ES	3.45	.817	.609**	.629**	.709**	**.836**		
EL	3.20	.484	.647**	.641**	.625**	.683**	**.818**	
EPL	3.48	.798	.775	.608	.605	.682	.205	**.871**

Note: Significance at p**< 0.01

Table 4: Mediation Analysis

Relationship	Direct Effect	Indirect Effect	Total Effect	Result
BMI<---Exploitative Leaning<---MS	.721	.201	.922	Partial Mediation
BMI<---Exploitative Learning<---ES	.659	.179	.838	Partial Mediation
BMI<---Exploitative Learning<---MT	.451	.008	459	Full Mediation
Relationship	**Direct Effect**	**Indirect Effect**	**Total Effect**	**Result**
BMI<---Explorative Learning<---MS	.721	.021	.742	Full Mediation
BMI<---Explorative Learning<---ES	.659	.211	.869	Partial Mediation
BMI<---Explorative Learning <---MT	.451	.014	.465	Full Mediation

Figures Used in the Study:

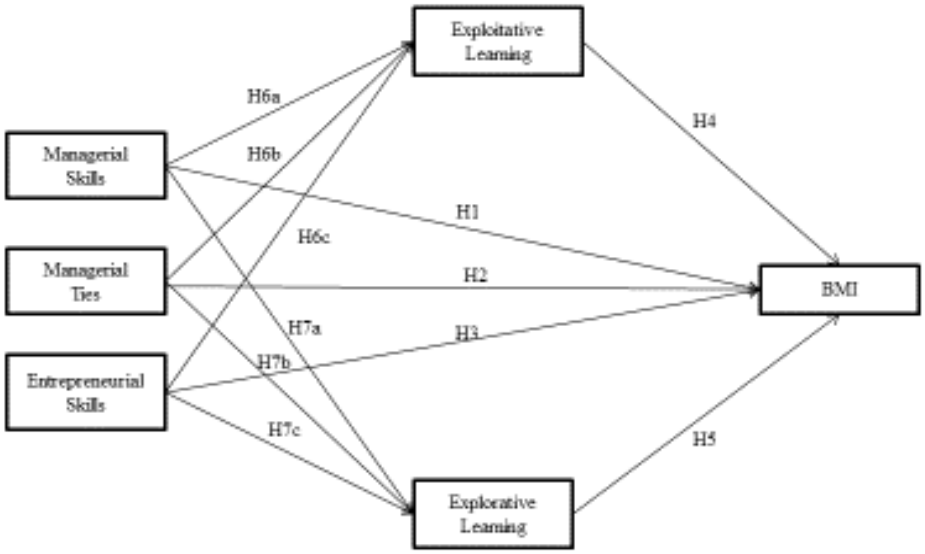

Figure 1: Conceptual Model

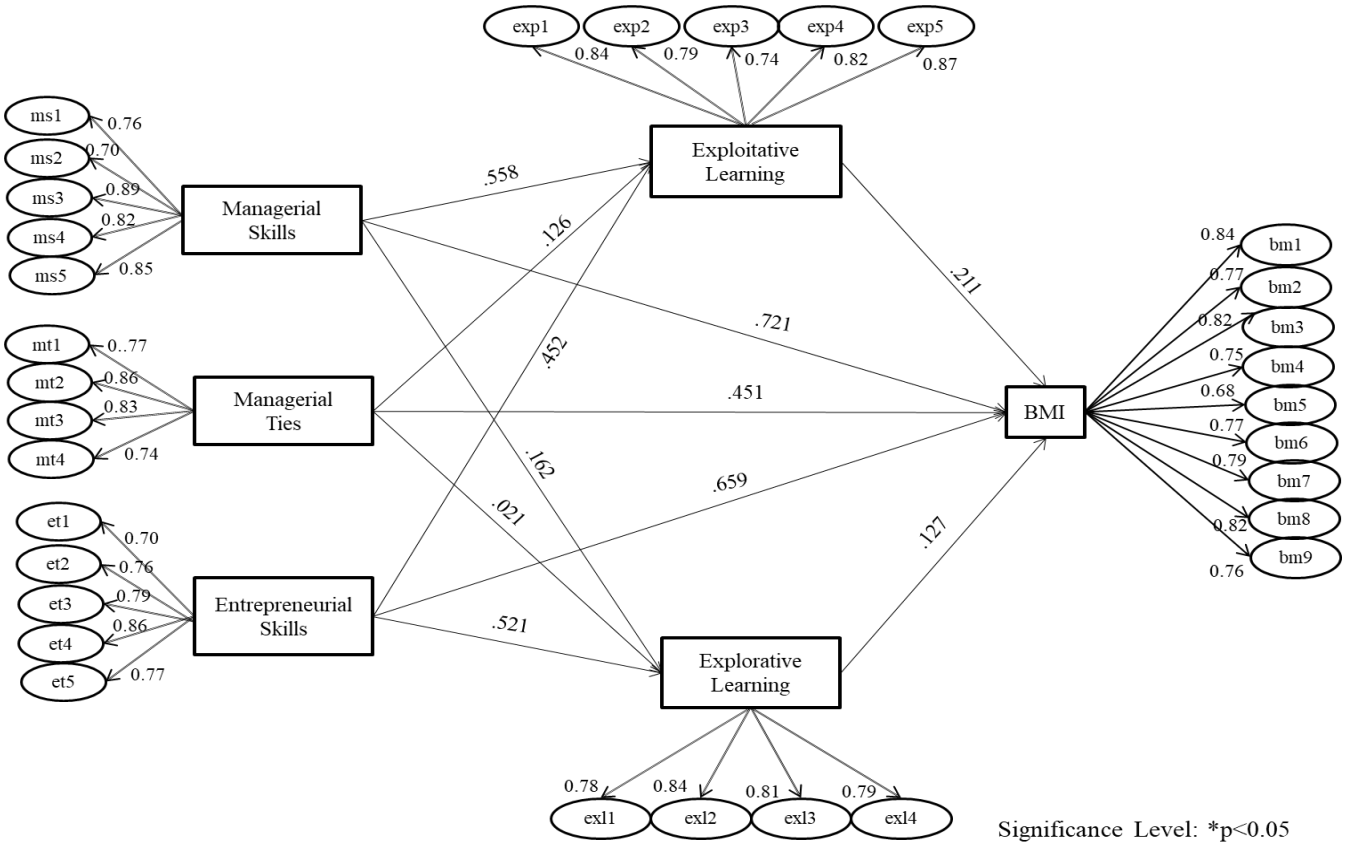

Figure 2: Structural Model