

Impact of Social Media and Digital Innovation in Business Models: Strategies that Leverage Dynamic Capabilities

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Abstract

Modern digital technology has enabled many businesses, includes family-run enterprises, to develop novel business strategies. We investigate how dynamic capacity functions as a mediator in the connection between creativity and social impact of the business model of the digital age (BMI), as well as the role of environmental dynamics moderator. We demonstrate the beneficial correlation between family damage and digital BMI through utilizing unique survey data from 1,444 Indonesian businesses with and without family damage, this study examines knowledge exploitation, risk management, and marketing capabilities. As a result of this, and in opposition to our assumptions, we recognize that positive relationships between the group's interests and its dynamic capabilities are strengthened by the environment. All of us bear significant ramifications for digital BMI research and family business innovation, both of which shed light on the dynamics of dynamic ecosystems in the digital economy.

Dampak Media Sosial dan Inovasi Digital terhadap Model Bisnis: Strategi yang Memanfaatkan Kemampuan Dinamis

Abstrak

Teknologi digital modern telah memungkinkan banyak bisnis, termasuk bisnis keluarga, untuk melakukan inovasi terhadap model bisnis mereka. Kami mempelajari peran kemampuan dinamis sebagai mediator dalam hubungan antara pengaruh sosial dan inovasi model bisnis era digital (BMI), serta peran moderator dinamika lingkungan. Berdasarkan data survei unik dari 1.444 bisnis di Indonesia tanpa dan dengan kerusakan keluarga, kami menyoroti hubungan positif antara kerusakan keluarga dan BMI digital melalui eksploitasi pengetahuan, manajemen risiko, dan kemampuan pemasaran. Sebagai hasil dari hal ini, dan berlawanan dengan asumsi ini, kami menyadari bahwa hubungan positif antara kepentingan kelompok dan kapabilitas dinamisnya diperkuat oleh lingkungan. Semua ini memiliki implikasi penting bagi inovasi bisnis keluarga dan penelitian BMI digital, yang memberikan wawasan tentang dinamika ekosistem yang dinamis dalam ekonomi digital.

INTRODUCTION

Digital technologies, which are cloud computing and data analytics, which are described as procedures, systems, instruments, and approaches based on a sequence of binary digits (von Briel et al., 2018; Yoo et al., 2010), are influencing enterprises more and more of all sizes and industries (Sorescu, 2017; Teece, 2018a). (Nambisan, 2017). Prior studies have shown that businesses using digital technology may increase their competitiveness and contribute to their long-term performance. As an example, companies can use digital distribution channels to enter a new market. Businesses need the right business model in order to commercialize digital technology and boost its entrepreneurial value (Chesbrough, 2010). According to Fichman et al. (2014, p. 335), according to Teece (2010) and 2018b, digital business model innovation (BMI) is the application of digital technology as a "significantly new way of creating and capturing business value that is embodied in or enabled" and whereby these technologies represent a crucial component of the value that is created. In other words, BMI is necessary for firms to adapt to the changes brought about by digital technologies. One well-known company creating voith is the digital BMI. Voith is a typical device and plant company that was founded in 1900 and is currently operated by family members who are fifth generation. It provides a vehicle communication platform that links several cloud-based capabilities to on-board public transportation systems (Voith Group,

2020). This illustration emphasizes what "being data driven" means in digital BMI and how it differs from traditional, nondigital BMI (Sorescu, 2017).

Although most studies concur that digital BMI is important, we still don't know how family influence which Davis (1983) describes how the owning family's ability to make decisions affects the firm's digital BMI which is "exercised through ownership and sometimes through the participation of family members in management". This matters because family-run enterprises are not like other kinds of businesses in a number of ways in terms of innovation because of the close ties that exist their distinct knowledge management systems, the connection between the family and the firm, as well as the fact that the family's wealth is concentrated in the enterprise, frequently combined with a risk-averse mindset (Chrisman et al., 2015; Kotlar et al., 2020). Despite the fact that family firm innovation has been the subject of research (Duran et al., 2016; König et al., 2013), the potential for multiple drivers of digital innovation, the intricacy of digital BMI, encompassing intricate data processing, risk management, welcoming new stakeholders, and never-ending innovation (Soluk & Kammerlander, 2021). Indicates that it could be difficult to adapt current knowledge to a digital setting.

Family-influenced businesses, which are renowned regarding their prospects in the long run, should pay particular attention to digital BMI since it is crucial for sustained company performance (Teece, 2018b). Since prior research

indicates We suggest the degree of familial influence and digital BMI are related, and that dynamic capacities (Eisenhardt & Martin, 2000; Teece et al., 1997) provide a useful theoretical framework for understanding this link (Nambisan, 2017; Sambamurthy et al., 2003; Teece, 2018b). Considering that it could take a different set of skills to survive in the digital age. But there is currently a dearth of understanding regarding the precise dynamic capabilities that influence digital BMI (Teece, 2018b). The degree of family influence is thought to have an impact on the dynamic capacities (particularly, knowledge utilization, risk mitigation, and marketing proficiencies) that the business cultivates, and therefore, the digital BMI level. Additionally, the extent of environmental dynamism may possess a substantial effect on the influence of family (Wirtz et al., 2010; Chirico & Baù, 2014). The process of learning new abilities might potentially be impacted by this dynamic (Teece et al., 1997). The following research questions are raised by this:

- (1) How do dynamic capabilities fit into the relationship between digital BMI and the degree of familial influence?
- (2) How does the dynamic of the environment impact this relationship?

It's crucial to provide answers to these queries for a number of reasons. First, we need to learn more about the link between the degree of digital BMI and the impact of family in order to increase our theoretical knowledge of the idiosyncrasies of family businesses in terms of digital innovation (Kammerlander et al., 2018). According to Classen et al. (2014) and De Massis,

Frattini, et al. (2015), this link might not be the same as incremental process and product innovation. Second, it will be feasible to establish a more complex theoretical framework for family company innovation and clarify the ways in which family influence impacts digital BMI by highlighting dynamic capacity. Based on the dynamic capabilities theory (Teece, 2018b; Teece et al., 1997), we provide a number of hypotheses. In order to address our research concerns. We use survey data from 1,444 Indonesian businesses to evaluate these claims some of which are nonfamily businesses, and with varied degrees of family impact.

We add to the literature in at least three ways. First, we contradict earlier research that highlighted family enterprises' challenges in implementing more extreme or abrupt innovation (König et al., 2013; Patel & Chrimman, 2014) by discovering a favorable correlation between digital BMI and family influence. As a result, by emphasizing the importance two elements: the dynamic capabilities and the environmental context that haven't gotten enough academic focus to date (Chirico & Nordqvist, 2010; Reisinger & Lehner, 2015) our research contributes to the corpus of knowledge on innovation in family businesses. Second, by offering We add to the body of knowledge on digital BMI via offering a thorough description of the processes resulting in digital BMI as well as theoretical and empirical insights on dynamic capacities as antecedents of digital BMI (Sorescu, 2017; Teece, 2018b; Zott et al., 2011).

Third, we shed light on the significance of particular dynamic capabilities for digital BMI, thereby advancing the fields of research on dynamic capabilities in the digital economy (Karimi & Walter, 2015; Yeow et al., 2018) and dynamic capabilities theory (Teece, 2018b; Teece et al., 1997). We also offer pertinent management practice insights by identifying the dynamic capabilities that have the greatest influence on digital BMI. These insights are particularly useful for those who advise, manage, and operate family-influenced enterprises.

THEORETICALLY CONTEXTS

Our study builds on two areas of previous research: digital BMI research and family firm innovation. We apply the theoretical framework of dynamic capacities to bring these two study streams together.

In Family-Influenced Firms, Innovation and Digital - BMI

According to Schumpeter (1934), innovation-driven continuous renewal is a crucial condition for the long-term viability of any business, particularly those with a family impact. Previous research on family firms demonstrates that the unique due to their resources and usually nonfinancial purposes, family enterprises' product and process innovation efforts differ greatly from equivalent innovation endeavors in nonfamily firms (Gómez-Mejía et al., 2007). BMI can also be used to achieve continuous regeneration (Zott et al., 2011), which is described as “designed,

novel, nontrivial changes to the key elements of a firm’s business model and/or the architecture linking these elements” (Foss & Saebi, 2018, p. 201). BMI is in addition to innovation in processes and products. The "core" of an organization's business is its architecture for value generation, delivery, and capture and its innovation processes is what's being highlighted by an increasing body of research as being crucial to survival and a sustained competitive edge (Foss & Saebi, 2018; Teece, 2010).

Specifically, companies are being prompted to develop new business strategies by the advent of digital technologies. Digital technologies offer new opportunities for entrepreneurship, according to prior study as well as possible savings (e.g., through automation; Bharadwaj, 2000). But the chances adoption of digital technology may only completely reach its intrinsic potential if it is marketed through BMI. (Hedman et al., 2016; Chesbrough, 2010). Previous studies associate the BMI combination with the adoption of digital technology as measured by digital BMI (Fichman et al., 2014; Remane et al., 2017: examples).

Although research on even while family firms are becoming more innovative (Duran et al., 2016), little research has been done, both theoretically and empirically, on how businesses with a family influence handle (digital) BMI. Considering the peculiarities of family enterprises, this is unexpected which could have a significant influence on how they participate in digital BMI. These peculiarities include due to the

family's close ties to the business (Chirico & Salvato, 2016; De Massis et al., 2016), their distinct goals and resources (Chirico & Nordqvist, 2010; Chirico & Salvato, 2008), and the concentration of their wealth within the business, there is a risk aversion that results (Chrisman et al., 2015; Kotlar et al., 2020). More precisely, family-influenced businesses have a control-oriented mindset because of the close ties that bind the family and the business (Chrisman & Patel, 2012). This could aid in their faster and more sustainable (Duran et al., 2016) development of the skills needed for digital BMI projects (König et al., 2013). Furthermore, family-influenced businesses may be due to their distinct learning and knowledge management processes, especially suitable for creating digital BMI, which is determined by knowledge intensity (Nambisan, 2017). Although there is a dearth of research on BMI in family-run businesses generally, the preliminary findings generally seem to confirm the significance of BMI for long-term performance. In family businesses, for example, De Massis, Di Minin, et al. (2015) state that BMI is "a very powerful source of competitive advantage." However, they also highlight the difficulties that come with it, like "deeper changes to established routines and mental models" as opposed to innovation in products or processes.

The Function of Adaptive Skills in (Digital) BMI

Though digital BMI creates chances for entrepreneurship, it is especially challenging to attain because due to the

inherent reprogrammable and distributed nature of digital technology (Correani et al., 2020; Nambisan et al., 2017). Businesses may enhance their dynamic capacities to meet the demands of BMI digitally (Veit et al., 2014). Teece et al. (1997) state on page 516 that a company's dynamic capabilities are characterized as its capacity "to integrate, build, and reconfigure internal and external competences to address rapidly changing environments." This makes them different from ordinary capabilities, which support organizations in managing their daily routine and fundamental administrative tasks (Teece, 2014).

Three particular dynamic capabilities may be identified among the many that are available particularly pertinent given the digital BMI environment (Easterby-Smith & Prieto, 2008; Teece, 2018; Troilo et al., 2017; 2018a, 2018b). First, the ability to leverage knowledge, specifically the acceptance, integration, and application of both information from both inside and outside (Easterby-Smith & Prieto, 2008; Martinez-Conesa et al., 2017; McKelvie & Davidsson, 2009), taking into account the main There are substantial differences between the technologies and expertise that support digital and nondigital business strategy. (Ebel and others, 2016; Bhatt and Grover, 2005). The second is risk management capabilities, which help organizations manage the dangers and unknowns associated with introducing new digital technology and associated BMI (Teece, 2007; Arena et al., 2013; Teece, 2018a). Two important aspects of the digital age are cyber risks

and intellectual property protection (Greenstein et al., 2013; Teece, 2018a). Third, marketing skills (Fang & Zou, 2009; Helfat & Winter, 2011) give businesses insights into (new) markets, help them reposition their brand, and help them deal with new or evolving client wants. According to Abrell et al. (2016), These adaptable qualities are particularly useful in times of digital transformation because they enable businesses to create innovative customer-centric business models that provide them a competitive edge.

While dynamic capabilities like opportunity identification, resource commitment, and structural realignment have been the focus of research on conventional BMI, we contend that the three dynamic capacities indicated above are especially pertinent to digital BMI for the following reasons (Teece, 2018b). Firstly, it is commonly said that digital BMI is far more complicated than traditional BMI. Digital BMI is frequently improved even further than conventional BMI, which typically outcomes in the existence of business models for a number of years. Because digital technologies are always evolving, digital BMI requires regular iterations of implementation and exploration. As a result, it is difficult to determine the beginning and end of an innovation process or the point at which A product of invention is deemed "final" (Nambisan et al., 2017). Digital BMI is more complicated than traditional BMI, which makes it more information-intensive and reliant on the firm's capacity for knowledge exploitation. The inherent danger connected with digital technology is another factor

contributing to the increasing complexity of digital BMI. For example, digital technologies increase the susceptibility of digital BMI to data privacy issues and cyberattacks (Nambisan et al., 2019). Furthermore, current liability laws and intellectual property protection are put to the test by the frequent participation of disorganized people and other unique external parties in the development of digital BMI. Due to its dispersed design and the potential for third parties to exploit certain of its components, digital BMI is especially dependent on risk management skills, raising further problems. Lastly, in comparison to traditional BMI, digital BMI is also linked to faster changes in consumer demands and industry advancements (Soluk & Kammerlander, 2021; Sorescu, 2017). Businesses are employing digital BMI as opposed to traditional BMI to address whole new consumer categories and markets, therefore they need to get new, in-depth information about the workings of these online markets and these new clients.

While previous though there are solid grounds to believe that these three dynamic capabilities may enable digital BMI, research has conceptualized and examined them several times (e.g., Easterby-Smith & Prieto, 2008; Morgan et al., 2009; Sen et al., 2020). Nevertheless, we lack a systematic theoretical and empirical study on the relationship between them. Furthermore, it is unknown how family-influenced businesses function in terms of digital BMI and how their peculiarities could impact the growth of dynamic capacities. Previous research regards

family companies as a particularly important setting to examine, considering that dynamic capabilities often arise in governance structures with substantial social connections and frequent encounters between people or groups (Chirico et al., 2012). As stated by De Massis and colleagues (2016), family-influenced businesses have the potential to create dynamic skills by internalizing and reinterpreting information, owing to the close relationships and intergenerational traditions that exist between the family and the business.

HYPOTHESIS

We hypothesize how rising family influence levels affect dynamic capacities, which in turn affect digital BMI, in the following images. Additionally, we contend that the environment more especially, environmental dynamism has a moderating impact because it might influence companies' efforts to develop dynamic skills (Teece et al., 1997)

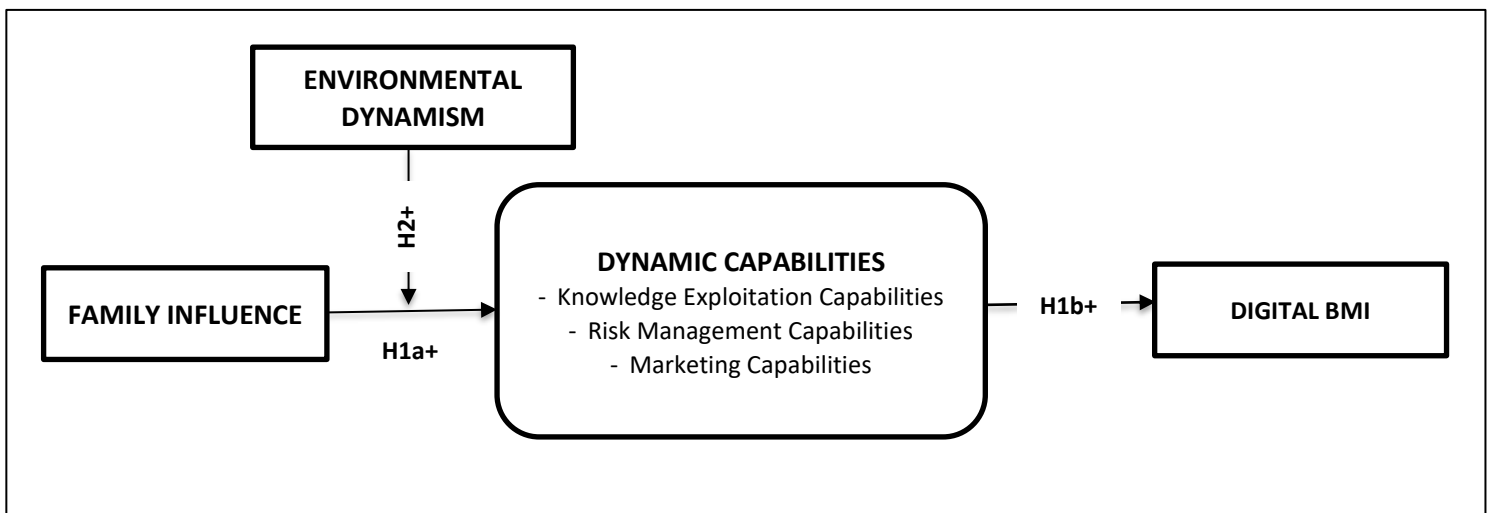


Fig. 1 Theoretical model illustrating the hypothesized effects

The Relationship Between Family Impact and Dynamic Capabilities

As family influence grows, the frequently enduring ties between the business's owners and their family get closer, which encourages the growth of a common tradition amongst relatives. Family members build and nurture strong levels of trust, reciprocity, and

closeness as part of this shared heritage, which eventually results in a high level of family connection to the company (De Massis et al., 2016). The urge to build values in the economy and society that transcend generations stems from this very strong bond, which intensifies with increased family influence (Chirico & Nordqvist, 2010; Habbershon et al., 2003). In particular, previous studies show that the urge to assimilate

knowledge is correlated with a strong relationship. This is due to the fact that family members usually care even more about the company and lend their expertise to help it expand (De Massis et al., 2016), because of this, intimacy, a great degree of trust, and strong attachments promote information exchanges between relatives (Chirico & Salvato, 2016). Consequently, as family influence grows, so do unique education and Information administration processes, especially the diverse information and experiences derived from family members' complimentary viewpoints (Chirico et al., 2011; Kellermanns & Eddleston, 2006; Kotlar & De Massis, 2013), who may or may not be related administrators businesses and who come from various professional and educational backgrounds, can result in the effective orchestration of information (Chirico, 2008). Through their complementarity, these complementary perspectives increase awareness of relevant information (maybe from sources outside the company and its sector), making it easier for family-influenced firms to utilise knowledge. They also create pathways for interpreting and responding to this knowledge (Chirico et al., 2011). We argue that these unique learning and knowledge management patterns facilitate the development of knowledge exploitation abilities, which are particularly dependent on an organization's ability to retrieve and reorganize information. Therefore, we anticipate that higher family influence levels are positively correlated with the ability to use information.

Additionally, when family influence rises, businesses tend to focus more based on their socioemotional and monetary endowments, making them longer-lasting and control-oriented (Chrisman & Patel, 2012). This long-term focus frequently drives the family's efforts to foster peace (Chrisman et al., 2012), a reputable public image (Dyer & Whitten, 2006), and the intention of passing the business on to a future member of the family (Gimenez-Jimenez et al., 2020). The desire to be independent and lower business risks is a key component of the family's intention to stay in charge of the company. These peculiarities suggest that greater family influence should be accompanied by cautious risk assessment, as excessive commercial risks might imperil their non-financial and financial assets. The family may get more involved in risk assessment in addition to exerting more influence to mitigate these possible business concerns. The diverse and complimentary relatives' experiences assist this risk appraisal process once again and have the potential to transform it into a process of group learning (Lumpkin & Lichtenstein, 2005). We argue that the emergence of risk management skills is facilitated by risk-related learning processes and the cumulative competence of families in handling risk over time (Arena et al., 2013; Teece, 2018a). Put another way, the ability to preserve when evaluating significant business decisions, consider the family's assets, both financial and nonfinancial, and use complementing skills is made possible by the cumulative awareness of the danger that rises with greater family influence and the

intended outcome of controlling the situation both now and in the future. Thus, we suggest that having a larger family is positively correlated with having the ability to manage risk.

Furthermore, companies with higher family influence are more likely to foster reliable network connections with clients and other long-standing business associates due to (Duran et al., 2016) their considerable emphasize following tradition and sustaining solid, long-lasting connections (Lumpkin & Brigham, 2011). The owning family may choose which company partners to collaborate with as increased family influence is also linked to corporate control and power-centricity in the hands of family owners. The family that owns the property is more able and ready to participate in such partnerships when it perceives them as beneficial to its nonfinancial and financial endowments (Chrisman et al., 2015). Therefore, the company's legacy and its "desire to make a mark" are just as significant to the owning family as the money earned (Diaz-Moriana et al., 2020, p. 10). According to Duran et al. (2016), this may be especially true for established and stable connections with clients and business partners, but it may also apply to other kinds of interactions, such as those with chaotic crowds and virtual communities. Firms with higher family influence may find it easier to enter into new collaborations due to less bureaucratic decision-making (Chrisman et al., 2015). Additionally, because of their effective implementation frameworks, these firms may be able to sustain these collaborations longer (König et al.,

2013). Hence, more family influence encourages businesses to match their goals with those of their families with their external relationships (De Massis, Audretsch, et al., 2018; Duran et al., 2016). Thus, we contend that enhanced family influence and effective decision-making also result in a more deliberate choice of market activities. Businesses with greater degrees of family influence tend to have stronger customer relationships. As a result, we contend that the increased efficacy and client-centeredness that higher family influence implies are particularly significant for building marketing capabilities because they enable prompt response to shifting market conditions by utilizing knowledge gained from prior customer interactions. As a result, we anticipate a favorable correlation between greater family influence and marketing capabilities.

We conclude that higher Higher levels of risk management are correlated greater levels of knowledge exploitation because family influence is linked to complementary ideas, higher levels of marketing, and higher levels of family influence because of their control and long-term emphasis (because of their efficiency in making decisions and customer focus). As a result, we speculate:

H1a: *Dynamic qualities are positively correlated with higher family influence levels.*

The Connection Between Digital BMI and Dynamic Capabilities

The influence of dynamic capacities on digital BMI is then investigated, with a particular emphasis on the three dynamic capacities mentioned before. According to Osterby-Smith & Prieto (2008), Forsman (2011), Paarup Nielsen (2006), and other authors, knowledge exploitation skills allow businesses to access and recombine knowledge, manage learning mechanisms, and use new knowledge to create value for their operations. We contend that these dynamic properties are especially pertinent to BMI in the digital domain. Previous research (Nambisan et al., 2017; Sorescu, 2017) emphasizes the complexity of digital components are often "reprogrammable" to "perform a wide array of functions", digital BMI eventually leads to a constant innovation process (Müller et al., 2018; Yoo et al., 2010). Digital BMI is frequently continually created, in contrast to traditional BMI, which is typically produced over a number of years (Nambisan et al., 2017). Knowledge exploitation skills in relation to digital BMI are very important because of these characteristics. Furthermore, because digital BMI is frequently discontinuous, knowledge exploitation skills help businesses manage with uncertainty. This is especially true when pursuing digital BMI (Vial, 2019). The unknowable results of the business procedures required to create digital BMI as well as the novelty or even infancy of certain associated technologies are the main sources of uncertainty connected with digital BMI and stakeholders' partial ignorance of the creation of digital BMI (for instance, in the context of

extensive, anonymous initiatives involving crowdsourcing and open innovation). Additionally, earlier studies have emphasized the significance knowledge exploitation abilities in handling information overload, especially "technostress," which is the outcome of organizations and their decision-makers being overburdened by digitalization (Ceipek et al., 2021). We contend that knowledge and learning processes play a major role on the level of digital BMI obtained in a business. This is due to the complexity of digital BMI high in uncertainty, and discontinuous, necessitating expertise to handle. As a result, we anticipate that digital BMI and knowledge exploitation capacities will positively correlate.

Previous research highlights the importance of risk management competencies in identifying and assessing business risks brought on by environmental uncertainty for the company. The development of digital BMI is often typified by the involvement of scattered actors, including loosely organized crowds (e.g., in new markets) and external stakeholders (e.g., customers). The current responsibility rules and intellectual property protection are put to the test by the dispersed nature, ambiguity, and complexity of digital BMI. Risk knowledge is especially useful for analyzing risks and addressing the absence of formal intellectual property agreements when establishing digital BMI via digital ecosystems (Cennamo, 2020) or online communities (Faraj et al., 2011). We contend that risk management competencies empower businesses to address these issues

connected to digital body mass index. Furthermore, previous studies reveal that severe privacy and cybersecurity concerns are frequently associated with digital BMI (Nambisan et al., 2019). Businesses' digital BMI operations may be significantly limited or even discouraged by a lack of unique skills in handling security concerns (Ceipek et al., 2021). Therefore, we contend that a firm's capacity to manage these novel business risks is a critical component in achieving digital BMI. As a result, we anticipate a beneficial relationship between risk management skills and digital BMI.

The development of profound understandings of the workings of markets and consumers is facilitated by marketing competencies (Fang & Zou, 2009; Helfat & Winter, 2011; Morgan et al., 2009). Because digital BMI is reprogrammable and involves many cycles of testing, "Receding boundaries" between innovative techniques and results are more common in corporations. To put it another way, it is less obvious when an innovation process begins or finishes and when an innovation product is "final" while pursuing digital BMI (Nambisan et al., 2017). We contend that in order to more accurately predict the success of digital BMI, it is becoming more and more necessary to combine the market and the consumer experience. In order to manage the dispersed setup of digital BMI, marketing prowess is seen as crucial (Troilo et al., 2017), since they allow businesses to anticipate the behavior of loosely structured crowds and manage complicated and multifaceted relationships with external

persons, especially consumers. As a result, we presume that because of its dispersing borders, decentralized, and dispersed structure, digital BMI is heavily reliant on market and consumer insights as well as the influx of knowledge about how digital markets operate. As a result, we anticipate that marketing skills and digital BMI will positively correlate.

Together, we contend that dynamic capacities promote digital BMI. In particular, firms can deal with uncertainty through knowledge exploitation capabilities, using risk management tools, handle new ownership, responsibility, and (cyber) security concerns; use dispersed information on new clients and online marketplaces that go along with digital BMI with the help of marketing capabilities. Therefore, we presume:

H1b: *Digital BMI is favorably correlated with dynamic capacities.*

The Role of Dynamic Capabilities in Mediating

We anticipate that dynamic capacities will mediate the link based on the logic that gave rise to H1a and H1b, between smartphone BMI and the degree of genetic effect. The degree of dynamic capabilities, i.e., knowledge exploitation, risk management, and marketing capabilities, as previously mentioned, positively correlates with family influence traits like unique learning styles, a high degree of control, and sound decision-making. Moreover, a greater level of dynamic capabilities helps businesses to handle intricate

business problems, control the erratic nature of digital technology, capitalize on outside relationships with customers and markets, manage the rules of ownership and accountability that are disappearing, safeguard intellectual property, and uphold cybersecurity. Thus, we propose that they have a favorable correlation with digital BMI.

Dynamic capabilities and the peculiarities of family influence are intimately related in this mediation model, which bundles and orchestrates these traits to produce corporate value through digital BMI (Soluk & Kammerlander, 2021). In the theoretical background section, we identified a number of characteristics that were associated with more familial influence. However, previous research indicates that these characteristics do not always translate into business value; instead, they must be suitably adjusted (Chirico et al., 2012; Teece et al., 1997). More precisely, given that family firm features have a wide range of diverse consequences, this link could be more intricate than previously thought (Chrisman et al., 2015; Kellermanns et al., 2012; König et al., 2013).

Therefore, we contend that, as value-related outcomes, we need to fully comprehend the processes that link digital BMI and familial impact. As they "integrate, build, and reconfigure internal and external competences to address rapidly changing environments," dynamic capabilities carry out this enabling role. This may be attributed to the fact that knowledge exploitation risk management (Arena et al., 2013; Teece, 2018a), marketing

skills, and knowledge exploitation are three prominent facets of the integration and reconfiguration of talents necessary for digital BMI. Furthermore, as previously mentioned, higher family impact levels stimulate learning and knowledge processes, a more thorough assessment of company risks (Gómez-Mejía et al., 2007; Christman et al., 2015), close relationships with clients as well as market research (König et al., 2013). As a result, we anticipate that there may not always be a direct correlation between increased family influence levels and digital BMI. As this will ultimately rely affects the ability of the company to manage risk (Teece, 2018a), market (Sorescu, 2017), and use knowledge (Foss & Saebi, 2017).

In conclusion, we contend that larger degrees of family influence are a direct result of dynamic capacities, including information marketing, risk-taking, and exploitation skills. Therefore, we anticipate that dynamic capacities will mediate the link between digital BMI and familial influence.

H1c: *The favorable correlation between digital BMI and family influence is mediated by dynamic capacities.*

The Attenuating Impact of Ecological Dynamics

Businesses must have dynamic skills to keep up with quickly changing developments when they are under environmental strain (Teece et al., 1997). Due to the complementary views within the family, it is believed that family impact promotes the

development of knowledge exploitation capacities. We suggest that a highly dynamic environment forces businesses, particularly those with a family impact, to increase their investment in building knowledge exploitation capacities that might assist them navigate difficult times, given their goal of sustaining long-term company success. Put differently, there is a perceived need to improve knowledge exploitation capacities in highly dynamic environmental conditions, and this requirement increases with family influence. Businesses that are impacted by families set up their operations to build these talents in high-volatility environments by depending more emphasis on the complementing abilities and easily accessible internal knowledge inside the family (which rise with increasing family influence). Given the perceived need to invest even more time and energy in skill development in anticipate that environmental dynamism will have a beneficial impact on the relationship between the level of family influence and knowledge exploitation capacities.

Dynamics of the environment, as defined by Chirico & Baù (2014), p. 212. In general, "concerns the amount of uncertainty, complexity, and change emanating from the external environment" may make a corporation more aware of significant business circumstances and the risks involved, particularly for businesses with a strong family influence. A stronger drive to survive results from the greater the degree of family influence, which is correlated with the family's riches and the company's achievements. Thus, a

highly dynamic environment further motivates businesses to strengthen their risk management capacities. We contend that because business survival is becoming more and more important in family-influenced enterprises, this incentive increases as family influence increases. Higher levels of family influence, as previously stated, foster closer relationships enhance the amount of time that family members spend together and use their complementing expertise with that of the wider family to address threats that pose a threat to the company. Consequently, the ownership family may put in greater effort to develop risk management knowledge the more dynamic conditions in the corporate world (Chirico & Baù, 2014). To fulfill their deep need for survival and long-term prosperity, we contend that enterprises with higher degrees of family influence are forced by environmental dynamics to place a greater priority on risk management initiatives. Therefore, we anticipate that environmental dynamism will improve the link between risk management competencies and family influence.

Building the corresponding dynamic skills is necessary since market and consumer demands shift during times of environmental dynamism. Especially, families that own businesses are able and ready to go above and beyond in response to mounting environmental stress (Ramos et al., 2014) in order to protect their socioemotional and financial capital. This going above and above might show up as the mobilization of connections with other market actors and customers—many of

whom have been around for a long time—under environmental dynamism (Duran et al., 2016). Furthermore, the heightened intricacy linked to environmental dynamism may prompt companies with elevated family influence may now also depend on the abilities of other stakeholders, which may not have previously been under the firm's purview, including disorganized crowds or online communities. Therefore, we contend that the environment. Family-run businesses must now engage even more in customer relationship marketing due to dynamics have unique objectives and ties, this link grows stronger as family influence increases. Consequently, we anticipate the marketing capabilities between the impact of family and the potential for dynamism of the environment.

Finally, we believe that the environment's dynamic quality will enhance the influence of family on dynamic capacities; more precisely, marketing, risk management, and knowledge exploitation. We contend that the dynamic nature of the environment places additional pressure on family-influenced businesses to acquire these skills. Therefore, we postulate:

H2: *Environmental dynamism strengthens the bond between dynamic qualities and family impact.*

METHODS

We employed exclusive survey data from Indonesia businesses to test our theories because there isn't a database

that provides detailed details on the digital BMIs of businesses with different family participation percentages. Due to the importance of family-influenced businesses, we decided to conduct our research in Indonesia (De Massis, Audretsch, et al., 2018). Furthermore, Indonesia provides an ideal framework for researching the importance of environmental dynamism and digital BMI due to its innovativeness, growing rivalry and transformative obstacles in important sectors (De Massis, Audretsch, et al., 2018; De Massis, Di Minin, et al., 2015; Leal et al., 2019).

Data Collection

We began by gathering data for every operating business that is included in the Ministry of Trade database, which included family and nonfamily firms in Indonesia with varied family impact levels. Due to inherent characteristics that can distort digital BMI, including a lack of formalization participation, we did not include micro- and small-scale companies with under 50 workers. Additionally, we eliminated companies whose main offices are outside of Indonesia, local governments, and places of worship, leaving 37,390 companies. Contact details for 7,206 businesses, ranging in terms of family power, size, and industry.

Initially, we sent them companies outlining the goals of the research and making it clear that CEOs, senior executives, and executive managers in charge of innovation and (digital) technology are the target audience for our survey. We utilized Survey software to administer the survey. We pretested

and piloted the survey prior to providing the link to the survey to possible study participants (Kriauciunas et al., 2011). There were two stages to the pretesting: (1) in-person interviews with four practitioners and five academics utilizing a protocol approach in which participants completed the questionnaire while thinking aloud (Hunt et al., 1982); and (2) in accordance with earlier survey-oriented study distributing the online survey to an additional 30 business practice respondents in order to assess the general length, wording, and organization of the survey. Two pretesting sessions resulted in minor rewordings of our text. A total of 1,774 surveys were returned following two reminders for the survey, which ran from March 9, 2023, to December 24, 2023. This response rate of 24.63% is consistent with studies of a similar nature in the family business literature. Of the returned responses, 1,226 gave us complete information for our analyses (the dropouts were probably caused by the sensitivity of some of the survey questions).

Variables

We primarily developed the questionnaire using validated constructs. We meticulously translated these materials into Indonesia and then back into English to make sure the original meaning remained intact. (Dillman, 2007; Kriauciunas et al., 2011). In addition, we constructed web surveys in accordance with Dillman's (2007) guidelines, which guaranteed respondent usability and prevented any biases right away.

Dependent Variable

We modified the BMI measurements from previous studies in order to accommodate the innovations in digital setting (Nambisan et al., 2017; Yoo et al., 2012) in order to collect digital BMI. The respondents scored utilizing a five-point Likert-type scale, the observed degree of digital innovation in their company's business model (1 being strongly disagreed and 5 being highly agreed). Using varimax rotation, we performed nine elements were subjected to a principal component factor analysis (PCFA) (Cronbach's $\alpha = .87$). As a result, we were able to find patterns among the items and narrow them down to one or more unifying variable(s) (Jolliffe, 2011). As one element, identified via PCFA analysis (with an eigenvalue greater than the traditional cutoff of 1), accounts for 62% of the variance in the data.

Independent Variables

In line with previous studies (Fernández & Nieto, 2006; Miller et al., 2010; Miroshnychenko, Strobl, et al., 2020; Sciascia et al., 2015; see also Boling et al., 2016; Sirmon et al., 2008), we employed a stand-in for the continuous family ownership stake variable (with a range of 0–100) to measure the impact of the family on the company. The responders specifically mentioned the proportion of company shares that the family owned. On various operationalizations of the independent variable, we conducted a number of robustness tests (see to the section on robustness tests).

Mediating Variable

We created according to existing The dynamic capacities variable assesses how much a corporation has evolved its knowledge exploitation, risk management, and marketing skills based on theory and our previously discussed reasons. This is because firms are likely to need diverse capabilities in order to successfully apply digital BMI. Thus, we adopted the strategy proposed by Forsman (2011), who claimed that these dynamic qualities were especially important for businesses looking to innovate. To ensure scale reliability, we carefully modified Forsman's (2011) constructs by removing the Risk Management Capabilities Measure's "risk assessment" item (Cronbach's α grew from 0.56 to 0.86). In particular, we employed the PCFA (with Cronbach's $\alpha = .76$) using varimax rotation to assist us develop the final dynamic capacities variable, which consisted of the eight concerns were scored on a five-point Likert-type scale, with 1 representing strongly disagreed and 5 representing greatly agreed. One element having an eigenvalue of 1.98 that accounted for 68% of the variance overall was identified by the PCFA.

Moderating Variable

We built the environmental dynamism variable using the Chen et al. (2015) scale, which was based on earlier studies on the topic. We enhanced their methodology by taking into account not only altered goods and services, as well as modified protocols and corporate structures. The continuous variable of

environmental dynamism can be measured using a Likert scale with five points: 1 for extremely steady and 5 for very turbulent that indicates the degree of shifts in customers, suppliers, and rivals, as well as in the company's operations, products, services, and business strategies. The PCFA was used to build this variable (with rotation using varimax). Using a Cronbach's alpha of 0.82, the environmental dynamism variable composite scale is deemed dependable and accounts for 64% of the overall variation.

RESULTS

Descriptive Results

With a minimum 7% family ownership percentage, 48% of the sample might be categorized as having influences from their families enterprises. The industry breakdown (refer to Supplemental Table S1) reveals a comparatively broad dispersion of businesses across several sectors. The two industries are information and communication technology (ICT) and machine construction with the highest representation (22.70% of the sample). In our sample, the sector with the fewest enterprises is agriculture, forestry, and fishing (around 0.16% of the sample).

Our sample of organizations has a median size of 284 people and a median age of 45 years. Over the 7% family ownership level, family-influenced companies exhibit greater degrees of dynamic capabilities in comparison to their peers who are not impacted by families ($t = 4.620$; $p < .001$). In

comparison to nonfamily-influenced enterprises, family-influenced firms do better financially ($t = 1.621$; $p < .10$) and internationally ($t = 3.672$; $p < .001$). They also show lower R&D intensity than enterprises not driven by families ($t = -3.571$; $p < .001$). The two groups differ in terms of company size, age, and family dynamics enterprises tend to be older ($t = 6.107$; $p < .001$) and smaller ($t = -3.710$; $p < .001$). According to O'Brien (2007), all of when the variance inflation factors are smaller than three, multicollinearity is present has little bearing on our regression estimates.

Regression Results

The digital BMI is negatively impacted by the firm age variable ($\beta = -0.172$; $p < .001$), as demonstrated the following criteria, although there is a significant correlation ($\beta = .046$; $p < .001$) between the firm size variable and the digital BMI level. This means that smaller, older businesses had lower digital BMIs than larger, younger businesses. This is consistent with earlier innovation studies (Huerger & Jaumandreu, 2004). Furthermore, in Model (1) and all other models, the financial performance variable has a positive and statistically significant regression coefficient ($\beta = .324$; $p < .001$). To determine the cumulative importance of industrial dummies, the Wald tests are used in all parameters show a strong statistical significance ($p < .001$), which supports their incorporation into our model.

According to H1a, dynamic talents are positively correlated with family influence. The family influence variable in Model (3) has a regression on

dynamic capacities ($\beta = .003$, $p < .001$) with a positive and statistically significant coefficient. So, we discover that H1a is fully supported. In line with H1b, digital BMI and dynamic capacities are strongly correlated. The dynamic capacities variable has a positive and statistically significant regression coefficient ($\beta = .482$, $p < .001$). As a result, we discover empirical support for H1b. According to H1c, the positive correlation the relationship between dynamic abilities function as a mediator between family influence and digital BMI. We find that the association between family influence and digital BMI is no longer statistically significant ($\beta = .000$, n.s.). Considering the mediator variable to be dynamic capacities, our primary variable of interest is family influence, and the outcome variable is digital BMI. This suggests full mediation. Stated differently, family has a large indirect impact on digital BMI by enabling the dynamic capabilities of H1c. The results reveal a significantly significant indirect impact by Sobel test ($p < .001$).

According to H2, environmental dynamism strengthens the bond between dynamic qualities and parental impact. The word that describes the connection between family and environmental dynamics impact variables in Model (4) is found to be statistically significant to a little extent and, remarkably, A negative sign ($\beta = -0.005$, $p < 0.10$) was observed. Thus, we find that there is a negative moderating, or weakening, link between parental influence and dynamic abilities by ambient dynamic strength. Specifically, the average impact of family on dynamic

skills is smaller for enterprises that encounter in contrast to those who do not ($\beta = .003$, $p < .001$), environmental dynamism ($\beta = .004$, $p < .037$). We demonstrate this relationship further, basing it on a family ownership share of at least 5%, and defining by Salkind (2007) defined two standard deviations from the mean represent the low and high boundaries, respectively. The variation in the two slopes' statistical significance is negligible ($p < .10$). H2 is rejected due to the moderating effect's sign.

In conclusion, Muller et al. (2005) propose that two conditions must be met in order to prove the moderated mediation. Models (1) and (2) meet the first condition, while Models (3)–(7) satisfy the second.

Rather than employing the variable of aggregate dynamic capacities, we recalculated the moderated mediation by applying each of the three dynamic capabilities: risk management, marketing, and knowledge exploitation) in order to obtain additional insights. With fairly demonstrate a favorable impact of family on marketing abilities ($\beta = .004$; $p < .01$), risk management ($\beta = .005$; $p < .001$), and knowledge exploitation ($\beta = .002$; $p < .10$), with similar regression coefficient magnitudes in all models. Therefore, H1a is applicable to each dynamic capability independently.

When examining how each of the three dynamic capacities affects using BMI, we discover that in every model, they are all very significant statistically at the 1% level. The magnitude of the

regression coefficients varies among the different skills, with risk management capabilities having the lowest value at 0.362 and knowledge exploitation capabilities having the highest value at 0.321. Therefore, every dynamic capability has a considerable impact on digital BMI, which validates H1b even more. However, the impact varies depending on the capability. Furthermore, when considering each of the three dynamic capabilities separately, H1c is also verified. However, as previously noted, the environmental dynamism of the environment negatively moderates the link between dynamic capacities and familial influence. This impact does not hold true for only for marketing capabilities in Model 10 ($\beta = -0.002$; $p < .10$) is it statistically significant, regardless of knowledge exploitation or risk management capabilities.

Structural Equation Modeling (SEM)

Additionally, we used the recommendations to recalibrate our model of moderated mediation provided by Preacher et al. (2007) and Hayes (2013) using the SEM technique. Using SEM, we can analyze every variable in our model at the same time and adjust for measurement mistakes, preventing them from being combined into the leftover phrase (Tarka, 2018). Panel A of Supplemental Table S7 presents the analysis's findings. The goodness-of-fit statistics ($\chi^2 = 1234.83$ [DF = 75]; CFI = .963; RMSEA = .112; SRMR = .005) show that our model fits the data well. Based on about 1000 bootstrap runs, the SEM estimates validate our primary results.

Using three distinct test our analysis of using the Delta technique, Sobel's test, and Monte Carlo simulations (5000 replications), the importance of the standardized indirect impact of family influence on digital BMI was investigated with dynamic capabilities. At the 1% level, each of these tests is statistically significant, confirming the existence of our model's dynamic capabilities as an indirect means of influencing family influence on digital BMI. The indirect impact is statistically significant ($\beta = .073$, $p < .001$) from the Monte Carlo simulations, therefore we have an extensive mediation model (Zhao et al., 2010). However, there is no difference between zero and the standardized impact of familial influence on digital BMI (n.s.).

DISCUSSION

A paradigm of regulated mediation that connects digital BMI to dynamic capabilities was proposed and evaluated in our study using a sample of 1,226 Indonesia enterprises with different family influence levels. Our research reveals a favorable relationship between digital body mass index (BMI) and higher family influence levels. This association is mediated by dynamic capabilities, particularly those connected to marketing, risk management, and knowledge exploitation. Remarkably, and in opposition to what we expected, the link between dynamic capabilities and the extent of familial effect is weakened by environmental dynamism. Subsequent investigation shows that family influence and environmental

dynamism only interact when marketing skills are taken into account. It has little bearing on the ability to use information or control risks. Our findings are robust against modifications to the model's parameters and independent variables, in addition to endogeneity problems.

THEORETICAL CONTRIBUTIONS

Initially, our study expands the corpus of information regarding innovation in family businesses. Although prior research indicates showing R&D expenditure (Chrisman et al., 2015), patent activity (Kotlar et al., 2013), and innovation in general are all strongly predicted by family influence, the impact of family influence on digital BMI has not yet been examined (Duran et al., 2016). In particular, we demonstrate that the unfavorable impression of sudden or dramatic innovation in family-run enterprises is not applicable to digital BMI. On the other hand, we show that family businesses have characteristics that make them ready for the opportunities and challenges posed by the digital economy. These characteristics include their distinct knowledge management strategies, the strong family ties that bind the company (Chirico & Salvato, 2016; De Massis et al., 2016), and specialized resources. This leads to a major expansion of the insights provided by the few research (e.g., Soluk & Kammerlander, 2021) that have looked at digital innovation in family firms. By presenting we further extend our hitherto limited understanding of how family firms engage in digital business opportunities in general and digital BMI in particular by presenting our theoretical arguments

and empirical findings regarding the specific mechanisms that family influence provokes in organizations and the role that dynamic capabilities play (Teece, 2018a).

Secondly, our results further the study of digital BMI. We significantly broaden this perspective by illuminating the processes that underpin digital BMI in organizations, despite the fact that earlier research (Foss & Saebi, 2017; Sorescu, 2017; Teece, 2010) focused more on the performance consequences of digital BMI than its antecedent circumstances. This is, as far as we are aware, the first study to look at the connection between digital BMI and ownership type and to present dynamic capacities as a pertinent but little-studied mediating factor in this relationship. We theoretically and experimentally demonstrate, according to our sufficiently big and distinctive sample, the ownership type-dependent accessible dynamic capabilities, have an impact on a firm's digital BMI level. According to our empirical findings, risk management capabilities have the least impact on digital BMI, but knowledge exploitation capabilities have the most. Additionally, we contribute to the empirical capture by adapting a recognized BMI metric and using it in the context of the digital economy (Foss & Saebi, 2017). This builds on earlier, mostly conceptual research on digital BMI. Furthermore, digital BMI is largely discussed as a problem that predominantly affects new enterprises (Sorescu, 2017; Teece, 2010; Hedman et al., 2016), even though the BMI literature focuses on both new and established businesses. By increasing

the BMI digitally research to incumbent organizations, we refute this notion and add to the small body of research on how well-established businesses create long-term performance using digital BMI (e.g., Müller et al., 2018; Remane et al., 2017).

Thirdly, our research adds to the expanding body of knowledge regarding dynamic capabilities (Teece, 2007; Heilfat & Raubitschek, 2018; Teece et al., 1997). We expand on this research stream confirms the importance offering a sophisticated and empirically based knowledge of the function of dynamic capabilities in the context of the digital BMI in order to compete in the digital economy. In doing so, we provide empirical evidence that risk management, marketing, and information exploitation act as mediators in the interaction between digital BMI and familial influence capacities. For this reason, we contribute to the current body of literature about dynamic capacities in family-run enterprises (De Massis et al., 2016; Chirico & Nordqvist, 2010; Chirico & Salvato, 2008; Chirico et al., 2012). Additionally, we disprove prior theories that dynamic settings often encourage the growth of dynamic capacities specifically by demonstrating show the association between greater family influence levels and knowledge exploitation or risk management competencies is not moderated by environmental dynamism. We discover that the link between marketing and family influence skills is negatively moderated by environmental dynamism which contradicts our theoretical predictions. This result contradicts

previous studies' claims that changing surroundings could encourage the growth of marketing expertise. This unexpected outcome could be explained by the family-influenced firms' inward-oriented focus, which may lead in uncertain times, these enterprises should depend on firm-internal procedures instead of external ones to safeguard the non-financial and financial endowments of the family (Gómez- Mejía et al., 2007; Kotlar et al., 2013).

LIMITATIONS AND FUTURE RESEARCH

Despite several limitations, our research offers significant avenues for future research. We have not attempted to establish causal links in this study, as is the case with any cross-sectional investigation (Bascle, 2008). To address the potential endogeneity issue and rule out any other plausible explanations, we did a number of robustness tests, as detailed in the methods section. The reliability and applicability of our results may be confirmed by additional study on digital BMI utilizing longitudinal data. Further study, particularly qualitative case-based studies, could clarify the intra- and interfirm variations brought about by different degrees of family influence. It could also investigate how businesses build dynamic capacities and handle micro-level digital BMI (Kammerlander & De Masis, 2020). According to De Massis and Kotlar (2014), longitudinal (many) case studies may be able to clarify the time-varying impacts' fundamental mechanics on the development of digital BMI. Extending our strategy to more extensive

institutions contexts with differing legal systems, cultural norms, and advancements in digital technology (Gedajlovic et al., 2012) would also be an interesting way to determine if our conclusions hold true in other contexts.

It's also crucial to note that, because of data limitations, we were unable to take into account family business heterogeneity, which surpasses the variation observed in the family influence (Chua et al., 2012) factors that were included. Therefore, another possible direction for future research is to examine the impact of various traits pertaining to families, such family structures. Further research may also focus on how the relationship between the three dynamic capacities and additional dynamic or regular capabilities that fall outside the purview of our study, such as absorptive capability and its subcategories (Daspit et al., 2019; Zobel, 2017). We recommend future research to use various theoretical frameworks in addition to the dynamic capacities lens to understand how digital BMI is created by family-influenced businesses. Theory of prospects (Tversky & Kahneman, 1974) might provide useful guidance on how family members evaluate the hazards associated with digital BMI, but other viable avenues are based on multidisciplinary theoretical approaches, including the idea of construal level (Trope & Liberman, 2010). Constructional level theory, which was first created in the psychological field, may help to understand how and why The way that decision makers conceptualize digitization is influenced by family

influence, and therefore, digital BMI at the firm level (Kammerlander & Breugst, 2019). Furthermore, academics may find it easier to comprehend how family-influenced businesses include outsiders in their procedures for developing digital BMIs, such as suppliers, long-standing consumers, prospective new customers, and disorganized crowds, if they employ stakeholder theory (Freeman, 2010).

CONCLUSIONS

Our research connects the streams of literature on digital BMI, dynamic capacities, and family firm innovation. We demonstrate that dynamic capabilities—more specifically, knowledge management, risk management, and marketing capabilities—are positively connected with family influence and digital BMI. With digital BMI act as a mediating factor in this relationship. When considered collectively, our results illustrate the value dynamic capacities for influencing families businesses, showcasing their advantages with reference to digital BMI and providing intriguing directions for future study.

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