

# Antecedents and consequences of business model innovation in the IT industry

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## ABSTRACT

Business model innovation has gained increasing attention from scholars in the last few years. However, there is a lack of large-scale empirical research on business model innovation and fewer attempts have been made to study whether and how various factors can affect innovation in business models. As a consequence, this study aims to investigate the impact of knowledge absorptive capacity, organizational agility, and top management mindfulness on business model innovation as these factors contribute to organizational changes in business models. Data were collected from IT firms operating in Pakistan. The results indicate that business model innovation is significantly dependent on the knowledge absorptive capacity, agility, and mindfulness of the top management. Furthermore, business model innovation was established as a mediator in the relationship between these factors and business performance. From a managerial perspective, the findings are significant as organizations need to focus on the antecedents to make the necessary change to their business models to improve their competitive advantage and firm performance.

## 1. Introduction

Recently, business model innovation (BMI) has received considerable attention from both practitioners (Giesen, Berman, Bell, & Blitz, 2007; Pohle & Chapman, 2006) and academics (Pedersen, Gwozdz, & Hvass, 2018; Schneider & Spieth, 2013; Spieth, Schneckenberg, & Ricart, 2014). Being instrumental in attaining a competitive advantage (Casadesu-Masanell & Zhu, 2013), business models (BMs) have been considered as a new phenomenon in studies spanning a wide range of areas, including strategic management (Zott & Amit, 2008), entrepreneurship and innovation (George & Bock, 2011; Wei, Yang, Sun, & Gu, 2014), and marketing (Storbacka, Frow, Nenonen, & Payne, 2012). Similarly, deeply rooted in the theoretical domains of strategy, innovation, entrepreneurship, and complexity, BMI has been defined as “designed, novel, nontrivial changes to the key elements of a firm’s business model and/or the architecture linking these elements” (Foss & Saebi, 2017, p. 201).

Business models, as a means to describe the design or architectural processes of value creation, delivery, or capture (Teece, 2010), have been discussed comprehensively in the literature. In contrast, the

concept of BMI as a source of innovation in BMs to complement the conventional types of product, process, and organizational innovation (Sorescu, 2017; Zott, Amit, & Massa, 2011) is relatively new and has been discussed less in the academic discourse. In a similar vein, Foss and Saebi (2017) insisted that BMI is a critical concept and thus should be deliberated upon and theorized on its own and that a number of fundamental theoretical and empirical questions must be answered, including the empirical enquiry into its antecedents, facilitators, and obstacles.

Despite the attention received from researchers in the last couple of decades, studies have highlighted the lack of research exploring the critical factors contributing to BMI and its impact on organizational outcomes (Schneider & Spieth, 2013). Even though research has long established BMI as a critical factor in gaining a competitive advantage, studies on how to achieve this critical concept are still rare (Futterer, Schmidt, & Heidenreich, 2018; Snihur & Zott, 2020). That is why researchers have recommended investigating the antecedents of BMI based on the existing theories and best practices (Spieth et al., 2014; Venkataraman, Sarasvathy, Dew, & Forster, 2012) and the empirical mechanisms of its drivers and outcomes (Foss & Saebi, 2017; Zott et al.,

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2011). Similarly, in their systematic literature review on BMI, Silva, Ghezzi, de Aguiar, Cortimiglia, and ten Caten (2019) highlighted the lack of research and opportunities in a variety of contexts, especially in developing countries.

While the earlier studies tended to define and characterize BMI, the majority of the later research has been based on case studies (Aspara, Hietanen, & Tikkanen, 2010; Bogers & Jensen, 2017; Ghezzi & Cavallo, 2020; Schneider & Spieth, 2013) and thus this area is characterized by the predicament of limited generalizability (Clauss, 2017). Accordingly, researchers have called for more causal studies of the antecedents and consequences of BMI, including large-scale empirical analysis, to increase the generalizability and attain superior methodological rigour (Bogers & Jensen, 2017; Spieth et al., 2014; Zott et al., 2011). As such, this paper tries to fill this gap by proposing and empirically testing an integrated model of the antecedents and consequence of BMI.

The aim of this paper is to study the antecedents of BMI and its effect on business performance. There is a lack of large-scale empirical research on BMI and fewer attempts have been made to study whether and how various factors can affect innovation in business models of firms characterized by digital technologies, which can together lead to improved business performance. The underlying assumption is that knowledge absorptive capacity, organizational agility, and top management mindfulness are related to BMI as these factors contribute to organizational changes in business models. Moreover, it is expected that BMI is linked to the business performance in the IT sector, which is a technology-intensive sector and continuously faces major disruptions in its operations (Remane, Hanelt, Nickerson, & Kolbe, 2017).

The motivation behind choosing the antecedents of BMI is threefold. First, despite a substantial increase in the literature focusing on knowledge absorptive capacity (Santoro, Bresciani, & Papa, 2020; Santoro, Thrassou, Bresciani, & Del Giudice, 2019), researchers have called for more studies exploring the intricacies involved in the relationship between knowledge absorptive capacity and performance outcomes (Papa, Dezi, Gregori, Mueller, & Miglietta, 2018; Xie, Zou, & Qi, 2018). Second, based on cutting-edge technologies, IT firms will be more sensitive to changes in their environment and will have to react accordingly (Li, Wu, Cao, & Wang, 2019); thus, it is critical to study the role of agility in improving performance through the intervening role of BMI. Third, the existence of mindfulness in organizations increases the chances that managers will make effective digital transformation decisions and utilize their resources in an efficient way to implement digital technologies (Li et al., 2019), but the impact of organizational mindfulness on BM transformation has not been examined empirically (Li et al., 2019). Lastly, due to the lack of a well-defined construct of BMI, the past literature has obtained inconsistent empirical findings regarding its effect on firm performance (George & Bock, 2011; Pedersen et al., 2018). Thus, although the relationship between innovation and performance has been explored with mixed results, a majority of studies have concluded that a positive significant relationship exists between the two, with stronger evidence for the causal direction from innovation on performance (Bowen, Rostami, & Steel, 2010). Thus, we also aim to explore the relationship between BMI and IT firms' performance.

In this way, we make three important contributions to the literature. First, whereas most prior research has focused on an inductive methodology, especially case studies, to explore the factors affecting BMI, our study empirically tests the antecedents and outcome of BMI in a setting characterized by digital transformation, that is, the IT sector. Second, our study contributes to the BMI literature by investigating the effects of some of the important organizational factors behind BMI based on a thorough literature review of the concept and proposes a model including knowledge absorptive capacity, organizational agility, and top management mindfulness as key factors leading to BMI in a developing country context. Third, the study contributes to the emerging academic debate on the relationship between knowledge absorptive capacity, agility, and mindfulness and business performance through the

intermediary role of BMI.

The rest of the paper is structured as follows. The next section discusses the theoretical foundations, develops the hypotheses, and presents the research model. The subsequent sections present the research methodology, data analysis, and results. Lastly, the paper concludes with a discussion of the research findings, the implications for theory and practice, and the limitations of the paper and suggests avenues for future research.

## 2. Literature review and hypothesis development

Despite being marred by “conceptual proliferation”, BM has become a promising area of research in management sciences (Saebi, Lien, & Foss, 2017, p. 568). According to George and Bock (2011), business models have been defined in a number of ways, including organizational narrative (Magretta, 2002), processes that convert innovation into value (Chesbrough, 2010), a network of organizational activities that integrates design with strategy (Slywotzky & Wise, 2003), networks of information and resource exchanges (Timmers, 1998), and organizational structures that are designed as boundary-spanning transactions (Zott & Amit, 2008).

In a similar vein, there has been a lack of clarity and agreement among researchers regarding what constitutes BMI and what its scope is. According to Foss and Saebi (2015), one stream of research has considered BMI as a process (e.g., search, experimentation, transformation; Khanagha, Volberda, & Oshri, 2014), while the second has viewed it as an outcome (Berman, 2012; Gambardella & McGahan, 2010). Another typology, proposed by Volberda, Van Den Bosch, and Heij (2018), classifies innovative business models into four quadrants characterized by replication–renewal and strategy driven–customer driven dimensions. Yet another group of researchers has taken the architectural view of innovation in business models and hence the emphasis in this particular group has been on the linkages among the activities of the BMI process (Amit & Zott, 2012; Santos, Spector, & van der Heyden, 2015). Finally, researchers have also classified BMI according to the degree of novelty and scope of change in the existing business models. On one hand, some researchers have proposed that BMI may affect only a single component of the business model value processes, such as value creation (Amit & Zott, 2012; Spieth & Schneider, 2016), but, on the other hand, others have argued that it may include more than one, if not all, of the components of the BM and the architecture that links those components (Lindgardt, Reeves, Stalk, & Deimler, 2009). Still other researchers have maintained that a total recombination of all the components along with the underlying architecture linking them must be a necessary condition for BMI (e.g., Velamuri, Bansemir, Neyer, & Moeslein, 2013). Accordingly, Osterwalder and Pigneur (2010) proposed the CANVAS framework, which describes BMI as a combination of a set of nine basic building blocks that show the logic of how a company operates and innovates its business model.

Researchers have found evidence that innovation in one dimension, such as the value proposition, triggers change in other factors of business models (Demil & Lecocq, 2010). Hence, it can be concluded that innovation in a single element of the business model alone can lead to changes in the complete business model (Futterer et al., 2018). Recently, researchers have adopted a dynamic view of BMI and conceptualized it as an organizational change process requiring appropriate capabilities, leadership, and learning mechanisms (Cavalcante, Kesting, & Ulhøi, 2011; Foss & Saebi, 2017). In a similar vein, Pedersen et al. (2018) proposed that a continuum subsists between incremental and radical changes to BM (Davenport, Leibold, & Voelpel, 2006). We define BMI as a continuum of changes from incremental to radical changes in various factors of BM, as proposed by Osterwalder and Pigneur (2010).

In the past decade or so, knowledge absorptive capacity has been recognized as a key factor of different kinds of innovation, like product, process, marketing, and management innovation (Santoro, Quaglia, Pellicelli, & De Bernardi, 2020). Cohen and Levinthal (1990) defined

organizational absorptive capacity as “the ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends” (p. 128), which has been adopted by many researchers in knowledge management research (Manlio Del Giudice et al., 2014; Ardito, Ferraris, Petruzzelli, Bresciani, & Del Giudice, 2019). Since many researchers have concluded that knowledge absorptive capacity is significantly related to innovation and performance outcomes (Ferraris, Santoro, Bresciani, & Carayannis, 2018; Tseng, Chang Pai, & Hung, 2011), we also posit that knowledge absorptive capacity is related to business performance through the mediatory role of BMI.

The second antecedent to BMI is organizational agility. Agility is defined as the ability to “collect and process extensive amounts and a variety of information to identify and anticipate external changes” and to “monitor and quickly improve product/service offerings to address customer needs” (Lu & Ramamurthy, 2011, p. 935). Vogus and Sutcliffe (2012) explained organizational agility as “the extent to which an organization captures discriminatory detail about emerging threats and creates a capability to swiftly act in response to these details” (p. 723). It is the ability of a business to change or adapt to changes in its environment promptly (Tallon & Pinsonneault, 2011). Due to the changing nature of organizational environmental factors, organizational agility is essential for organizations (Shams, Vrontis, Belyaeva, Ferraris, & Czinkota, 2020). Organizational agility can enable organizations to manage their knowledge resources while responding effectively to a wide variety of organizational and environmental changes. Shams et al. (2020) distinguished different forms of agility, namely IT agility, supply chain agility, and organizational strategic agility. We aim to study the impact of organizational agility as a strategic dynamic capability (including operational and market capitalizing agility) and on the firm performance with the intervening role of BMI.

Organizational mindfulness entails anticipating, planning, and managing technological changes, which are an integral part of digital transformation and have a significant impact on the relationships between people involved in digital transformation (McAvoy, Nagle, & Sammon, 2013). Langer (1989) regarded mindfulness as “a state of alertness and lively awareness” (p. 138). Following the social cognition theory, the cognitive processes, including unobserved internal mental processes, lead to external physical processes, that is, mindful behaviour (Fiske & Taylor, 2013). These cognitive processes further lead to behaviours that reflect specific actions, and thus it is imperative to study the impact of mindfulness (Dernbecher & Beck, 2017) to achieve better performance. Furthermore, regardless of its central part in decision-making processes, such as bandwagons (Fiol & O’Connor, 2003; Swanson & Ramiller, 2004), the concept of leaders’ mindfulness has not been studied in the literature (Dernbecher & Beck, 2017).

### 2.1. Knowledge absorptive capacity and business model innovation

As mentioned earlier, absorptive capacity has been deemed as the capacity to recognize and use new information and knowledge for commercial ends (Cohen & Levinthal, 1990). Researchers have found evidence of a strong significant relationship between knowledge capabilities and firm innovation (Bhatti, Zakariya, Vrontis, Santoro, & Christofi, 2020). Knowledge acquisition from sources internal or external to the firm can lead to an improvement in innovation performance and the way in which value is created and captured (Ferraris et al., 2018; Scuto, Del Giudice, Bresciani, & Meissner, 2017). Similarly, assimilation of external knowledge can improve the momentum to solve problems and curtail the development cycle of new products and services (Santoro, Vrontis, & Pastore, 2017; Vrontis, Thrassou, Santoro, & Papa, 2017; Xie et al., 2018). By assimilating external knowledge, firms can evade work repetition and add to their existing knowledge resources (Sandulli, Ferraris, & Bresciani, 2017). Thus, stronger assimilation capacity results in better innovation performance. In a similar vein, successful knowledge transformation speeds up the assimilation of

new knowledge and results in better innovation performance as well as superior firm performance (Xie et al., 2018). Lastly, researchers have maintained that exploitation of knowledge can influence a firm’s innovation output (Ferraris, Santoro, & Bresciani, 2017).

The recombination and integration of internal and external capabilities essentially play a crucial role in improving the fundamental components of BMs (Bogers & Jensen, 2017). The modification and reinvention of firms’ business models are strongly coupled with the firms’ dynamic capabilities and their ability to reconfigure their resources (Ritter & Lettl, 2018). In addition, the ability to acquire and use external knowledge can provide firms with new ideas on how to change the current business model to extract and capture more value. Since value creation and capture through business models entail an intricate, interrelated, and interconnected network of relationships among actors (Zott et al., 2011), we propose the following:

H1: Knowledge absorptive capacity has a significant impact on business model innovation.

### 2.2. Organizational agility and business model innovation

Agility is defined as the capability of a business to develop and utilize its knowledge base to gain a competitive advantage in a complex and volatile digital market (Van Oosterhout, Waarts, & Van Hillegersberg, 2006). It includes flexibility, learning, and responding efficiently and quickly to changes in the environment (Campanelli & Parreiras, 2015). Agile organizations must strive to create an equilibrium between the apparently conflicting processes of stability and flexibility to survive and grow in response to the technological changes and environmental uncertainty because flexibility without stability can result in chaos (Lu & Ramamurthy, 2011; Volberda, 1996).

The literature has found evidence of an impact of organizational agility on firm performance (Tallon & Pinsonneault, 2011). In fact, organizational agility is positively related to improved firm performance since agile organizations are better equipped to respond to technical and market changes in a focused way (Alegre & Sard, 2015). Ghezzi and Cavallo (2018) found in their study that agile methods can be used to enhance BMI in digital startups. Since agility is associated with superior organizational performance, an agile organization can survive and even prosper in the face of complexities (Rialti, Zollo, Ferraris, & Alon, 2019), adapting its current BM or developing new ones. Conversely, organizations that lack agility will not be able to adapt their activities and processes in response to fluctuations in their surroundings (Cegarra-Navarro, Soto-Acosta, & Wensley, 2016).

To overcome the inflexibility of the well-established conventional BMs, researchers have recommended that companies must be more agile (Doz & Kosonen, 2010). Given that such a capability influences firms’ BMI, the following hypothesis is proposed:

H2: Organizational agility has a direct impact on business model innovation.

### 2.3. Top management mindfulness and business model innovation

With its roots in psychology, mindfulness pertains to the cognitive abilities of an individual (Langer & Moldoveanu, 2000). It has been perceived as a state of mind (Brown & Ryan, 2003; Langer, 1989), as a trait (Sternberg, 2000), as a cognitive skill, and, last but not least, as a cognitive style (Sternberg, 2000). A mindful person is a person who is open to innovation and vigilant but at the same time thoughtful and alert to his/her surroundings (Langer, 1989; Sternberg, 2000). Accordingly, such a person responds to changes in his/her environment and creates new or improved processes (Langer & Moldoveanu, 2000).

A well-calculated and mindful response to emerging opportunities and changing conditions results in many innovative initiatives (Van de Ven, 1993). Consequently, mindfulness plays a critical role in improving innovation performance through the recognition of organizational situations that demand an innovative response and the execution of the

actual response (Swanson & Ramiller, 2004). Mindfulness has been related to market innovation (Ray, Baker, & Plowman, 2011), improved operational outcomes (Madsen, Desai, Roberts, & Wong, 2006), and employee performance (Schuh, Zheng, Xin, & Fernandez, 2019). Regardless of the recent attention from researchers, the links between mindfulness and performance have scarcely been studied (King & Haar, 2017).

The IT sector, which is characterized by digital innovation, is also affected by mindfulness (Swanson & Ramiller, 2004). By mindfully planning, organizing, and controlling, individuals and organizations become successful in achieving reliable and accurate work outcomes (Butler & Gray, 2006). Such organizations can create circumstances for context-specific learning and will adopt practices like experimentation, networks for R&D, and prototyping (Swanson & Ramiller, 2004), which contribute to new value proposition and creation. The speed and variability of technological innovation are high in IT organizations, in which new technologies replace old ones rapidly. Therefore, organizations need to be mindful of digital transformation for utilizing the benefits of digital technologies (Li et al., 2019).

According to the upper echelons theory, the cognitive structure of an organization's top management team determines the organizational outcomes (Christofi, Vrontis, Thrassou, & Shams, 2019). Santos et al. (2015) highlighted the significance of the behavioural characteristics of leaders involved in BMI. Business models have been linked to the top management cognition as they reflect the "management's hypothesis about what customers want, how they want it, and how the enterprise can organize to best meet those needs, get paid for doing so, and make a profit" (Teece, 2010, p. 172). Leaders' cognition and logical interpretation are essential for BMI (Svejenova, Planellas, & Vives, 2010). According to Smith, Binns, and Tushman (2010), the effective management of complex business models depends on mindful leadership to take self-motivated decisions, develop affective commitment to the organizational vision, and improve organizational learning.

It has been argued that mindful leaders are inclined to display a higher degree of scanning and engaging in their environment and exhibit better decision-making skills with relevance to transformations in IT (Fiol & O'Connor, 2003). Thus, based on the above argumentations, we propose our next hypothesis as follows:

H3: Top management mindfulness has a significant positive relationship with business model innovation.

#### 2.4. Business model innovation and firm performance

Innovation has been linked with a variety of positive outcomes for organizations, including adaptation to market uncertainties (Vrontis & Christofi, 2019) and improved stakeholder relationships (Leonidou, Christofi, Vrontis, & Thrassou, 2018). Focusing on firms' value capture process, Afuah (2004) presented a framework in which he proposed that business models correspond to firms' profitability. Whereas most of the research on business models has comprised conceptual papers (Afuah, 2004; Hedman & Kalling, 2003), a few studies have tried to investigate the impact of business models through empirical analyses.

In recent years, researchers have also attempted to investigate the impact of BMI on business performance (e.g., Bouwman, Nikou, Molina-Castillo, & de Reuver, 2018). A study focusing on corporate and public-sector leaders established that firms that were financial outperformers put twice as much emphasis on BMI as underperformers did (IBM Global Business Services, 2006). Similarly, Giesen et al. (2007) investigated the impact of BMI and firm performance and found that market leaders place twice as much importance on BMI as underperformers.

The majority of researchers have linked BMI with positive outcomes, but BMI may come with higher R&D costs, greater risk of product failures, higher employee turnover, and so on, which can force firms to opt for a follower strategy and thus may have a negative impact on their financial performance (Aspara et al., 2010). Thus the association of BMI with firm performance may be more intricate than is commonly assumed

(Pedersen et al., 2018). Nonetheless, according to the findings of the majority of the studies, it is reasonable to assume that BMI and business performance are likely to be positively related. For example, by making significant changes to their existing strategic partnerships and adopting flexible processes and procedures, businesses can cut their expenses and increase their customer base (Pedersen et al., 2018). Thus, in light of the above argumentation, we propose our next hypothesis that BMI has a positive relationship with business performance.

H4: Business model innovation has a direct impact on firm performance.

#### 2.5. Mediating role of business model innovation

Rooted in the domain of business strategy and its related theoretical concepts, BMI has been considered as a critical factor to achieve a competitive advantage and better performance outcomes (Zott et al., 2011). It has also been deemed as a necessary condition for a sustainable growth strategy (see Demil & Lecocq, 2010; Johnson, Christensen, & Kagermann, 2008). Chesbrough (2010) proposed that innovations in BM have faced different obstacles and barriers, including the inability of managers to lead a process of identity change to help their companies escape the identity trap. Research must be conducted to identify the factors that can lower these barriers (Zott et al., 2011). Specifically, we propose that the factors that lead to BMI lead to improved business performance as well. Thus, we suggest that knowledge management capabilities, organizational agility, and top management's mindfulness enhance business performance and that this relationship is explained by increased business model innovation.

H5: Business model innovation mediates the relationship between a) knowledge absorptive capacity, b) organizational agility, and c) top management mindfulness and firm performance.

Fig. 1 shows the research model tested in the study.

### 3. Methodology

This study used the survey methodology for collecting the data and testing the proposed model. The self-report survey method is the most common method of data collection in the management- and strategy-related domains (e.g. Ren et al., 2015; Sok et al., 2013), especially when the investigated variables are hard to measure and data are not readily available (Pucci et al., 2017). Bouwman, Nikou, and de Reuver (2019) argued that the majority of the existing quantitative studies on business models show limitations, such as the use of secondary data collected for other purposes (Barjak, Bill, & Perrett, 2014; Bock, Opsahl, George, & Gann, 2012; Cucculelli & Bettinelli, 2015) and the use of primary data in very few studies (e.g., Aziz & Mahmood, 2011; Zott & Amit, 2008). A summary of these empirical studies is provided as Appendix 1.

Furthermore, the IT industry was chosen as a context in which to test the proposed model for two reasons. First, although the diffusion of digital technologies leads to new business models in almost every industry by affording new ways of value creation, delivery, and capture (Porter & Heppelmann, 2014), the IT industry is one of the leading industries in which managers constantly utilize digital technologies to form new global ecosystems (Jansen, Finkelstein, & Brinkkemper, 2009; Remane et al., 2017). Due to the interaction between the firm and its environment (which is the key to the firm's revenue), the ever-changing business environment forces business models to be innovative as well. Second, most of the empirical studies on BMI have either taken multiple industries as their sample (Bouwman et al., 2018; Cortimiglia, Ghezzi, & Frank, 2016) or chosen the manufacturing sector to investigate the antecedents of BMI empirically (Aziz & Mahmood, 2011; Huang, Lai, Lin, & Chen, 2013), with a few exceptions (Huang, Lai, Kao, & Chen, 2012).

Since the unit of analysis is the organization, data were collected from IT firms operating in Pakistan. Due to the lack of availability of any databases on the sector, convenience sampling was adopted for this

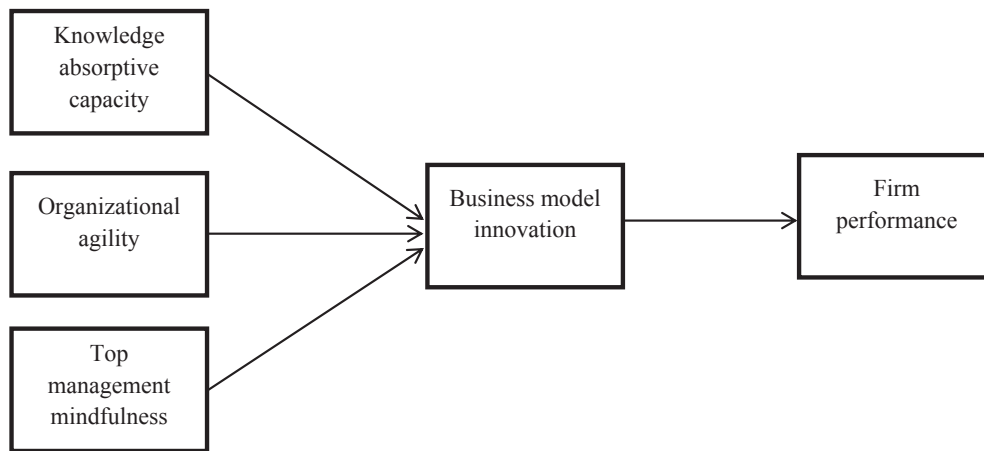


Fig. 1. The research model.

study, as used by previous researchers in similar contexts (Khan, Jaafer, Javed, Mubarak, & Saudagar, 2020). The data were collected from major cities in Pakistan, like Karachi, Lahore, Islamabad, Rawalpindi, and Peshawar. The respondents consisted of managerial-level employees working in IT firms. To reduce social desirability bias, the questionnaires were filled in with the assurance of anonymity from the researchers. Both soft and hard copies of the questionnaires were distributed by the researchers through personal visits and Google Forms. The IT firms chosen for the survey consisted of all those firms that were involved as software service or solution providers and did not include other similar sectors, like electronics manufacturers or telecom firms. A screening question was added in the first section of the questionnaire to make sure that the same firm was not included in the sample twice. In total, 200 questionnaires were returned, of which 4 were discarded due to missing values while some questionnaires were from the same company and were not added to the analysis. The problem of missing values is common in similar contexts, and previous researchers have also highlighted this issue (Khan et al., 2020). Finally, 172 firms were used for the hypothesis testing. Table 1 shows the demographic information of the respondents.

3.1. Measures

Knowledge Absorptive Capacity

In light of the previous work by Flatten, Engelen, Zahra, and Brettel (2011), Xie et al. (2018), and Zahra and George (2002), we measured knowledge absorptive capacity (KAC) with the help of four dimensions consisting of thirteen items altogether (see Table 3). The items for the construct were measured on a five-point Likert scale, ranging from one, meaning “strongly disagree”, to five, meaning “strongly agree”.

Organizational agility (OA) was measured using items proposed by

Table 1  
Sample descriptions.

Demographic Characteristics	Frequency	Cumulative Percentage
<b>Age</b>		
20–25	45	26.9
26–30	78	73.7
31–35	31	92.2
36–39	9	97.0
40 and above	7	100
<b>Gender</b>		
Male	134	77.9
Female	38	100
<b>Education</b>		
Intermediate	6	3.5
Bachelor	78	48.8
Master or PhD	88	100

Cegarra-Navarro et al. (2016), which were adapted from Lu and Ramamurthy’s (2011) study. The six items of the construct were evaluated using a five-point Likert scale, ranging from one, indicating “strongly disagree”, to five, indicating “strongly agree”.

In light of the research by Li et al. (2019), we measured top management mindfulness (TMM) towards digital transformation as a three-item construct using a five-point Likert scale. The items of the scale are shown in Table 3.

For the construct of BMI, we chose Osterwalder and Pigneur’s (2010) practitioner-oriented BM canvas for two reasons. First, the canvas model has been discussed and used extensively by practitioners belonging to wider range of firms and industries, including the IT sector. Second, this model has been discussed and adopted recently in scholarly research (e.g. Chesbrough, 2010; Cortimiglia et al., 2016; Pedersen et al., 2018). Thus, we also took the construct of BMI as a matter of degree rather than an either–or division. Therefore, our study does not aim for a definite separation between innovative and non-innovative firms; rather, we offer a continuum between exploiting existing capabilities and exploring new business prospects. In line with the reflective scale selected, innovative changes adopted by the firm in all of the factors combined are taken to be more innovative than changes made to a single business model component by that firm. The scale included questions about whether the firm’s focus is on existing or new activities within each of the nine components of the business model canvas. These nine components are “value proposition, customer segments, key resources, key activities, key partnerships, customer relationships, channels, cost structure, and revenue streams”.

The scale for the firm performance (FP) was taken from Wamba et al. (2017), as previously used by Wang, Liang, Zhong, Xue, and Xiao (2012). The scale consisted of two dimensions of financial performance and market performance with five and four items, respectively (see Table 3). All the constructs in the model were measured using seven-point Likert scales (where 1 = strongly disagree and 7 = strongly agree). Past researchers, like McDermott and Prajogo (2012), have recommended the use of subjective measures of performance as a valid proxy for objective performance measures. Thus, previous research has also employed the subjective assessment for firm performance with useful insights (Aziz & Mahmood, 2011; Kranich & Wald, 2018; Tippins & Sohi, 2003).

4. Analysis and findings

4.1. Empirical strategy and measurement model

We performed a number of statistical tests to analyse the data. First, we ran a confirmatory factor analysis (CFA) to ensure that the factor structure of our data is consistent with the theoretical model. Second, we

used structural equation modelling (SEM) to test our hypotheses. SEM is a widely practiced technique in management sciences as it offers more robustness than traditional statistical approaches (Hair, Anderson, Tatham, & Black, 1998) as a result of combining the characteristics of multiple regression and CFA to examine a number of interrelated relationships simultaneously (Hair et al., 1998). Moreover, it has been used in recent studies and in similar contexts (Bhatti, Vorobyev, Zakariya, & Christofi, 2020).

The measurement model consists of five variables: KAC, OA, TMM, BMI, and FP. The current study used standard fit indices to measure the model fitness, including chi-square, TLI, CFI, IFI, and RMSEA. The use of these indices enabled a detailed assessment of the model, for which a chi-square less than 3 (Carmines & MacFiver, 1981) and an RMSEA value equal to or less than 0.05 indicate a good model fit (Kline, 1998). Moreover, a CFI and TLI with values 0.90 and greater are considered as showing a good model fit (Hu & Bentler, 1999; Kline, 1998). The measurement model gave a good fit to the data: chi square = 1.44; comparative fit index = 0.91; Tucker–Lewis index = 0.90; and root mean square error of approximation = 0.05 (Table 2). However, the single-factor model created by combining all five variables compared with the five-factor model showed the worst fit ( $\chi^2 = 2101.721$ , Df = 740,  $\chi^2$ /Df = 2.84,  $p < 0.000$ ; CFI = 0.60, IFI = 0.60, TLI = 0.57, RMSEA = 0.10), as shown in Table 2. Furthermore, common method bias was tested using Harman’s single-factor method, for which the threshold value is less than 50% (Podsakoff et al., 2003): the value for the model is 31%.

4.2. Convergent and discriminant validity

The study measured convergent validity by examining the composite reliability and average variance extracted from the measures (Fornell & Larcker, 1981; Hair et al., 1998). Table 3 encapsulates the factor loadings, composite reliability, and average variance extracted. All the items of the scales show acceptable loading values. Similarly, all the measures fulfil the threshold requirement, with the composite reliability values ranging from 0.77 to 0.95. For the average variance extracted of a measure, a score of 0.5 or more indicates acceptability (Fornell & Larcker, 1981). Table 3 indicates that the average variances extracted for our measures range from 0.50 to 0.62. This evidence indicates that our constructs possess convergent validity. Moreover, discriminant validity was assessed through the heterotrait–monotrait ratio (HTMT) criterion (Henseler et al., 2015). According to Henseler et al. (2015), the value of the HTMT should be less than .90. The results presented in Table 4 indicate that all five construct values are less than 0.90. The loaded values range from 0.42 to 0.71; accordingly, the current study model’s discriminant validity is satisfactory.

4.3. Correlations and reliability

Table 5 presents the reliability values and zero-order links of all the variables. The recommended threshold value for the Cronbach alpha reliability is 0.7 or more (Chin, 1998). As shown in Table 5, the alpha values range from 0.79 to 0.95. KAC is positively correlated with OA (0.73,  $p < 0.01$ ), TMM (0.68,  $p < 0.01$ ), BMI (0.32,  $p < 0.01$ ), and FP (0.64,  $p < 0.01$ ). OA is positively correlated with TMM (0.60,  $p < 0.01$ ), BMI (0.33,  $p < 0.01$ ), and FP (0.59,  $p < 0.01$ ). TMM is positively correlated with BMI (0.27,  $p < 0.01$ ) and FP (0.61,  $p < 0.01$ ). Finally, BMI correlates positively with FP (0.37,  $p < 0.01$ ).

Table 2  
Measurement model.

Model	CMIN	DF	CFI	TLI	IFI	RMSEA
Baseline hypothesized model	1028.80	710	0.91	0.90	0.91	0.05
All items in one factor	2101.72	740	0.60	0.57	0.60	0.10

Table 3  
Reliability and validity of the measures in the study.

	Measures	OL	CR	AVE
	<b>Knowledge absorptive capacity (KAC)</b>		0.95	0.62
KAC1	The search for relevant information occurs daily in my company.	0.749		
KAC2	My company motivates the employees to use information sources within my industry.	0.801		
KAC3	My company expects employees to be related to information beyond my industry.	0.794		
KAC4	New ideas and concepts are created via cross-departmental communication in my company.	0.765		
KAC5	My company emphasizes cross-departmental support to solve problems.	0.776		
KAC6	There is a quick information flow in my company.	0.743		
KAC7	My company exchanges ideas through periodic meetings.	0.78		
KAC8	The employees of my company have the ability to structure and use collected knowledge.	0.758		
KAC9	The employees of my company can link existing knowledge with new insights.	0.803		
KAC10	The employees of my company are able to transform new knowledge into productivity	0.845		
KAC11	My company supports the development of prototypes.	0.748		
KAC12	My company regularly adapts technologies in accordance with new knowledge.	0.772		
KAC13	My company has the ability to work more effectively by adopting new technologies.	0.739		
	<b>Organizational agility (OA)</b>		0.85	0.50
OA1	We have the ability to respond rapidly to customers’ needs	0.792		
OA2	We have the ability to adapt our production/service provision rapidly to demand fluctuations	0.630		
OA3	We have the ability to cope rapidly with problems from suppliers	0.662		
OA4	We rapidly implement decisions to face market changes	0.774		
OA5	We continuously search for forms to reinvent or redesign our organization	0.719		
OA6	We see market changes as opportunities for rapid capitalization	0.612		
	<b>Top management mindfulness towards digital transformation (TMM)</b>		0.77	0.55
TMM1	Top management accurately anticipates digital transformation that is relevant to the firm	0.765		
TMM2	Top management makes sure that the firm’s strategic plan identifies value from digital transformation	0.764		
TMM3	Top management informs the management team about valuable options of digital technology before a digital transformation’s strategic change decision is made	0.653		
	<b>Business model innovation (BMI)</b>		0.89	0.50
BMI1	The focus is on improving EXISTING products and/or services/the focus is on developing radically NEW products and/or services.	0.689		
BMI2	The focus is on serving EXISTING markets and customer segments/the focus is on identifying and serving entirely NEW markets and customer segments.	0.581		
BMI3	The focus is on nurturing EXISTING resources and competences (technology, people, IT systems, etc.)/the focus is on developing and/or acquiring NEW resources and competences (technology, people, IT systems, etc.).	0.761		
BMI4	The focus is on improving EXISTING core processes and activities (design, logistics, marketing, etc.)/the focus is on developing NEW core processes and activities (design, logistics, marketing, etc.).	0.699		
BMI5	The focus is on deepening relationships with EXISTING strategic business partners (suppliers, distributors, end users, etc.)/the focus is on establishing relationships with NEW	0.662		

(continued on next page)

**Table 3** (continued)

Measures	OL	CR	AVE
BMI6 strategic business partners (suppliers, distributors, end users, etc.). The focus is on improving EXISTING tools for building customer relationships (personal service, memberships, bonus systems, etc.)/the focus is on developing NEW tools for building customer relationships (personal service, memberships, bonus systems, etc.).	0.707		
BMI7 The focus is on selling products and/or services through EXISTING channels (own stores, partner stores, online, etc.)/the focus is on selling products and/or services through NEW channels (own stores, partner stores, online, etc.).	0.671		
BMI8 The focus is on minimizing EXISTING costs incurred when operating the company/the focus is on making MAJOR changes in the combination of costs incurred when operating the company.	0.733		
BMI9 The focus is on improving sales from EXISTING revenue streams (products, services, leasing, sponsorships etc.)/we have developed NEW ways of generating revenue (products, services, leasing, sponsorships, etc.).	0.807		
<b>Firm performance (FP)</b>		0.89	0.50
FP1 Customer retention	0.649		
FP2 Sales growth	0.773		
FP3 Profitability	0.739		
FP4 Return on investment	0.731		
FP5 Overall financial performance	0.636		
FP6 We have entered new markets more quickly than our competitors.	0.627		
FP7 We have introduced new products or services to the market faster than our competitors.	0.703		
FP8 Our success rate of new products or services has been higher than that of our competitors.	0.652		
FP9 Our market share has exceeded that of our competitors.	0.789		

Notes: OL = outer loadings, CR = composite reliability, AVE = average variance extracted.

**Table 4**

Discriminant validity of the measurement model – Heterotrait–monotrait ratio (HTMT).

Constructs	KAC	OA	TMM	BMI	FP
KAC	.				
OA	0.62	.			
TMM	0.64	0.46	.		
BMI	0.53	0.51	0.71	.	
FP	0.53	0.49	0.67	0.42	.

**Table 5**

Correlation matrix and reliability of the constructs.

Variables	1	2	3	4	5
Knowledge absorptive capacity	<b>0.95</b>				
Organizational agility	0.73**	<b>0.89</b>			
Top management mindfulness towards digital transformation	0.68**	0.60**	<b>0.79</b>		
Business model innovation	0.32**	0.33**	0.27**	<b>0.89</b>	
Firm performance	0.64**	0.59**	0.61**	0.37**	<b>0.86</b>

N = 172, \* p < 0.05, \*\* p < 0.01; Cronbach’s alphas are provided in bold.

4.4. Hypothesis testing

AMOS 26 was used for SEM to test the assumptions and the effects, as tabulated in Tables 6 and 7. The empirical findings support the hypothesized positive effect of KAC on BMI ( $\beta = 0.91, p < 0.001$ ) (first hypothesis). The second hypothesis is also supported as OA is

**Table 6**

Path coefficients.

Structural Path	B
Knowledge absorptive capacity → Business model innovation	0.91***
Organizational agility → Business model innovation	0.33***
Top management mindfulness towards digital transformation → Business model innovation	0.55***
Business model innovation → Firm performance	0.13***

Note: \* p < 0.05; \*\* p < 0.01; \*\*\* p < 0.001.

**Table 7**

Results of the mediating role of business model innovation.

	Indirect Effect	BC (95% CI)
<b>Bootstrapping</b>		
Knowledge absorptive capacity → business model innovation → firm performance	0.10	0.03, 0.21
Organizational agility → business model innovation → firm performance	0.13	0.07, 0.29
Top management mindfulness towards digital transformation → business model innovation → firm performance	0.09	0.02, 0.17

Notes: BC = bias corrected, 5000 bootstrap samples; CI = confidence interval.

significantly related to BMI ( $\beta = 0.33, p < 0.001$ ). Similarly, TMM is significantly related to BMI ( $\beta = 0.55, p < 0.001$ ) and thus the third hypothesis is also supported. The fourth hypothesis states that BMI is positively related to FP, and the results support this hypothesis ( $\beta = 0.13, p < 0.001$ ). Finally, in line with our own expectations, BMI mediates the relationship of KAC with FP (indirect effect = 0.10,  $CI_{95\%} = [0.03, 0.021]$  excludes zero), OA positively affects FP via BMI (indirect effect = 0.13,  $CI_{95\%} = [0.07, 0.29]$  excludes zero), and TMM has a significant impact on FP via BMI (indirect effect = 0.09,  $CI_{95\%} = [0.02, 0.17]$  excludes zero). Hence, Hypotheses 5a, 5b, and 5c are all accepted.

5. Discussion and implications

BMI is one of the critical factors for improving the performance of a firm, and it is considered to be an important organizational capability (Amit & Zott, 2012; Aspara et al., 2010; Chesbrough, 2010; Lindgardt et al., 2009). If organizations fail to innovate their business models, they may lose their market share to their competitors (Chesbrough, 2010; Osterwalder & Pigneur, 2010). Literature about the antecedents and consequences of business models has been progressing in a largely isolated way, and researchers have stressed the need to investigate the antecedents and consequences of BMI through different lenses (Zott et al., 2011). This study aims to establish the relationship of knowledge absorptive capacity, organizational agility, and top management mindfulness as antecedents of BMI empirically through a quantitative methodology and to explore its impact on business performance.

The results from this study indicate that BMI is significantly dependent on the knowledge absorptive capacity, agility, and mindfulness of the top management. Previous researchers have also proposed that dynamic capabilities are an important indicator of business model innovation (Rachinger, Rauter, Müller, Vorraber, & Schirgi, 2019). Similarly, Ghezzi and Cavallo (2018) found evidence that agile methods can be used to enhance BMI in digital startups and Smith et al. (2010) maintained that the effective management of complex business models depends on mindful leadership. Furthermore, BMI is established as a mediator in the relationship between these factors and business performance. The findings from this study provide support to the literature, highlighting the role of dynamic capabilities (knowledge absorptive capacity), organizational flexibility towards changes (agility), and cognitive abilities of the leaders (mindfulness) as key factors for

innovation in the business models of IT firms.

5.1. Implications for theory

This study has several implications for theory in the field of business models and innovation management. First, our study presents an empirical model consisting of the factors leading to higher BMI, contributing to the literature on business models (Belyaeva, Rudawska, & Lopatkova, 2020; Franceschelli, Santoro, & Candelo, 2018). Even though research has long established BMI as a critical factor in firms’ achievement of their strategic objectives and gaining of a competitive advantage, research on how to achieve this critical concept is still rare (Futterer et al., 2018; Snihur & Zott, 2020). Accordingly, researchers have called for more causal studies of the antecedents of BMI, including large-scale empirical analysis, to increase generalizability and attain superior methodological rigour (Bogers & Jensen, 2017; Spieth et al., 2014; Zott et al., 2011). In this manner, our research deviates from most of the research based on organizational-level case studies on the topic (Bogers & Jensen, 2017; Ghezzi & Cavallo, 2018; Schneider & Spieth, 2013). Our research is one of the very few studies to connect and investigate empirically the antecedents to BMI in a sector that is largely affected by digital transformation. Second, this paper contributes to the literature on the antecedents and outcomes of BMI in the context of developing markets, whereas most previous studies have focused on developed economies (Silva et al., 2019). The discovery that these factors contribute to BMI is particularly relevant to the development of integrative heuristics, models, and guidelines for the creation of novel business models in countries with a weaker R&D infrastructure and fewer resources available to invest in innovation. Third, our framework proposes and empirically tests an integrated model between knowledge absorptive capacity, organizational agility, and top management mindfulness and firm performance through the intermediary role of BMI. While researchers have established the role of absorptive capacity, agility, and mindfulness in improving innovation individually (Kostopoulos, Papalexandris, Papachroni, & Ioannou, 2011; Sullivan & Yang, 2016), empirical evidence of the relationship between BMI and these specific constructs is largely absent from the existing literature on business models. Thus, the current research investigating how to create BMI to be successful, that is, by improving knowledge absorptive capacity (Enkel & Gassmann, 2010), by increasing agility (Casadesus-Masanell & Zhu, 2013), and through mindful leaders (Huang et al., 2013), is useful for organizations working in volatile environments.

5.2. Implications for practice

From a managerial perspective, the findings are significant as organizations need to focus on the antecedents to bring the necessary change to their business models and achieve better firm performance. Fundamental changes in the organizations are not going to be effective unless

the top management creates an appropriate climate for this transformation (Pedersen et al., 2018). IT managers must develop their organizational capabilities to respond quickly and efficiently to changes in digital technologies to achieve better business performance through effective management of innovation in their business models. Moreover, this must be accompanied by increasing the organizational flexibility and agility capabilities to enable businesses to adapt to their changing environment. Finally, firms’ top management team must possess or develop some cognitive capabilities to comprehend fully the changes in their environment so that they can make the necessary changes to their business models. By incorporating all these factors, businesses can react better to the changes in their environment through the successful adoption of BMI, which can lead to higher market and financial performance.

6. Conclusion, Limitations, and future work

Managers and experts need to analyse critically and evaluate the possible outcomes and benefits of technological applications to exploit their potential fully (Li et al., 2019). Knowledge absorptive capabilities, agility, and mindfulness towards digital transformation encompass the reorganization of the business and technological work practices to make the necessary changes to business models and to utilize strategic resources fully. They encourage rich communications between business and digital technology. Thus, the relationship between digital technology and business should be increased by incorporating all of these activities.

Our study helps to understand the antecedents of BMI and its impact on business performance. However, the model designed and the methodology adopted present limitations that open avenues for future research. First, the empirical validation of the research model selected for this research signifies an initial test of the proposed relationships. The model must be subjected to further testing in different contexts and with other scales proposed for BMI (e.g. Clauss, 2017; Spieth & Schneider, 2016) to capture fully the scope of BMI. Moreover, to enhance the external validity of the results, firms belonging to other digitally transformed sectors and operating in other geographical contexts should also be tested. Second, the paper does not make any claim to have included all the antecedents that potentially affect organizations’ BMI. The antecedents included in the model were adopted in light of a detailed literature review by the researchers, but future studies might add to the model and try to explore other potential antecedents to this critical concept to comprehend fully the factors that lead to improved BMI in firms in the digital era. In addition, reverse causality is a possibility and future researchers can explore this in detail. Finally, the cross-sectional nature of the data limits the casual predictability of the model and hence future research can study the model with a time-lagged or longitudinal research design.

Appendix A. Summary of empirical investigations on BMI

Reference	Antecedents (A)/Consequences (C)	BMI Conceptualization	Industry and Country	Main Findings
Aziz and Mahmood (2011)	C – firm performance	Subjective scale of four dimensions of BMI (stakeholder, competencies, value creation, value capture)	Manufacturing SMEs, Malaysia	Only one dimension of BMI is related to firm performance
Aspara et al. (2010)	C – profitable growth	Subjective scale of two self-created items for strategic emphasis on BMI	Industry not mentioned, Finland	Large and small firms put different emphases on business model innovation and business model replication
Barjak et al. (2014)	No antecedents or consequences	Composite innovation indicator of different types of innovation	SME, Europe	Out of twenty SMEs, one has introduced a BMI in the three-year period prior to the surveys
Bock et al. (2012)	Moderator between culture, structure, resources, partner reliance, and strategic flexibility	IBM Global CEO Survey data	Multiple industries in multiple countries (more than 80% developed countries)	The relative magnitude of business model innovation effort moderates the effect of reconfiguration on strategic flexibility

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Reference	Antecedents (A)/Consequences (C)	BMI Conceptualization	Industry and Country	Main Findings
Bouwman et al. (2018)	A – innovation, strategy, technology turbulence, competitive intensity, C – BM experimentation, innovativeness, firm performance	Conceptualized as BM experimentation, subjective measure based on three items	SME from multiple industries, Europe	External technology turbulence plays a role and BMI driven by social media and big data has a positive impact on business performance
Bouwman et al. (2019)	A – resources and strategy practices; C – firm performance	Conceptualized as BM experimentation, subjective measure based on seven items	SMEs, Europe	Positive overall firm performance results in more resource allocation to BM experimentation and more engagement in practices of strategy implementation
Cortimiglia et al. (2016)	Relationship between strategic management practices and BMI	Subjective scale of five dimensions of BMI	Multiple industries, Europe	BM design and improvement are more likely to be positioned in the strategic alternatives implementation step of the strategic management practices
Cucculelli and Bettinelli (2015)	C – firm performance	Subjective and objective measures of BM changes and innovation	Clothing industry SME, Italy	The positive effects of BM change on performance increase with the innovation intensity of such changes and are positively moderated by investments in intangibles
Hock, Claus, and Schulz (2016)	A – cultural values (novelty and efficiency) and capabilities (strategic sensitivity, collective commitment, and resource fluidity)	Subjective self-developed scale with three items	Engineering companies, firms at a trade fair, Germany	Novelty-oriented cultural values foster capabilities in favour of BMI, while efficiency-oriented cultural values do not show positive effects
Huang et al. (2012)	A – target costing; C – firm performance	Subjective four-item scale based on Johnson et al. (2008) and Moore (2004)	Electronics and IT manufacturers, China	The implementation of target costing is positively associated with both BMI and firm performance
Huang et al. (2013)	A – organizational inertia and open innovation; C – firm performance	Subjective four-item scale based on Johnson et al. (2008) and Moore (2004)	Manufacturing SME, Taiwan	Open innovation has a significant mediating effect on the relationship between organizational inertia and BMI and the relationship between organizational inertia and firm performance
Kranich and Wald (2018)	C – BM consistency and BM performance	Subjective four-item scale based on Spieth and Schneider (2016)	Power transmission industry, Germany	Limited partial mediation of consistency with regard to the relationship between BMI and its performance
Pedersen et al. (2018)	A – organizational values; C – corporate sustainability and financial performance	Subjective measure based on Osterwalder and Pigneur (2010)	Fashion industry, Sweden	BMI is related to corporate sustainability but not fully related to financial performance
Pucci et al. (2017)	A – firm capabilities; C – firm performance	Adopted BM based on three types of business models based on Casprini, Pucci and Zanni (2014)	Multiple industries, SMEs, Italy	Different capabilities spur the adoption of different BMs, and different BM designs have variable impacts on firm performance
Velu (2015)	C – survival of new firms with third-party alliance as moderator	Subjective rating of BMI, value proposition, value creation, and value capture	Bond trading marketing firms, US and Europe	New firms with a high or low degree of BMI are more likely to survive for longer
Velu and Jacob, (2014)	A – presence of entrepreneurs as owners with competition as moderator	Subjective rating of BMI	US and European bond trading markets, Australia and Europe	The presence of entrepreneurs as owner–managers positively influences the degree of innovation

## References

- Afuah, A. (2004). *Business models: A strategic management approach*. New York: McGraw-Hill/Irwin.
- Alegre, J., & Sard, M. (2015). When demand drops and prices rise. Tourist packages in the Balearic Islands during the economic crisis. *Tourism Management*, 46, 375–385.
- Amit, R., & Zott, C. (2012). Creating value through business model innovation. *MIT Sloan Management Review*, 53, 41–49.
- Ardito, L., Ferraris, A., Messeni Petruzzelli, A., Bresciani, S., & Del Giudice, M. (2019). The role of universities in the knowledge management of smart city projects. *Technological Forecasting and Social Change*, 142, 312–321.
- Aspara, J., Hietanen, J., & Tikkanen, H. (2010). Business model innovation vs replication: Financial performance implications of strategic emphases. *Journal of Strategic Marketing*, 18(1), 39–56.
- Aziz, S. A., & Mahmood, R. (2011). The relationship between business model and performance of manufacturing small and medium enterprises in Malaysia. *African Journal of Business Management*, 5(22), 8918–8932.
- Barjak, F., Bill, M., & Perrett, P. (2014). Paving the way for a new composite indicator on business model innovations. Institute for Competitiveness and Communication Report No. 34. [https://irf.fhnw.ch/bitstream/handle/11654/9987/Arbeitsbericht\\_FHNW\\_BMI.pdf?sequence=1](https://irf.fhnw.ch/bitstream/handle/11654/9987/Arbeitsbericht_FHNW_BMI.pdf?sequence=1).
- Belyaeva, Z., Rudawska, E. D., & Lopatkova, Y. (2020). Sustainable business model in food and beverage industry – A case of Western and Central and Eastern European countries. *British Food Journal*. Vol. 122 No. 5, pp. 1573–1592.
- Berman, S. J. (2012). Digital transformation: Opportunities to create new business models. *Strategy & Leadership*, 40(2), 16–24.
- Bhatti, S. H., Vorobyev, D., Zakariya, R., & Christofi, M. (2020). Social capital, knowledge sharing, work meaningfulness and creativity: Evidence from the Pakistani pharmaceutical industry. *JIC, ahead-of-print*(ahead-of-print). <https://doi.org/10.1108/JIC-02-2020-0065>.
- Bhatti, S. H., Zakariya, R., Vrontis, D., Santoro, G., & Christofi, M. (2020). High-performance work systems, innovation and knowledge sharing: An empirical analysis in the context of project-based organizations. *ER, ahead-of-print*(ahead-of-print). <https://doi.org/10.1108/ER-10-2019-0403>.
- Bock, A. J., Opsahl, T., George, G., & Gann, D. M. (2012). The effects of culture and structure on strategic flexibility during business model innovation. *Journal of Management Studies*, 49, 279–305.
- Bogers, M., & Jensen, J. D. (2017). Open for business? An integrative framework and empirical assessment for business model innovation in the gastronomic sector. *British Food Journal*, 119(11), 2325–2339.
- Bouwman, H., Nikou, S., & de Reuver, M. (2019). Digitalization, business models, and SMEs: How do business model innovation practices improve performance of digitalizing SMEs? *Telecommunications Policy*, 43(9), 101828. <https://doi.org/10.1016/j.telpol.2019.101828>.
- Bouwman, H., Nikou, S., Molina-Castillo, F. J., & de Reuver, M. (2018). The impact of digitalization on business models. *DPRG*, 20(2), 105–124.
- Bowen, F. E., Rostami, M., & Steel, P. (2010). Timing is everything: A meta-analysis of the relationships between organizational performance and innovation. *Journal of Business Research*, 63(11), 1179–1185.
- Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, 84(4), 822–848.
- Butler, B. S., & Gray, P. H. (2006). Reliability, mindfulness, and information systems. *MIS Quarterly*, 30(2), 211–224.
- Campanelli, A. S., & Parreiras, F. S. (2015). Agile methods tailoring – A systematic literature review. *Journal of Systems and Software*, 110, 85–100.
- Carmines, E. G., & MacIver, J. P. (1981). Analyzing models with unobserved variables: Analysis of covariance structures. In G. W. Bohrnstedt, & E. F. Borgatta (Eds.), *Sociological measurement: Current issues* (pp. 61–73). Newbury Park, CA: Sage.
- Casadesus-Masanell, R., & Zhu, F. (2013). Business model innovation and competitive imitation: The case of sponsor-based business models: Business Model Innovation and Competitive Imitation. *Strategic Management Journal*, 34(4), 464–482.
- Casprini, E., Pucci, T., & Zanni, L. (2014). Business model shifts: A case study on firms that apply high technology to cultural goods. *Technology Analysis & Strategic Management*, 26(2), 171–187.
- Cavalcante, S., Kesting, P., & Ulhoi, J. (2011). Business model dynamics and innovation: (re)establishing the missing linkages. *Management Decision*, 49(8), 1327–1342.

- Cegarra-Navarro, J.-G., Soto-Acosta, P., & Wensley, A. K. P. (2016). Structured knowledge processes and firm performance: The role of organizational agility. *Journal of Business Research*, 69(5), 1544–1549.
- Chesbrough, H. (2010). Business Model Innovation: Opportunities and Barriers. *Long Range Planning*, 43(2-3), 354–363.
- Chin, W. W. (1998). The partial least squares approach to structural equation modeling. *Modern Methods for Business Research*, 295(2), 295–336.
- Christofi, M., Vrontis, D., Thrassou, A., & Shams, S. M. R. (2019). Triggering technological innovation through cross-border mergers and acquisitions: A micro-foundational perspective. *Technological Forecasting and Social Change*, 146, 148–166.
- Clauss, T. (2017). Measuring business model innovation: Conceptualization, scale development, and proof of performance: Measuring business model innovation. *R&D Management*, 47(3), 385–403.
- Cohen, W. M., & Levinthal, D. A. (1990). Absorptive Capacity: A New Perspective on Learning and Innovation. *Administrative Science Quarterly*, 35(1), 128. <https://doi.org/10.2307/2393553>.
- Cortimiglia, M. N., Ghezzi, A., & Frank, A. G. (2016). Business model innovation and strategy making nexus: Evidence from a cross-industry mixed-methods study. *R&D Management*, 46(3), 414–432.
- Cucculelli, M., & Bettinelli, C. (2015). Business models, intangibles and firm performance: Evidence on corporate entrepreneurship from Italian manufacturing SMEs. *Small Bus Econ*, 45(2), 329–350.
- Davenport, T. H., Leibold, M., & Voelpel, S. (2006). *Strategic management in the innovation economy*. Erlangen: Publicis Corporate Publishing.
- Manlio Del Giudice, P., Vincenzo Maggioni, P., Del Giudice, M., & Maggioni, V. (2014). Managerial practices and operative directions of knowledge management within inter-firm networks: A global view. *J of Knowledge Management*, 18(5), 841–846.
- Demil, B., & Lecocq, X. (2010). Business Model Evolution: In Search of Dynamic Consistency. *Long Range Planning*, 43(2-3), 227–246.
- Dernbecher, S., & Beck, R. (2017). The concept of mindfulness in information systems research: A multi-dimensional analysis. *European Journal of Information Systems*, 26(2), 121–142.
- Doz, Y. L., & Kosonen, M. (2010). Embedding Strategic Agility. *Long Range Planning*, 43(2-3), 370–382.
- Enkel, E., & Gassmann, O. (2010). Creative imitation: Exploring the case of cross-industry innovation. *R&D Management*, 40(3), 256–270.
- Ferraris, A., Santoro, G., & Bresciani, S. (2017). Open innovation in multinational companies' subsidiaries: The role of internal and external knowledge. *European Journal of International Management*, 11(4), 452–468.
- Ferraris, A., Santoro, G., Bresciani, S., & Carayannis, E. G. (2018). HR practices for explorative and exploitative alliances in smart cities: Evidences from smart city managers' perspective. *Management Decision*, 56(6), 1183–1197.
- Fiol, C. M., & O'Connor, E. J. (2003). Waking Up! Mindfulness in the Face of Bandwagons. *Academy of Management Review*, 28(1), 54–70.
- Fiske, S. T., & Taylor, S. E. (2013). *Social cognition: From brains to culture*. Los Angeles: Sage.
- Flatten, T. C., Engelen, A., Zahra, S. A., & Brettel, M. (2011). A measure of absorptive capacity: Scale development and validation. *European Management Journal*, 29(2), 98–116.
- Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18(1), 39–50.
- 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.
- Foss, N. J., & Saebi, T. (Eds.). (2015). *Business model innovation: The organizational dimension*. Oxford: OUP.
- Franceschelli, M. V., Santoro, G., & Canelo, E. (2018). Business model innovation for sustainability: A food start-up case study. *British Food Journal*, 120(10), 2483–2494.
- Futterer, F., Schmidt, J., & Heidenreich, S. (2018). Effectuation or causation as the key to corporate venture success? Investigating effects of entrepreneurial behaviors on business model innovation and venture performance. *Long Range Planning*, 51(1), 64–81.
- Gambardella, A., & McGahan, A. M. (2010). Business-Model Innovation: General Purpose Technologies and their Implications for Industry Structure. *Long Range Planning*, 43(2-3), 262–271.
- George, G., & Bock, A.J. (2011). The business model in practice and its implications for entrepreneurship research. *Entrepreneurship Theory and Practice*, 35, 83–111.
- Ghezzi, A., & Cavallo, A. (2020). Agile Business Model Innovation in Digital Entrepreneurship: Lean Startup Approaches. *Journal of Business Research*, 110, 519–537.
- Giesen, E., Berman, S. J., Bell, R., & Blitz, A. (2007). Three ways to successfully innovate your business model. *Strategy & Leadership*, 35(6), 27–33.
- Hair, J. F. J., Anderson, R. E., Tatham, R. L., & Black, W. C. (1998). *Multivariate data analysis with readings*. Englewood Cliffs, NJ: Prentice Hall.
- Hedman, J., & Kalling, T. (2003). The business model concept: Theoretical underpinnings and empirical illustrations. *European Journal of Information Systems*, 12(1), 49–59.
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *J. of the Acad. Mark. Sci.*, 43(1), 115–135.
- Hock, M., Clauss, T., & Schulz, E. (2016). The impact of organizational culture on a firm's capability to innovate the business model. *R&D Management*, 46(3), 433–450.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indices in covariance structure analysis: Conventional versus new alternatives. *Structural Equation Modeling*, 6, 1–55.
- Huang, H.-C., Lai, M.-C., Kao, M.-C., & Chen, Y.-C. (2012). Target Costing, Business Model Innovation, and Firm Performance: An Empirical Analysis of Chinese Firms. *Canadian Journal of Administrative Sciences*, 29(4), 322–335.
- Huang, H.-C., Lai, M.-C., Lin, L.-H., & Chen, C.-T. (2013). Overcoming organizational inertia to strengthen business model innovation: An open innovation perspective. *Journal of OrgChange Mgmt*, 26(6), 977–1002.
- IBM Global Business Services. 2006. Expanding the innovation horizon: The global CEO study 2006. [www-07.ibm.com/sg/pdf/global\\_ceo\\_study.pdf](http://www-07.ibm.com/sg/pdf/global_ceo_study.pdf) Accessed January 2020.
- Jansen, S., Finkelstein, A., & Brinkkemper, S. (2009). A sense of community: A research agenda for software ecosystems. In *31st International Conference on Software Engineering (ICSE'09)* (pp. 187–190). Vancouver, Canada: IEEE Computer Society.
- Johnson, M. W., Christensen, C. M., & Kagerman, H. (2008). Reinventing your business model. *Harvard Business Review*, 86(12), 51–59.
- Khan, J., Jaafar, M., Javed, B., Mubarak, N., & Saudagar, T. (2020). Does inclusive leadership affect project success? The mediating role of perceived psychological empowerment and psychological safety. *International Journal of Managing Projects in Business*, 13(5), 1077–1096.
- Khanagha, S., Volberda, H., & Oshri, I. (2014). Business model renewal and ambidexterity: Structural alteration and strategy formation process during transition to a Cloud business model. *R&D Management*, 44, 322–340.
- King, E., & Haar, J. M. (2017). Mindfulness and job performance: A study of Australian leaders. *Asia Pacific Journal of Human Resources*, 55(3), 298–319.
- Kline, R. B. (1998). *Principles and practice of structural equation modeling*. New York: Guilford Press.
- Kostopoulos, K., Papalexandris, A., Papachroni, M., & Ioannou, G. (2011). Absorptive capacity, innovation, and financial performance. *Journal of Business Research*, 64(12), 1335–1343.
- Kranich, P., & Wald, A. (2018). Does model consistency in business model innovation matter? A contingency-based approach. *Creativity and Innovation Management*, 27(2), 209–220.
- Langer, E. J. (1989). Minding matters: The consequences of mindlessness mindfulness. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (pp. 137–173). San Diego, CA: Academic Press.
- Langer, E. J., & Moldoveanu, M. (2000). The Construct of Mindfulness. *J Social Issues*, 56(1), 1–9.
- Leonidou, E., Christofi, M., Vrontis, D., & Thrassou, A. (2018). An integrative framework of stakeholder engagement for innovation management and entrepreneurship development. *Journal of Business Research*. <https://doi.org/10.1016/j.jbusres.2018.11.054>.
- Li, H., Wu, Y., Cao, D., & Wang, Y. (2019). Organizational mindfulness towards digital transformation as a prerequisite of information processing capability to achieve market agility. *Journal of Business Research*. <https://doi.org/10.1016/j.jbusres.2019.10.036>.
- Lindgardt, Z., Reeves, M., Stalk, G., & Deimler, M. S. (2009). *Business model innovation: When the game gets tough, change the game*. Boston, MA: The Boston Consulting Group.
- Lu, Y., & Ramamurthy, K. (2011). Understanding the link between information technology capability and organizational agility: An empirical examination. *Management Information Systems Quarterly*, 35(4), 931–954.
- Madsen, P., Desai, V., Roberts, K., & Wong, D. (2006). Mitigating Hazards Through Continuing Design: The Birth and Evolution of a Pediatric Intensive Care Unit. *Organization Science*, 17(2), 239–248.
- Magretta, J. (2002). Why business models matter. *Harvard Business Review*, 80(5), 86–92.
- McAvoy, J., Nagle, T., & Sammon, D. (2013). Using mindfulness to examine ISD agility. *Information Systems Journal*, 23(2), 155–172.
- McDermott, C. M., & Prajogo, D. I. (2012). Service innovation and performance in SMEs. *Int Jnl of Op & Prod Mngemnt*, 32(2), 216–237.
- Moore, G. A. (2004). Darwin and the demon: Innovating within established enterprises. *Harvard Business Review*, 82(7), 86–92.
- Osterwalder, A., & Pigneur, Y. (2010). *Business model generation*. Hoboken, NJ: Wiley.
- Papa, A., Dezi, L., Gregori, G. L., Mueller, J., & Miglietta, N. (2018). Improving innovation performance through knowledge acquisition: The moderating role of employee retention and human resource management practices. *Journal of Knowledge Management*, 24(3), 589–605.
- Pedersen, E. R. G., Gwozd, W., & Hvass, K. K. (2018). Exploring the relationship between business model innovation, corporate sustainability, and organizational values within the fashion industry. *Journal of Business Ethics*, 149(2), 267–284.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of applied psychology*, 88(5), 879.
- Pohle, G., & Chapman, M. (2006). IBM's global CEO report 2006: Business model innovation matters. *Strategy & Leadership*, 34(5), 34–40.
- Porter, M. E., & Heppelmann, J. E. (2014). How smart, connected products are transforming competition. *Harvard business review*, 92(11), 64–88.
- Pucci, T., Nosi, C., & Zanni, L. (2017). Firm capabilities, business model design and performance of SMEs. *Jnl of Small Bus Ente Dev*, 24(2), 222–241.
- Rachinger, M., Rauter, R., Müller, C., Vorraber, W., & Schirgi, E. (2019). Digitalization and its influence on business model innovation. *JMTM*, 30(8), 1143–1160.
- Ray, J. L., Baker, L. T., & Plowman, D. A. (2011). Organizational mindfulness in business schools. *Academy of Management Learning & Education*, 10(2), 188–203.
- Remane, G., Hanelt, A., Nickerson, R. C., & Kolbe, L. M. (2017). Discovering digital business models in traditional industries. *Journal of Business Strategy*, 38(2), 41–51.
- Ren, S., Eisingerich, A. B., & Tsai, H.-T. (2015). How do marketing, research and development capabilities, and degree of internationalization synergistically affect the innovation performance of small and medium-sized enterprises (SMEs)? A panel data study of Chinese SMEs. *International Business Review*, 24(4), 642–651.

- Rialti, R., Zollo, L., Ferraris, A., & Alon, I. (2019). Big data analytics capabilities and performance: Evidence from a moderated multi-mediation model. *Technological Forecasting and Social Change*, 149, 119781. <https://doi.org/10.1016/j.techfore.2019.119781>.
- Ritter, T., & Lettl, C. (2018). The wider implications of business-model research. *Long Range Planning*, 51(1), 1–8.
- Saebi, T., Lien, L., & Foss, N. J. (2017). What Drives Business Model Adaptation? The Impact of Opportunities, Threats and Strategic Orientation. *Long Range Planning*, 50(5), 567–581.
- Sandulli, F. D., Ferraris, A., & Bresciani, S. (2017). How to select the right public partner in smart city projects: Public partner selection in smart city projects. *R&D Management*, 47(4), 607–619.
- Santoro, G., Bresciani, S., & Papa, A. (2020). Collaborative modes with Cultural and Creative Industries and innovation performance: The moderating role of heterogeneous sources of knowledge and absorptive capacity. *Technovation*, 92–93, 102040. <https://doi.org/10.1016/j.technovation.2018.06.003>.
- Santoro, G., Quaglia, R., Pellicelli, A. C., & De Bernardi, P. (2020). The interplay among entrepreneur, employees, and firm level factors in explaining SMEs openness: A qualitative micro-foundational approach. *Technological Forecasting and Social Change*, 151, 119820. <https://doi.org/10.1016/j.techfore.2019.119820>.
- Santoro, G., Thrassou, A., Bresciani, S., & Del Giudice, M. (2019). Do knowledge management and dynamic capabilities affect ambidextrous entrepreneurial intensity and firms' performance? *IEEE Transactions on Engineering Management*. <https://doi.org/10.1109/TEM.2019.2907874>.
- Santoro, G., Vrontis, D., & Pastore, A. (2017). External knowledge sourcing and new product development: Evidence from the Italian food and beverage industry. *British Food Journal*, 119(11), 2373–2387.
- Santos, J., Spector, B., & van der Heyden, L. (2015). Toward a theory of business model innovation within incumbent firms. In N. J. Foss, & T. Saebi (Eds.), *Business model innovation: The organizational dimension*. Oxford: Oxford University Press.
- Schneider, S., & Spieth, P. (2013). Business model innovation: Towards an integrated future research agenda. *International Journal of Innovation Management*, 17(01), 1340001. <https://doi.org/10.1142/S136391961340001X>.
- Schuh, S. C., Zheng, M. X., Xin, K. R., & Fernandez, J. A. (2019). The Interpersonal Benefits of Leader Mindfulness: A Serial Mediation Model Linking Leader Mindfulness, Leader Procedural Justice Enactment, and Employee Exhaustion and Performance. *Journal of Business Ethics*, 156(4), 1007–1025.
- Scuotto, V., Del Giudice, M., Bresciani, S., & Meissner, D. (2017). Knowledge-driven preferences in informal inbound open innovation modes. An explorative view on small to medium enterprises. *Journal of Knowledge Management*, 21(3), 640–655.
- Shams, R., Vrontis, D., Belyaeva, Z., Ferraris, A., & Czinkota, M. R. (2020). Strategic agility in international business: A conceptual framework for “agile” multinational. *Journal of International Management*. <https://doi.org/10.1016/j.intman.2020.100737>.
- Silva, D. S., Ghezzi, A., Aguiar, R. B. D., Cortimiglia, M. N., & ten Caten, C. S. (2019). Lean startup, agile methodologies and customer development for business model innovation: A systematic review and research agenda. *International Journal of Entrepreneurial Behavior & Research*, 26(4), 595–628.
- Slywotzky, A., & Wise, R. (2003). Three keys to groundbreaking growth: A demand innovation strategy, nurturing practices, and a chief growth officer. *Strategy & Leadership*, 31(5), 12–19.
- Smith, W. K., Binns, A., & Tushman, M. L. (2010). Complex Business Models: Managing Strategic Paradoxes Simultaneously. *Long Range Planning*, 43(2–3), 448–461.
- Snihur, Y., & Zott, C. (2020). The Genesis and Metamorphosis of Novelty Imprints: How Business Model Innovation Emerges in Young Ventures. *AMJ*, 63(2), 554–583.
- Sok, P., O’Cass, A., & Sok, K. M. (2013). Achieving superior SME performance: Overarching role of marketing, innovation, and learning capabilities. *Australasian Marketing Journal (AMJ)*, 21(3), 161–167.
- Sorescu, A. (2017). Data-Driven Business Model Innovation: BUSINESS MODEL INNOVATION. *J Prod Innov Manag*, 34(5), 691–696.
- Spieth, P., & Schneider, S. (2016). Business model innovativeness: Designing a formative measure for business model innovation. *Journal of Business Economics*, 86(6), 671–696.
- Spieth, P., Schneckenberg, D., & Ricart, J. E. (2014). Business model innovation – State of the art and future challenges for the field. *R&D Management*, 44(3), 237–247.
- Sternberg, R. J. (2000). Images of Mindfulness. *Journal of Social Issues*, 56(1), 11–26.
- Storbacka, K., Frow, P., Nenonen, S., & Payne, A. (2012). Designing business models for value co-creation. *Review of Marketing Research*, 9, 51–78.
- Sullivan, B. N., & Yang, X. (2016). Can mindful firms be innovative? Differentiated impact of organizational mindfulness on innovation. In *Academy of Management Proceedings*, 1, 12802. Briarcliff Manor, NY: Academy of Management.
- Svejenova, S., Planellas, M., & Vives, L. (2010). An Individual Business Model in the Making: A Chef’s Quest for Creative Freedom. *Long Range Planning*, 43(2–3), 408–430.
- Swanson, & Ramiller. (2004). Innovating Mindfully with Information Technology. *MIS Quarterly*, 28(4), 553. <https://doi.org/10.2307/25148655>.
- Tallon, P. P., & Pinsonneault, A. (2011). Competing perspectives on the link between strategic information technology alignment and organizational agility: Insights from a mediation model. *MIS Quarterly*, 35(2), 463–486.
- Teece, D. J. (2010). Business Models, Business Strategy and Innovation. *Long Range Planning*, 43(2–3), 172–194.
- Timmers, P. (1998). Business Models for Electronic Markets. *Elec. Markets*, 8(2), 3–8.
- Tippins, M. J., & Sohi, R. S. (2003). IT competency and firm performance: Is organizational learning a missing link? *Strategic Management Journal*, 24(8), 745–761.
- Tseng, C. Y., Chang Pai, D., & Hung, C. H. (2011). Knowledge absorptive capacity and innovation performance in KIBS. *Journal of Knowledge Management*, 15(6), 971–983.
- Van de Ven, A. H. (1993). Managing the process of organizational innovation. In G. P. Huber, & W. H. Glick (Eds.), *Organizational change and redesign* (pp. 269–294). New York: Oxford University Press.
- van Oosterhout, M., Waarts, E., & van Hillegersberg, J. (2006). Change factors requiring agility and implications for IT. *European Journal of Information Systems*, 15(2), 132–145.
- Velamuri, V. K., Bansemir, B., Neyer, A. K., & Moeslein, K. M. (2013). Product service systems as a driver for business model innovation: Lessons learned from the manufacturing industry. *International Journal of Innovation Management*, 17(01), 1340004. <https://doi.org/10.1142/S1363919613400045>.
- Velu, C. (2015). Business model innovation and third-party alliance on the survival of new firms. *Technovation*, 35, 1–11.
- Velu, C., & Jacob, A. (2014). Business model innovation and owner-managers: The moderating role of competition. *R&D Management*, 46(3), 451–463.
- Venkataraman, S., Sarasvathy, S. D., Dew, N., & Forster, W. R. (2012). Reflections on the 2010 AMR decade award: Whither the promise? Moving forward with entrepreneurship as a science of the artificial. *Academy of Management Review*, 37(1), 21–33.
- Vogus, T. J., & Sutcliffe, K. M. (2012). Organizational Mindfulness and Mindful Organizing: A Reconciliation and Path Forward. *AMLE*, 11(4), 722–735.
- Volberda, H. W. (1996). Toward the Flexible Form: How to Remain Vital in Hypercompetitive Environments. *Organization Science*, 7(4), 359–374.
- Volberda, H., Van Den Bosch, F. A., & Heij, K. (2018). *Reinventing business models: How firms cope with disruption*. Oxford: Oxford University Press.
- Vrontis, D., & Christofi, M. (2019). R&D internationalization and innovation: A systematic review, integrative framework and future research directions. *Journal of Business Research*. <https://doi.org/10.1016/j.jbusres.2019.03.031>.
- Vrontis, D., Thrassou, A., Santoro, G., & Papa, A. (2017). Ambidexterity, external knowledge and performance in knowledge-intensive firms. *J Technol Transf*, 42(2), 374–388.
- Wamba, S. F., Gunasekaran, A., Akter, S., Ren, S.-F., Dubey, R., & Childe, S. J. (2017). Big data analytics and firm performance: Effects of dynamic capabilities. *Journal of Business Research*, 70, 356–365.
- Wang, N., Liang, H., Zhong, W., Xue, Y., & Xiao, J. (2012). Resource Structuring or Capability Building? An Empirical Study of the Business Value of Information Technology. *Journal of Management Information Systems*, 29(2), 325–367.
- Wei, Z., Yang, D., Sun, B., & Gu, M. (2014). The fit between technological innovation and business model design for firm growth: Evidence from China. *R&D Management*, 44, 288–305.
- Xie, X., Zou, H., & Qi, G. (2018). Knowledge absorptive capacity and innovation performance in high-tech companies: A multi-mediating analysis. *Journal of Business Research*, 88, 289–297.
- Zahra, S. A., & George, G. (2002). Absorptive Capacity: A Review, Reconceptualization, and Extension. *AMR*, 27(2), 185–203.
- Zott, C., & Amit, R. (2008). The fit between product market strategy and business model: Implications for firm performance. *Strategic Management Journal*, 29(1), 1–26.
- Zott, C., Amit, R., & Massa, L. (2011). The business model: Recent developments and future research. *Journal of Management*, 37(4), 1019–1042.

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