Environmental Science and Pollution Research
https://doi.org/10.1007/s11356-023-26207-x

RESEARCH ARTICLE

The sequential effect of absorptive capacity, strategic agility, and sustainable competitive advantage on sustainable business performance of SMEs

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Received: 21 December 2022 / Accepted: 26 February 2023
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Abstract
A company's environmental sensitivity primarily depends on its sustainability. Hence, investigating the factors that affect sustainable business performance contributes to the literature on the environment. Based on a resource-based view, dynamic capabilities, and contingency theory, this study examines the sequential relationships between the absorptive capacity, strategic agility, sustainable competitive advantage, and sustainable business performance of small- and medium-sized enterprises (SMEs), as well as the mediating role of sustainable competitive advantage in the relationship between strategic agility and sustainable business performance. The data for the study was collected from 421 SMEs operating as family businesses and analyzed using SEM. Research findings show that the sub-dimensions of absorptive capacity, acquisition, and exploitation affect strategic agility; strategic agility affects sustainable competitive advantage, and sustainable competitive advantage affects sustainable business performance. In addition to these sequential relationships, sustainable competitive advantage was found to play a full mediating role in the relationship between strategic agility and sustainable business performance. The findings of the study highlight the process to achieve sustainable performance for SMEs, which are the backbone of developing economies in today's highly turbulent economic conditions.

Keywords Absorption capacity · Strategic agility · Sustainable competitive · Sustainable firm performance · Sustainable Development Goals · SMEs

Introduction

As stated in the framework of the Sustainable Development Goals, which includes the goals to be achieved by the United Nations member states by the end of 2030, it is essential to achieve sustainable growth in every country. In today's globalized world, countries' economies affect each other like dominoes lined up one after the other. For this reason, both the economic development and the regression countries' experience affect each other. Unsustainable growth will do more harm than good. The effective and efficient use of all kinds of resources, especially human beings, is possible with sustainable development, and the way to achieve this is through providing sustainable performance. Otherwise, all kinds of resources will be used inefficiently. In terms of developing economies, it is clear that sustainable growth cannot be possible without sustainable performance.

In particular, studies focusing on the sustainable performance of small- and medium-sized enterprises (SMEs), the main pillars of developing economies, are evaluated to

The earlier version of this study was presented at ECONEFE Conference on 7-10 September 2022, Belgrade, Serbia.

Responsible Editor: Arshian Sharif

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Published online: 13 March 2023

guide how the Sustainable Development Goals put forward by the United Nations can be put into practice accurately and effectively.

In this context, this study focuses on the antecedents of the sustainable performance of SMEs in Turkey, which also constitutes an essential dimension of sustainable development. Today, sustainable performance is a must for any level of business (Tufan et al. 2023). Sustainable performance is defined as the harmonization of social, financial, and environmental objectives in the realization of the core activities of the business to maximize value (Haseeb et al. 2019). Sustainable performance is vital to SMEs' sustainability (Kot 2018). The resources and capabilities of companies, their information infrastructure, and how they use information have become essential in determining their position in the market, providing sustainable competitive advantage and sustainable performance (González-Loureiro et al. 2015; Haseeb et al. 2019).

Considering the severity of competition and the speed of environmental changes today, strategic agility is of great importance in achieving long-term success by responding to these changes instantly through the dynamic capabilities of businesses (Uğurlu et al. 2019). For this reason, it is accepted that SMEs can adapt to changing conditions due to globalization more quickly than large enterprises, thanks to their flexible structures and closer proximity to the consumers (Yılmaz and Alpkan 2004). However, it is observed that SMEs operate in business environments where economic, political, and geopolitical conditions can change frequently and where uncertainty is high, especially in Turkey, and cannot respond to their operational problems promptly due to improper management of their information resources. Moreover, it is stated that many SMEs cannot survive in the long term due to their difficulties in adapting to dynamic environmental conditions (Müller et al. 2021; Salisu and Abu Bakar 2019). Knowledge-intensive entrepreneurship in research on SMEs that focus on how confidently a firm is prepared to use new knowledge to cope with environmental changes presents several shortcomings. Therefore, in our literature review, we could not find any studies examining the relationship between the absorptive capacity of SMEs operating in the field of production, strategic agility, sustainable competitive advantage, and overall performance. For businesses to survive in the long run, it is essential to identify the antecedents that lead to sustainable competitive advantage and performance. For this reason, based on resource-based view, dynamic capabilities, and contingency theory, this study aims to examine the sequential relationships between SMEs' absorptive capacity, strategic agility, sustainable competitive advantage, and sustainable business performance. It also examines the mediating role of sustainable competitive advantage in the relationship between strategic agility and sustainable business performance.

The current study was also conducted in response to the calls of some researchers as future research proposals (AlTaweel and Al-Hawary 2021; Clauss et al. 2020; Imamoğlu et al. 2022; Kale et al. 2019). For example, Khan et al. (2020) mentioned that the effect of absorptive capacity on strategic agility is not given much importance and stated that more studies should be conducted in this area. Brahma et al. (2021) noted that the relationship between strategic agility and sustainable competitive advantage in different industries and different types of organizations, especially small organizations, should be addressed. According to Yildiz and Aykanat (2021), there is a need for more empirical studies examining the relationship between strategic agility and sustainable business performance. Kale et al. (2019) noted that new research is needed to clarify the concepts related to agility, distinguish strategic agility from other agility types, make institutions understand its importance, and fill the gaps in the literature. Focusing on investment in intangible resources and capabilities and their positive effects on sustainable competitive advantage and firm performance, Khan et al. (2018) highlighted the need for empirical studies that will examine the intermediary role of sustainable competitive advantage between different variables.

A company's environmental sensitivity primarily depends on its sustainability. Generally, in developing countries such as Turkey, environmental sensitivity is observed in companies that do not have any pressing issues regarding existence, in other words, no problems in terms of sustainability. Hence, as done in the current study, investigating the factors that are effective in achieving a sustainable business performance contributes to the environmental literature. Furthermore, this research contributes to the literature in several ways. Firstly, it defines absorptive capacity, strategic agility, and sustainable competitive advantage as the main determinants of the sustainable performance levels of firms, especially in the context of SMEs in emerging economies. Secondly, it adds to the existing literature by investigating the mediating role of sustainable competitive advantage in the relationship between strategic agility and sustainable business performance. In addition, we demonstrate that strategic agility is an essential factor that transforms the positive effect of absorptive capacity on sustainable competitive advantage. We contributed to the literature by finding that agility is vital for companies in using the information they have acquired. Moreover, the current study provides a comprehensive framework for companies to increase their absorptive capacity and SMEs' sustainable competitive advantage and sustainable performance. Further, the findings obtained from examining the variables we used in the study can guide SME managers operating in the production field and lead future research to results that create value. Finally, this study is expected to provide practical guidance on how

SMEs in developing countries such as Turkey can cope with competitive challenges and improve their competitiveness to survive in the markets in which they operate with limited resources. The results of the current study are also expected to guide the organizational structure and strategic management practices that business managers create.

We think that the study will contribute to development in terms of drawing attention to cultural factors in the emergence of sustainable performance, which is thought to be directly effective in implementing the Sustainable Development Goals set forth by the United Nations, and how to effectively implement it. Within the scope of this study, we present theoretical background, moving on to our research hypotheses, and explain the research model (Fig. 1). Then, we provide information about the scales and the sample, and present the analyses and findings applied to test the research hypotheses. Finally, we evaluate the research findings, state research limitations, and make suggestions for future research and the business world.

Literature review

Theoretical framework

The studies carried out by Penrose (1959) in the field of strategy had a significant impact on the shaping of resource-based view (RBW) theory. RBW is called the inside-out perspective because it takes business resources as a starting point (Nkuda 2017). RBW focuses on creating a potential competitive advantage from a firm's internal resources, such as assets, talents, and strengths (Hitt et al. 2013). According to RBW (Barney, 1986, 1991; Grant 1991), competitive advantage can be achieved by creating new resources and capabilities and constantly improving existing ones to respond to ever-changing market conditions. Therefore, if businesses can strategically deploy their resources and capabilities, they can turn the competitive struggle towards their interests in the best possible way and create sustainable competitive advantages (Nkuda 2017). Managers who can provide this will also enable the implementation of their businesses' growth plans; this will bring along a high rate of growth and an increase in performance (Penrose 1959).

Along the same line, dynamic capabilities refer to the firm's ability to create, integrate, and reconfigure its internal and external capabilities to respond quickly to environmental changes (Teece et al. 1997). Here, the concept of dynamism indicates the ability of a firm to adapt to changes in the environment by improving its operating capability. Capabilities mean the ability to meet changing environmental needs through integrating, relevance, and restructuring technology and resources. This perspective states that dynamic capability in any process is an essential resource in determining a firm's competitive advantage. Dynamic talent consists of three elements: perceiving the environment, seizing opportunities, and transformation (Farago et al. 2019). Perception of the environment refers to identifying, analyzing, and evaluating opportunities and threats. This includes the ability to create a favorable environment for the firm. Opportunity seizing is the ability to mobilize and capture value in response to the opportunities presented by environmental changes. This phase includes the selection of technology and product features and the design of business models. Finally, transformation refers to a firm's ability to reorganize and transform its developed resources and competitiveness (Min and Kim 2021). In addition to these, contingency theory proposes

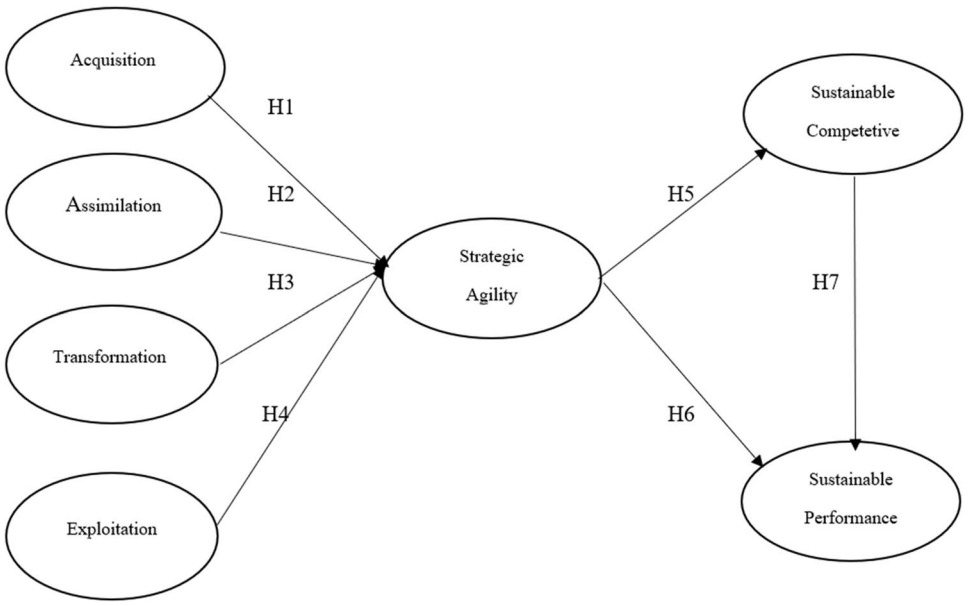


Fig. 1 The conceptual model of the research

that firm performance is determined by the organization's alignment with the environment (external fit) and the harmony of organizational elements with each other (internal fit) (Wilden et al. 2013). In addition, assuming that a firm tries to adapt to a certain environment and situation, this adaptation creates a competitive advantage (Eckstein et al. 2015). To maintain this harmony, managers must carefully analyze the internal and external environments and respond appropriately to the measures they will take. In light of all this, we contend that the use and development of the unique resources and capabilities of SMEs in harmony with dynamic environmental conditions will provide them with a sustainable competitive advantage and overall sustainable performance. Based on these explanations, propositions regarding each factor affecting the sustainable performance of SMEs are given in the following sections.

Absorptive capacity and strategic agility

Roth (1996) defines strategic agility as the ability to bring the right product to the market at the right time, in the right place, and at the right price. Hemmati et al. (2016) define it as one of the essential dynamic capabilities required for a company to gain a competitive advantage in their work in line with RBW, and listed the factors that create strategic agility as clarity of vision, grasping the right talent, choosing strategic goals, sharing responsibility, and taking action. Strategic agility also means enabling the development of outputs that will benefit the company from the information obtained from the environment in today's information age (Delmas et al. 2011). Providing strategic agility requires continuous monitoring of internal and external environments and quickly responding to changes in the market by rapidly acquiring, assimilating, and exploiting information (Kumkale 2016). In this respect, strategic agility can improve the quality of a firm's competitive activities and its responses to environmental changes, thereby increasing the overall performance of firms (Kale et al. 2019). Some researchers also refer to absorptive capacity as a dynamic ability (García-Morales et al. 2008; Zahra and George 2002), which is a concept related to how the information in the environment is used. Different companies exposed to the same information obtain different outputs from that information (Delmas et al. 2011). Cohen and Levinthal (1990) define absorptive capacity as the firm's ability to recognize, internalize, and use external information. Absorptive capacity can help firms design or modify activities, processes, and products to reduce or prevent adverse environmental impacts (Carneiro 2000; Patelet al. 2014). Based on this, it can be said that absorptive capacity is both a unique resource for companies and a capability that affects environmental compliance (Delmas et al. 2011).

Cohen and Levinthal (1989) conceptualize absorptive capacity as a three-dimensional model, namely, the processes of recognizing, assimilating, and exploiting information. On the other hand, Kim (1998) argues that absorption capacity should include the processes of knowledge acquisition, assimilation, transformation, and exploitation. Zahra and George (2002) explain absorptive capacity as organizational routines and processes by which firms acquire, assimilate, transform, and exploit knowledge to produce a dynamic organizational capability. According to Zahra and George (2002), absorptive capacity consists of two subsets and four dimensions. The subsets are potential absorptive capacity and actual absorptive capacity. Potential absorptive capacity encompasses the obtaining and interpretation of exogenous knowledge. Actual absorptive capacity focuses on transforming and implementing knowledge (Aliasghar et al. 2019; Ganguly et al. 2022). In this study, in accordance with Zahra and George, absorptive capacity is discussed in four dimensions (acquisition, assimilation, transformation, and exploitation). Indeed, many researchers in the literature seem to use this distinction (e.g., Ali and Park 2016; Delmas et al. 2011; Xie et al. 2018).

Acquisition refers to a firm's ability to identify and obtain external information about itself from the information around it (Zahra and George 2002). Hill and Rothaermel (2003) state that acquiring and using new knowledge will result in higher organizational capability and a higher capacity to create innovation because newly acquired knowledge will expand the breadth and depth of the firm's knowledge base. Assimilation refers to a firm's ability to develop processes and routines helpful in analyzing, interpreting, and understanding externally acquired information (Aliasghar et al. 2019). On the way to success for a company, systematically acquiring, organizing, and assimilating internal and external information through information management systems means bringing agility to companies (Ashrafi et al. 2006). Kale et al. (2019) noted that assimilated knowledge is used for current and future incentives for improvement. Therefore, it is said that assimilating knowledge positively affects firm performance.

Transformation is defined as the capacity to integrate acquired and internalized knowledge with existing knowledge and current firm activities (Zahra and George 2002). Shin et al. (2015) state that transformation is a survival technique to remain competitive in the business environment. The authors mention that transformation is a way that can be used to achieve strategic agility, which has a positive impact on the firm's performance.

Exploitation, on the other hand, is the capacity to develop valuable outputs such as new knowledge, products, processes, and competencies for the company thanks to the knowledge integrated within the existing structure (Camisón and Forés 2010). Exploitation helps new products, systems,

and processes gain continuity and flexibility (Spender 1996). Tallon and Pinsonneault (2011) state that companies using available information could also better use their internal business processes, which can respond appropriately to market fluctuations and dynamism. Van Oosterhout et al. (2006) suggest that absorptive capacity is strategic. He mentions that it is essential in terms of agility to benefit from this process in coping with unpredictable and uncertain market or demand changes. Studies in the literature show that absorptive capacity affects the sustainable competitive advantage of the firm (Chen, et al. 2009; Cohen and Levinthal 1990; Delmas et al. 2011; Hermundsdottir and Aspelund 2020; Pangarso et al. 2020; Zahra and George 2002) as well as its performance (Chaudhary and Batra 2018; Latukha and Veselova 2018; Wales et al. 2012).

In previous studies, it was also stated that absorptive capacity is a skill that affects the firm's strategic agility (Kale et al. 2019; Mao et al. 2014; Sambamurthy et al. 2003; Mata et al. 2023). In addition, some studies in the literature point to the indirect relationship between absorptive capacity and strategic agility. Nurcholis (2021) has proven that exploiting knowledge significantly affects strategic agility; moreover, exploiting knowledge and strategic agility mediate the relationship between new market exploration, development of marketing programs, product diversity, and a sustainable competitive advantage. Nazir and Pinsonneault (2012) believe that IT and agility increase business performance by using the defining elements of agility, such as sensing and responsiveness. Mao et al. (2014) found that information technology and capabilities positively affect organizational agility. Tallon et al. (2018) support the necessity of strategic agility in the IT industry. Kale et al. (2019) found that the dimensions of acquiring and exploiting information have a positive direct effect on strategic agility and also positively affect strategic agility and business performance. Moreover, they also found that knowledge acquisition and usage dimensions indirectly affect business performance through strategic agility.

H_1: Acquisition positively affects strategic agility.
H_2: Assimilation positively affects strategic agility.
H_3: Transformation positively affects strategic agility.
H_4: Exploitation positively affects strategic agility.

Strategic agility and sustainable competitive advantage

According to Porter (1985), a sustainable competitive advantage consists in firms performing above average in the long run. Sustainable competitive advantage is defined as "a value-creating strategy implementation that cannot be applied and copied by a company's current or potential competitors at the same time" (Barney 1991). In today's world of intense competition and rapid changes, strategic agility is a factor that plays a vital role in surviving in the market for SMEs operating in unstable environments (Nejatian et al. 2019). Kumkale (2016), in his study that deals with the impact of market conditions such as technology, sustainability, and competition, states that strategic agility is a tool that provides a competitive advantage for organizations. It is stated that strategic agility, which is the ability to develop new resources, is a critical factor in providing a sustainable competitive advantage, since organizations do not have enough resources to achieve superior returns in the long run in a highly competitive environment (Teece et al. 1997).

Al-Romeedy (2019) found in his empirical study that strategic agility significantly affects competitive advantage. Adamik et al. (2018) highlight the importance of strategic agility in gaining a competitive advantage. Battour et al. (2021) revealed that strategic agility has a mediating effect on the relationship between HRM strategies and strategic agility. Sherehiy and Karwowski (2014) stated the role of information exchange and strategic agility in gaining competitive advantage. Clauss et al. 2020) found that strategic agility affected the competitive advantage of 150 medium-sized German firms in the engineering industry. Clauss et al. (2020) stated that strategic agility would effectively provide a competitive advantage through reliability, quality, delivery, price, and product innovation.

H_5: Strategic agility positively affects sustainable competitive advantage.

Strategic agility and sustainable firm performance

All companies aim to achieve higher performance as a result of their activities. Performance is an essential element that develops through the interaction between the resources and capabilities of the companies and contributes to achieving goals and objectives. Based on this explanation, we present the concept of performance as a dependent variable (Matchaba-Hove and Goliath 2007). Sustainability performance often adopts a long-term focus, as it refers to a holistic approach to economic, social, and environmental progress. Thus, it is possible to adapt the companies' social, economic, and environmental goals to their business strategies and improve the balance between these three (Székely and Knirsch 2005). SMEs operating in dynamic environments must first create a sustainable competitive advantage to perform and face the changes in these environments. In this context, strategic agility affects organizational capability in terms of taking timely action, continuous adaptation, and self-adjustment in ensuring the sustainable performance of companies (Ofoegbu and Akabil 2012). A firm's sustainable performance depends on its strategic agility towards its partners, competitors, suppliers, customers, and government

policies (Yildiz & Aykanat 2021). Studies in the literature have proven that agile companies respond faster to environmental opportunities (Kumkale 2016; Roberts and Grover 2012). With this aspect, strategic agility enables companies to increase their market share, improve their financial performance, and increase productivity by restructuring their resources in line with environmental conditions. Many researchers examining the relationships between strategic agility and performance in different sectors have found that companies' strategic agility practices significantly increase their competitive advantages and overall performance. For example, Yang and Liu (2012) state that strategic agility significantly impacts business performance and is a critical resource for businesses wishing to gain a competitive advantage. Vickery et al. (2010) state in their study on productive firms that the concept of strategic flexibility has a positive effect on firm performance. Cegarra-Navarro et al. (2016) revealed that there is a positive relationship between corporate agility and corporate performance. In research conducted by Kumkale (2016), who evaluates strategic agility as a means of providing a competitive advantage, he states that businesses could gain a competitive advantage and increase their performance when they become strategically agile. Lyn Chan and Muthuveloo (2019) revealed a fundamental link between the strategic agility of banks in Nigeria and their organizational performance. Francis et al. (2021) found that the strategic agility of micro-businesses plays an essential role in their sustainable performance in Nigeria.

H_6: Strategic agility positively affects firm performance.

Sustainable competitive advantage and sustainable firm performance

According to RBW theory, a firm can achieve sustainable competitive advantage and sustainable performance in a turbulent market if it has unique resources, skills, and capabilities. If companies operating in such environments cannot promptly respond to environmental changes, they lose their competitive position in the market (Andersén 2011; Dogan et al. 2022). Porter (1980) states that a firm can achieve a sustainable competitive advantage by offering better, differentiated features; low costs; and difficult to imitate and unique services and products compared to its competitors. Teece et al. (1997) found that creating a sustainable competitive advantage is linked to a dynamic process where firms develop and achieve dynamic business conditions. For this reason, they state that the sustainable business performance of companies that provide a sustainable competitive advantage with the help of their internal resources, including social and technological factors, tends to increase (Dogan et al. 2021). Newbert (2008) found a positive relationship between a firm's competitive advantage and its ability to provide superior organizational performance. In their research Chan et al. (2004) found that sustainable competitive advantage is tangibly and distinctly related to sustainable business performance as companies focus on increasing their competitive strategies in our current era. In their study of SMEs in Malaysia, Haseeb et al. (2019) revealed that social and technological challenges play essential roles in increasing sustainable competitive advantage and sustainable business performance. In the study, they also stated that there is a positive relationship between sustainable competitive advantage and sustainable performance.

H_7: Sustainable competitive advantage positively affects sustainable business performance.

Mediating effect of sustainable competitive advantage

Strategic agility, which enables SMEs to quickly and decisively manage and reassemble their complex resource and relationship networks, is also the key to sustainable competitive advantage in the long run. The ability to demonstrate strategic agility through certain processes and practices within the company may also be a key to achieving sustainable performance (Purwani and Nurcholis 2015). Businesses with a sustainable competitive advantage can also seize opportunities to achieve higher performance than their competitors (Balsalobre-Lorente et al. 2019). This gives them the ability to maximize shareholder value. Chan et al. (2004) revealed in their research that sustainable competitive advantage is concretely related to the sustainable performance of the firm. Thus, it can be said that a sustainable competitive advantage will provide sustainable business performance (Heenkenda et al. 2022). Some studies in the literature examine the mediating role of sustainable competitive advantage. Khan et al. (2018) found that sustainable competitive advantage partially mediates the relationship between intellectual capital and business performance. Yang et al. (2018) gathered data from 304 senior SME managers operating in Pakistan and found that sustainable competitive advantage partially mediates the relationship between enterprise risk management practices and SME performance. Songling et al. (2018), in their study of 326 top SME managers, found that a sustainable competitive position partially mediates the relationship between government support and business performance. In their research in Pakistan, Hussain et al. (2020) found that sustainable competitive advantage fully mediates the relationship between brand equity and market performance and partially mediates the relationship between marketing innovation and market performance. The study of Sayedeh et al. (2015) on managers of 205 manufacturing and

consumer product businesses in Iran shows that competitive advantage mediates the relationship between corporate social responsibility and business performance.

H_8: Sustainable competitive advantage mediates the relationship between strategic agility and sustainable business performance.

Methods

Sample and procedure

We determined the universe of the research at the end of our meeting with the Republic of Turkey Small and Medium Enterprises Development and Support Administration (KOSGEB). We asked KOSGEB for the number and contact information of SMEs operating as family businesses. KOSGEB informed us that 1128 SMEs are operating as family businesses in Turkey, in line with our research. Then we got the contact information of these businesses. Between June 2020 and May 2021, we made phone calls with the senior managers of the SMEs whose contact information we received to inform them about our work and ask for permission to apply our survey. Then, we sent our survey to the top managers of the enterprises via e-mail. Of the 1128 questionnaires we sent, 421 were responded to.

Measures

We translated all survey questions from English to Turkish using the rejection method suggested by McGorry (2000). Finally, we asked the faculty members of the Akdeniz University School of Foreign Languages to translate the items from Turkish to English.

All constructs were measured through multiple items on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree) (Appendix) .

The measures of this study are as follows:

Absorption capacity was measured using the Flatten et al.'s (2011) four-dimensional scale: acquisition (3), assimilation (4), transformation (3), and exploitation (3). Thus, there are a total of 13 items on the absorption capacity scale.

Strategic agility was operationalized with an 8-item scale from Tallon and Pinsonneault (2011).

Sustainable competitive advantage was operationalized with a 6-item scale from De Villiers (2001).

Sustainability business performance was operationalized with a 5-item scale from Nawanir (2016).

Demographics

The research population consisted of 1188 senior managers of SMEs. Responses were obtained from 421 of the questionnaires sent. The managers taking part in the research were 81.2% male and 20.8% female; 11.8% were in the 25–35 age range, 40.6% were 36–45, and 47.6% were 46 years old and over. On an educational level, 73% of the participants were university graduates, 12.6% had associate degrees, 11.3% had completed their master's degrees, 1.5% had doctorate degrees, and 1.5% were high school graduates. The corporate tenure of the participants was 1–5 years (13.4%), 6–10 years (19.3%), 11–15 years (35.2%), 16–20 years (24.2%), and over 20 years (8%).

Results

Measurement model assessment

The analyses were carried out in two stages: evaluation of the measurement model and testing the hypotheses using path analysis. Since the kurtosis and skewness values of the expressions that make up the variables are between − 2 and + 2, we assume that the data are suitable for normal distribution (George and Mallery 2019; Çolakoğlu and Bozkurt 2021). While evaluating the measurement model, we used standardized factor loads for item reliability, Cronbach's alpha (CA) and compound reliability (CR) values for internal consistency and reliability, mean–variance (AVE) values for convergent validity, and the Fornell-Lacker method for discriminant validity. Goodness-of-fit values were also used for the fit of the model. As a result of the analysis, nine statements with low factor loads or which failed to meet the reliability and validity criteria were excluded from the analysis (i.e., ASM4, AGL1, AGL3, AGL5, AGL7, SCA2, SCA4, SFP2, SFP4). In the last case, item reliability (Hulland 1999), the standardized loads of the expressions forming the variables were above 0.50 and were statistically significant ($p < 0.05$). Since the CA and CR values of the variables were greater than 0.70 (Bagozzi and Yi 1988), internal consistency (reliability) and AVE values were greater than 0.5 (Hair et al. 2019), convergent validity criteria were met. In addition, since the goodness-of-fit values are within acceptable limits, we observed that the data model fit is good (Yaşlıoğlu 2017). Detailed information about these values is shown in Table 1.

Fornell and Lacker's methods were used to test discriminant validity. To determine that discriminant validity is provided in this method, the square root of each variable's AVE values should be greater than the correlation coefficients between them and other variables (Fornell and Lacker 1981;

Table 1 Evaluation of the measurement model

Kod	Skewness	Kurtosis	Loading	CA	CR	AVE
Acquisition				.930	.931	.818
ACQ1	− 1.761	1.993	.847			
ACQ2	− 1.778	1.955	.924			
ACQ3	− 1.768	1.943	.940			
Assimilation				.945	.947	.856
ASM1	− .664	− .614	.864			
ASM2	− .654	− .627	.931			
ASM3	− .674	− .601	.976			
Transformation				.925	.927	.810
TRF1	1.454	.115	.947			
TRF2	1.472	.168	.880			
TRF3	.575	1.314	.872			
Exploitation				.941	.943	.846
EXP1	− .408	− .668	.858			
EXP2	− .429	− .668	.943			
EXP3	− .422	− .668	.954			
comp				.930	.931	.771
AGL2	− .841	− .361	.800			
AGL4	− .841	− .361	.928			
AGL6	− .841	− .361	.917			
AGL8	− .841	− .361	.861			
Sust.Comp.Ad				.923	.925	.804
SCA1	− .610	− .622	.899			
SCA3	− .610	− .622	.949			
SCA5	− .610	− .622	.839			
Sust.Firm.Perf				.954	.954	.874
SBP1	− .534	− .620	.896			
SBP3	− .577	− .587	.953			
SBP5	− .580	− .595	.955			

X^2**/SD** = 2.723 ($p < 0.05$), **GFI** = 0.907, **NFI** = 0.942, **TLI** = 0.954, **CFI** = 0.962, **RMSEA** = 0.064, **SRMR** = 0.037

Table 2 Discriminant validity

	Mean	S.S	1	2	3	4	5	6	7
Transformation	4.203	.393	**0,900**						
Strategic_Agility	4.475	.587	0.039	**0.878**					
Sust. Firm. Perf	4.425	.586	0.050	0.047	**0.935**				
Sust.Comp.Ad	4.499	.532	0.083	0.155	0.282	**0.897**			
Assimilation	4.532	.530	− 0.046	0.067	0.047	0.013	**0.925**		
Exploitation	4.346	,593	− 0.001	0.187	0.089	0.108	0.045	**0.920**	
Acquisition	4.690	.557	− 0.021	0.065	0.181	0.075	0.101	0.052	**0.904**

Bold values represent the square root of the AVE values of the variables

Tan and Çolakoğlu 2021). When the values in Table 2 are examined, it is seen that discriminant validity is provided.

Path analysis was applied to test the research hypotheses. According to the results, the variables of exploitation ($\beta = 0.183$; $p < 0.01$) and acquisition ($\beta = 0.172$; $p < 0.01$) have a direct and positive effect on the strategic agility variable; the strategic_agility variable has a direct and positive effect on the sustainable competitive advantage variable ($\beta = 0.156$; $p < 0.01$) and the sustainable competitive advantage variable has a direct and positive effect on the sustainable firm performance variable ($\beta = 0.282$; $p < 0.05$). According to these results, hypotheses H_1, H_4, H_5, and H_7

Table 3 Path analysis results

Hypothesis	Path	Standardized effect coefficients (β)		Result
		Direct	Indirect	
H_1	Acquisition → Strategic agility	.172**	-	Accepted
H_2	Assimilation → Strategic agility	.056	-	Rejected
H_3	Transformation → Strategic agility	.044	-	Rejected
H_4	Exploitation → Strategic agility	.183**	-	Accepted
H_5	Strategic_Agility → Sust.Comp.Ad	.156**	-	Accepted
H_6	Strategic_Agility → Sust.Firm.Perf	.005	-	Rejected
H_7	Sust.Comp.Ad. → Sust.Firm.Perf	.282**	-	Accepted
H_8	Strategic_Agility → Sust.Comp.Ad. → Sust.Firm.Perf	.005	.014**	Accepted

were supported. Hypotheses H_2, H_3, and H_6 were not supported. Detailed information about the results is shown in Table 3.

To examine the mediation effects, their indirect effects and confidence intervals were calculated using the Bootstrap method. To have a mediating role, indirect effects must be significant. If the indirect effect is significant and the direct effect is statistically insignificant, full mediation is seen; if the direct effect is also significant, it means that there is a partial mediating role (Zhao et al. 2010). The indirect effect of strategic agility on the variable of sustainable firm performance through sustainable competitive advantage was found to be statistically significant ($\beta = 0.014$; $p < 0.01$) (H_8). Since the direct effect of the strategic agility variable on the sustainable firm performance variable is statistically insignificant ($\beta = 0.005$; $p > 0.05$) (H_6), we determined that the sustainable competitive advantage variable has a full mediating role in the relationship between the strategic agility and the sustainable company performance variables. Detailed information about the results is shown in Table 3.

Discussion and conclusion

The Sustainable Development Goals stated by United Nations are a call for action by all countries and require strategies that build economic growth and address a range of social needs. In this regard, the current study tries to answer this call by addressing the sustainable performance of SMEs, which are the Turkish economy's engine. Sustainable performance emerges both as a sign and a result of the sustainable development of SMEs. The study's findings are discussed by addressing the social needs associated with the cultural characteristics of Turkey below.

In this study, which focused on sustainable business performance, a significant part of strategic management has revealed the sequential relationship between absorptive capacity, strategic agility, and sustainable competition, which we describe as the antecedents of sustainable performance.

Accordingly, the two sub-dimensions of absorptive capacity (namely, acquisition and exploitation) affect strategic agility; strategic agility affects sustainable competitive advantage, and sustainable competitive advantage affects sustainable performance, which is the outcome variable. Moreover, in this sequential relationship series, sustainable competitive advantage plays a full mediating role in the relationship between strategic agility and sustainable business performance. Research findings reveal the journey of transforming knowledge into performance. In the manufacturing industry, which is affected by rapid change and environmental uncertainties, the absorptive capacity for the success of SMEs is transformed into an advantage in competitive environments through strategic agility, becoming one of the main drivers of sustainable business performance. However, our knowledge on this subject is lacking, since there are not enough empirical studies in the literature on how to make this transformation. For this reason, our study underlines this important but little-studied issue, as it needs to be addressed in more detail. In the current study, first of all, we claim that the variables of absorptive capacity have positive effects, especially on the strategic agility of the firm. According to the findings, we see that first of all, in the sequential effect, the two-dimensional capacity to acquire and assimilate information of absorptive capacity positively affects strategic agility. This finding means that companies that apply and use the external knowledge they have acquired rapidly increase their strategic agility. This finding is also compatible with studies in the experimental literature (Kocoglu et al. 2015; Brueller et al. 2014; Delmas et al. 2011; Kale et al. 2019; Roth 1996; Xie et al. 2018). The knowledge acquisition dimension of absorptive capacity indirectly affects business performance through strategic agility. Firms that use the external knowledge they have acquired by assimilating their external strategies see their performance increase rapidly. It is seen that the exploitation

dimension directly affects business performance and indirectly affects it through strategic agility.

The assimilation and transformation sub-dimensions, the other two dimensions of absorptive capacity, did not directly or significantly affect strategic agility. In the assimilation process, it is not easy for a business to easily perceive and internalize every useful piece of information. On the other hand, every piece of information that the SMEs acquires may not always be useful, i.e., of interest to the business or perceived as such. In addition, the SMEs must be able to understand the acquired knowledge or use it as part of new knowledge. For these reasons, it is possible that the adoption process will not occur as desired (Greve et al. 2009). Therefore, insufficient professionalization in family businesses may cause the assimilation process to not have the desired effect on strategic agility. Another finding is that the transformation dimension is ineffective on strategic agility, like the assimilation dimension. Newly acquired knowledge is added to the existing knowledge in the transformation dimension. In this dimension, previous information can be deleted or re-evaluated (Zahra and George 2002). Generally, first-generation managers who are influential in the management of family businesses may resist deletion of previously used information due to their conservative character. This might explain why the transformation dimension is ineffective on strategic agility.

It can also be said that the cultural characteristics of Turkey may play a role in this relatively interesting finding that the assimilation and transformation sub-dimensions have no effect on strategic agility. As mentioned above, most SMEs in Turkey consist of family businesses. In these enterprises, which are usually run by the first and second generations, rarely the third generation, the family elders who own the company are also the general managers and greatly influence the management. These company owners often have close social relations with their competitors operating in the same sector and also in their private lives. They usually know and follow each other very closely. Innovation information in a company, a new machine, process, or system change is quickly learned. This innovation is a situation that is often envied. Therefore, it is rapidly imitated and used. The absence of innovation and innovative knowledge in the competitor is perceived as a personal deficiency beyond professional management. With the close social relations and awareness among company owners, the capacity to acquire information is high. However, this knowledge tends to be used as soon as possible without focusing too much on assimilating and transforming it. Thus, the willingness to not fall behind one's competitors sometimes results in exploiting information quickly and hastily, by imitation, without assimilating and transforming it.

Through the lens of RBV theory, contingency theory, and dynamic capability theory, in the sequential effect of the research's findings, and secondly in line with previous empirical research, strategic agility was found to provide sustainable competitive advantage (Adamik et al. 2018; Sherehiy and Karwowski 2014; Al-Romedy 2019; Barahmah et al. 2022; Battour et al. 2021; Claus et al. 2020; Kotter 2015; Mason 2010, Nkuda 2017; Nurcholis 2021). This means rapid recognition of the ability to identify changes, trends, and opportunities in the environment, adapting and restructuring team members to quickly perform tasks and change conditions rapidly (Hajko et al. 2018). This also means that sustainable competitive advantage will be achieved by creating a strategic, broad, or comprehensive networking capability with suppliers and distributors.

In another research result, it was seen that strategic agility does not have a direct and significant effect on sustainable business performance. Drnevich and Kriauciunas (2011) mention that the question of whether and how strategic agility affects business performance has not been fully addressed. Our finding can be explained by Eisenhardt and Martin's (2000) claim that having dynamic capabilities and thus strategic agility does not lead to sustainable business performance. In their study, Jacobs et al. (2010) found no relationship between production agility and business performance. This finding also points out the importance of using multiple performance measures in strategic agility studies. Similarly, it is mentioned in the literature that strategic agility is not a factor that leads to sustainable business performance by itself, but the effects of dynamic capabilities on firm performance are context dependent (Helfat et al. 2007; Teece et al. 1997; Wilden et al. 2013).

Another effect in the chain of research findings is the effect of sustainable competitive advantage on sustainable performance. Our results reveal background support of RBV and contingency theory, as well as the support of previous studies in the literature (AlTaweel and Al-Hawary 2021; Andersén 2011; Heenkenda et al. 2022; Khan et al. 2018; O'Shannassy 2008; Songling et al. 2018; Walsh and Dodds 2017). Businesses need to gain a competitive advantage through strategic agility in the environments in which they operate by using innovative knowledge to achieve sustainable performance. Providing sustainable competitive advantage almost creates a vision and mission for SMEs, which keeps them on the alert and directs them towards superior and sustainable performance. Another significant result of the research is that sustainable competitive advantage has a full mediating role in the relationship between strategic agility and sustainable business performance. This result can be interpreted as the strategic agility of SMEs operating in the Turkish manufacturing sector, where the study was conducted, contributing positively to achieving sustainable competitive advantage and being effective in achieving sustainable business performance.

Implication of the study

This study handles SMEs' absorptive capacity and strategic agility uniquely. The mediating effect of sustainable competitive advantage and the interactions between the variables are evaluated from different perspectives. In particular, few studies investigate the impact of strategic agility on the sustainable competitive advantage of SMEs.

This study is essential in explaining the background of success in the performance of SMEs in countries with a collectivist culture, such as Turkey. In this context, RBV theory, on which the research is based, contributes to the theory by showing the effect of cultural factors in understanding how contingency theory and the dynamic abilities approach work in practice.

Knowing the transformation of knowledge imitation in SMEs into performance through strategic agility and sustainable competition in collectivist cultures is especially important for the success of emerging economies such as Turkey. Knowing the sequential reaction identified within the scope of the research can shed light on how to use support tools such as incentives and loans effectively in promoting and developing SMEs. In economic progress, cultural influence should not be ignored but used as a tailwind. In this context, the sequential reaction created by identifying and supporting some SMEs that will play the leading role in the sector will enable the transformation of information into performance through imitation. Research shows that knowing how theories emerging in developed economies work in different cultures and developing countries will contribute to their development. The study findings provide various benefits for practitioners when creating sustainable competitive advantage and sustainable business performance strategies. The present study provides a roadmap for enabling SMEs to develop a framework that combines their knowledge-absorbing capacity and strategic agility to increase sustainability in achieving competitive advantage and business performance. Through this study, SMEs can help develop their absorptive capacity, increasing their strategic agility in achieving sustainable competitive advantage and sustainable business performance. For this reason, our study will provide valuable contributions to SMEs during their strategy formation.

This study aims to support development-oriented policies that support productive activities, decent employment creation, entrepreneurship, creativity, and innovation, which is stated under the sub-title of "Decent work and economic growth" within the framework of the Sustainable Development Goals, which includes the goals aimed to be achieved by the end of 2030 by the United Nations. This contributes directly to the purpose of "encouraging the formalization and growth of micro-, small-, and medium-sized enterprises through access to financial services and financial services." In promoting SMEs, the comments made above within the scope of research findings will be useful in terms of using the mentioned incentives correctly and appropriately. The influence of a country's culture cannot be ignored in promoting and developing national economies. Development and growth programs that take cultural characteristics into account can produce effective results. In this respect, we think that this research will contribute to achieving the goals set by the UN. Similarly, this research has been conducted to determine the value and access of small-scale industrial enterprises and other enterprises to financial services, including affordable loans, especially in developing countries, which is stated under the sub-title of "Industry, innovation, and infrastructure" within the framework of the United Nations' 18 Sustainable Development Goals. It also contributes to increasing their integration into their chains and markets. In this context, it can be inferred that it can provide a synergetic result by creating a domino effect on other SMEs by financing SMEs that play the locomotive role in the sector or region and set an example while giving loans to domestic and foreign financial institutions and SMEs.

Limitations

The environment and pollution sensitivity of companies differ in developing countries such as Turkey compared to developed countries, due to its different characteristics. In this study, we focused on sustainable performance and assumed that the environment and pollution sensitivity of companies increase as they obtain sustainable business performance. Our assumption also emerges as a limitation of the current study. Testing this assumption in future studies could make significant contributions to the environment and pollution literature. Sensitivity to the environment and pollution is an end. There is a need to examine the other factors and organizational variables as means that may be effective in the emergence of this end — sensitivity to the environment and pollution — that are not addressed in this study.

Also, to increase the generalizability of the research, it is recommended that future similar studies with the same variables be repeated on SMEs in sectors not covered by this research. Similarly, considering that the research sample consists of SMEs, it would be appropriate to apply the analysis to large-scale enterprises to increase generalizability. In addition, considering that the data collected within the scope of the research were obtained in a single time period and self-reported, future studies may use longitudinal research design and multi-source data to counteract the adverse effects.

Appendix. The items of the scales (Turkish and English)

Özümseme Kapasitesi/Absorption capacity

Sektörümüze ilişkin bilgi toplamak, işletmemizde düzenli olarak yapılan iştir/The search for relevant information occurs daily in your company

Çalışanlarımız sektörümüze ilişkin bilgi kaynaklarını kullanmaları konusunda teşvik edilir/Our company motivates the employees to use information sources within your industry

Çalışanlarımızdan faaliyette bulunduğumuz sektör dışındaki bilgileri de takip etmeleri beklenir/Our company expects employees to be related to information beyond your industry

İşletmemizde yeni fikir ve düşünceler bölümler arasında paylaşılır/New ideas and concepts are created via cross-departmental communication in our company

Sorunların çözümünde bölümler arası yardımlaşmaya önem verilir/Our company emphasizes cross-departmental support to solve problems

İşletmemizde bir birim önemli bir bilgiye ulaştığında bu bilgi anında diğer bölümlere aktarılır/There is a quick information flow in our company

Yeni gelişmelerin aktarılması, sorunların çözülmesi ve başarıların paylaşılması için düzenli olarak toplantılar organize edilir/Our company exchanges ideas through periodical meetings

Çalışanlarımız toplanan bilgileri yapılandırma ve kullanma becerisine sahiptir/Our employees have the ability to structure and use collected knowledge

Çalışanlarımız işletme içindeki ve dışındaki verileri (bilgileri) işletme için değerli bilgilere dönüştürebilir/Our employees can link existing knowledge with new insights

Çalışanlarımız yeni bilgileri verimliliğe dönüştürebilir/Our employees are able to transform new knowledge into productivity

İşletmemizde yeni ürün modellerinin (prototiplerin) geliştirilmesi desteklenir/Our company supports the development of prototypes

İşletmemizde teknoloji düzenli olarak gözden geçirilir ve yeni gelişmelere göre uyarlanır/Our company regularly adapts technologies in accordance with new knowledge

İşletmemizde yeni teknolojiler kullanılarak daha verimli çalışılır/Our company has the ability to work more effectively by adopting new technologies

Stratejik Çeviklik/Strategic agility

Toplam tüketici talebindeki değişikliklere yanıt verir/Respond to changes in aggregate consumer demand

Bir ürünü veya hizmeti tek bir müşteriye uyacak şekilde özelleştirir/Customize a product or service to suit an individual customer

Rakiplerin yeni ürün veya hizmet lansmanlarına tepki verir/React to new product or service launches by competitors

Rakiplerin fiyatlarındaki değişikliklere yanıt olarak yeni fiyatlandırma programları sunar/Introduce new pricing schedules in response to changes in competitors' prices

Yeni bölgesel veya uluslararası pazarlara açılır/Expand into new regional or international markets

Satışa sunulan ürün/hizmet çeşitliliğini değiştirir (yani genişletir veya azaltır)/Change (i.e., expand or reduce) the variety of products/services available for sale

Daha iyi, daha hızlı ve daha ucuz ürün ve hizmetler üretmek için yeni teknolojileri benimser/Adopt new technologies to produce better, faster, and cheaper products and services

Daha düşük maliyetlerden, daha iyi kaliteden veya daha iyi teslimat sürelerinden yaralanabilmek için tedarikçileri değiştirir/Switch suppliers to avail of lower costs, better quality, or improved delivery times

Sürdürlebilir Rekabet Avantajı/Sustainable competitive advantage

Kuruluşum, keşfedilen fikirleri yeni hizmetler, süreçler ve prosedürler haline getirmeye özen gösterir/My organization gives attention to develop discovered ideas into new services, processes, and procedures

Kuruluşum, faaliyet gösterdiği pazara yeni ürünler/hizmetler sunar/My organization introduces services that are new to the market it serves

Tercih edilen pazar konumlandırması, pazardaki rekabet avantajlarına katkıda bulunabilir/Preferred market positioning can contribute to competitive advantages in the market place

Daha fazla kaynağa erişim, pazardaki rekabet avantajlarına katkıda bulunabilir/Access to superior limit resources can contribute to competitive advantages in the market place

Sınırsız kaynak kullanımı pazardaki rekabet avantajlarına katkıda bulunabilir/Exploiting unlimited resources can contribute to competitive advantages in the market place

Üstün yetkinliklere ve yeteneklere erişim, pazardaki rekabet avantajlarına katkıda bulunabilir/Access to superior competencies and capabilities can contribute to competitive advantages in the marketplace

Sürdürülebilir İşletme Performansı/Sustainable business performance

Kuruluşumuzun net kâr marjı artmaktadır/Net profit margin of our organization increased

Kuruluşumuzun yatırım getirisi artmaktadır/Return on investment of our organization increased

Karlılık artışımız yüksek seviyelere ulaşmaktadır/Profitability growth has been outstanding

Genel finansal performans rakiplerimizi aşmaktadır/Profitability has exceeded our competitors

Karlılığımız rakiplerimizi aşmaktadır/Overall financial performance has exceeded competitors

Author contribution The first author designed the study topic and the research methodology in collaboration with the second author. "Introduction" and "Literature review" sections were written by first author. Second author analyzed the data and handled the "Discussion and conclusion" section. "Discussion and conclusion" section was written with the efforts and contributions of each author. First author helped to prepare the manuscript according to the guidelines of the journal which was edited by the second author.

Data availability The datasets generated during and/or analyzed during the current study are not publicly available as they contain sensitive information but are available from the corresponding author on reasonable request.

Declarations

Ethical approval The study was in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent Informed consent was obtained from all participants included in the study.

Consent to participate All the authors of this work agree with the content and give their explicit consent to submit it.

Consent for publication All the participants consented to submit findings for publishing purposes.

Competing interests The authors declare no competing interests.

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