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The interplay of dynamic capabilities and innovation output in family and non-family companies: The moderating effect of environmental dynamism

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ABSTRACT

Objective: In the article, we aim to test the relationship between dynamic capabilities (DCs) and innovation output as moderated by environmental dynamism and establish if there are significant differences between family and non-family firms in this regard.

Research Design & Methods: To test three research hypotheses we employed quantitative research methodology. Our results are based on the data from 211 family and 211 non-family companies from the Polish post-transition economy. Results were analyzed using multigroup structural equation modelling.

Findings: Results indicate that DCs can be justifiably perceived in two dimensions (sensing and seizing; reconfiguring) and these dimensions influence the innovation output in both family and non-family businesses, however, this impact varies. The environmental dynamism does not significantly moderate the basic relationship, but it influences the level of innovation output in non-family businesses. Models estimated for family and non-family businesses are significantly different, which proves that subtle differences between these two groups of companies exist.

Implications & Recommendations: In the article, we enrich the theory of innovation in family firms and show how subtle differences create a different portrait of relationships between DCs and innovation in these types of companies.

Contribution & Value Added: To our knowledge, it is the first study to show how family businesses are different from their non-family counterparts with respect to relationships between DCs and innovation output as measured by the number of new products and solutions.

Article type: research article

Keywords: dynamic capabilities; environmental dynamism; innovation output; family business; structural equation modelling

JEL codes: O30

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INTRODUCTION

The external environment, its dynamism, hostility, and unpredictability force organizations to change (Stieglitz, Knudsen, & Becker, 2016). As the failures of numerous companies show (Blackberry, Nokia, to mention just a few), the inability to change results in a slow decline or rapid collapse. Organizations have numerous ways to adapt to the environment and one of them is innovation. Innovation – defined in terms of new products, services, or new organizational solutions and processes (Oslo Manual, 2018) – can be achieved in organizational settings through numerous means. Most organizations seek to create a proper mindset and conditions in which innovation may occur (Ringberg, Reihlen, & Ryden, 2019). Numerous studies emphasize the role of dynamic capabilities (DCs) in driving desired outcomes – new and

valuable products, services, or processes that help to adapt to the ever-changing environment. Teece, Pisano, and Shuen (1997) argue that the DCs focus on the organization's abilities to create new resources and renew or reconfigure its resource base in the face of a rapidly changing environment; it helps to explain organizational behaviours in uncertain times. Moreover, although Borch and Madsen (2007) clearly show the links between DCs and innovative strategies, the proofs for the direct effect of DCs on firm innovation and innovation output in particular – introduced new products, services, or processes – are scarce in the literature. Even less is known about the influence of the DCs on innovation in different organizational settings and different types of companies (Weerawardena & Mavondo, 2011).

To fill in this empirical gap, we decided to compare the influence of DCs on innovation output in two diverse groups of organizations: family businesses (FBs) and non-family businesses (NFBs). The distinctiveness of FBs from NFBs is indicated in the literature. The differences reside, among other things, in specific FBs features, such as familiness, increased family involvement, on average, the lower level of professionalization, or creating and appropriating socioemotional wealth as a particular goal of the operation. It all leads to a different approach to innovation and differential organizational processes and may also lead to a different approach to DCs as compared with the NFBs, although evidence for it is ambiguous (Kraus, Pohjola, & Koponen, 2012). The understanding of differences between FBs and NFBs in terms of the differences in the approach to the utilization of dynamic capabilities for innovation is important for several reasons. Firstly, FBs are often characterized by unique features such as a long-term orientation and a focus on tradition and legacy (Akram, Gosh, & Sharma, 2022), which may impact their ability to develop and deploy DCs effectively. Understanding how dynamic capabilities influence innovation in FBs and NFBs can provide insights into how FBs can leverage their unique strengths and overcome potential barriers to innovation. Secondly, FBs may have to balance the needs of the family and the business, navigate family dynamics, and manage succession planning, all of which can impact their ability to develop and effectively deploy DCs (Perlines, Ariza-Montes, & Araya-Castillo, 2020). Thirdly, innovation is a key driver of economic growth and FBs are important contributors to the global economy. By examining the differences in the influence of DCs on firm innovation in these two types of companies, researchers and practitioners can better understand the factors that influence innovation in these firms, and how they can be encouraged to develop and deploy DCs more effectively (Camisón-Zornoza *et al.*, 2020). Overall, in our opinion, the search for differences in the influence of DCs on firm innovation in FBs and NFBs has important implications for both theory and practice and can inform strategies for improving innovation in these firms.

Summarizing, (1) there is a significant convergence of views on the importance of innovation for the survival and development of the company (Ortiz-Villajos & Sotoca, 2018); (2) DCs are seen as a trigger of innovation (Warner & Wäger, 2019). However, few studies focus on answering the question: do DCs translate directly into the company's innovation, as measured by the innovation output? Even fewer studies explain that relationship in a more precisely defined organizational context – the context of family and non-family firms (De Massis *et al.,* 2016). Thus, the article will answer three questions. Are DCs related to innovation output? What role does environmental dynamism (changeability) play in this relationship? Moreover, is the relationship between DCs and innovation output different in family and non-family firms? Therefore, the article will test the relationship between DCs and innovation output as moderated by environmental dynamism and establish if there are significant differences between family and non-family firms.

We hope to contribute to the knowledge of the determinants of innovation in family and non-family firms based on data flowing from 211 family and 211 non-family firms, considering their similarities in size as measured by the number of employees. These data were gathered between August and November 2021 from owners or managers of Polish companies. We are convinced that such data allow us to test the relationship between DCs and innovation output and check to what extent FB and NFB are different. Our study fills in empirical gaps in current literature by explicitly presenting the link between DCs and innovation, exhibiting the role of environmental dynamism in this relationship, and showing how this relationship looks in family and non-family firms (Akram, Ghosh, & Sharma, 2022; Calabro *et al.*, 2019). In our study, we seek to contribute to the knowledge of DCs and innovation by

exhibiting the influence of latent organizational DCs on innovation output as moderated by the dynamism of the organizations' environment. We also seek to enrich the knowledge in the field of FBs by showing how the specificity of FBs alters the influence of DCs on innovation output.

To achieve the goal of our paper, we begin by conducting a literature review and developing hypotheses based on the findings. We then proceed with describing our methodology and presenting the results of our empirical research. In the following section, we discuss these results and compare them with previous studies. Finally, we present the theoretical and practical implications of our findings, outline future research directions, and acknowledge the limitations of our research approach.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Dynamic Capabilities as Drivers of Innovation and Change in an Organization

Management scholars explain the innovativeness of organizations using diverse approaches (Ardi *et al.*, 2020; Singh *et al.*, 2020). Some scholars argue for the role of organizational culture in innovation (Büschgens *et al.*, 2013), some emphasize the notion of organizational ambidexterity (Andriopoulos & Lewis, 2009), and others seek sources of innovation in individual creativity (Amabile, 1988; Perry-Smith & Mannucci, 2017). One of the most critical research streams – the resource-based view (RBV) – explains an organization's innovativeness by emphasizing the role of resources in driving organizational-level outcomes (Barney *et al.*, 2001). As some argue (Eisenhardt & Martin, 2000; Lin & Wu, 2014; Wang & Ahmed, 2007), building on, and enhancing the resource-based view, DCs seek the sources of organizational performance, including innovations, in firms' specific competencies, allowing for swift movement in a dynamic environment (Laaksonen & Peltoniemi, 2018).

Teece *et al.* (1997) initially coined the notion of DCs to gain consequent interest in the management field. The original definition of DCs (Teece *et al.*, 1997), explains it as 'the firm's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments,' or 'the organization's ability to achieve new and innovative forms of a competitive advantage given path dependencies and market positions.' Despite the notion of the DCs for diverse organizational outcomes, proven by different scholars in different settings, the debate is still roaming in the literature regarding the very essence of this phenomenon (Ambrosini & Bowman, 2009; Breznik & Hisrich, 2014; Kurtmollaiev *et al.*, 2022). The original definition, coined by Teece *et al.* (1997) focuses on four types of DCs: (1) reconfiguration and transformation or the reconfiguration-transforming and recombining of assets and resources; (2) leverage – replicating a process or system operating in one business unit into another; (3) learning – experimenting and reflecting on failures and successes; and (4) assets and resources, resulting in a new resource configuration.

Eisenhardt and Martin (2000) also played an important role in creating the concept of the company and integrating, reconfiguring, acquiring, and releasing resources in order to adjust the company to market changes, and even to trigger them ('the processes to integrate, reconfigure, gain and release resources – to match and even create market change'). DCs are organizational and strategic routines through which companies create new resource configurations during the emergence, merger, division, development, and disappearance of markets.

Moreover, Eisenhardt and Martin (2000) emphasize that the importance of DCs lies in the appropriate configuration of resources and not only in the resources themselves. Competitive advantage is achieved because one uses these resources faster and better than competitors. In the following years, Teece (2007) and other researchers made some changes to the concept of DCs, trying to clarify certain assumptions, as there were criticisms of the concept. However, publications by Teece, Pisano, and Shuen (1997) and Eisenhardt and Martin (2000) are still considered key in strengthening the position of the DCs concept in strategic management (Di Stefano *et al.*, 2014; Peteraf *et al.*, 2013), even though many researchers contrast them. In this instance, Yeow, Soh, and Hansen (2018) express the opinion that in recent years these two, to some extent opposing approaches to DCs, have been subject to integration. The differences that previously raised concern were, among other things, whether DCs are

idiosyncratic or shared by organizations and whether they provide a sustainable competitive advantage. It is believed that DCs exist in different forms but also share common characteristics; in detail, they can be idiosyncratic (Di Stefano *et al.*, 2014; Peteraf *et al.*, 2013).

Many researchers interested in the DCs research perspective believe it is rooted in the resource-based view (RBV). According to numerous scholars, DCs constitute not only a specific continuation of RBV but also its extension (Ambrosini & Bowman, 2009; Barney & Clark, 2007; Breznik & Hisrich, 2014; Helfat & Peteraf, 2003). Nonetheless, in a dynamic environment characterized by a high level of variability, frequency, and depth of changes, the DCs of enterprises operating in these difficult conditions acquire a special meaning. Summarizing, management literature emphasizes the relationship between DCs and innovation and it can be argued that this relationship is significant in highly dynamic environments (Slater *et al.*, 2014).

From the analysis of individual DCs dimensions, it can be concluded that their relationship with implementing innovations is highly probable. The DCs concept's originators (Eisenhardt & Martin, 2000; Teece, 2007; Teece *et al.*, 1997) emphasize a close relationship between DCs and innovative behaviour and the creation of new products or services. Lessard, Teece, and Leih (2016) believe that DCs specifically include asset orchestration and provide the ability to combine selected technologies, people, and other resources into new products and processes. Moreover, DCs reflect the company's ability to create and modify its material and non-material resources deliberately and thus facilitate the introduction of changes and renewal of implemented processes. It further stimulates innovation to adapt to market or, more broadly, environmental changes (Eisenhardt & Martin, 2000). Strategic management research indicates that innovation and capabilities are essential elements of DCs (Strønen *et al.*, 2017).

Furthermore, DCs enable the repetitive and reliable performance of activities aimed at planned strategic change instead of ad hoc solutions to problems resulting from turbulence in the environment (Schilke *et al.*, 2018). Thus, DCs are not spontaneous reactions to changes in the environment to solve an identified ad hoc problem-solving event or a spontaneous reaction. Instead, DCs are becoming prominent and observed as routines, which entails their repeatability and intentionality (Ambrosini & Bowman, 2009). They also include routines related to innovation management. In this way, DCs will become the primary source of sustainable competitive advantages and economic efficiency (Camisón & Monfort-Mir, 2012), among other things, by creating innovation as an effect of innovative capacity. Thus, we hypothesize:

H1: Dynamic abilities are positively related to the level of innovation output.

Dynamic capabilities enable companies to change (Winter, 2003; Teece *et al.*, 1997) in response to shifts in their environment. In fact, DCs facilitate sensing and seizing of new business opportunities located in the companies' environment, and as a result, new products or services can be introduced (Laaksonen & Peltoniemi, 2018). Research in this vein helped to establish the role of environmental characteristics in the relationship between DCs and performance (Nedzinskas *et al.*, 2013), competitive advantage (Jurksiene & Pundziene, 2016) or financial performance (Girod & Whittington, 2017). Considering the critical role of new products or services in driving the competitive advantage of companies (Chatzoglou & Chatzoudes, 2018), the lack of evidence for the influence of environment's characteristics on the relationship between DCs and introduced innovations (innovation output) brings a question of the role environment plays in this respect.

Digging deeper into the nature of the relationship between DCs and the innovation performance of companies, it is worth noting that the creators of this concept (Teece, 2007; Teece *et al.*, 1997), as well as other researchers, indicate the notion of DCs interaction with the competitive and changeable environment of contemporary organizations. Miller and Friesen (1984) indicate environmental dynamism as one of the key environmental characteristics. Environment complexity, changeability, depth, and pace of changes require an entrepreneurial approach from the management of companies, *i.e.*, a focus on looking for opportunities in the environment, flexibility, responsiveness, and learning ability (Teece, 2014). These conditions are met by the DCs concept, as it allows it to adapt to environmental changes. However, some researchers indicate that despite the commonly perceived variability in the current conditions in which enterprises operate, their environment may differ: from a 'fast speed' environment to a quasi-

stable environment. Therefore, it seems rational to ask whether a company needs DCs in all environmental conditions or to adapt to rapidly changing environments (Suddaby *et al.*, 2020). Some researchers, especially the creators of the DCs concept, note that the construct refers to the adaptation of companies to the conditions of rapid environmental changes, usually initiated by technological innovations (Teece, 2007; Teece *et al.*, 1997). In turn, Eisenhardt and Martin (2000) stated that the opposite is true, *i.e.*, dynamic abilities may enable the adaptation of a company in a relatively stable environment but do not help adapt to high-speed changes. However, most researchers agree that DCs in a dynamic environment is the most useful organizational response (Breznik & Hisrich, 2014), while the environment is a source of opportunities that can be exploited with new products or services.

According to Ringov (2017), the codified DCs may lose their importance as the environment's dynamism increases. However, the importance of codified DCs largely depends on the exposure to changes' dynamics and the asset base's complexity. According to Ringov (2017), what is needed is a more nuanced situational approach to this relationship, which considers the complex interaction between environmental and internal factors of the company. Thus, in Ringov's opinion, it seems necessary to abandon simple determinism. In this vein, Schilke (2014) empirically confirmed that the strongest positive influence of DCs on competitive advantage exists in average environment dynamism. This relationship may be weaker at lower levels of the environment's dynamism as then fewer opportunities are available to the company. On the other hand, when environmental changes are highly dynamic, too frequent or unpredictable, appropriate use of DCs and implementation of changes might become problematic. Schilke *et al.* (2018) emphasize that the environment's dynamism may be a critical condition for the degree to which DCs can affect organizational results. Summarizing, DCs may be valuable for competing in both stable and dynamic environments, but the strength of the influence of DCs on performance measures might vary.

Literature analyses on the role of the environment bring evidence for the moderating role of this variable in the relationships between DCs and organizational-level outcomes. Girod and Whittington (2017) show that environmental dynamism positively moderates the relationship between reconfiguration and economic performance. In their research, reconfiguration enables the prompt reaction to new opportunities created in the environment through offering of modified or new products allowing better response to clients' needs. Similarly, Singh *et al.* (2019) position environmental dynamism as a moderating variable in the relationship between DCs and firm responsiveness. Moreover, Huang and Ichikohji (2022) argue for and test the moderating effect of environmental dynamism in the relationship between DCs and business model innovation (see also Wiemann *et al.*, 2020). Considering all the above mentioned we believe there is a strong confirmation for the proposition of positioning the environmental dynamism as a moderator in the relationship between DCs and innovation output. Thus, we hypothesise.

H2: The environment's dynamism plays a moderating role in shaping the relationship between DCs and innovation.

Towards a better understanding of the relationship between DCs and innovation in FBs and NFBs

The specificity of FBs is of interest to many researchers (De Massis *et al.*, 2021; Neubaum & Payne, 2021), but there is no single definition of FBs. Although some claim FBs themselves are not uniform category (Brune *et al.*, 2019; Kosmidou & Ahuja, 2019; Stanley *et al.*, 2019), research confirms numerous differences between FBs and NFBs (Chrisman *et al.*, 2009; Gedajlovic *et al.*, 2012; Short *et al.*, 2009). The specificity of FBs relates to, among others, the notion of socioemotional wealth importance (Minichilli *et al.*, 2014), succession problems (Kets de Vries, 1993; Ucbasaran *et al.*, 2013), familiness (Basco, 2015; Habbershon & Williams, 1999; Pearson *et al.*, 2008), the role of family in managing the enterprise (Gedajlovic *et al.*, 2012; Getz & Carlsen, 2000; Greenhaus & Beutell, 1985) and corporate governance mechanisms, which are unique to FBs (Schulze *et al.*, 2001; Thomsen & Pedersen, 2000; Zellweger *et al.*, 2012). In the database, there were also studies related to social capital structure (Sanchez-Famoso *et al.*, 2014), entrepreneurship and entrepreneurial orientation (Salvato & Melin, 2008), innovation (De Massis *et al.*, 2013) or agency theory (Le Breton-Miller & Miller, 2006), which signifies that there might also be significant differences in these instances. Thus, there are numerous arguments for clearly distinguishing FBs from their non-family counterparts.

Following previous studies, we defined FB as a company of any legal form, which is owned in whole or a decisive part (minimum 30% of shares in the case of listed companies) by the family (one or more) and at least one family member manages or co-manages the company to keep the company in the hands of the family on a lasting basis. The operational definitions of FBs used by researchers in other countries are similar, as they take into account one or more of the criteria mentioned above (Waterwall & Alipour, 2021). Some researchers consider an additional or exclusive criterion, which is the perception of the company as a family by its representatives (Brinkerink, 2018).

To gain a deeper understanding of the differences between FBs and NFBs with respect to DCs and innovation, we decided to conduct a literature study on the publications listed in the Scopus and Web of Science databases. For this purpose, we searched for three terms: 'innovat*' (innovation, innovativeness), 'family business' and 'dynamic capabilities' in titles, abstracts and keywords of indexed articles. We located 134 articles relating jointly to these three issues in Web of Science database (fields of business or management or economics) and just 38 documents in the Scopus database (in the areas of business, management and accounting, economics and econometrics and finance). The search was carried out on 5 March 2023. It allowed us to identify articles explicitly, simultaneously referring to key constructs.

Then we downloaded the metadata (containing data identifying the article, keywords from articles, abstracts and a full bibliography) of these articles (we exported it to separate files). The prepared files were further imported to the VOSviewer program, free software that assesses coexistence relationships. The program performed a keyword analysis and created a map based on biographical data. There were 767 unique keywords in the articles, so we decided to limit their number to the most common ones. The minimum number of word occurrences was set at 15, which resulted in the selection of 18 keywords. The phrases 'family business' and 'family firms,' were coded as 'family business,' also 'firm performance' and 'performance' were coded as 'performance,' before the analysis, for better clarity of results. The co-occurrence of keywords is presented in Figure 1.

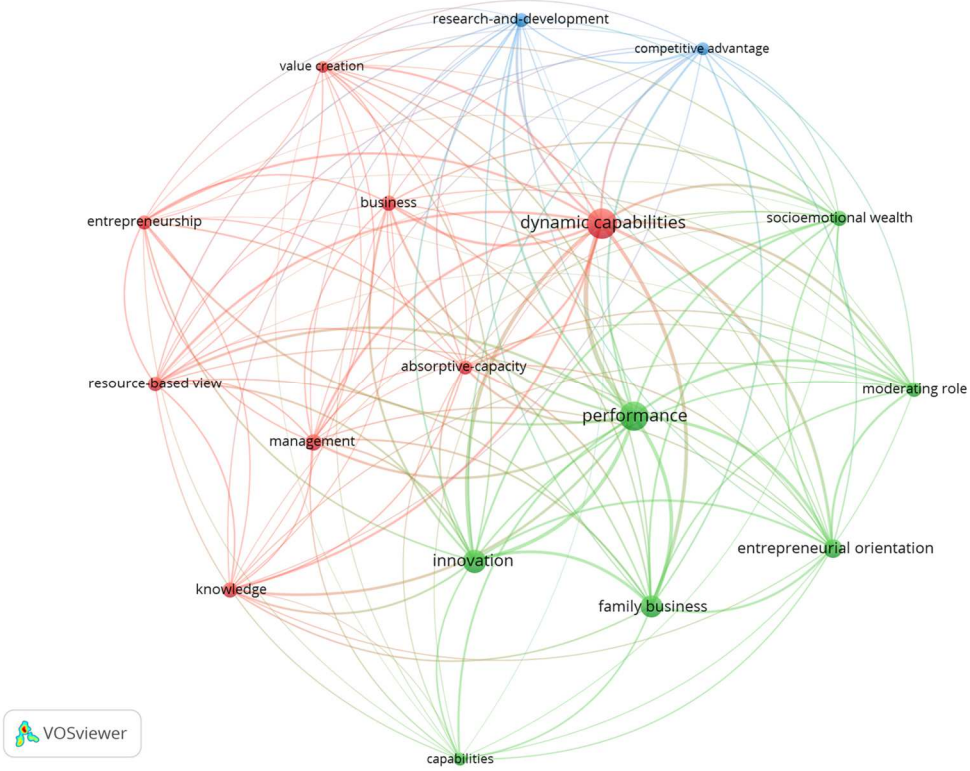

Figure 1. Co-occurrence of keywords in articles referring to a family business, innovation, and dynamic capabilities

Source: own elaboration based on database search and analysis conducted on 5 March 2023.

Analysis of keywords clearly showed that research on DCs and innovation in FBs was mainly carried out using the resource-based view (Alonso, Kok, & O'Shea, 2018); frequently, performance or competitive advantage were dependent variables (Camison-Zornoza *et al.*, 2020); studies also referred to entrepreneurial orientation or entrepreneurship (Hernandez-Perlines *et al.*, 2022), research and development (Broekaert, Andries, & Debackere, 2016), value creation (Gunavan & Keontjoro, 2023) and absorptive capacity (Mennens *et al.*, 2018). However, they also investigated management and knowledge (Sanchez-Sellero, 2014). The main construct strongly related to the specificity of the FBs is socioemotional wealth, which according to Fang *et al.* (2018), jointly with governance structures, generation of family control, and resource availability influence the internationalization of companies. According to the study, FBs differ significantly from NFBs in this regard. In a similar vein, Hernandez-Perlines, Ariza-Montes and Araya-Castillo (2020) argue that in FBs socioemotional wealth strongly influences the entrepreneurial orientation and performance of this group of companies. Similarly, De Massis *et al.* (2018) show how German FBs achieve innovation through a specific set of capabilities related, among others, to niche focus, self-financing, long-run mindset, and community embeddedness, which are perceived as unique characteristics of this group of companies. Summarizing, socioemotional wealth importance clearly distinguishes FBs from NFBs in terms of its influence on innovation.

We further analysed articles searching for empirical studies related to relationships between DCs and innovation in FBs. Using a systematic literature review of 147 journal articles, Akram, Ghosh, and Sharma (2022) clearly indicate the need (as a future research avenue) for studying DCs and innovation output in FBs arguing for its distinctiveness from the NFBs. Based on 261 cases from Taiwan, Chen and Huan (2022) suggest that market knowledge influences product innovation and this relationship is mediated by operational financial effectiveness, knowledge governance, and modularity in FBs. Further, De Massis *et al.* (2016) argue for the creation of a new product innovation strategy for FBs (called innovation through tradition) while it allows for the identification of capabilities enabling for interiorization and reinterpretation of past knowledge in these types of organizations. In sum, researchers call for studies on relationships between DCs and innovation output in FBs justifying these types of studies with specific characteristics of FBs.

The above short review of studies relating to the differences between FBs and NFBs confirms that the specificity of FBs affects several aspects of their functioning. It includes innovation, which remains in complex relationships with the strategic behaviour of these entities with their entrepreneurial orientation (Hernández-Linares & López-Fernández, 2020; Lumpkin *et al.*, 2010), and ultimately with the DCs. The uniqueness of FBs is reflected in strategic management (Barros *et al.*, 2016). Their characteristics may influence the formation and use of DCs by them. However, comparative research on these issues confirms the apparent specificity of DCs in FBs, as it shows that FBs adapt to changes in the environment mainly through innovation (Duarte Alonso *et al.*, 2018). Moreover, DCs are manifested in most of the respondent's FBs through 'organizational heritage,' home-grown capabilities, VRIN attributes, open culture, signature processes, and idiosyncratic/tacit knowledge (Duarte Alonso *et al.*, 2018). Additionally, DCs research in FBs (Camisón-Zornoza *et al.*, 2020; Chirico & Nordqvist, 2010; Jones *et al.*, 2013) clearly shows the impact of different aspects of family involvement in business on the DCs. It has been empirically proven that DCs in FBs are influenced by ownership, management, and governance (corporate and family) (Camisón-Zornoza *et al.*, 2020).

To summarize, we believe that there is a solid theoretical rationale for studying relationships between DCs and innovation in FBs. In fact, relationships between DCs and innovation in FBs might be different than in NFBs, which by itself justifies comparative studies to delve deeper into the similarities and differences. These differences result mainly from the notion of socioemotional wealth, but also from different strategic approaches, the role of family and government mechanisms, particular goals and sets of values, social capital, or risk-taking propensities. On this basis, we hypothesise:

H3: Relationships between dynamic abilities and the level of innovation are different in family and non-family companies.

RESEARCH METHODOLOGY

Sample Selection

To test the interplay between DCs, innovation output, and environmental dynamism in FBs and NFBs, we designed and carried out empirical research based on a quantitative methodology. Considering the nature of the relationship between DCs and innovation output and the knowledge gathered in the respective fields, we opted for a survey. Further, to be able to compare FBs and NFBs, we decided to gather data from two groups of companies that would be similar, at least considering their size. A similar approach was suggested by Amman and Jaussaud (2012). The external market research company employed to gather the data managed to reach 211 FBs and 211 NFBs, which created pairs with respect to their size. The data were gathered between August and November 2021. The sampling frame was a database of a research company; it is composed of 10 009 contacts to company representatives from Poland. Approximately 60% of the contacts in the database were from the FBs. However, no data about the family status of a company was available during the initial stage. In the second stage, randomly selected companies were contacted by e-mail if they opted to participate in a survey. If the answer was positive, the interviewer contacted the company representative and asked if the company is a family or non-family one and about the number of full-time employees. The respondents were either owners or managers having profound knowledge of the company. The market research company contacted selected companies so that the number of FBs and NFBs was equal in three groups of organizations: micro and small, medium, and large. The effective response rate after removing incomplete answers equalled about 21.1% (the company contacted over 2000 companies by e-mail with a request to participate in a survey). Overall, one in five companies from the database was contacted.

Although we asked for an entirely random sample, the study's design made it impossible to finish the study as a fully randomly selected one. Finally, in the sample, there were 145 micro and small (less than 50 employees), 61 medium-sized (50-249 employees), and five large (employing more than 250 employees) FBs. The composition of the sample of NFBs was the same. The average age of the FBs equalled more than 19 years (sd=13.78), and for NFBs it was nearly 17 years (sd=11.06). Family companies were, on average, smaller than their non-family counterparts, which results from the inclusion of large non-family companies in the sample (mean = 40 vs 127 employees; with the standard deviation of 73 and 603, respectively for FBs and NFBs).

Within the family firms, 155 of them were managed by the first owner, and only 56 were passed to the second generation of owners. Owners of FBs were also actively engaged in the company. In 125 FBs, one or two members of the founding company were active. In the remaining 86 FBs, three or more family members were engaged. In 186 FBs, one founding family member was on the board, and in 25 cases, there were two or more owners. Moreover, 196 family companies were owned by at least 50% of the founding family, and in 15 FBs founding family owned less than 50% of the shares.

Measures

We measured innovation output according to the Oslo Manual (2018). We asked for the number of new products, new services, and innovations in business processes (production and service, distribution and logistics, marketing and sales, information and communication with the environment, management and administration, and product development). Next, to establish the innovation output, we decided to sum up the answers. Considering the large dispersion of data, these were further standardized using the log10 function (to minimize the influence of outliers and extreme cases on the calculation).

We measured DCs using the framework and questionnaire proposed by Wilden *et al.* (2013). The scale was previously extensively cited and used in different research scenarios and is considered reliable, with studies showing its high internal consistency and test-retest reliability (Kump *et al*., 2019). The questionnaire was composed of 12 questions evaluated on the 1-7 Likert-type scale with a small modification. Instead of asking 'How often have you carried out the following activities?' with referral to reconfiguring construct, we asked respondents about their focus on the implementation of new kinds of management methods, the introduction of new or substantially changed marketing methods or strategy, substantial

renewal of business processes and new or substantially changed ways of achieving targets and objectives. In this way, we obtained information about the strategic focus rather than real-life changes. We did it to mitigate the measurement of DCs in a similar manner to our main dependent variable – innovation output. Cronbachs' alpha for the scale was 0.7849. This framework suggests the existence of three dimensions of DCs, namely sensing, seizing, and reconfiguring, four items each. However, when checking for Cronbachs' alphas for the dimensions sensing accounted for only 0.5533, which is significantly below the accepted cut-off line of 0.7. For sensing, we decided to test alpha if an item was deleted. It occurred that deleting the very first item related to people's participation in professional association activities improved the scale significantly to the level of 0.67, which is still below the cut-off line. Thus, we decided to run a confirmatory factor analysis in Mplus 8.0 and the estimation fit results: RMSEA = 0.087, CFI of 0.923, TLI = 0.901, and SRMR = 0.092 suggested a poor to weak fit for the structural model. Thus, we decided to use exploratory factor analysis (EFA) in STATA to check for the suggestions of the internal structure of DCs in the sample. The results of the EFA analysis (KMO=0.861; Bartlett test of sphericity: Chi-square = 2180.586; df=66; p-value=0.000) are presented in Table 1.

Table 1. Exploratory factor analysis of dynamic capabilities

Variable	Factor 1 – Sensing and Seizing	Factor 2 – Reconfiguring	Mean	SD	Uniqueness
3. We observe best practices in our sector	**0.793**	0.017	5.445	1.444	0.371
6. We adopt best practices in our sector	**0.790**	-0.127	5.524	1.407	0.360
5. We invest in finding solutions for our customers	**0.763**	0.043	5.495	1.347	0.416
8. We change our practices when customer feedback gives us a reason to change	**0.712**	-0.137	5.524	1.253	0.474
4. We gather economic information on our operations and operational environment	**0.638**	0.244	5.085	1.539	0.533
2. We establish processes to identify target market segments, changing customer needs and customer innovation	**0.602**	0.203	4.898	1.602	0.597
7. We respond to defects pointed out by employees	**0.583**	0.108	5.225	1.444	0.649
11. Substantial renewal of business processes	-0.006	**0.893**	3.322	1.625	0.203
12. New or substantially changed ways of achieving our targets and objectives	0.062	**0.882**	3.597	1.67	0.218
10. New or substantially changed marketing method or strategy	0.071	**0.858**	3.443	1.6	0.258
9. Implementation of new kinds of management methods	-0.086	**0.851**	3.32	1.671	0.268
1. People participate in professional association activities	0.017	0.521	3.313	2.072	0.729
Cronbach's alpha	0.825	0.9075	-	-	-

Note: Significant loadings are highlighted.
Source: own elaboration of empirical research.

Thus, EFA results suggest a two-factor structure instead of the three-factor proposed by Wilden *et al.* (2013). Both factors have relatively high values of Cronbach's alphas' which signifies satisfying reliability and internal consistency. The first question, on participation in professional association activities, does not load significantly to any of the factors. However, with a grain of salt, based on EFA, it could be attributed to the reconfiguration but we find no theoretical justification for such an inclusion. Thus, we decided to drop this item off the scale for further calculations. This may be explained by considering the low average participation of employees in professional associations in smaller companies in Poland in comparison to, for example, adopting best practices. However, this would require additional study, which is beyond the scope of our research. Confirmatory factor analysis for 11 items and two constructs (1. Sensing and seizing, composed of seven items; 2. Reconfiguring, composed of four items) showed acceptable levels of fit, with RMSEA = 0.070, CFI = 0.958, TLI = 0.944 and SRMR = 0.059. Thus, for further analyses, we included the structure as suggested by the results of factor analyses and not following suggestions by Wilden *et al.* (2013).

To measure the environment's dynamism, we decided to use the scale suggested by Sutcliffe (Sutcliffe, 1994), composed of four items measured on a 7-point Likert scale. Cronbach's alpha was slightly below 0.7 (0.6567). However, removing items would not significantly improve the scale's reliability. Considering our sample size and intended statistical analyses methods, we decided to code dynamism, as a moderator, and as a dummy variable (although we could potentially treat it as a continuous latent variable, this would significantly increase the complexity of the already complicated model and increased significantly the number of estimated parameters in a SEM model leading to estimation problems). Thus, for further analyses, we decided to treat this variable as a moderator and transform it into a dummy variable. For this purpose, we (1) calculated the mean values for every company (created meta-variables), (2) calculated the mean value for the whole environmental dynamism, (3) if the meta-variable was below the mean, we coded it as 1; if the meta-variable was above mean, we coded it as 2. Thus, we identified low and high levels of dynamism for further calculations.

We divided our sample into two sub-samples, namely FBs and NFBs. To assign the companies appropriately, we asked a single question scaled 1 – a family firm, and 2 – non-family firms. If the company declared to be of a family status, we asked for additional parameters regarding the number of active members of the family in a firm, the number of family members on a board, and shares owned by a single family member (generation of the family). This further tested if the company could be considered a family one.

We decided to include the age and size of a company as a control variable. Respondents were asked to provide information on the number of years the company being in the market (age of the company) and the average number of employees (as a measure of the company's size). Both variables were standardized using the decimal logarithm function (to minimize the influence of outliers and extreme cases on the calculation).

RESULTS AND DISCUSSION

In our analyses, we first calculated Pearson correlation. Table 2 summarizes the analyses in the whole sample (a), as well as in family (b) and non-family firms (c). The Table 2 also provides descriptive statistics for variables.

Table 2. Pairwise correlations and descriptive statistics

Variables	(1)	(2)	(3)	(4)	(5)	(6)
(1) Innovation output (log10)	1.000	–	–	–	–	–
(2) Sensing and seizing	0.263*	1.000	–	–	–	–
(3) Reconfiguring	0.398*	0.088	1.000	–	–	–
(4) Dynamism (meta-variable)	0.146*	0.201*	0.196*	1.000	–	–
(5) Size (log10)	0.351*	-0.111*	0.336*	0.015	1.000	–
(6) Age (log10)	0.052	-0.107*	0.041	-0.124*	0.455*	1.000
Mean	42	5.310	5.442	4.306	84	18
Standard deviation	137	1.000	1.03	1.117	431	12

Note: *In the case of a number of innovations, age, and size, we provided average and standard deviation of real numbers, not calculated logarithms. Correlations reflect standardized values. *P < 0.05.
Source: own elaboration of empirical research.

To prepare a correlation Table, in the case of DCs and environmental dynamism, we calculated metavariables as means of questionnaire items following factor analysis results.

The values of individual meta-variables indicated that the surveyed companies had dynamic capabilities more significant than the middle level of the scale in the area of perceiving and capturing values (average = 5.31, standard deviation = 1.00). However, in their assessment, they perform worse dealing with the reconfiguration of resources (average = 3.421; std = 1.453). In this case, the responses were relatively highly dispersed, which indicates that this issue differentiates enterprises in the sample most strongly among all three dimensions of DCs. On average, companies implemented 42 new solutions in the analysed three-year period, and the standard deviation, in this case, was vast and amounted to

over 137, which indicates the abnormal distribution and the great importance of large enterprises in the sample, which can generate statistically more innovations than in the case of smaller economic entities. The maximum number of developed solutions – innovations was 2 260. Moreover, 85% of the surveyed companies indicated that in the three years, they developed less than 50 new solutions that, according to the definition of Oslo, can be treated as innovations. The dynamics of the environment were assessed at the level of the middle of the scale (4.306) with a moderate standard deviation (1.117). The average number of employees converted into full-time jobs was almost 84, with a high standard deviation of 431. This indicates a significant role of very large economic entities in the studied sample. The average lifetime was just over 18 years, with a relatively significant standard deviation of over 12 years. The oldest of the surveyed enterprises was 102 years old, and the youngest was two years.

To better understand the nature of the studied dependencies – taking into account the differences between family and non-family enterprises – in the following part, structural equations were modelled using the multigroup analysis technique, with the grouping variable, in this case, being the family nature or the non-family nature of the enterprise. Table 2 shows the estimation results of the three models.

Table 3. Results of a structural equation modelling

Variable	Model 1. The model with control variables and DV only			Model 2. Relationships between dynamic capabilities and the number of innovations		
	(overall) (restricted)	(family) (unrestricted)	(non-family) (unrestricted)	(overall) (restricted)	(family) (unrestricted)	(non-family) (unrestricted)
CHI2	58.213	58.213		282.318	260.497	
DF	4	4		166	156	
RMSEA	0.000	0.000		0.058	0.056	
CFI	1.000	1.000		0.949	0.954	
TLI	1.000	1.000		0.945	0.947	
Akaike Information Criteria (AIC)	760.794	764.346		15667.543	15665.722	
SRMR	0.015	0.000		0.094	0.083	
Innovation output (r2)	**0.150 (0.037; 0.000)**	**0.119 (0.042; 0.004)**	**0.139 (0.044; 0.002)**	**0.301 (0.043; 0.000)**	**0.329 (0.056; 0.000)**	**0.269 (0.054; 0.000)**
Constant	**0.359 (0.035; 0.000)**	**0.881 (0.042; 0.000)**	**1.512 (0.268; 0.000)**	**1.504 (0.205; 0.000)**	**1.516 (0.275; 0.000)**	**1.239 (0.286; 0.000)**
Size (logarithm)	**0.360 (0.047; 0.000)**	**0.381 (0.067; 0.000)**	**0.413 (0.070; 0.000)**	**0.280 (0.048; 0.000)**	**0.218 (0.070; 0.002)**	**0.374 (0.074; 0.000)**
Age (logarithm)	**-0.264 (0.108; 0.014)**	**-0.155 (0.071; 0.029)**	-0.096 (0.075; 0.196)	-0.068 (0.049; 0.163)	-0.091 (0.065; 0.158)	-0.027 (0.071; 0.709)
Sensing and seizing	N/A	N/A	N/A	**0.310 (0.050; 0.000)**	**0.319 (0.060; 0.000)**	**0.286 (0.070; 0.000)**
Reconfiguring	N/A	N/A	N/A	**0.298 (0.048; 0.000)**	**0.359 (0.064; 0.000)**	**0.249 (0.067; 0.000)**

Note: Statistically significant relationships are highlighted (bold); in brackets, standard errors and p-values are provided.
Source: own elaboration based on empirical research.

The control model explains circa 15% of the variability of innovation output, which signifies that both size and age of an organization play a role in explaining the innovativeness of a company. In the case of family business age negatively influencing its innovation output, it can be noticed that older FBs are, on average, less innovative than their younger counterparts. At the same time, age is not a significant factor in non-family business settings. The company's size is an essential predictor of innovativeness in both FBs and NFBs. Differences between these two models are subtle, except for the above-mentioned relationship. The second model revealed that sensing, seizing, and reconfiguring are essential in explaining the innovation output. There were no significant differences between family and non-FBs in this instance. It also showed that size remains an important determinant of innovation

output, positively influencing its levels, no matter the type of business. Age, on the other hand, becomes insignificant in both cases. This shows that studied FBs and NFBs were similar in relationships between DCs and innovation output. In sum, Table 3 analyses reveal no significant differences between family and NFBs in the sample. In estimated models, DCs with the size and age of the company explain roughly 30% of the variability of innovation output. Both models were estimated with acceptable levels of fit indicators – with RMSEA below the 0.06 cutoff line and CFI and TLI reaching levels approaching 0.95, which shows that theoretical models fit relatively well with the ones resulting from data. Calculating restricted and unrestricted models' parameters allowed for comparing both models using the right-tailed chi-square distribution function in Excel. The difference of chi-square of 21.821 with the difference of 10 degrees of freedom results in a 0.01 p-value, which signifies that the two models were significantly different in statistical terms. Thus, although path coefficients were similarly significant, there were differences between family and NFBs strong enough to justify the claim of the difference between FBs and NFBs in this regard. As seen from the determination coefficient, DCs are a more important predictor of innovation output in FBs than in NFBs.

To test the influence of environmental dynamism on the relationship between DCs and innovation output, separate models were calculated for FBs and NFBs. In this case, due to the latent variable moderation by the environmental dynamism, multigroup analysis was not possible in the Mplus program. Figures 2 and 3 present estimated models reporting relationships between DCs dimensions (sensing and seizing, and reconfiguring) and innovation output in the context of environmental dynamism. Comparing the two models reveals that they are similar at first sight. In both models, sensing, seizing, and reconfiguring are significantly related to innovation output. In both models, environmental dynamism is not a significant moderator of relationships between DCs and innovation output. In both models, firm size is a valid predictor of innovation output, and age, as a control variable, does not play an important role. The difference lies in the influence of environmental dynamism. In FBs, environmental dynamism was not a significant predictor of innovation output (-0.056; 0.063; 0.374), while in NFBs, it was (0.185; 0.093; 0.049). Furthermore, although significant, parameters had diverse levels indicating different explanation power. It was revealed in the determination coefficient. In FBs, DCs with size, age, and environmental dynamism explained 33.6% of the variation of innovation output. For FBs, the influence of studied constructs on the dependent variable was lower and accounted for 27.8% of the variability.

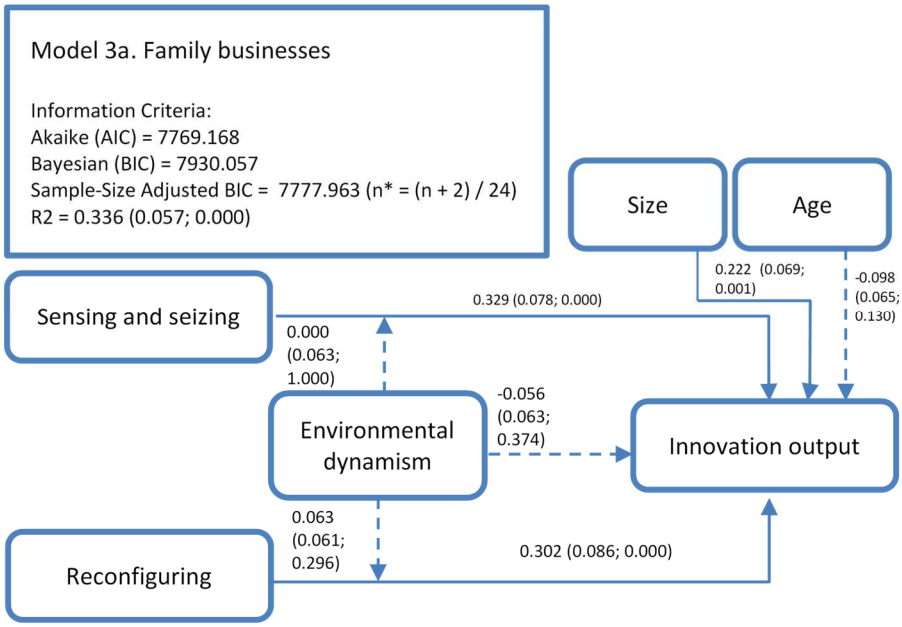

Figure 2. Relationships between dynamic capabilities and innovation output mediated by environmental dynamism in family businesses

Source: own elaboration of empirical research.

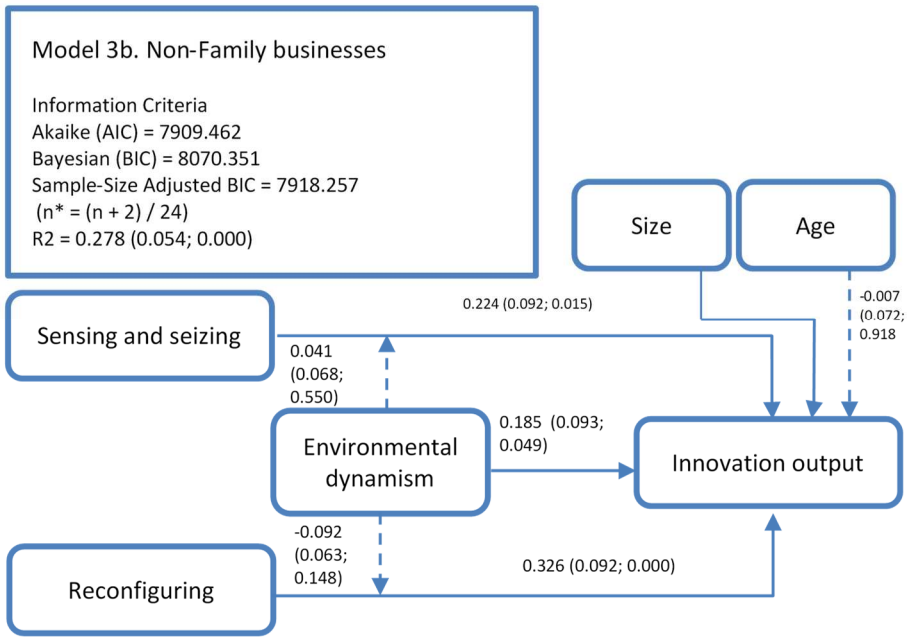

Figure 3. Relationships between dynamic capabilities and innovation output mediated by environmental dynamism in non-family businesses
Source: own elaboration of empirical research.

In the following part, we will discuss these relationships in more detail, searching for explanations, and trying to make implications for theory, practice, and future research directions.

Discussion

Research results revealed that DCs were positively related to the level of innovation output both in family and NFBs. This confirmed our first research hypothesis (H1). It also confirmed other studies that reported relationships between DCs and innovation in companies (Zheng, Zhang, & Du, 2011). Moreover, it proved the claim that FBs are significantly different in this respect in comparison to NFBs. In this case, one might expect more substantial differences in the innovation performance of DCs (*i.e.* diverse signs of coefficients or non-significance of relations in one case and significance in the latter). However, the direct comparison of restricted and unrestricted models (model 2) with right-tailed chi-square distribution revealed that differences were significant enough to claim that FBs are essentially different from NFBs.

Both identified dimensions of DCs played an important role in explaining the variability of innovation output in studied organizations. However, in FBs (Figure 2) settings, sensing and seizing coefficient (0.329; 0.078; 0.000) is slightly higher than the reconfiguring coefficient (0.302; 0.086; 0.000), which signifies these processes might play a slightly more important role for innovation output. It is the opposite in NFBs (Figure 3), where the reconfiguring coefficient is higher (0.326; 0.092; 0.000) than the sensing and seizing coefficient (0.224; 0.092; 0.015).

When explaining these differences, we should take into account that FBs in the sample were, on average, smaller than their non-family counterparts (mean 40 employees in FBs vs. 73 employees in NFBs). As proven, larger organizations usually have more financial resources and reserves (resource and financial slack) to implement innovations (Parida & Örtqvist, 2015), and thus proper reconfiguration of resources on hand may lead to more innovations. On the other hand, in statistically smaller FBs, the role of original ideas, which are direct responses to sensed opportunities, combined with appropriately crafted seizing activities, result in more innovations. It might signify a larger role of improvisation and utilization of resources currently on hand in FBs than in the case of NFBs. This is, however, a claim that needs empirical confirmation and could serve as a potentially interesting implication of the study fuelling future research.

Delving deeper into the role of environmental dynamism, our study revealed that it does not play an important role as supposed in hypothesis H2. It did not serve as a moderator of the main relationship in our study. Neither in FBs nor in NFBs did environmental dynamism significantly alter the influence of DCs on innovation output. It is contrary to other research results proving that the nature of the organizational environment acts as a moderator and influences the relationships in organizational settings (Rosenbusch *et al.*, 2013). However, in this instance, it should be noticed that the perception of the level of environmental dynamism directly influenced the number of innovations in NFBs (0.185; 0.093; 0.049), while it was non-significant in FBs (-0.056; 0.063; 0.374). It means that, on average, NFBs are more dependent on environmental jolts and tend to respond to a perceived increase in environmental dynamism with more innovations than their family counterparts. It might be explained by the fact that studied NFBs were significantly larger in terms of the number of employees (as indicated above) and thus had more resources to respond to increased environmental dynamism promptly. Combining these results with reported (Amann & Jaussaud, 2012) better adaptability and responses to FBs' external, unpredicted events (and organizational resilience) may signify that FBs are more restrictive towards investments in new solutions as a response to everyday environment changes than NFBs. It also suggests that FBs accumulate on average more financial and resource slack to be used in extreme situations. At the same time, these companies are reluctant to invest their resources daily, responding to natural environmental changes (Dreux, 1990). However, this assumption would require more in-depth study based on qualitative results and more profound information on the choices of FBs and NFBs.

CONCLUSIONS

We conclude that DCs are perceived as an important driver of performance and innovation in both FBs (Cassia, De Massis, & Pizzurno, 2012; Diéguez-Soto, Manzaneque, & Rojo-Ramírez, 2016, Fuetsch & Suess-Reyes, 2017) and in NFBs alike (De Massis *et al.*, 2015; Ferreira, Coelho, & Moutinho, 2020). Willing to contribute to the knowledge of dynamic capabilities, innovation, and functioning of FBs, we show how DCs lead to innovation irresectable of environmental dynamism. In light of our study, in FBs, sensing, seizing, and reconfiguring the existing resource base serve as a trigger for innovation. In NFBs, the role of sensing and seizing is slightly lower, although still statistically significant. Our study clearly supports the claim that FBs are statistically significantly different from their NFBs counterparts (Amann & Jaussaud, 2012), which serves as a trigger for further, in-depth analyses in the field. The different influence of DCs on innovation output in FBs as compared with NFBs may be well explained by the very specificity of these companies (Chirico & Nordqvist, 2010). This may be attributed to the fact that FBs develop different organizational climate for innovation because of the very specific 'organizational heritage,' open culture, idiosyncratic and tacit knowledge, or home-grown capabilities (Duarte Alonso *et al.*, 2018). Moreover, family involvement in business may to some extent influence the focus of FBs' key decision-makers on the effective deployment of DCs (Camisón-Zornoza *et al.*, 2020). However, further in-depth studies are necessary to confirm it.

Implications For Organizational Practice

On the practical side, our study confirmed the value and notion of DCs in both FBs and NFBs. Our research results proved that FBs should focus slightly more on sensing and seizing opportunities for improving innovation output, while NFBs should put more focus on the reconfiguration of resources, which might bring out a higher number of innovations than in the case of focus on sensing and seizing. For FBs, it is a clear indication that the focus on observing best practices in the sector, adopting best practices, investing in finding solutions for customers, changing practices when customer feedback provides a reason to do so, gathering economic information on operations and operational environment, establishing processes to identify target market segments, and modifying customer needs and responding to defect pointed out by employees should become an everyday practice (Wilden & Gudergan, 2015). Capabilities related to the substantial renewal of processes, changing ways of achieving targets, altering marketing methods and strategies, or implementing new management methods should also be considered as a source of innovations (Brines, Shepherd, & Woods, 2013; Werner,

Schroder, & Chlosta, 2018). However, these are less important in FBs than they are in NFBs. On the other hand, NFBs should pay significantly more attention to reconfiguration processes and slightly lesser to sensing and seizing capabilities.

Our study confirms that environmental dynamism does not play an important role in moderating the effect of DCs dimensions on innovation output. Thus, no matter the environment, both in the case of. FBs and NFBs, investments in the development of DCs should pay back in the form of innovation output (Uhlaner *et al.*, 2013). However, in NFBs, organizational growth in terms of the size of an organization should lead to increased innovation output, as proven by our research, and congruent with Pittino, Visitin and Mazzurana (2017) claims. For FBs, on the other hand, significant growth in the number of employees does not necessarily lead to increased innovation performance, which is against previous findings (Ding, Fu, & Yang, 2022). For NFBs, imitation of successful practices taken by their FBs' competitors may not lead to expected outcomes. This may be explained by the socioemotional wealth importance (Gomez-Mejia *et al.*, 2007; 2014), the influence of the family in FBs, which is not observed in NFBs (Duran, 2016; Kellermanns *et al.,* 2012), or founder influence (Arzubiaga *et al.*, 2018; Jaskiewicz *et al.*, 2017), which are uncharacteristic for this group of companies.

Future Research Directions and Limitations

The analysis of identified articles related to DCs and innovation led to a surprising observation. Among identified 134 articles, only one by Wang (2016) deals with environmental dynamism. Wang argues that environmental dynamism triggers DCs to appear with the moderating role of trust in this relationship. Although there is a rationale for such an approach and DCs were specified with referral to absorptive, adaptive, and innovative capabilities, Wang does not provide an alternative model structure. Innovative capabilities are closely related to innovation output in the research design.

The differences between FBs and NFBs are subtle but observable in the data. Focusing more on the distinctive characteristics of FBs might bring more evidence on how and why innovation performance is achieved in this type of company. However, our research results support the third hypothesis (H3). Although the differences are small, they are significant enough to justify the claim that the influence of DCs on innovation output is different in FBs and NFBs. We believe that including other variables more related to the specificity of FBs, would strengthen this argument. Of special interest are socioemotional wealth (Filser *et al.*, 2018; Fitz-Koch & Nordqvist, 2017; Li & Daspit, 2016) and the importance of these specific values for the functioning of FBs. Moreover, a different, more tradition-based strategic approach of FBs should be considered in this instance (Mariussen *et al.*, 1997). We are convinced that the interplay and interaction of family members with non-family members of FBs might also play an essential role in explaining the influence of DCs on innovation output (Memili *et al.*, 2015).

We also suppose that subtle differences between FBs and NFBs result from similar roots in studied organizations. On average, studied organizations were similar in terms of age, which signifies they were created at a similar time – in most cases, after the economic transformation of the 1990s. As a result, both types of companies had access to the same knowledge, were influenced by similar factors, and underwent similar environmental disturbances. Most likely, also the experience of managers and owners is similar. Frequently, owners and managers are firmly entrenched in the way of thinking characteristic of the socialist period (pre-1990). It might be especially evident in the case of FBs' owners. In most cases, these companies were before succession, which means they are effectively governed by the very first generation of managers, educated prior to economic transition. These organizational actors, very influential in everyday life and making decisions reflecting the company's future, were educated and gathered their experiences in different conditions, which is uncharacteristic for the market economy. Thus, the influence of socialist imprinting on the functioning of FBs would also make sense in future research (Kriauciunas & Kale, 2006).

We are convinced that future research should intensely focus on explaining the processes and thus should be based more on comparisons of qualitative data. Exploring the relationships, our study brings a few arguments on how DCs are transformed into new solutions. Getting deeper information on the processes behind it would greatly benefit our knowledge. This suggests case studies and more

grounded-theory-based research designs appropriate for gathering more evidence on these relationships (Qingliang *et al.*, 2021). Furthermore, studies reporting more than single source information, including triangulation, would help better understand the very nature of relationships in the model.

Our study is limited in terms of not including mediating variables and we believe it would better explain how DCs are transformed into new products and solutions. Previous studies suggested the role of organizational creativity (Bharadwaj & Menon, 2000), organizational culture (Büschgens, Bausch, & Balkin, 2013), and resource availability (Classen *et al.*, 2012). Knowledge management would also play an important role in this relationship (Cheung, 2016). We predict that including these variables in the model would further explain the innovation performance to a greater extent. Moreover, including slack resources, primarily financial, might help to show and explain the differences in the levels of innovativeness in studied organizations (Ruggiero & Cupertino, 2018). However, this was beyond the scope of the study and required further empirical proof.

Regarding the measurement choices, the scale for assessing the DCs referred strongly to innovation performance, especially concerning the reconfiguration items (Wilden *et al.*, 2013). This may raise a question about measuring the same issues as dependent and independent variables. Firstly, our study differs from the approach taken by Wilden *et al*. (2013), while the original study linked DCs to overall organizational performance and we focused on its influence on the innovation output explicitly. Secondly, Lichtenthaler and Muethel (2012) indicate differences between innovation capabilities and innovation output. The same issue is emphasized by Broekaert, Andries, and Debackere (2016), who test the influence of organizational flexibility, perceived through the lenses of DC theory on product and service innovation output. Similarly, Mennens *et al.* (2018) distinguish between absorptive capacity and innovation performance. In the article, we confronted declarative statements for capabilities which may lead to innovation with the number of innovations introduced within recent years. With respect to the alternative specification of dynamic capabilities in our study as compared to the investigation of Wilden *et al.* (2013), we believe that the composition and perception of the internal structure of the construct may slightly vary depending on diverse organizational settings. Literature offers different approaches to the internal structure of the researched constructs. While sensing and seizing opportunities created a joint dimension, reconfiguration remained unchanged. We believe it simply reflects the perceived internal structure better than blindly applying theoretical (albeit well-tested and validated) constructs in our analysis (Ruscio & Roche, 2012).

REFERENCES

Akram, M.U., Ghosh, K., & Sharma, D. (2022). A systematic review of innovation in family firms and future research agenda. *International Journal of Emerging Markets*, *17*(7), 1759-1792. https://doi.org/10.1108/ijoem-06-2021-0936

Amabile, T.M. (1988). A model of creativity and innovation in organizations. *Research in Organizational Behavior*, *10*(1), 123-167.

Amann, B., & Jaussaud, J. (2012). Family and non-family business resilience in an economic downturn. *Asia Pacific Business Review*, *18*(2), 203-223. https://doi.org/10.1080/13602381.2010.537057

Ambrosini, V., & Bowman, C. (2009). What are dynamic capabilities and are they a useful construct in strategic management?. *International Journal of Management Reviews*, *11*(1), 29-49. https://doi.org/10.1111/j.1468-2370.2008.00251.x

Andriopoulos, C., & Lewis, M.W. (2009). Exploitation-Exploration Tensions and Organizational Ambidexterity: Managing Paradoxes of Innovation. *Organization Science*, *20*(4), 696-717. https://doi.org/10.1287/orsc.1080.0406

Ardi, A., Djati, S.P., Bernarto, I., Subidjo, N., Yulianeu, A., Nanda, H.A., & Nanda, K.A. (2020). The secret to enhancing innovativeness in the digial industry. *International Journal of Innovation, Creativity and Change*, *12*(12), 225-243.

Arzubiaga, U., Kotlar, J., De Massis, A., Maseda, A., & Iturralde, T. (2018). Entrepreneurial orientation and innovation in family SMEs: Unveiling the (actual) impact of the Board of Directors. *Journal of Business Venturing*, *33*(4), 455-469. https://doi.org/10.1016/j.jbusvent.2018.03.002

Barney, J.B., & Clark, D.N. (2007). *Resource-based theory: Creating and sustaining competitive advantage*. OUP Oxford.

Barney, J., Wright, M., & Ketchen, D.J. (2001). The resource-based view of the firm: Ten years after 1991. *Journal of Management*, *27*(6), 625-641. https://doi.org/10.1177/014920630102700601

Barros, I., Hernangómez, J., & Martin-Cruz, N. (2016). A theoretical model of strategic management of family firms. A dynamic capabilities approach. *Journal of Family Business Strategy*, *7*(3), 149-159. https://doi.org/10.1016/j.jfbs.2016.06.002

Basco, R. (2015). Family business and regional development—A theoretical model of regional familiness. *Family Business and Regional Development*, *6*(4), 259-271. https://doi.org/10.1016/j.jfbs.2015.04.004

Bharadwaj, S., & Menon, A. (2000). Making Innovation Happen in Organizations: Individual Creativity Mechanisms, Organizational Creativity Mechanisms or Both?. *Journal of Product Innovation Management*, *17*(6), 424-434. https://doi.org/10.1111/1540-5885.1760424

Borch, O.J., & Madsen, E.L. (2007). Dynamic capabilities facilitating innovative strategies in SMEs. *International Journal of Technoentrepreneurship*, *1*(1), 109-125. https://doi.org/10.1504/IJTE.2007.014731

Breznik, L., & Hisrich, R. (2014). Dynamic capabilities vs. Innovation capability: Are they related?. *Journal of Small Business and Enterprise Development*, *21*(3), 368-384. https://doi.org/10.1108/JSBED-02-2014-0018

Brines, S., Shepherd, D., & Woods, C. (2013). SME family business innovation: Exploring new combinations. *Journal of Family Business Management*, *3*(2), 117-135. https://doi.org/10.1108/JFBM-01-2012-0002

Brinkerink, J. (2018). Broad Search, Deep Search, and the Absorptive Capacity Performance of Family and Non-family Firm R&D. *Family Business Review*, *31*(3), 295-317. https://doi.org/10.1177/0894486518775187

Broekaert, W., Andries, P., & Debackere, K. (2016). Innovation processes in family firms: the relevance of organizational flexibility. *Small Business Economics*, *47*, 771-785. https://doi.org/10.1007/s11187-016-9760-7

Brune, A., Thomsen, M., & Watrin, C. (2019). Family Firm Heterogeneity and Tax Avoidance: The Role of the Founder. *Family Business Review*, *32*(3), 296-317. https://doi.org/10.1177/0894486519831467

Büschgens, T., Bausch, A., & Balkin, D.B. (2013). Organizational Culture and Innovation: A Meta-Analytic Review. *Journal of Product Innovation Management*, *30*(4), 763-781. https://doi.org/10.1111/jpim.12021

Calabrò, A., Vecchiarini, M., Gast, J., Campopiano, G., De Massis, A., & Kraus, S. (2019). Innovation in family firms: A systematic literature review and guidance for future research. *International Journal of Management Reviews, 21*(3), 317-355. https://doi.org/10.1111/ijmr.12192

Camisón, C., & Monfort-Mir, V.M. (2012). Measuring innovation in tourism from the Schumpeterian and the dynamic-capabilities perspectives. *Tourism Management*, *33*(4), 776-789. https://doi.org/10.1016/j.tourman.2011.08.012

Camisón-Zornoza, C., Forés-Julián, B., Puig-Denia, A., & Camisón-Haba, S. (2020). Effects of ownership structure and corporate and family governance on dynamic capabilities in family firms. *International Entrepreneurship and Management Journal*, *16*(4), 1393-1426. https://doi.org/10.1007/s11365-020-00675-w

Cassia, L., De Massis, A., & Pizzurno, E. (2012). Strategic innovation and new product development in family firms. *International Journal of Entrepreneurial Behavior & Research*, *18*(2), 198-232. https://doi.org/10.1108/13552551211204229

Chatzoglou, P., & Chatzoudes, D. (2018). The role of innovation in building competitive advantages: an empirical investigation. *European Journal of Innovation Management*, *21*(1), 44-69. https://doi.org/10.1108/EJIM-02-2017-0015

Chen, K.Y., & Huan, T.C. (2022). Explore how SME family businesses of travel service industry use market knowledge for product innovation. *Journal of Business Research*, *151*, 519-530. https://doi.org/10.1016/j.jbusres.2022.07.033

Cheung, C.W.M. (2016). Exploitative learning and entrepreneurial opportunity recognition of a family business in Hong Kong during and after the Second World War. *Journal of Entrepreneurship in Emerging Economies*, *8*(3), 321-334. https://doi.org/10.1108/jeee-06-2015-0035

Chirico, F., & Nordqvist, M. (2010). Dynamic capabilities and trans-generational value creation in family firms: The role of organizational culture. *International Small Business Journal*, *28*(5), 487-504. https://doi.org/10.1177/0266242610370402

Chrisman, J.J., Chua, J.H., & Kellermanns, F. (2009). Priorities, Resource Stocks, and Performance in Family and Nonfamily Firms. *Entrepreneurship Theory and Practice*, *33*(3), 739-760. https://doi.org/10.1111/j.1540-6520.2009.00324.x

Classen, N., Van Gils, A., Bammens, Y., & Carree, M. (2012). Accessing Resources from Innovation Partners: The Search Breadth of Family SMEs. *Journal of Small Business Management*, *50*(2), 191-215. https://doi.org/10.1111/j.1540-627X.2012.00350.x

Cuervo-Cazurra, A., Gaur, A., & Singh, D. (2019). Pro-market institutions and global strategy: The pendulum of pro-market reforms and reversals. *Journal of International Business Studies*, *50*(4), 598-632. https://doi.org/10.1057/s41267-019-00221-z

De Massis, A., Audretsch, D., Uhlaner, L., & Kammerlander, N. (2018). Innovation with Limited Resources: Management Lessons from the G erman Mittelstand. *Journal of Product Innovation Management*, *35*(1), 125-146. https://doi.org/10.1111/jpim.12373

De Massis, A., Frattini, F., Kotlar, J., Petruzzelli, A.M., & Wright, M. (2016). Innovation Through Tradition: Lessons From Innovative Family Businesses and Directions for Future Research. *Academy of Management Perspectives*, *30*(1), 93-116. https://doi.org/10.5465/amp.2015.0017

De Massis, A., Frattini, F., & Lichtenthaler, U. (2013). Research on Technological Innovation in Family Firms: Present Debates and Future Directions. *Family Business Review*, *26*(1), 10-31. https://doi.org/10.1177/0894486512466258

De Massis, A., Frattini, F., Pizzurno, E., & Cassia, L. (2015). Product Innovation in Family versus Nonfamily Firms: An Exploratory Analysis. *Journal of Small Business Management*, *53*(1), 1-36. https://doi.org/10.1111/jsbm.12068

De Massis, A., Kotlar, J., & Manelli, L. (2021). Family Firms, Family Boundary Organizations, and the Family-Related Organizational Ecosystem. *Family Business Review*, *34*(4), 350-364. https://doi.org/10.1177/08944865211052195

Di Stefano, G., Peteraf, M., & Verona, G. (2014). The Organizational Drivetrain: A Road To Integration of Dynamic Capabilities Research. *Academy of Management Perspectives*, *28*(4), 307-327. https://doi.org/10.5465/amp.2013.0100

Diéguez-Soto, J., Manzaneque, M., & Rojo-Ramírez, A.A. (2016). Technological Innovation Inputs, Outputs, and Performance: The Moderating Role of Family Involvement in Management. *Family Business Review*, *29*(3), 327-346. https://doi.org/10.1177/0894486516646917

Ding, X., Fu, X., & Yang, Z. (2022). Open Innovation and Resource Flexibility in Times of Crisis: The Roles of Firm Characteristics. *Academy of Management Proceedings*, *2022*(1), 11758. https://doi.org/10.5465/AMBPP.2022.11758abstract

Dreux, D.R. (1990). Financing Family Business: Alternatives to Selling Out or Going Public. *Family Business Review*, *3*(3), 225-243. https://doi.org/10.1111/j.1741-6248.1990.00225.x

Duarte Alonso, A., Kok, S., & O'Shea, M. (2018). Family Businesses and Adaptation: A Dynamic Capabilities Approach. *Journal of Family and Economic Issues*, *39*(4), 683-698. https://doi.org/10.1007/s10834-018-9586-3

Duran, P., Kammerlander, N., van Essen, M., & Zellweger, T. (2016). Doing More with Less: Innovation Input and Output in Family Firms. *Academy of Management Journal*, *59*(4), 1224-1264. https://doi.org/10.5465/amj.2014.0424

Eisenhardt, K.M., & Martin, J.A. (2000). Dynamic capabilities: What are they?. *Strategic Management Journal*, *21*(10-11), 1105-1121. https://doi.org/10.1002/1097-0266(200010/11)21:10/11<1105::AID-SMJ133>3.0.CO;2-E

Fang, H., Kotlar, J., Memili, E., Chrisman, J.J., & De Massis, A. (2018). The pursuit of international opportunities in family firms: Generational differences and the role of knowledge-based resources. *Global Strategy Journal*, *8*(1), 136-157. https://doi.org/10.1002/gsj.1197

Ferreira, J., Coelho, A., & Moutinho, L. (2020). Dynamic capabilities, creativity and innovation capability and their impact on competitive advantage and firm performance: The moderating role of entrepreneurial orientation. *Stimulating Innovation and Entrepreneurship in High-Technology Sectors -the Role of Cultural and Creative Industries*, 92-93, 102061. https://doi.org/10.1016/j.technovation.2018.11.004

Filser, M., De Massis, A., Gast, J., Kraus, S., & Niemand, T. (2018). Tracing the Roots of Innovativeness in Family SMEs: The Effect of Family Functionality and Socioemotional Wealth. *Journal of Product Innovation Management*, *35*(4), 609-628. https://doi.org/10.1111/jpim.12433

Fitz-Koch, S., & Nordqvist, M. (2017). The Reciprocal Relationship of Innovation Capabilities and Socioemotional Wealth in a Family Firm. *Journal of Small Business Management*, *55*(4), 547-570. https://doi.org/10.1111/jsbm.12343

Fuetsch, E., & Suess-Reyes, J. (2017). Research on innovation in family businesses: Are we building an ivory tower?. *Journal of Family Business Management*, *7*(1), 44-92. https://doi.org/10.1108/JFBM-02-2016-0003

Gedajlovic, E., Carney, M., Chrisman, J.J., & Kellermanns, F.W. (2012). The Adolescence of Family Firm Research: Taking Stock and Planning for the Future. *Journal of Management*, *38*(4), 1010-1037. https://doi.org/10.1177/0149206311429990

Getz, D., & Carlsen, J. (2000). Characteristics and goals of family and owner-operated businesses in the rural tourism and hospitality sectors. *Tourism Management, 21*(6), 547-560. https://doi.org/10.1016/S0261-5177(00)00004-2

Girod, S.J., & Whittington, R. (2017). Reconfiguration, restructuring and firm performance: Dynamic capabilities and environmental dynamism. *Strategic Management Journal, 38*(5), 1121-1133. https://doi.org/10.1002/smj.2543

Gomez–Mejia, L.R., Campbell, J.T., Martin, G., Hoskisson, R.E., Makri, M., & Sirmon, D.G. (2014). Socioemotional Wealth as a Mixed Gamble: Revisiting Family Firm R&D Investments with the Behavioral Agency Model. *Entrepreneurship Theory and Practice*, *38*(6), 1351-1374. https://doi.org/10.1111/etap.12083

Gómez-Mejía, L.R., Haynes, K.T., Núñez-Nickel, M., Jacobson, K.J.L., & Moyano-Fuentes, J. (2007). Socioemotional Wealth and Business Risks in Family-controlled Firms: Evidence from Spanish Olive Oil Mills. *Administrative Science Quarterly*, *52*(1), 106-137. https://doi.org/10.2189/asqu.52.1.106

Gunawan, S., & Koentjoro, S. (2023). Orchestration to improve the performance and sustainability of family companies. *Cogent Business & Management*, *10*(1), 2176283. https://doi.org/10.1080/23311975.2023.2176283

Greenhaus, J.H., & Beutell, N.J. (1985). Sources of Conflict Between Work and Family Roles. *Academy of Management Review*, *10*(1), 76-88. https://doi.org/10.5465/amr.1985.4277352

Habbershon, T.G., & Williams, M.L. (1999). A Resource-Based Framework for Assessing the Strategic Advantages of Family Firms. *Family Business Review*, *12*(1), 1-25. https://doi.org/10.1111/j.1741-6248.1999.00001.x

Helfat, C.E., & Peteraf, M.A. (2003). The dynamic resource-based view: Capability lifecycles. *Strategic Management Journal*, *24*(10), 997-1010. https://doi.org/10.1002/smj.332

Hernández-Linares, R., & López-Fernández, M.C. (2020). Entrepreneurial Orientation, Learning Orientation, Market Orientation, and Organizational Performance: Family Firms Versus Non-Family Firms. *European Journal of Family Business*, *10*(1), 6-19. https://doi.org/10.24310/ejfbejfb.v10i1.6780

Hernández-Perlines, F., Ariza-Montes, A., & Araya-Castillo, L. (2020). Socioemotional wealth, entrepreneurial orientation and international performance of family firms. *Economic Research-Ekonomska Istraživanja*, *33*(1), 3125-3145. https://doi.org/10.1080/1331677x.2019.1685398

Hernández-Perlines, F., Xu, W., Araya-Castillo, L.A., & Ariza-Montes, A. (2022). Dynamic absorptive and innovative capabilities as determinants of family business performance. *International Journal of Business Environment*, *13*(3), 235-258. https://doi.org/10.1504/ijbe.2022.10046145

Jaskiewicz, P., Block, J.H., Combs, J.G., & Miller, D. (2017). The Effects of Founder and Family Ownership on Hired CEOs' Incentives and Firm Performance. *Entrepreneurship Theory and Practice*, *41*(1), 73-103. https://doi.org/10.1111/etap.12169

Jones, O., Ghobadian, A., O'Regan, N., & Antcliff, V. (2013). Dynamic capabilities in a sixth-generation family firm: Entrepreneurship and the Bibby Line. *Business History, 55*(6), 910-941. https://doi.org/10.1080/00076791.2012.744590

Jurksiene, L., & Pundziene, A. (2016). The relationship between dynamic capabilities and firm competitive advantage: The mediating role of organizational ambidexterity. *European Business Review, 28*(4), 431-448. https://doi.org/10.1108/EBR-09-2015-0088

Kellermanns, F., Eddleston, K., Sarathy, R., & Murphy, F. (2012). Innovativeness in family firms: A family influence perspective. *Small Business Economics*, *38*(1), 85-101.

Kets de Vries, M.F.R. (1993). The dynamics of family controlled firms: The good and the bad news. *Organizational Dynamics*, *21*(3), 59-71. https://doi.org/10.1016/0090-2616(93)90071-8

Kosmidou, V., & Ahuja, M.K. (2019). A Configurational Approach to Family Firm Innovation. *Family Business Review*, *32*(2), 154-173. https://doi.org/10.1177/0894486519827738

Kraus, S., Pohjola, M., & Koponen, A. (2012). Innovation in family firms: an empirical analysis linking organizational and managerial innovation to corporate success. *Review of Managerial Science*, *6*, 265-286. https://doi.org/10.1007/s11846-011-0065-6

Kriauciunas, A., & Kale, P. (2006). The impact of socialist imprinting and search on resource change: A study of firms in lithuania. *Strategic Management Journal*, *27*(7), 659-679. https://doi.org/10.1002/smj.537

Kump, B., Engelmann, A., Kessler, A., & Schweiger, C. (2019). Toward a dynamic capabilities scale: measuring organizational sensing, seizing, and transforming capacities. *Industrial and Corporate Change, 28*(5), 1149-1172. https://doi.org/10.1093/icc/dty054

Kurtmollaiev, S., Lervik-Olsen, L., & Andreassen, T.W. (2022). Competing through innovation: Let the customer judge!. *Journal of Business Research*, *153*, 87-101. https://doi.org/10.1016/j.jbusres.2022.08.002

Laaksonen, O., & Peltoniemi, M. (2018). The Essence of Dynamic Capabilities and their Measurement. *International Journal of Management Reviews*, *20*(2), 184-205. https://doi.org/10.1111/ijmr.12122

Le Breton–Miller, I., & Miller, D. (2006). Why Do Some Family Businesses Out–Compete? Governance, Long–Term Orientations, and Sustainable Capability. *Entrepreneurship Theory and Practice*, *30*(6), 731-746. https://doi.org/10.1111/j.1540-6520.2006.00147.x

Lessard, D., Teece, D.J., & Leih, S. (2016). The Dynamic Capabilities of Meta-Multinationals. *Global Strategy Journal*, *6*(3), 211-224. https://doi.org/10.1002/gsj.1126

Li, Z., & Daspit, J.J. (2016). Understanding family firm innovation heterogeneity. *Journal of Family Business Management*, *6*(2), 103-121. https://doi.org/10.1108/JFBM-02-2015-0010

Lichtenthaler, U., & Muethel, M. (2012). Retracted: The impact of family involvement on dynamic innovation capabilities: Evidence from German manufacturing firms. *Entrepreneurship Theory and Practice*, *36*(6), 1235-1253. https://doi.org/10.1111/j.1540-6520.2012.00548.x

Lin, Y., & Wu, L.-Y. (2014). Exploring the role of dynamic capabilities in firm performance under the resource-based view framework. *Journal of Business Research*, *67*(3), 407-413. https://doi.org/10.1016/j.jbusres.2012.12.019

Lumpkin, G.T., Brigham, K.H., & Moss, T. W. (2010). Long-term orientation: Implications for the entrepreneurial orientation and performance of family businesses. *Entrepreneurship & Regional Development*, *22*(3-4), 241-264. https://doi.org/10.1080/08985621003726218

Mariussen, Å., Wheelock, J., & Baines, S. (1997). The Family Business Tradition in Britain and Norway. *International Studies of Management & Organization*, *27*(3), 64-85. https://doi.org/10.1080/00208825.1997.11656713

Memili, E., Chang, E.P.C., Kellermanns, F.W., & Welsh, D.H.B. (2015). Role conflicts of family members in family firms. *European Journal of Work and Organizational Psychology, 24*(1), 143-151. https://doi.org/10.1080/1359432X.2013.839549

Mennens, K., Van Gils, A., Odekerken-Schröder, G., & Letterie, W. (2018). Exploring antecedents of service innovation performance in manufacturing SMEs. *International Small Business Journal*, *36*(5), 500-520. https://doi.org/10.1177/0266242617749687

Miller, D., & Friesen, P.H. (1983). Strategy-making and environment: the third link. *Strategic Management Journal, 4*(3), 221-235. https://doi.org/10.1002/smj.4250040304

Minichilli, A., Nordqvist, M., Corbetta, G., & Amore, M.D. (2014). CEO Succession Mechanisms, Organizational Context, and Performance: A Socio-Emotional Wealth Perspective on Family-Controlled Firms. *Journal of Management Studies*, *51*(7), 1153-1179. https://doi.org/10.1111/joms.12095

Nedzinskas, Š., Pundzienė, A., Buožiūtė-Rafanavičienė, S., & Pilkienė, M. (2013). The impact of dynamic capabilities on SME performance in a volatile environment as moderated by organizational inertia. *Baltic Journal of Management, 8*(4), 376-396. https://doi.org/10.1108/BJM-01-2013-0003

Neubaum, D.O., & Payne, G.T. (2021). The Centrality of Family. *Family Business Review*, *34*(1), 6-11. https://doi.org/10.1177/0894486521995268

Ortiz-Villajos, J.M., & Sotoca, S. (2018). Innovation and business survival: A long-term approach. *Research Policy*, *47*(8), 1418-1436. https://doi.org/10.1016/j.respol.2018.04.019

Oslo Manual. (2018). *Guidelines for collecting, reporting and using data on innovation. The measurement of Scientific, Technological and Innovation Activities. 4th Edition.* https://doi. org/10.1787/9789264304604-en

Parida, V., & Örtqvist, D. (2015). Interactive Effects of Network Capability, ICT Capability, and Financial Slack on Technology-Based Small Firm Innovation Performance. *Journal of Small Business Management*, *53*(S1), 278-298. https://doi.org/10.1111/jsbm.12191

Pearson, A.W., Carr, J.C., & Shaw, J.C. (2008). Toward a Theory of Familiness: A Social Capital Perspective. *Entrepreneurship Theory and Practice*, *32*(6), 949-969. https://doi.org/10.1111/j.1540-6520.2008.00265.x

Perry-Smith, J.E., & Mannucci, P.V. (2017). From Creativity to Innovation: The Social Network Drivers of the Four Phases of the Idea Journey. *Academy of Management Review*, *42*(1), 53-79. https://doi.org/10.5465/amr.2014.0462

Peteraf, M., Di Stefano, G., & Verona, G. (2013). The elephant in the room of dynamic capabilities: Bringing two diverging conversations together. *Strategic Management Journal*, *34*(12), 1389-1410. https://doi.org/10.1002/smj.2078

Pittino, D., Visintin, F., & Mazzurana, P.A.M. (2017). *Chapter 9: Alliance governance in entrepreneurial firms: The influence of family control and organizational size*. Edward Elgar Publishing. https://doi.org/10.4337/9781782545569.00017

Qingliang, M., Yi, H., Xiaojun, C., & Qiaoyi, C. (2021). Value co-creation mechanisms of multi-agent participation in crowdsourcing innovation: A grounded theory study. *Journal of Intelligent & Fuzzy Systems*, *41*(4), 4995-5006. https://doi.org/10.3233/JIFS-189986

Ringberg, T., Reihlen, M., & Rydén, P. (2019). The technology-mindset interactions: Leading to incremental, radical or revolutionary innovations. *Industrial Marketing Management*, *79*, 102-113. https://doi.org/10.1016/j.indmarman.2018.06.009

Ringov, D. (2017). Dynamic capabilities and firm performance. *Long Range Planning*, *50*(5), 653-664. https://doi.org/10.1016/j.lrp.2017.02.005

Rosenbusch, N., Rauch, A., & Bausch, A. (2013). The Mediating Role of Entrepreneurial Orientation in the Task Environment–Performance Relationship: A Meta-Analysis. *Journal of Management*, *39*(3), 633-659. https://doi.org/10.1177/0149206311425612

Ruscio, J., & Roche, B. (2012). Determining the number of factors to retain in an exploratory factor analysis using comparison data of known factorial structure. *Psychological Assessment, 24*(2), 282. https://doi.org/10.1037/a0025697

Ruggiero, P., & Cupertino, S. (2018). CSR Strategic Approach, Financial Resources and Corporate Social Performance: The Mediating Effect of Innovation. *Sustainability*, *10*(10). https://doi.org/10.3390/su10103611

Salvato, C., & Melin, L. (2008). Creating Value Across Generations in Family-Controlled Businesses: The Role of Family Social Capital. *Family Business Review*, *21*(3), 259-276. https://doi.org/10.1177/08944865080210030107

Sanchez-Famoso, V., Maseda, A., & Iturralde, T. (2014). The role of internal social capital in organisational innovation. An empirical study of family firms. *European Management Journal*, *32*(6), 950-962. https://doi.org/10.1016/j.emj.2014.04.006

Sánchez-Sellero, P., Rosell-Martínez, J., & García-Vázquez, J.M. (2014). Absorptive capacity from foreign direct investment in Spanish manufacturing firms. *International Business Review*, *23*(2), 429-439. https://doi.org/10.1016/j.ibusrev.2013.06.006

Schilke, O. (2014). Second-Order Dynamic Capabilities: How Do They Matter?. *Academy of Management Perspectives*, *28*(4), 368-380. https://doi.org/10.5465/amp.2013.0093

Schilke, O., Hu, S., & Helfat, C.E. (2018). Quo Vadis, Dynamic Capabilities? A Content-Analytic Review of the Current State of Knowledge and Recommendations for Future Research. *Academy of Management Annals*, *12*(1), 390-439. https://doi.org/10.5465/annals.2016.0014

Schulze, W.S., Lubatkin, M.H., Dino, R.N., & Buchholtz, A.K. (2001). Agency Relationships in Family Firms: Theory and Evidence. *Organization Science*, *12*(2), 99-116. https://doi.org/10.1287/orsc.12.2.99.10114

Short, J.C., Moss, T.W., & Lumpkin, G.T. (2009). Research in social entrepreneurship: Past contributions and future opportunities. *Strategic Entrepreneurship Journal*, *3*(2), 161-194. https://doi.org/10.1002/sej.69

Singh, N., Sinha, N., & Liébana-Cabanillas, F.J. (2020). Determining factors in the adoption and recommendation of mobile wallet services in India: Analysis of the effect of innovativeness, stress to use and social influence. *International Journal of Information Management*, *50*, 191-205. https://doi.org/10.1016/j.ijinfomgt.2019.05.022

Slater, S.F., Mohr, J.J., & Sengupta, S. (2014). Radical Product Innovation Capability: Literature Review, Synthesis, and Illustrative Research Propositions. *Journal of Product Innovation Management*, *31*(3), 552-566. https://doi.org/10.1111/jpim.12113

Stanley, L.J., Hernández-Linares, R., López-Fernández, M.C., & Kellermanns, F.W. (2019). A Typology of Family Firms: An Investigation of Entrepreneurial Orientation and Performance. *Family Business Review*, *32*(2), 174-194. https://doi.org/10.1177/0894486519838120

Strønen, F., Hoholm, T., Kværner, K., & Støme, L.N. (2017). Dynamic capabilities and innovation capabilities: The case of the 'Innovation Clinic'. *Journal of Entrepreneurship, Management and Innovation*, *13*(1), 89-116.

Suddaby, R., Coraiola, D., Harvey, C., & Foster, W. (2020). History and the micro-foundations of dynamic capabilities. *Strategic Management Journal*, *41*(3), 530-556. https://doi.org/10.1002/smj.3058

Sutcliffe, K.M. (1994). What Executives Notice: Accurate Perceptions in Top Management Teams. *Academy of Management Journal*, *37*(5), 1360-1378. https://doi.org/10.5465/256677

Stieglitz, N., Knudsen, T., & Becker, M.C. (2016). Adaptation and inertia in dynamic environments. *Strategic Management Journal*, *37*(9), 1854-1864. https://doi.org/10.1002/smj.2433

Teece, D.J. (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, *28*(13), 1319-1350. https://doi.org/10.1002/smj.640

Teece, D.J. (2014). The Foundations of Enterprise Performance: Dynamic and Ordinary Capabilities in an (Economic) Theory of Firms. *Academy of Management Perspectives*, *28*(4), 328-352. https://doi.org/10.5465/amp.2013.0116

Teece, D.J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, *18*(7), 509-533. https://doi.org/10.1002/(SICI)1097-0266(199708)18:7<509::AID-SMJ882>3.0.CO;2-Z

Teece, D., Peteraf, M., & Leih, S. (2016). Dynamic Capabilities and Organizational Agility: Risk, Uncertainty, and Strategy in the Innovation Economy. *California Management Review*, *58*(4), 13-35. https://doi.org/10.1525/cmr.2016.58.4.13

Thomsen, S., & Pedersen, T. (2000). Ownership structure and economic performance in the largest European companies. *Strategic Management Journal*, *21*(6), 689-705. https://doi.org/10.1002/(SICI)1097-0266(200006)21:6<689::AID-SMJ115>3.0.CO;2-Y

Ucbasaran, D., Shepherd, D.A., Lockett, A., & Lyon, S.J. (2013). Life After Business Failure: The Process and Consequences of Business Failure for Entrepreneurs. *Journal of Management*, *39*(1), 163-202. https://doi.org/10.1177/0149206312457823

Uhlaner, L.M., van Stel, A., Duplat, V., & Zhou, H. (2013). Disentangling the effects of organizational capabilities, innovation and firm size on SME sales growth. *Small Business Economics*, *41*(3), 581-607. https://doi.org/10.1007/s11187-012-9455-7

Hieu Minh, V.U. (2020). A Review of Dynamic Capabilities, Innovation Capabilities, Entrepreneurial Capabilities and Their Consequences. *The Journal of Asian Finance, Economics and Business*, *7*(8), 485-494. https://doi.org/10.13106/JAFEB.2020.VOL7.NO8.485

Wang, Y. (2016). Investigating dynamic capabilities of family businesses in China: a social capital perspective. *Journal of Small Business and Enterprise Development*, *23*(4), 1057-1080. https://doi.org/10.1108/jsbed-12-2015-0175

Wang, C.L., & Ahmed, P.K. (2007). Dynamic capabilities: A review and research agenda. *International Journal of Management Reviews*, *9*(1), 31-51. https://doi.org/10.1111/j.1468-2370.2007.00201.x

Warner, K.S.R., & Wäger, M. (2019). Building dynamic capabilities for digital transformation: An ongoing process of strategic renewal. *Long Range Planning*, *52*(3), 326-349. https://doi.org/10.1016/j.lrp.2018.12.001

Waterwall, B., & Alipour, K.K. (2021). Nonfamily employees' perceptions of treatment in family businesses: Implications for organizational attraction, job pursuit intentions, work attitudes, and turnover intentions. *Journal of Family Business Strategy*, *12*(3), 100387. https://doi.org/10.1016/j.jfbs.2020.100387

Weerawardena, J., & Mavondo, F.T. (2011). Capabilities, innovation and competitive advantage. *Industrial Marketing Management*, *40*(8), 1220-1223. https://doi.org/10.1016/j.indmarman.2011.10.012

Weimann, V., Gerken, M., & Hülsbeck, M. (2020). Business model innovation in family firms: dynamic capabilities and the moderating role of socioemotional wealth. *Journal of Business Economics,* 90, 369-399. https://doi.org/10.1007/s11573-019-00958-x

Werner, A., Schröder, C., & Chlosta, S. (2018). Driving factors of innovation in family and non-family SMEs. *Small Business Economics*, *50*(1), 201-218. https://doi.org/10.1007/s11187-017-9884-4

Wilden, R., & Gudergan, S.P. (2015). The impact of dynamic capabilities on operational marketing and technological capabilities: investigating the role of environmental turbulence. *Journal of the Academy of Marketing Science, 43, 181-199.* https://doi.org/10.1007/s11747-014-0380-y

Wilden, R., Gudergan, S.P., Nielsen, B.B., & Lings, I. (2013). Dynamic Capabilities and Performance: Strategy, Structure and Environment. *PLS applications in strategic management: Partial Least Squares modeling in strategy research*, *46*(1), 72-96. https://doi.org/10.1016/j.lrp.2012.12.001

Winter, S.G. (2003). Understanding dynamic capabilities. *Strategic Management Journal, 24*(10), 991-995. https://doi.org/10.1002/smj.318

Yeow, A., Soh, C., & Hansen, R. (2018). Aligning with new digital strategy: A dynamic capabilities approach. *The Journal of Strategic Information Systems*, *27*(1), 43-58. https://doi.org/10.1016/j.jsis.2017.09.001

Zellweger, T.M., Kellermanns, F.W., Eddleston, K.A., & Memili, E. (2012). Building a family firm image: How family firms capitalize on their family ties. *Journal of Family Business Strategy*, *3*(4), 239-250. https://doi.org/10.1016/j.jfbs.2012.10.001

Zheng, S., Zhang, W., & Du, J. (2011). Knowledge-based dynamic capabilities and innovation in networked environments. *Journal of Knowledge Management*, *15*(6), 1035-1051. https://doi.org/10.1108/13673271111179352

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