Emerging trends around strategic flexibility: a systematic review supported by bibliometric techniques

Lara Agostini and Anna Nosella
Department of Management and Engineering, University of Padua, Padua, Italy
Riikka Sarala
Bryan School of Business and Economics, University of North Carolina at Greensboro, Greensboro, North Carolina, USA, and
Corinne Nkeng
Department of Management and Engineering, University of Padua, Padua, Italy

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Abstract

Purpose – Strategic flexibility (SF) has become increasingly important for firms because of the fast changes in the external environment. In line with the practical importance of SF, an emerging research field has developed around it that has attempted to understand the nature of SF and the key relationships. The aim of this study is to unveil the semantic structure of the recent literature on SF and to suggest new promising areas for future research.

Design/methodology/approach – The authors conduct a systematic literature review with a bibliographic analysis technique, which allows authors to identify the main recent streams in the literature, as well as offer reflections and suggestions for future research.

Findings – The authors uncover three main emerging areas in the research on SF, namely SF as a dynamic capability, the role of knowledge management for SF and the relationship between a firm SF and the external environment. The authors put forward three avenues for future research on SF: Avenue 1. SF, business model innovation (BMI) and other dynamic capabilities (DC), Avenue 2. Digital technologies and SF/organizational agility and Avenue 3. SF and sustainability. Articles included in the special issue entitled "A strategic perspective on flexibility, agility and adaptability in the digital era" contribute to Avenue 2, thus paving the way for filling some of the identified gaps regarding the relationship between SF and digitalization.

Originality/value – To the best of authors' knowledge, this is the first literature review on SF that uses a bibliometric approach to draw conclusions on the findings in the literature. The review contributes to the theoretical understanding of SF by illustrating and explicating core topics that have persisted over time, as well as by presenting three main avenues for further developing authors' knowledge around SF.

Keywords Flexibility, Strategy, Literature review

Paper type Original article

1. Introduction

In the rapidly changing external environment characterized by uncertainty, dynamism and technological change strategic flexibility (SF) has emerged as a key requirement for firms to obtain sustained competitive advantage and superior performance (Brozovic, 2018; Dai *et al.*,

Since submission of this article, the following author have updated their affiliation: Corinne Nkeng is at the Arise IIP, Kinshasa, Democratic Republic of Congo.

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2018; Micevski *et al.*, 2019). SF has been defined as an organizational capability (Bashir and Verma, 2019; Jiao *et al.*, 2021) that companies need for surviving and thrive in turbulent business environments (Alamro *et al.*, 2018; Hagen *et al.*, 2019). Practitioners increasingly acknowledge that "under the changing conditions of a nascent or recently disrupted industry, a rigid plan can become a straitjacket for the flexibility and adaptation which may be required to succeed" [1]. Therefore, flexibility has become a key mechanism for successful transformation to face the changing environmental conditions and to take on ground-breaking new technologies [2].

In line with these developments in the business strategy and practice, academic interest in the field of SF has been growing in the recent years (Brozovic, 2018), resulting in a rapid evolution of the field (Bamel and Bamel, 2018). However, several tensions still exist in the extant literature on SF due to its multidimensional nature (Liao *et al.*, 2019; Singh *et al.*, 2015). Divergent theoretical perspectives and different conceptual underpinnings have been used to describe the SF concept, which has resulted in a broad and fragmented body of literature (Brozovic, 2018), with some researchers describing it as a "conceptual schizophrenia" (Herhausen *et al.*, 2021, p. 437). To consolidate the literature, and potentially resolve the existing debates, Brozovic (2018) and Herhausen *et al.* (2021) recently published two literature reviews about SF. The first publication, which included articles published between 1978 and 2015, brought to light the interactions between the different constructs revolving around SF, classifying them as triggers, enablers, barriers, dimensions and outcomes of SF (Brozovic, 2018). The second publication, Herhausen *et al.* (2021) extended the work by Brozovic (2018) by focusing on the effect of the contingencies of SF to resolve the SF-performance relationship by means of a meta-review of quantitative contributions up to 2019.

While these publications are relevant and necessary to provide a broad understanding of the field from different angles, business leaders are continuing to seek new areas to develop and maintain SF (Nowak, 2022). Recently, disruptive changes in the area of digitalization have pushed firms to make their businesses strategically flexible (Nylén and Holmström, 2015) to innovate their business models in times of continuous change (Miroshnychenko *et al.*, 2021). Therefore, SF is intertwined with recently topics (e.g. Matalamäki and Joensuu-Salo, 2022), thus making emerging synergies worth discovering to be further investigated by future research. Since 2015, articles published on SF have more than doubled, which corroborates the need to make a systematic evaluation of the recent literature. Accordingly, the aim of this article is to systematically review the SF literature with the help of a bibliographic analysis in order to unveil the state of the art of the recent literature on SF. We analyze the semantic structure of the literature, identify emerging trends and suggest new promising areas for future research on SF. To the best of our knowledge, this is the first literature review article on SF that uses a bibliometric approach to draw conclusions on the findings in the literature. While the two previous literature reviews of SF were based on the enablers-inhibitors-consequences framework, the bibliometric technique is based on connections of keywords to highlight trends and identify interconnections among topics.

In the remainder of the article, first, we discuss the multidimensionality of SF (Singh *et al.*, 2015) by summarizing the various conceptualizations that exist in the literature. Then, we describe our data collection process and the bibliometric technique that was used to systematically analyze the literature. After that, to illustrate the primary emerging topics in the recent literature on SF, we discuss the three main clusters that emerged in the data, namely (1) SF as a dynamic capability (DC), (2) the role of knowledge management (KM) for SF and (3) the relationship between a firm SF and the external environment, which. We contrast these clusters with older literature on the topic and finally, drawing from our results, we offer reflections and suggestions on future avenues in research on SF, and contribute to an enhanced understanding of these main novel research streams and illustrate ways of

exploring them further. In doing so, we contribute to an enhanced understanding of the main novel research streams in the literature on SF and illustrate ways of exploring them further. Moreover, to this purpose we have managed a Special Issue entitled "A strategic perspective on flexibility, agility and adaptability in the digital era" that paves the way towards a clearer understanding of the relationship between SF and digitalization.

2. Conceptualization of SF

The concept of SF has emerged to describe a crucial capability underpinning the success of today's organizations (Micevski *et al.*, 2019). Despite the growth the field has witnessed in the literature in the recent years, there still exists a lack of consolidation and of common definitions within the scope of the SF literature (Herhausen *et al.*, 2021). [Researchers, including Brozovic (2018), in their most recently published literature review articles, attempted to provide a common ground among the different definitions.] Brozovic (2018) provided an extensive overview of the definitions of SF to extrapolate its various dimensions, such as reactive, proactive, time aspect, strategic option and intentionality dimensions. Herhausen *et al.* (2021), on the other hand, leveraged five key definitions by Sanchez (1995), Volberda (1996), Hitt *et al.* (1998), Young-Ybarra and Wiersema (1999) and Grewal and Tansuhaj (2001) to identify product competition, organizational form, competitive landscape, strategic alliances and economic crisis, respectively, as key dimensions of SF. While the revelation of the key dimensions of SF contributes greatly to the SF research, it does not directly address the issue of a lack of a consolidated and widely accepted definition of SF, which has rendered the literature difficult to understand, as argued by these same researchers.

Therefore, prior to going into the details of the content of the literature review, in this research paper, we provide an overview of existing conceptualizations of SF to provide a more holistic definition of SF. We did this by mapping and coding, in a consolidated manner, the different definitions found in the literature analysis. Table 1 illustrates the key conceptualizations of SF, including SF as strategic adjustment, strategic options, dynamic capability and resource flexibility [which are used individually or in combination of two or, more rarely, three]. It is important to note the role of reactive and/or proactively dimension of SF, which emerged in the definitions, where the reactive ability includes the "responsiveness and adaptation to changes in the business environment" while the proactive dimension emphasizes, e.g. creating new markets, influencing the environment, changing game plans, acting on opportunities or simply "proacting" to changes in the business environment (Brozovic, 2018).

Considering the different angles through which SF can be explained, it becomes necessary to provide a holistic definition. Thus, for the purpose of this study, SF is defined an organization's ability to change and adapt their use of organizational resources (Chen *et al.*, 2017) by rapidly and effectively reconfiguring and reallocating its flexible resources and capabilities (Herhausen *et al.*, 2021; Kamasak *et al.*, 2019) to create and maintain alternative courses of action (Li *et al.*, 2017; Liao *et al.*, 2019) or diverse portfolios of strategic options (Chen *et al.*, 2022; Yawson, 2020) that can be leveraged to act, either proactively or reactively (Miroshnychenko *et al.*, 2021; Vihari, 2019; Yang and Gan, 2021), on identified environmental opportunities and/or threats (Brinckmann *et al.*, 2019; Frare and Beuren, 2021).

3. Methodology

3.1 Sample selection

Our first step was to search and collect articles that belong to the field of SF (McCain, 1990). To this purpose, in May 2022 we performed a wide search in the Web of Science (WoS)

Conceptualization	Definition	References
Strategic adjustment	SF is defined as the ability of a firm to change its current strategies to avoid being stuck in obsolete strategies. It can also be defined as a firm's ability to change its business strategies in a timely fashion to meet new business conditions or more simply, an organization's ability to align its strategies accordingly to the business environment	Ouakouak and Ammar (2015), Yang *et al.* (2015), Gelhard and von Delft (2016), Nitzsche *et al.* (2016), Chan *et al.* (2017), Chen *et al.* (2017), Cheng and Krumwiede (2017), Xiu *et al.* (2017), Yawson and Greiman (2016), Alamro *et al.* (2018), Beraha *et al.* (2018), Dai *et al.* (2018), Gutierrez-Gutierrez *et al.* (2018), Bamel and Dhir (2019), Bashir and Verma (2019), Brinckmann *et al.* (2019), Wan and Liu (2021), Benitez *et al.* (2018), Friedmann *et al.* (2018), Paek and Lee (2018), Bashir and Verma (2019), Paek and Lee (2018), Kamasak *et al.* (2019), Lichtarski *et al.* (2019), Perez-Perez *et al.* (2019), Thakur-Wernz (2019), Vihari (2019), Bouhalleb and Smida (2020), Gorondutse *et al.* (2020), Jiao *et al.* (2021), Nwachukwu and Vu (2020), Spanuth *et al.* (2020), Yang *et al.* (2020), Yawson (2020), Chebo and Wubetie (2021), Crick and Crick (2021), Crick *et al.* (2023), Herhausen *et al.* (2021), Hoeft (2021), Jiao *et al.* (2021), Ipsmiller *et al.* (2021), Majid *et al.* (2021), Nassani and Aldakhil (2021), Skydan *et al.* (2021), Yu and Wang (2021), Chaudhary *et al.* (2022), Chen *et al.* (2022), Clauss *et al.* (2022), Jia *et al.* (2022), Sen *et al.* (2023), Zhu *et al.* (2022)
Strategic options	SF defines a firm's ability to generate and keep options and alternatives thus providing the firm with readily available options to react instantly by realigning and readjusting the plans and strategies	Singh *et al.* (2015), Chan *et al.* (2017), Bamel and Bamel (2018), Brozovic (2018), Dai *et al.* (2018), Bashir and Verma (2019), Atkinson *et al.* (2022), Haarhaus and Liening (2020), Yawson (2020), Matsuno and Kohlbacher (2020), Nwachukwu and Vu (2020), Wang and Lou (2020), Yang and Gan (2021), Crick *et al.* (2023), Herhausen *et al.* (2021), Ipsmiller *et al.* (2021), Li and Wang (2021), Majid *et al.* (2021), Nassani and Aldakhil (2021), Trigeorgis *et al.* (2021), Chen *et al.* (2022)

Table 1.
Key conceptualizations of strategic flexibility

(*continued*)

Conceptualization	Definition	References
Dynamic capability	SF is a firm's dynamic capability to reallocate and reconfigure organizational resources and processes to achieve competitive advantage in response to environmental changes in turbulent markets, where dynamic capability emphasizes the firm's ability to sense and seize opportunities, as well as being able to integrate, build and reconfigure internal and external resources to address rapidly changing environments	Wang *et al.* (2015), Yang *et al.* (2015), Cui and Wu (2016), Fernández-Pérez *et al.* (2016), Gärtner and Schön (2016), Gelhard and von Delft (2016), Nitzsche *et al.* (2016), Perez-Valls *et al.* (2016), Anwar and Hasnu (2017), Chan *et al.* (2017), Chen *et al.* (2017), Kamasak *et al.* (2017), Li *et al.* (2017), Xiu *et al.* (2017), Yi *et al.* (2017), Bamel and Bamel (2018), Beraha *et al.* (2018), Brozovic (2018), Yayla *et al.* (2018), Bamel and Dhir (2019), Bashir and Verma (2019), Brinckmann *et al.* (2019), Chaudhary (2019), Hagen *et al.* (2019), Kamasak *et al.* (2019), Liao *et al.* (2019), Micevski *et al.* (2019), Umam and Sommanawat (2019), Wan and Liu (2021), Ahmadi *et al.* (2020), Dias *et al.* (2020), Gyarmathy *et al.* (2020), Herhausen *et al.* (2021), Matsuno and Kohlbacher (2020), Siahtiri *et al.* (2020), Spanuth *et al.* (2020), Wang and Lou (2020), Yang *et al.* (2020), Yawson (2020), Zhao and Wang (2020), Frare and Beuren (2021), Hoeft (2021), Jiang *et al.* (2021), Jiao *et al.* (2021), Kandemir and Acur (2022), Li and Wang (2021), Majid *et al.* (2021), Miroshnychenko *et al.* (2021), Nassani and Aldakhil (2021), Nowak (2021), Xiao *et al.* (2021), Yu and Wang (2021), Chaudhary *et al.* (2022), Chen *et al.* (2022), Jia *et al.* (2022), Zhang and Zhu (2022), Zhu *et al.* (2022)
Resource flexibility	SF is defined as an inherent flexibility of a firm's resources that enables the firm to make necessary internal changes in response to new external developments. The inherent flexibility of a firm, most commonly referred to as resource flexibility, emphasizes the range of alternative uses of the resources and the cost of switching from one resource to another	Yang *et al.* (2015), Gärtner and Schön (2016), Chan *et al.* (2017), Kamasak *et al.* (2017), Beraha *et al.* (2018), Dai *et al.* (2018), Gutierrez-Gutierrez *et al.* (2018), Mu *et al.* (2018), Yayla *et al.* (2018), Micevski *et al.* (2019), Umam and Sommanawat (2019), Vihari (2019), Wang *et al.* (2019), Bouhalleb and Smida (2020), Chebo and Wubatie (2021), Haarhaus and Liening (2020), Lim *et al.* (2020), Nwachukwu and Vu (2020), Rialti *et al.* (2020), Spanuth *et al.* (2020), Wang and Lou (2020), Yang and Gan (2021), Yang *et al.* (2020), Han and Zhang (2021), Chaudhary *et al.* (2022), Nowak (2022)

Table 1.

database, using the keyword "strategic flexib*" in the topic. Building on Rialti *et al.* (2019), we chose the WoS database because (1) it is considered as the database that includes most of the articles published in journals of good standing (i.e. all with impact factor), (2) it is the most up-to-date database concerning recently accepted articles (Marzi *et al.*, 2018), (3) it provides less off-topic articles and (4) it does not include articles written in magazines or nonscientific journals (Caputo *et al.*, 2018, 2021). This resulted in 717 entries that were then reduced to 508 after filtering on *WoS categories* (management, business and operations research

management science). The number decreased to 505 after filtering on the *language* to include only articles written in English. Finally, the results were brought down to 436 after selecting only articles, reviews and early access articles as *document type*. After this first screening, we set two boundary conditions with the purpose of selecting the management-oriented articles on SF:

(1) The article does not only mention SF, but specifically deals with it;

(2) The article has a clear focus on SF, instead of other types of flexibility (e.g. manufacturing flexibility, supply chain flexibility). The decision to exclude other types of flexibilities was influenced by the point that SF is a multidimensional concept as earlier demonstrated, with researchers such as Singh *et al.* (2015) identifying supply chain flexibility, operations flexibility, and manufacturing flexibility as flexibility types that govern SF. Also, other researchers (e.g. Singh *et al.*, 2015) single out SF as a higher order capability, this study thus focused only on SF to prevent any further complexities should other flexibility types be integrated into the research.

(3) The article deals with management aspects associated to SF;

(4) The article is published from 2015 onwards. There is a twofold motivation behind this condition: there has been a rapid increase in publications from 2015, as illustrated in Figure 1. 2015 also happens to be the same year up to which the highly cited literature review by Brozovic (2018) covers [3], as illustrated in Figure 1. Moreover, from the abstract reading, we noticed the emergence of new themes starting from 2015, such green practices (Yang *et al.*, 2015; Perez-Valls *et al.*, 2016) and big data (Rialti *et al.*, 2020; Atkinson *et al.*, 2022) that were not mentioned in Brozovic (2018) and Herhausen *et al.*'s (2021) literature reviews, which our study is able to capture.

After applying the first three conditions to the article abstracts, 225 articles remained, among which 117 were published from 2015 onwards. This sample was reduced to 108 after full article reading. To examine the emergence of new themes starting from 2015, we used the group of 108 articles published between 1991 and 2014 as a basis for comparison. Therefore, while the focus of this article is on more recent articles, which we will refer to as period 2 (i.e. 2015–2022), we will perform the bibliometric analysis also on the earlier studies, which we

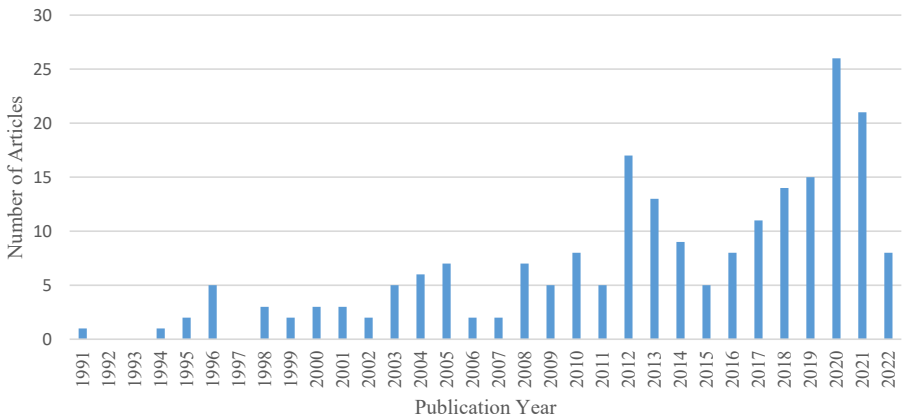


Figure 1.
Temporary evolution of SF articles

Note(s): 108 articles in Period 1 and 108 articles in Period 2
Source(s): Authors own creation

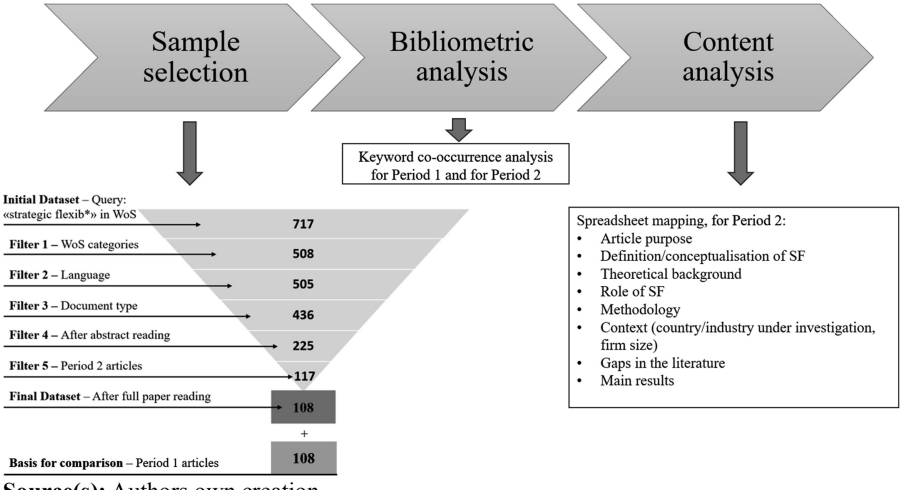
will refer to as Period 1 (i.e. 1991–2014). In other words, we use results derived from the more recent studies (period 1) in combination with evidence from earlier studies (period 2) to give a comparative standpoint. Figure 2 exhibits a diagram of the methodological protocol that we believe represents a balance between focusing more deeply on new articles that were not fully analyzed in prior reviews while, at the same time, not overlooking the less recent literature and taking previous evidence into account for proving contrast.

3.2 Bibliometric technique

We proceeded by conducting a bibliometric analysis to trace the state of the art of the field of SF and identify the evolution of the field over time. Bibliometrics is "the mathematical and statistical analysis of bibliographic records" (Pritchard, 1969). It is used to establish intellectual linkages among different units of analysis, such as keywords in this case, to provide an overall picture of the trends and potential research opportunities. The primary advantage of bibliometric techniques is the quantitative accuracy it adds to the subjective evaluation of the literature such as narrative literature reviews which can be subjected to researcher bias and lack of rigor (Tranfield *et al.*, 2003). Consequently, the bibliometric analysis guides the researcher to the most influential works through a mapping of the research field without subjective bias.

The specific bibliometric technique applied in this research was the co-occurrence of keywords, which reveals the most relevant research topics and the underlying conceptual structure of the field (Callon *et al.*, 1983). The technique is based on counting the number of articles in which two keywords appeared together. To perform this analysis, the software VOSviewer version 1.6.14 was used to construct and display the bibliographic maps. Before importing the data set into the software, the completeness of information within the data was checked and the missing relevant information such as the publication year was added manually. Also, the keywords were refined and standardized, i.e. some authors used abbreviations or plural forms of the keywords.

In VOS Viewer, to perform the co-occurrence of keywords analyses, only the author keywords of the sampled articles were considered. As the co-occurrence of keywords looks at the content of the sampled articles, the relevant features of these articles were also mapped in



Source(s): Authors own creation

Figure 2.
Methodological protocol

a spreadsheet, namely the article purpose, definition/conceptualisation of SF, role of SF, specific methodology, context (country/industry under investigation, firm size), gaps leading to research, debates in the literature and the main results. The full list of articles with details about the methodology and the aim of the research is presented in Appendix. Mapping these aspects supported the identified themes that characterized each cluster revealed in the maps and paved the way for identifying the gaps and research opportunities.

In the bibliographic map, the node size represents the weight, i.e. the number of articles in which a keyword appears. Thus, the larger the node size, the higher the number of articles in which the keyword appears. The line thickness represents the frequency of co-occurrence between two keywords. Hence, the thicker the line between two keywords, the higher the number of articles in which the two keywords appear together. In addition, the smaller the proximity between two nodes, the stronger their relationship, in terms of how many articles these two keywords appears in together, and with other keywords. Finally, the color of each node and keyword indicates the cluster to which they belong, with the same color of nodes and keywords belonging to the same cluster of related keywords.

4. Emerging topics in the literature on SF

Figure 3 exhibits the co-occurrence of keywords in the sampled articles published between 2015 and 2022 (i.e. Period 2). Out of 380 keywords, 41 keywords were selected that had at least 2 occurrences. For contrast, we also show the analysis of keywords in the sampled articles published between 1991 and 2014 (i.e. Period 1) (see Figure 4). In 2015–2022, three clusters emerged (red, blue and green) with each cluster representing the most frequently related keywords. The red cluster depicts the relationship between different *DC* and *SF*. The blue cluster illustrates different aspects of *KM* and *SF*. Finally, the green cluster focuses on the external push towards *SF*. The following paragraphs explain further these clusters, with emphasis on the emerging topics with respect to previous years of research in this domain.

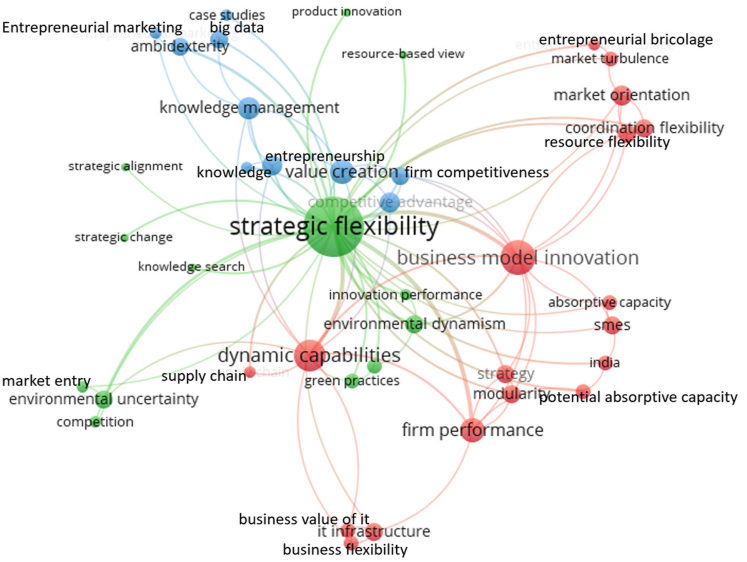


Figure 3.
Co-occurrence of keywords in sampled articles published in Period 2 between 2015 and 2022

Note(s): Minimum number of co-occurrence of a keyword 2
Source(s): Authors own creation

Note(s): Minimum number of co-occurrence of a keyword 2
Source(s): Authors own creation

Figure 4.
Co-occurrence of keywords in sampled articles published in Period 1 between 1991 and 2014

4.1 The red cluster: "SF as a dynamic capability"

The red cluster revolves around the keyword business model innovation (BMI), which only emerged in Period 2, DC and firm performance, which is the most prominent development in this cluster with respect to Period 1. The keyword DC was mentioned in Period 1 and Period 2. However, the distance between DC and SF is shorter in Period 2 compared to Period 1, which shows a stronger relationship between the keywords, indicating they have been used together in more articles in Period 2 compared to Period 1. Also, the line connecting DC *and* SF is thicker in Period 2, which indicates a higher frequency of co-occurrence between both keywords. Beyond the impact of *SF* on firm performance (Brozovic, 2018), there is a shift from DC to BMI as the primary focus of the research in this cluster with respect to the previous period, as indicated by its more central position.

The increase in thickness of the line connecting *DC* to *SF* and an increase in their proximity indicates a more frequent co-occurrence of the keywords, and a stronger relationship with other keywords. This bond is reflected in their overlapping interpretations (Hoeft, 2021). The term dynamic capability describes an organization's ability to integrate, build and reconfigure its internal and external competencies, resource bases and organizational capabilities to deal with challenges in the business environment (Benitez *et al.*, 2018; Chen *et al.*, 2022; Spanuth *et al.*, 2020).

Dynamic capabilities include three main capabilities: to sense and shape opportunities and threats, to seize opportunities and to sustain a competitive edge through enhancing, combining, protecting and when necessary, reconfiguring the firm's intangible and tangible assets (Frare and Beuren, 2021; Kandemir and Acur, 2022; Spanuth *et al.*, 2020). Considering that SF exhibits the three capabilities of sensing (Yang and Gan, 2021), seizing (Haarhaus and Liening, 2020) and reconfiguring (Spanuth *et al.*, 2020), it has been identified as a prominent DC by various researchers in the field (Yang *et al.*, 2015; Nwachukwu and Vu, 2020; Chen *et al.*, 2022). Most of the different definitions of SF agree in considering it as a DC that enables a firm to reconfigure resources and act quickly to changing competitive conditions, thus achieving competitive advantage (e.g. Bamel and Bamel, 2018; Cui and Wu, 2016; Jia *et al.*, 2022; Li and Wang, 2021; Yang *et al.*, 2015; Yi *et al.*, 2017) and making it a key conceptualization of SF as pointed in Table 1 above. This aligns with the literature review by Herhausen *et al.* (2021), according to which the perspective of understanding SF as a DC is one of the main perspectives in the definitions of SF. As a DC, SF depends both on the inherent flexibilities of

resources available to a firm (resource flexibility) and on the firm's flexibilities in applying those resources to alternative courses of action (coordination flexibility) (Li *et al.*, 2017).

It can be observed that even though the *resource-based view* is in a different cluster (i.e. the green one) from *DC* in Period 1, they were connected to each other. In Period 2, however, they are not only in different clusters (green and red respectively) but are no longer linked to each other. A possible explanation derived from the articles in the sample could be that while firms gain competitive advantage from a resource base with unique characteristics (Bamel and Bamel, 2018; Spanuth *et al.*, 2020; Yeniaras *et al.*, 2020), such resources are static and cannot explain the inability of firm's resources to adapt to the dynamic digital environment (Zhu *et al.*, 2022). Thus, beyond a rare, valuable, perfectly inimitable, nonsubstitutable and flexible resource base, firms should develop DC to rebuild resource portfolios that contribute to sustainable competitive advantage, in response to the current turbulent business environment (Yang *et al.*, 2020; Yang and Gan, 2021). Hence, considering that the resource-based view and the DC view are usually considered complementary (Bamel and Bamel, 2018), with the latter as an extension of the former, we can observe that they are diverging into somewhat different directions regarding their role in SF. The literature review by Brozovic (2018) proposed further exploration of the links between SF and DC as a route towards sustainable competitive advantage. As the volatility, uncertainty, complexity and ambiguity of the business environment continue to increase, it is important for firms to benefit from the synergistic effect of SF (as one type of DC), with other higher order capabilities, to increase their performance and competitiveness (Bamel and Dhir, 2019).

BMI has taken center stage, as evident by its central position in Period 2, as a route through which firms leverage SF to deliver more sustained competitive advantage (Gaertner and Schon, 2016; Liao *et al.*, 2019; Xiao *et al.*, 2021). Furthermore, the shift from *new product development* as a primary innovative capability in Period 1 (as evidenced by its close proximity to *DC*) to *BMI* in Period 2 further illustrates that researchers and practitioners are increasingly going beyond product or process innovation to consider the role of business models in innovation processes (Gärtner and Schön, 2016). Existing SF research has highlighted the association between BMI and SF (Zhang and Zhu, 2022), as firms are leveraging the DC of SF through resource flexibility and coordination flexibility to facilitate the BMI process (Miroshnychenko *et al.*, 2021). BMI involves integrating all business model elements, the external environment and interfaces with customers and partners, in order to search for new ways of doing business and design new activity systems to create and capture value for its stakeholders (Yang *et al.*, 2020). Resource and coordination flexibility thus allow firms to use more exploratory methods to efficiently and innovatively combine internal and external resources, processes and strategies to pursue novel business models (Xiao *et al.*, 2021). Coordination flexibility can also help alleviate the organizational routine inertia, which helps firms break down institutionalized BMI processes and explore new alternatives (Liao *et al.*, 2019). The association between BMI and resource flexibility, and BMI and coordination flexibility can also be seen by their connection in Period 2.

It is also worth noting that while some studies consider SF as an antecedent of BMI as illustrated above, others see SF as an outcome of BMI (Miroshnychenko *et al.*, 2021; Vihari, 2019). For example (Clauss *et al.*, 2022), identify temporary BMI as a means of increasing firms' SF to react to environmental changes. The researchers revealed this approach as an effective crisis response strategy for small and medium-sized enterprises (SMEs) who were particularly vulnerable to the Covid-19 pandemic. This could be a possible explanation to the emergence of SMEs as a novel keyword in Period 2 since all kinds of businesses are facing challenges to respond to rapid innovation in the dynamic environment" (Nassani and Aldakhil, 2021, p. 1). Thus, researchers and practitioners are recognizing SF as an imperative attribute for SMEs to survive and grow in a competitive context (Majid *et al.*, 2021), despite their constraints (Ahmadi *et al.*, 2020; Clauss *et al.*, 2022). Associated to the topic of SMEs, we

find another novel concept in the field of SF, emerging in Period 2, in the top right-hand corner of the figure, namely *entrepreneurial bricolage*. Entrepreneurial managers of new ventures or start-ups are often faced with the paradox wherein they need to establish competitive advantage but struggle to do so due to their newness, small size, lower organizational legitimacy and insufficient organizational resources (Yu and Wang, 2021). As evidenced by its emergence, entrepreneurial firms are increasingly leveraging *entrepreneurial bricolage* which entails "making do by applying combinations of resources at hand", to give them a chance to make better use of available resources and take advantage of overlooked but unusual market opportunities to explore more potential market segments and customers despite their limited resources (Li and Wang, 2021, p. 2). Since SF as a DC involves the effective coordination of resources to generate various solutions to cope with external difficulties (Dewsnap *et al.*, 2020), entrepreneurial firms are not only using SF to supplement the effect of using their resources at hand more creatively (Li and Wang, 2021), but entrepreneurial firms are also developing their SF to react to changing business conditions via entrepreneurial bricolage (Yu and Wang, 2021). Entrepreneurial bricolage enables managers to improve resource mobility in their organizations through reallocation of resources from projects that no longer meet the dynamic needs of the market to develop alternative options, thus increasing the firm's SF to respond to unexpected changes.

4.2 The blue cluster: "the role of knowledge management for SF"

In the blue cluster, KM emerges not only as the central keyword in Period 2 but also a novel keyword that was not present in Period 1. In the newer strategy literature, KM is portrayed as synergistic to SF because cross-functional exchange of knowledge helps organizations quickly understand the changing environment, allowing firms to plan organizational priorities and actions accordingly (Perez-Perez *et al.*, 2019). Scholars have argued that KM is a key component in the development of DC (Gutierrez-Gutierrez *et al.*, 2018). Consequently, in today's increasingly dynamic environment, managing and transforming a firm's knowledge stock is vital (Miroshnychenko *et al.*, 2021). The blue cluster features several keywords that are related to aspects of *knowledge* such as *big data*, *value creation* and *ambidexterity*, emerging in Period 2, which suggests that management of organizational knowledge is increasingly being considered as a valuable resource for firms that support SF (Siahtiri *et al.*, 2020; Zhao and Wang, 2020). KM has been defined in the literature as a set of activities, initiatives and strategies that companies use to generate, store, transfer and apply *knowledge* within and among organizations (Perez-Perez *et al.*, 2019). It involves three processes, acquisition, conversion and application of new and existing *knowledge* (Rialti *et al.*, 2020), as the role of the firm is not only to obtain *knowledge*, but also to exploit and develop *knowledge* to produce capabilities to respond to the changing environment, thus achieving a fit between the changing environment and SF (Zhao and Wang, 2020). Researchers increasingly regard firms as social communities "specializing in the speed and transfer of *knowledge*" (Jia *et al.*, 2022), and thus are beginning to focus on knowledge search, defined as "the ability to capture multiple knowledge sources for innovation" (Jia *et al.*, 2022, p. 785), embodying the process of knowledge acquisition. The researchers leverage this definition to distinguish between knowledge search and absorptive capacity where the latter instead stresses on knowledge conversion (e.g. the conversion from external knowledge to internal knowledge). This shift in focus from knowledge conversion to knowledge acquisition, especially in today's knowledge-intensive environment (Matalamäki and Joensuu-Salo, 2022), can be seen in the decrease of attention of the keyword *absorptive capacity* considering its significantly smaller node size in Period 2 compared to its central position and relatively larger node size in Period 1. Also, the focus on knowledge acquisition stems from the fact that the more *knowledge* a firm can accumulate the stronger the capabilities it can develop (Zhao and Wang, 2020).

Knowledge acquisition can be based on big data. The novel keyword *big data* in Period 2 refers to a large amount of structured and unstructured data, available immediately everywhere and characterized by the 7 Vs: different volume, velocity, variety, veracity, value, variability and visualization (Gnizy, 2020; Rialti *et al.,* 2020). With the demand of firms to obtain a sustainable competitive advantage in uncertain environments characterized by globalization, technological advancements, short product life cycles and fleeting customer requirements, the investment of firms on big data that provide knowledge-rich information is deepening all over the world (Gnizy, 2020; Wan and Liu, 2021). Indeed, the primary objective of big data is to gain new knowledge to establish competitive advantage (Rialti *et al.*, 2020). Brozovic (2018) mentioned the need for a more inclusive understanding of what a business or product can do for a customer and why, by integrating internal resources, technology and the macro environment to increase market orientation and environmental scanning as enablers of SF. This article introduces big data as a tool to enhance SF by increasing a firm's strategic options given that it "enables the extraction of hidden insights to uncover unforeseen patterns in customers' behaviors and feelings, assists in better knowing customer's unique expectations and facilitates building a dynamic view of customers and thus exploring new opportunities to change firms' current marketing strategies" (Gnizy, 2020, p. 1225). Furthermore, the use of big data enables SF via the development of growth strategies, primarily product and service development and market penetration and market development strategies (Matalamäki and Joensuu-Salo, 2022).

Brozovic (2018) also called for further investigation into the proactive dimension of SF, though, e.g. creating new markets, influencing the environment, acting upon opportunities or simply pro-acting to changes in the business environment. Research on big data can be seen as a response to this call and consists of three analytic categories: a descriptive one which presents "what happened", a predictive one which identifies "what is probable to happen," and a prescriptive one which recommends "what should be done" (Gnizy, 2020). Big data provides input for short-, medium- and long-term choices that firms can leverage to become more proactive and flexible in selecting more effective strategies, with the aim of actively shaping their highly uncertain environments (Gnizy, 2020).

The map shows proximity between *big data* and *ambidexterity* indicating that they have frequently been mentioned together in literature. Researchers recognize that organizations that are ambidextrous are better able to leverage big data to thrive in a turbulent environment (Rialti *et al.*, 2020) or, alternatively, big data allows for, e.g. ambidextrous product strategies. Ambidextrous organizations are those that can perform differing and often competing strategic acts at the same time (Ahmadi *et al.*, 2020; Jiang *et al.*, 2021; Majid *et al.*, 2021) for example, quickly respond to market changes, whilst meeting and maintaining an adequate satisfaction level among their existing customers through their products and services (Rialti *et al.,* 2020). Ambidexterity can be conceptualized as an organization's ability to combine explorative and exploitative innovation, either through balancing them or combining them. Exploration aims at renewing knowledge by experimenting with novel, often disruptive innovation, whereas exploitation involves the refinement and extension of existing competencies, technologies and paradigms (Jiang *et al.*, 2021). Big data has been shown in the literature to be integral to the pursuit of ambidexterity as the information provided by big data increases an organization's ability to identify and exploit new opportunities emerging in the environment (Rialti *et al.*, 2020). Research has shown that when organizations identify these new opportunities and embark on their exploitation, SF is triggered as the organizations engage in either committing resources to new courses of action, or stop or reverse existing resource commitments, as such, bringing all three variables together (big data, ambidexterity and SF). For instance, research shows that big data is an antecedent of SF and ambidexterity mediates this relationship (Rialti *et al.*, 2020).

The literature also focuses on the role of ambidextrous leadership in managing big data (Jia *et al.*, 2022; Jiang *et al.*, 2021; Zhang and Zhu, 2022), which contributes to further explaining the close proximity between ambidexterity and big data on the map. By demonstrating "opening behaviors", leaders encourage employees to seek opportunities from the ever-changing innovative environment and build an atmosphere conducive to explorative knowledge search and "closing behavior" where leaders focus on operational effectiveness and performance in line with exploitation (Jia *et al.*, 2022). Also, the pertinent, fast and smart information that big data provides may help in exploring and exploiting previously neglected areas and trigger firms' search for change in their current strategies, thus increasing SF (Gnizy, 2020), especially if the information is directed to the right person within an organization who can take initiative and better identify and exploit opportunities (Rialti *et al.*, 2020). Thus, big data has been identified as an ambidextrous managerial tool enabling innovation and operational efficiency (Gnizy, 2020).

Although the concept of *ambidexterity* is new in the context of SF, the two dimensions of ambidexterity *exploitation* and *exploration* (Benitez *et al.*, 2018; Jiang *et al.*, 2021) were featured already in Period 1, but as individual nodes. However, in Period 2, we find exploitation and exploration merged to form one node, representing the keyword ambidexterity, and this time in close connection to big data unlike exploitation and exploration which were in close connection to absorptive capacity in Period 1. This further strengthens our argument above that researchers are focusing more on knowledge acquisition compared to knowledge conversion.

The other novel keyword in this cluster, *value creation*, which is in close proximity to SF has been defined in the literature as a key element of BMI (Bashir and Verma, 2019; Liao *et al.*, 2019; Xiao *et al.*, 2021). Research shows that knowledge resources present a significant potential for value creation (Brinckmann *et al.*, 2019), hence the connection between *KM* and *value creation*. Firms seek innovative ways to engage in market intelligence which enhances customer value creation processes through sourcing, tracking, storing and disseminating market information for greater awareness of business opportunities to serve customers (Yang *et al.*, 2020). Firms with high SF can leverage their resource and coordination flexibility to reconfigure and recombine their existing resource base with new incoming information to create more value for customers (Yang *et al.*, 2020). As such, firms are engaging in distal knowledge search to access diverse knowledge bases that can contribute to creativity and innovation (Siahtiri *et al.*, 2020). One method that firms are using to access diverse knowledge is the social media strategic capability (SMSC) which has surfaced as a new digital capability that offers opportunities for firms to move beyond the traditional means of value creation (Zhang and Zhu, 2022). SMSC involves the acquisition of information from social media, and its integration within a firm's knowledge base in alignment with its strategic directions (Zhang and Zhu, 2022). As such, the researchers argue that SMSC enables firms to draw from a wider range of information which increases firms' resource base and helps managers to extend their cognitive capabilities, overcoming potential sources of rigidity as they find innovative ways to recombine these extensive resources, which consequently positively influences firms' SF. Finally, firm competitiveness and competitive advantage which are closely connected to value creation, have all been identified in the literature as outcomes of SF (Bamel and Bamel, 2018), which enhance firm performance.

4.3 The green cluster: "the relationship between a firm SF and the external environment"

This cluster presents the "outside-in" perspective of SF by illustrating how SF interplays with the external environment, and the consequent influence on different forms of firm performance. In Period 1, *competitive intensity* features as the only external variable that provokes SF, but *environmental dynamism* and *environmental uncertainty* emerge in Period 2

as additional triggers. Rapid development in technologies, intense competition, increasing globalization, shortening product life cycles and the need for successful new products has fundamentally reshaped the external business environment, making it even more dynamic, complex and unpredictable (Brinckmann *et al.*, 2019; Xiu *et al.*, 2017; Ouakouak and Ammar, 2015). As a result, to stay competitive, firms need to develop SF to adapt (Alamro *et al.*, 2018; Cheng and Krumwiede, 2017; Hoeft, 2021; Xiu *et al.*, 2017). The literature that we analyzed tends to use the terms *environmental dynamism* and *environmental uncertainty* rather interchangeably, referring to them as the rate of change and the degree of instability and unpredictability in a firm's external environment (Cheng and Krumwiede, 2017; Kamasak *et al.*, 2017; Liao *et al.*, 2019; Vihari, 2019; Zhang and Zhu, 2022) [4]. *Competition*, also referred to as competitive intensity, is defined as the degree of competition a firm faces from its competitors (Herhausen *et al.*, 2021). Thus, as mentioned earlier, with the growing environmental dynamism, complexity, uncertainty and competitive intensity, businesses must develop SF that enables them to reorganize their internal resources and adapt their strategies in a way that can increase the likelihood of correct reactions to these emergent exogenous changes, as illustrated by the firms' responses to Covid-19 (Hoeft, 2021; Nowak, 2022).

Additionally, contingency theorists suggest that the success of firm strategies is derived from achieving a fit between firm strategy and the external environment, i.e. companies must strategically align their resources, capabilities and strategies with market changes (Wang and Lou, 2020). *Strategic alignment,* an emergent keyword in Period 2, is the linking of organizational structure, resources and strategies with the availing environment (Nassani and Aldakhil, 2021). Strategic alignment can reduce resource waste and enhance organizational capabilities during strategy reformulation in innovation processes, as it gives structure and clarity to the organization's position within its surrounding market (Nassani and Aldakhil, 2021). Also, it allows for the more efficient use of resources. *Strategic change* is important given the dynamic nature of market competition making it almost impossible to have the "best" strategy in the long term without adjustments over time (Wang and Lou, 2020). Anwar and Hasnu (2017) point out that the current business environment demands a high level of managerial response through *strategic change*. It is worth highlighting that the keyword strategic change, though mentioned in both periods, appears to be closer in terms of proximity to SF in Period 2 than in Period 1. This indicates a growing relationship between the two keywords as they have started appearing together in more articles in Period 2 compared to the former period.

It is through this external push on SF that firms have identified social and political concerns about the negative environmental impact of their activities (Perez-Valls *et al.*, 2016), and have consequently designed a proactive environmental strategy referred to as green management (Yang *et al.*, 2015). The ongoing environmental degradation caused by development has triggered business leaders to advocate for more social and environmental responsibility via sustainable development, defined as the ability to meet the needs of the current generation without compromising the future generation (Vihari, 2019; Nwachukwu and Vu, 2020). The concept of *green practices* has emerged as a mechanism for alleviating the negative impact of firm activities on the environment (Jiao *et al.*, 2021; Perez-Valls *et al.*, 2016). The novelty of research on green practices is evidenced by its emergence on the map in Period 2. Green practices are product-related practices that focus on the design and development of more ecological products and process-related practices that highlight the development and implementation of manufacturing and operational processes in a way that reduce the impact on the environment (Jiao *et al.*, 2021). The literature has reported inconsistent findings on the effect of green practices on financial performance. Some studies find a positive effect (Perez-Valls *et al.*, 2016; Yang *et al.*, 2015), whereas others reveal a negative effect (Jiao *et al.*, 2021). Researchers have attributed these inconsistent results to the omission of some important

moderators (Jiao *et al.*, 2021). For instance, it is argued that firms with SF can strengthen the positive effect of the adoption of green practices on a firm's *financial performance* (Gelhard and von Delft, 2016; Yang *et al.*, 2015). The successful adoption of green practices requires firms to adjust their organizational structures and operational processes. As such, firms with SF are able to overcome organizational inertia and break down existing operational routines at low cost (Kamasak *et al.*, 2017; Xiao *et al.,* 2021), which allows them to benefit financially from the adoption of green practices. Moreover, when SF is high, firms are more sensitive to opportunities in the "green" market and can quickly reallocate resources to green practices adoption with the aim of developing green products that can better satisfy customer demands, thereby expanding market share and earning more profits (Gelhard and von Delft, 2016; Jiao *et al.*, 2021).

Firm performance is a key measure used to evaluate the success or possibility of survival of an organization (Chan *et al.*, 2017), as evidenced by its recurring relevance, indicative of its relatively large node size in Period 1 and Period 2. Firm performance is addressed in all three clusters: as *firm performance* in the red cluster, as *competitive advantage, firm competitiveness and value creation* in the blue cluster and as *innovation performance* and *financial performance* in the green cluster, which only emerge in Period 2, which goes to further accentuate its relevance. As earlier mentioned, some studies examining SF and firm performance report a positive relationship (Chan *et al.*, 2017; Friedmann *et al.*, 2018; Xiao *et al.*, 2021), but other findings are only partially supportive, or even refute the relationship (Alamro *et al.*, 2018; Ouakouak and Ammar, 2015). It has been argued that *financial performance* is a narrow indicator of organizational effectiveness and captures only part of a firm's profitability, which fails to reflect performance as a multidimensional concept (Alamro *et al.,* 2018; Chan *et al.,* 2017). The meta-analysis of Herhausen *et al.* (2021) showed that SF has a negative direct effect on financial performance. However, the findings suggested that when the indirect positive effect of SF through innovation outcomes and market outcomes is considered, SF's overall impact on financial outcomes is positive, as they outweigh the costs associated with SF. This is supported by the work of Xiao *et al.* (2021) who argue that that because of the nature of SF as an organizational resource, "having a positive impact on organizational performance requires implementation of innovative activities" (Xiao *et al.*, 2021, p. 475). Accordingly, the positive relationship between SF and *innovation performance* has been shown by recent studies in the field (Chen *et al.*, 2022; Nwachukwu and Vu, 2020).

5. Discussion and avenues for future research on SF

The aim of this research was to systematically review the SF literature with the help of a bibliographic analysis in order to unveil the state of the art of the recent literature on SF. We analyzed the semantic structure of the literature and identified three emerging streams: SF as a DC, the role of KM for SF and the relationship between a firm SF and the external environment. This understanding of the prior literature obtained with the bibliographic analysis leads us to present several avenues for future research that put forward some of the potential interconnections between the stream of research on SF and diverse other topics.

Avenue 1. SF, BMI and other DCs. The red cluster in Period 2 showed the growing importance of SF as a *dynamic capability* (Chaudhary *et al.*, 2022; Cui and Wu, 2016; Jia *et al.*, 2022; Xiao *et al.*, 2021; Yi *et al.*, 2017). This conceptualization was put forward also before 2015, but what seems to be promising for future research to explore is the interrelationship of SF with other DC. The impact of other higher order DC in enhancing the SF of a firm is illustrated in our findings, which implies synergistic effect of DC in increasing the performance and competitiveness of firms (Bamel and Dhir, 2019). Furthermore, researchers have called for replicating studies on the relationship between DC and SF in developing and emerging countries (Anwar and Hasnu, 2017; Li *et al.*, 2017). Finally, longitudinal studies would be

important to better understand the causal relationships between different DC and SF (Yang and Gan, 2021; Yeniaras *et al.*, 2020). In this cluster, we observed the emergence of BMI, seen as a DC, as an important antecedent of SF and consequently firm performance. This is a promising cross-fertilization of streams within the strategic management research that has been unveiled by this study. Miroshnychenko *et al.* (2021) revealed a nonsignificant link between SF and BMI. In future research, it would be important to clarify further the relationship between SF and BMI and the related mechanisms. For example, alliance reconfiguration capabilities and external stakeholder engagement capabilities could be further investigated as potential facilitators of business model transformation. Also, the role of temporary BMI could be further investigated (Clauss *et al.*, 2022) in SF. Particular research attention was paid to the aspect of BMI in Period 2 considering its emergence as a "powerful means for a firm to anticipate and respond to environmental changes," Vihari (2019). Researchers could examine further how these two capabilities interact to further enhance a firm's performance.

Moreover, it would be intriguing to investigate the role of social media, and more broadly social movements, in value creation and BMI, which could influence SF and consequently firm performance (Zhang and Zhu, 2022). Furthermore, Miroshnychenko *et al.* (2021) have called for a more fine-grained investigation into the complex interplay between the different types of absorptive capacity (e.g. potential absorptive capacity and realized absorptive capacity) in relation to SF and BMI. Finally, BMI is more difficult to implement in established firms, which suggests examining whether entrepreneurial bricolage that has been studied mainly in new ventures, is effective also for incumbents (Yu and Wang, 2021).

Avenue 2. Digital technologies and SF/organizational agility. In the blue cluster, *KM* was recognized to have an influence on SF since the cross-functional exchange of knowledge helps organizations quickly understand the changing environment, allowing them to reorganize/restructure their resources as they plan organizational priorities and response actions accordingly (Perez-Perez *et al.*, 2019). Nevertheless, with the growth of new technologies, there is a need to investigate how novel KM tools are shaping the field of SF. The speed at which knowledge gets obsolete is accelerating (Zhao and Wang, 2020), which makes firms to turn to big data to provide them with knowledge-rich information to facilitate and speed up their decision-making process (Wan and Liu, 2021).

However, despite the importance of big data and big data analytics in revolutionizing organizations' decision-making processes, most companies have struggled to successfully implement big data strategies (Matalamaki and Joensuu-Salo, 2022). Especially, literature has neglected to explore the organizational micro-mechanisms that can facilitate the transformation of these new tools into new organizational capacities, allowing a firm to react to new situations (Rialti *et al.*, 2020). Accordingly, Rialti *et al.* (2020) and Wan and Liu (2021) call for investigation into the human element of big data analytics because organizational architectures are insufficient if the organizational members are not capable of managing the system complexity or are unable to relate to each other and share their knowledge. Gnizy (2020) calls for future research into different managerial capabilities (e.g. experience, creativity, intuition) that may influence the big data-strategy formation link that incorporates the dimension of SF.

Also, the commercial value of big data lies in its effective integration with other resources that lead to novel organizational capabilities (Wan and Liu, 2021). Understanding how big data can be combined with other digital technologies such as artificial intelligence and machine learning to reformulate strategies and business models (Matalamaki and Joensuu-Salo, 2022) seems a promising avenue for future research, which also represents a connection across topics in the red cluster. Along the same lines, more research that elaborates the understanding of what constitutes digitalization capabilities, and how these can influence an organization SF and consequently add value for customers is needed (Matalamaki and

Joensuu-Salo, 2022). This aligns with the recent developments of the organizational and strategic literature towards examining the connection between digital transformation and strategic change. In particular, organizational agility (a firm's capacity to effectively and efficiently transform its resources to create new value (Teece *et al.*, 2016), organizational adaptability (learning by an experimental approach) and organizational ambidexterity (combining exploration and exploitation), together with SF, have been put forward as mechanisms and capabilities through which companies can benefit from and respond to digital transformation (Del Giudice *et al.*, 2021; Reeves *et al.*, 2015). The interplay between digital transformation and firm's adaptive processes is intriguing in its complexity, thus deserving further attention. Before 2015, this interplay was not widely considered, whereas its emergence in more recent studies corroborates the increasing tendency of researchers to approach the topic of digital transformation without neglecting the strategic side of the phenomenon.

Third, this study examined how the relationship between GOPs adoption and firm performance is influenced by firm resources. Firm resources examined in this study included SF and organizational slack, both of which are at the firm level. Future research could examine the effect of other resources at the firm level. For example, big data analytics has been proven immensely useful in the field of operations management (Bag *et al.*, 2021), and recent studies have demonstrated that it can promote green practices adoption and improve environmental performance.

Avenue 3. SF and sustainability. Finally, the green cluster dealt with the role of the external environmental in SF, with green practices emerging as a novel proactive environmental response strategy (Yang *et al.*, 2015), revealing mixed impacts on financial performance. The studies of green practices in the literature so far have focused on a one sided relationship with SF, where SF is considered as either an antecedent (Gelhard and von Delft, 2016; Gorondutse *et al.*, 2020; Nwachukwu and Vu, 2020; Yang *et al.*, 2015) or moderating variable (Jiao *et al.*, 2021; Kamasak *et al.*, 2019; Perez-Valls *et al.*, 2016; Vihari, 2019) in helping firms adopt green management practices and/or sustainability practices. Further research is therefore needed to investigate the potential impact of green practices on SF.

Green practices play a critical role in alleviating the negative impact of firm activities on the environment which has rendered the area of study very relevant as it has become a key factor contributing to firms' competitive advantage (Jiao *et al.*, 2021). However, the studies in the green practices context so far have been very general in nature, with either green management practices treated as a general concept or only green operational practices identified as a particular green management practice. Also, green practices include a wide range of practices that can be classified based on the perspective of firm functional departments such as green operational practices, green procurement practices, green human resource practices, green information systems and green marketing practices (Jiao *et al.*, 2021). Future research could therefore investigate the role of green practices across different organizational functions and their specific relationships with SF and firm performance. For example, the research conducted by Jiao *et al.* (2021) shows a negative effect of SF on the relationship between green operational practices and financial performance. The negative relationship is theorized to result from the view that SF emphasizes resource configuration and neglects efficiency, thus accentuating the maximum output from existing resources but undermining the efficiency of green operational practice adoption and thus negatively affecting financial performance.

Green practices fall within the environmental dimension of sustainability, a stream that has recently started exploring interactions with SF, but is still underexplored, thus leading to many fruitful avenues for future research (e.g. Kafetzopoulos, 2022; Nwachukwu and Vu, 2020). Research about sustainability has been gaining increasing importance due to the pressing need to pursue sustainability objectives set at the international level. This is due to

the negative environmental impact of corporate development activities that pushed firms to now include green management practices and objectives in their strategies (Perez-Valls *et al.*, 2016). Nowadays, firms endeavor to conduct green management activities as required by both business ethics and social responsibility (Yang *et al.*, 2015). This presents an opportunity for managers to investigate how the incorporation of these green management practices influence their ability to respond to changes in the external environment, thus enhancing their SF and consequently their firm performance.

The current research on the relationship between SF and firm performance, including sustainability, appears to be complex with somewhat mixed results. Herhausen *et al.* (2021) thus call for further investigation using multidimensional conceptualizations and measures. Future studies could employ the multidimensional composition of SF, e.g. reactivity vs proactivity and internal vs external dimensions, which would contribute to clarify the multidimensional conceptualization of SF, to better capture the performance effects. In addition, studies should consider the role of the multidimensional environmental conditions, such as environmental dynamism, environmental uncertainty, demand uncertainty and competitive intensity.

6. Research articles included in the special issue

In the broader context of SF, which was presented in this article, the articles included in the special issue entitled "A strategic perspective on flexibility, agility and adaptability in the digital era" contribute to Avenue 2. Digital technologies and SF/organizational agility. Using a DC lens, Hutter *et al.* (2023) explores the agile transformation of an incumbent multinational firm, highlighting a set of activities in sensing, seizing and transforming required to succeed and stressing the role of an intermediate solution at a divisional level, to be subsequently scaled up at the organizational level. Brozovic *et al.* (2023) focus on how to achieve SF in the SME context, finding that a high strategic orientation, mainly in terms of entrepreneurial and market orientation, high innovation and digitalization capabilities, and changing leadership and organizational culture promote SF. Marchese *et al.* (2023), through a multicase study research based on the DC perspective, confirm that digital technologies seem to support adaptive organizations, not only SMEs, but also larger firms. Contrarily, Marrucci *et al.* (2023) investigate antecedents of Industry 4.0 implementation, finding that organizational agility and SF play a fundamental role. However, Dahms *et al.* (2023) and Qin (2023) provide an integrative view of the interplay between SF and digitalization that combines these two apparently conflicting views. On the one hand, Dahms *et al.* (2023) find that the interplay of organizational agility and digital capabilities contributes to superior innovation performance, but on the other hand, Qin (2023) empirically shows that a degree of flexibility is required for digital transformation that, in turn, increases flexibility. This gives an alternative perspective that puts forward a more sophisticated relationship where SF and digital technologies/digitalization may influence each other, which still deserves further investigation.

Moreover, related to the different constructs coming into play, a distinction between digital technologies and digitalization should be made, because digital technologies may contribute to be more adaptive, as suggested by Marchese *et al.* (2023), but then, in turn, being more flexible or agile could help taking advantage of digital technologies "to enable major business improvements to augment customer experience, streamline operations, or create new business models" (Warner and Wäger, 2019), which reflects digitalization.

Finally, two contributions are derived from the insights of the new business model (NBM) conference 2022: (1) Minà and Michelini (2023) discuss the role of strategic agility for implementing sustainable business models, proposing a framework that starts shedding more light on other potential avenues for future research presented above, namely BMI and

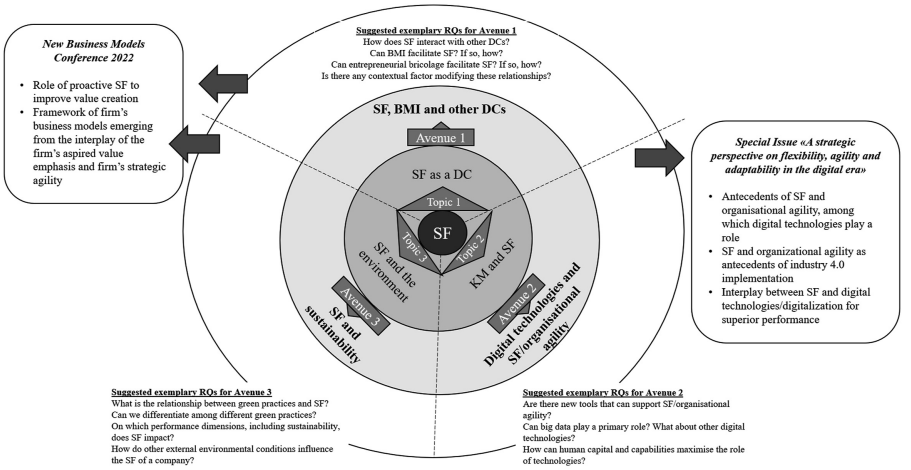
sustainability, while (2) the article by Pusceddu *et al.* (2023) shows the role of SF to enhancing value creation through customer experience.

Figure 5 illustrates the substreams of research about SF that we established through the bibliometric method and the potential avenues for future research with some exemplary research questions. The figure also exhibits how the special issue builds on and contributes to the second future research avenue through various explorations on the relationship between digital technologies and SF/organizational agility. Moreover, two articles included in the special issue are the evolution of two contributions deriving from the NBM Conference 2022, and contribute to the first and third avenues for future research highlighted in this study.

7. Conclusions, future directions and limitations

Following Micevski *et al.* (2019) and Nowak's (2022) call to identify key areas where SF can be developed and maintained within firms, this research set out to trace the development of research on SF, to identify novel areas in which the literature has developed lately and to suggest promising future areas of research around SF. We conducted a comprehensive and systematic literature review on SF and analyzed the collected data with bibliometric techniques which helped to reveal the emerging themes in the field. Thus, our findings are underpinned by a robust systematic literature review and bibliometric technique, including co-occurrence of keywords analysis that allowed for the mapping of the research field and revelation of the trends and potential opportunities for research.

Our review contributes to the theoretical understanding of SF by illustrating and explicating core topics that have persisted over time and form the underlying structure of the field. These theoretical underpinnings center around topics such as DC, environmental factors, knowledge aspects and firm performance. Secondly, as pointed out by Bamel and Bamel (2018), the field of SF is constantly evolving, which is apparent in Figure 1, showing a steady rise of published articles between 2015 and 2022, which necessitated a more recent literature review. This study also identified new, emerging and underdeveloped core topics in the field, which were presented as three research avenues in Chapter 5: SF, BMI and other DCs; SF and digital technologies; SF and sustainability. The recently published special issue mentioned in Section 6 focused on examining the relationship between digitalization and SF.



Source(s): Authors own creation

Figure 5.
Overview about the field of SF

While we hope that our article helps to take a step forward in understanding research on SF, a lot remains to be uncovered in the field of SF. Table 2 below provides a summary of the potential research areas for conducting further research in the field.

For practitioners, this study shows the relevance of SF by demonstrating its role in enabling businesses not only to adapt in today's business environment, but also to survive and thrive amidst exogenous crisis, such as the Covid-19. Second, considering the complex and fragmented nature of the literature on SF, we bring structure into the field by offering insights into the specific resources and/or capabilities that companies can develop to take full advantage of the opportunities offered by SF. The proposed avenues for future research provide insights into different areas where practitioners can partner with academicians to investigate, and consequently implement in their organizations, depending on the results, to increase their SF which has been proven to be vital for businesses. Moreover, they can have a clearer idea about the meaning of SF and its relationship with some macro trends they are inevitably going to deal with or are already confronting with, namely digitalization and sustainability, when facing these new challenges, including reflections about SF is worth doing and helpful.

Despite these contributions, our study has some limitations. Our literature review included articles based on the keyword "strategic flexib*" in the topic. We recognize that limiting the research to this keyword could have exposed the research to the potential risk of omitting relevant articles that discussed similar issues but used different terminology such as "adaptability", "strategic agility" or "dynamic capability." However, considering the complexity of the field, we believe it was better to limit the keyword to the main focus of

Table 2.
Promising avenues for future research on SF

Cluster	Theme	Main future research areas
Cluster 1 (Red)	SF and BMI	(i) The role of temporary BMI to increase SF (ii) The role of social media as a mediating/moderating factor between BMI and SF (iii) Clarification on the effect of potential absorptive capacity and/or realized absorptive capacity on the relationship between BMI and SF (iv) The role of proactive SF to improve value creation
Cluster 1 (Red)	SF and DCs	(i) DCs and SF in developing and emerging countries (ii) Causal relationship between SF and different DCs, using longitudinal studies
Cluster 2 (Blue)	SF and digital technologies/digitalization	(i) Antecedents of SF and organizational agility, among which digital technologies play a role (ii) The role of managerial factors such as experience, creativity and intuition as a mediating factor between digitalization and SF (iii) What constitutes digitalization capabilities and how these capabilities can influence SF (iv) The interplay between SF and digital technologies/ digitalization for superior performance
Cluster 3 (Green)	SF and sustainability	(i) The impact of green practices on SF (ii) The interplay between SF and green practices for superior performance
Cluster 3 (Green)	SF and firm performance	(i) The multidimensional composition of SF, e.g. reactivity vs proactivity on firm performance (ii) The effect of the multidimensional environmental conditions such as environmental dynamism, environmental uncertainty, demand uncertainty and competitive intensity on SF and consequently firm performance

the study. Also, our study used only one database to conduct the study. We recognize that not using multiple databases to gather relevant material for the study may have left out some relevant articles that could have contributed to the study. Nevertheless, the selected database in this article is one of the most trusted databases and so we believe we have captured the most relevant literature in this field.

In conclusion, our study shows the importance of the SF field as a research area and illustrates novel and exciting themes that have recently emerged. We hope that this study has revealed innovative insights that will lead to further studies on SF with significant theoretical and empirical contributions.

Notes

1. https://hbr.org/2017/11/your-strategy-has-to-be-flexible-but-so-does-your-execution (accessed in July 2022).
2. https://www.mckinsey.com/industries/retail/our-insights/prioritizing-flexibility-in-tech-strategies-can-unlock-new-value-for-grocers (accessed in July 2022).
3. Another literature review was published in 2021 by Herhausen *et al.* (2021), as anticipated. However, their review was a meta-analysis, including only quantitative contributions up to 2019, after which further intensification of publications on the topic has occurred. Our review thus includes a broader scope in terms of the methods and the period.
4. Though researchers have traditionally categorized environmental uncertainty solely as an external contingency (Cheng and Krumwiede, 2017), increasingly, recent studies have revealed the internal dimension of environmental uncertainty, defining it as "a manager's perceived inability to predict the rate of change of innovation in the marketplace, and the actions of competitors or customers" or their inability to assess the future changes that might occur in that environment (Bakker and Knoben, 2015; Haarhaus and Liening, 2020; Tian *et al.*, 2021).

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Corresponding author
Lara Agostini can be contacted at: lara.agostini@unipd.it

Appendix

Table A1. Overview of sampled articles

Title	Authors	Year	Methodology	Focus/aim of research
A Conceptual Framework for Achieving Flexibility at Strategic Level in Large- and Medium-Scale Indian Manufacturing Organizations	Singh, D; Oberoi, JS; Ahuja, IS	(2015)	Qualitative + Quantitative	To investigate the different methods to achieve flexibility at strategic level are identified
Built to Last or Meant to End: Intertemporal Choice in Strategic Alliance Portfolios	Bakker, RM; Knoben, J	(2015)	Quantitative	To explore the conditions that influence temporal interfirm relationships (strategic alliance choices)
How does strategic flexibility pay off in terms of financial performance?	Ouakouak, ML; Ammar, O	(2015)	Quantitative	This study aims to investigate the specific effect (outcome) of flexibility of strategic planning on firm performance, while also exploring the roles of environmental dynamism and firm size as moderators
Opening the Black Box of Upper Echelons in China: TMT Attributes and Strategic Flexibility	Wang, T; Libaers, D; Jiao, H	(2015)	Quantitative	This study examines the relationships between top management teams' sociopsychological attributes (shared vision, social integration, and political ties) and strategic flexibility, which is decomposed into organizational flexibility and technological flexibility. The study further investigates how the level of competitive intensity can moderate the relationships
Strategic flexibility, green management, and firm competitiveness in an emerging economy	Yang, JJ; Zhang, F; Jiang, X; Sun, W	(2015)	Quantitative	The focus of this research is to investigate how firms in emerging economies respond to green management (GM) practices and measure what they gain by adopting GM practices. Also, to study the role of SF on GMP adoption and the mediating role of institutional support on the impact of SF on GMP adoption
A Systems Approach to Identify Skill Needs for Agrifood Nanotechnology: A Multiphase Mixed Methods Study	Yawson, RM; Greiman, BC	(2016)	Qualitative + Quantitative	How to prepare the workforce, and human resource development (HRD)

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Table A1.

Title	Authors	Year	Methodology	Focus/aim of research
Entrepreneurial decision-making, external social networks and strategic flexibility: The role of CEOs' cognition	Fernandez-Perez, V; Garcia-Morales, VJ; Pulles, DC	(2016)	Quantitative	This study examines how CEOs' external social networks impact cognitive factors (strategic schemas and self-efficacy in opportunity recognition (SOR)) to affect SF and organizational performance
Green Practices and Organizational Design as Sources of Strategic Flexibility and Performance	Perez-Valls, M; Cespedes-Lorente, J; Moreno-Garcia, J	(2016)	Quantitative	This research uses the concept of SF (Sanchez, 1995) to study how critical internal organizational design variables are connected to environmental responsiveness, described as the degree of implementation of advanced environmental practices, and how these practices influence economic performance
Innovation success in the context of inbound open innovation	Nitzsche, P; Wirtz, BW; Gottel, V	(2016)	Quantitative	Based on the dynamic capabilities view, we hypothesize that a firm's openness, its absorptive capacity and its flexibility primarily determine innovation success in in-bound open innovation environments
Modularizing business models: between strategic flexibility and path dependence	Gaertner, C; Schon, O	(2016)	Conceptual paper	To explain whether modularization of BMs can either lead to path dependence or SF, thus either inhibiting or favoring BMI
Revamping research on unrelated diversification strategy: perspectives, opportunities and challenges for future inquiry	Picone, PM; Dagnino, GB	2016	Literature Review	This research presents a conceptual map that offers a comprehensive appreciation of unrelated diversification strategy antecedents, implementation process, and consequences
The role of organizational capabilities in achieving superior sustainability performance	Gelhard, C; von Delft, S	(2016)	Quantitative	This research discloses a compilation of organizational capabilities (strategic flexibility, value chain flexibility and customer integration) that supports firms in achieving superior sustainability performance

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Table A1.

Title	Authors	Year	Methodology	Focus/aim of research
Utilizing customer knowledge in innovation: antecedents and impact of customer involvement on new product performance	Cui, AS; Wu, F	(2016)	Quantitative	This study examines the antecedents and impacts of three forms of customer involvement on innovation: customer involvement as a co-developer (CIC), customer involvement as an information source (CIS), and customer involvement as innovators (CIN)
Bottom-up learning, strategic flexibility and strategic change	Yi, YQ; Gu, M; Wei, ZL	(2017)	Quantitative	To investigate how bottom-up learning affects the speed and magnitude of strategic change and if these relationships are contingent on SF
Evolution of modularity literature: a 25-year bibliometric analysis	Frandsen, T	2017	Literature Review	The purpose of this paper is to review and analyze the modularity literature to identify the established and emerging perspectives
How Do Resource Structuring and Strategic Flexibility Interact to Shape Radical Innovation?	Li, Y; Li, PP; Wang, HF; Ma, YC	(2017)	Quantitative	This study explores how two different types of SF (i.e. resource flexibility and coordination flexibility) as special capabilities interact with two different types of resource structuring (i.e. resource acquisition and resource accumulation) as special mechanisms to shape radical innovation under high uncertainty
Improving strategic flexibility with information technologies: insights for firm performance in an emerging economy	Chen, Y; Wang, Y; Nevo, S; Benitez, J; Kou, G	(2017)	Quantitative	This paper theorizes that firms that use IT to support core competencies will experience improved SF, which may enhance their performance. It further theorizes that these effects are contingent on the form and nature of the firm's IT infrastructure, as well as its type of ownership – state-owned or private
Knowledge process capabilities and innovation: testing the moderating effects of environmental dynamism and strategic flexibility	Kamasak, R; Yozgat, U; Yavuz, M	(2017)	Quantitative	This study seeks to examine the roles of two contextual variables; environmental dynamism and SF on developing knowledge process capabilities and innovation performance

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Table A1.

Title	Authors	Year	Methodology	Focus/aim of research
Reducing Risk Through Strategic Flexibility and Implementation Leadership in High-Velocity Markets	Kamasak, R; Yavuz, M; Ozturk, TY	(2017)	N/A	This chapter explains the effects of SF and implementation leadership on reducing risk in high volatile markets
Strategic flexibility analysis of agrifood nanotechnology skill needs identification	Yawson, RM; Greiman, BC	(2017)	Qualitative + Quantitative	This paper describes the use of SF analysis and the qualitative systems approaches as tools for systems research and it implications for human resources development and management
Strategic flexibility, innovative HR practices, and firm performance A moderated mediation model	Xiu, L; Liang, X; Chen, Z; Xu, W	(2017)	Quantitative	To examine the role of innovative human resources practices as an important mechanism through which SF affects firm performance as well as the role of female leadership in this relationship
Strategic patterns and firm performance: comparing consistent, flexible and reactor strategies	Anwar, J; Hasnu, SAF	(2017)	Quantitative	To investigate the strategy-performance relationship, considering the paradox of either adapting to change or remaining stable in order to control uncertainty to maintain competitive positions
The effects of strategic and manufacturing flexibilities and supply chain agility on firm performance in the fashion industry	Chan, ATL; Ngai, EWT; Moon, KKL	(2017)	Quantitative	This research examines how intensively SF and manufacturing flexibility affect SC agility and firm performance. It also examines how SC agility mediates the relationship between SF and manufacturing flexibility and firm performance
What makes a manufacturing firm effective for service innovation? The role of intangible capital under strategic and environmental conditions	Cheng, CCJ; Krumwiede, D	(2017)	Qualitative + Quantitative	This article investigates (1) what types of intangible capital are necessary for a manufacturing firm to develop new services, (2) whether a focus on an intangible capital will have the greatest effect on new service success, and (3) whether the effectiveness of a specific intangible capital varies from the combined conditions of strategic flexibility and environmental uncertainty

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Table A1.

Title	Authors	Year	Methodology	Focus/aim of research
CEOs' cultural and demographic attributes and organizational performance of Indian SMEs: an upper echelon approach	Friedmann, CB; Garg, R; Holtbrugge, D	(2018)	Quantitative	This study examines the impact of organizational scanning and SF capabilities of CEOs on organizational performance in Indian SMEs
Demand variation, strategic flexibility and market entry: Evidence from the US airline industry	Claussen, J; Essling, C; Peukert, C	(2018)	Quantitative	This research studies if, and under which circumstances, firms can use SF to enter markets with variable demand
How information technology influences opportunity exploration and exploitation firm's capabilities	Benitez, J; Llorens, J; Braojos, J	(2018)	Quantitative	To test the theory that information technology (IT) performs a key role in firms' opportunity exploration and exploitation
Impact of information technology infrastructure flexibility on mergers and acquisitions	Benitez, J; Ray, G; Henseler, J	(2018)	Quantitative	This research examines how information technology (IT) infrastructure flexibility affects M&As
Organizational resources, KM process capability and strategic flexibility: a dynamic resource-capability perspective	Bamel, UK; Bamel, N	(2018)	Quantitative	The objective of this study is to advance understanding of the relationships among organizational resources, knowledge management process capability and SF
Outside-in marketing capability and firm performance	Mu, JF; Bao, YC; Sekhon, T; Qi, JY; Love, E	(2018)	Quantitative	How and when do firms, by virtue of their outside-in marketing capability, manage to achieve superior performance?
Strategic entrepreneurship and competitive advantage of established firms: evidence from the digital TV industry	Paek, B; Lee, H	(2018)	Literature review + Qualitative	This study proposes a conceptual framework to investigate dimensions of strategic entrepreneurship and its function in sustainable competitive advantage of established firms in a modern volatile environment, through the lens of the dynamic capability view
Strategic Flexibility in New High-Technology Ventures	Dai, Y; Goodale, JC; Byun, G; Ding, FS	(2018)	Quantitative	To explore the effect of two sources of external knowledge: new product development (NPD) alliances, representing tightly coupled sources, and loosely coupled sources such as industry associations

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Table A1.

Title	Authors	Year	Methodology	Focus/aim of research
Strategic Flexibility: A Review of the Literature	Brozovic, D	(2018)	Literature review	This paper aims to systematically analyse the literature on SF by identifying its main characteristics, linking the different aspects together in a new conceptual framework, and considering the means to measure it
Strategic performance management system in uncertain business environment: An empirical study of the Indian oil industry	Akhtar, M; Sushil	(2018)	Quantitative	The purpose of this paper is to present the strategic performance management system (SPMS) designed, incorporating flexibility and implementation issues, and its effectiveness empirically validated from Indian oil industry
The effect of strategic flexibility configurations on product innovation	Beraha, A; Bingol, D; Ozkan-Canbolat, E; Szczygiel, N	(2018)	Qualitative	The purpose of this paper is to determine the contribution of company functional areas – production, marketing, and human resources – to SF configurations
The integrated impact of new product and market flexibilities on operational performance The case of the Jordanian manufacturing sector	Alamro, AS; Awwad, AS; Anouze, ALM	(2018)	Quantitative	This research examines the role that SF plays in organizational performance. Hence, it seeks to provide a more complete explanation of why SF might be an important contributor to success
The role of human resource-related quality management practices in new product development A dynamic capability perspective	Gutierrez-Gutierrez, LJ; Barrales-Molina, V; Kaynak, H	(2018)	Quantitative	The purpose of this paper is to adopt the dynamic capability (DC) view as a theoretical framework to empirically investigate the relationships among human resource (HR)-related quality management (QM) practices: new product development (NPD) as a specific DC, learning orientation, knowledge integration, and SF
The role of market orientation, relational capital, and internationalization speed in foreign market exit and re-entry decisions under turbulent conditions	Yayla, S; Yeniyurt, S; Uslay, C; Cavusgil, E	(2018)	Quantitative	This study utilizes the SF perspective to investigate the impact of market orientation, relational capital, and internationalization speed on market exit and re-entry decisions under turbulence in a host market

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Table A1.

Title	Authors	Year	Methodology	Focus/aim of research
A typology of backsourcing: short-run total costs and internal capabilities for re-internalization	Thakur-Wernz, P	(2019)	Qualitative	The purpose of this study is to examine backsourcing, which refers to the full or partial re-internalization of a firm's previously outsourced activity
Effects of business model innovation on corporate sustainability: intervening role of organizational learning and strategic flexibility	Vihari, NS	(2019)	Quantitative	The operational responsiveness of the relationship between business model innovation and sustainability practices is tested using organizational learning, SF as sequential mediating variables and environmental dynamism as a moderating variable
From fragile to agile: marketing as a key driver of entrepreneurial internationalization	Hagen, B; Zucchella, A; Ghauri, PN	(2019)	Qualitative	The purpose of this paper is to conceptualize strategic agility in entrepreneurial internationalization and highlight the role of marketing "under particular conditions"– those of early and fast internationalizers
Implications of strategic flexibility in small firms: the moderating role of absorptive capacity	Chaudhary, S	(2019)	Quantitative	The purpose of this paper is to examine the crucial role played by entrepreneurial orientation and absorptive capacity in the relationship between SF and firm performance, with a specific focus on small firms
Individual unlearning, organizational unlearning and strategic flexibility The down-up change perspective	Wang, XY; Qi, Y; Zhao, YX	(2019)	Quantitative	The purpose of this paper is to explore the relationship between unlearning and SF from the down-up change perspective
Internal factors and consequences of business model innovation	Bashir, M; Verma, R	(2019)	Literature Review	The purpose of this paper is to establish a link between business model innovation (BMI), SF, competitive advantage and firm competence

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Table A1.

Title	Authors	Year	Methodology	Focus/aim of research
Inter-partner dynamics and joint venture competitiveness: a fuzzy TISM approach	Bamel, N; Dhir, SS	(2019)	Quantitative	The objective of this paper is twofold: to identify and rank inter-partner dynamics-based enablers of joint venture competitiveness and their rankings in terms of their driving power on outcome variables, and to determine the interaction among identified variables and their driving power on outcome variables using total interpretive structural modeling
Investigate the role of distributed leadership and strategic flexibility in fostering business model innovation	Liao, SQ; Liu, ZY; Fu, LH; Ye, PC	(2019)	Quantitative	The purpose of this paper is to explore how and when distributed leadership enhances the business model innovation (BMI) by involving SF as a mediator and environmental dynamism as important contingency
Knowledge, Renewal and Flexibility: Exploratory Research in Family Firms	Perez-Perez, M; Lopez-Fernandez, MC; Obeso, M	(2019)	Quantitative	This study aims to explore how family firms pursue strategies that promote SF and knowledge-management (KM) practices to respond to strategic-renewal goals
Sales intra-functional flexibility: Its relationship to performance and moderating effects on role stressors	Micevski, M; Dewsnap, B; Cadogan, JW; Kadic-Maglajlic, S; Boso, N	(2019)	Quantitative	Building on SF literature and social exchange theory, this study aims to identify sales department intra-functional flexibility (SIF) as an important driver of sales organization success
Sources of strategic flexibility in new ventures: An analysis of the role of resource leveraging practices	Brinckmann, J; Villanueva, J; Grichnik, D; Singh, L	(2019)	Quantitative	To depict how specific resource management practices can augment the SF of a new firm in addition to the SF
Strategic Flexibility in Turbulent Times: Impact of CEO's Willingness and Permission to Change	Hess, J; Flatten, T	2019	Quantitative	To study if the SF of the company depends on the willingness and permission to change of the chief executive officer (CEO)
Strategic flexibility, manufacturing flexibility, and firm performance under the presence of an agile supply chain: a case of strategic management in fashion industry	Uman, R; Sommanawat, K	(2019)	Quantitative	To investigate the relationship between SF, manufacturing flexibility, supply chain flexibility and firm performance

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Table A1.

Title	Authors	Year	Methodology	Focus/aim of research
The intensity of inter-organizational relationships and the strategic flexibility of nodal organizations	Lichtarski, JM; Piorkowska, K; Cwik, K	(2019)	Qualitative + Quantitative	The aim of the paper is to present the results of empirical studies (quantitative and qualitative ones) on the intensity of organizational relationships (network embededness) and the flexibility of organizational strategy (SF) in firms' operating in networks
The interplay of corporate social responsibility and corporate political activity in emerging markets: The role of strategic flexibility in non-market strategies	Kamasak, R ; James, SR ; Yavuz, M	(2019)	Quantitative	This paper empirically investigates the political dimension and the interactive dimension which describes interactions between corporate social responsibility and corporate political activities together with SF and their effects on firm performance
Achieving strategic flexibility in the era of big data The importance of knowledge management and ambidexterity	Rialti, R; Marzi, G; Caputo, A; Mayah, KA	(2020)	Quantitative	This research unpacks the micromechanisms that exist between an organization's ability to conduct big data analytics (BDA) and its achievement of SF
Applying big data to guide firms' future industrial marketing strategies	Gnizy, I	(2020)	Qualitative + Quantitative	The purpose of this paper is to examine if big data's predictive power helps business to business (B2B) firms selecting their intended generic (differentiation, focus, and cost leadership) strategies
Attaining organizational agility through competitive intelligence: the roles of strategic flexibility and organizational innovation	Atkinson, P; Hizaji, M; Nazarian, A; Abasi, A	(2022)	Quantitative	This paper examines the impact of competitive intelligence on organizational agility through SF and organizational innovation
Building dynamic capabilities to cope with environmental uncertainty: The role of strategic foresight	Haarhaus, T; Liening, A	(2020)	Qualitative + Quantitative	This paper investigates the impact of strategic foresight on two distinct types of dynamic capabilities, namely SF and decision rationality, and how the influence of strategic foresight is moderated by the degree of environmental uncertainty

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Table A1.

Title	Authors	Year	Methodology	Focus/aim of research
Commercialization of technology through technology entrepreneurship: the role of strategic flexibility and strategic alliance	Chebo, AK; Wubatie, YF	(2021)	Quantitative	This study unlocks the contributions of strategic alliance and SF as mediators, which will be a catalyst for future research in the subject matter of commercializing technology
Control changes in multinational corporations: Adjusting control approaches in practice	Stendahl, E; Schriber, S; Tippmann, E	2020	Qualitative	This paper focuses on control changes in multinational corporations (MNCs), especially the adjusting of control to respond to changing corporate and subsidiary strategies
Cooperative goals and dynamic capability: the mediating role of strategic flexibility and the moderating role of human resource flexibility	Yang, LB; Gan, CJ	(2021)	Quantitative	This study aims to examine how dynamic capability can be shaped based on cooperative goal interdependence with supply chain partners by focusing on the mediating role of SF and the moderating role of human resource flexibility
Corporate Strategy and Subsidiary Performance: The Effect of Product and Geographic Diversification	Jiao, J ; Liu, Y ; Wu, R ; Xia, J	(2020)	Quantitative	This study argues that foreign subsidiaries may benefit from the corporate strategies of multinational firms in different ways in terms of knowledge transfer and SF
Customer Satisfaction and Its Impact on the Future Costs of Selling	Lim, LG; Tuli, KR; Grewal, R	(2020)	Quantitative	This study presents the first empirical and theoretical examination of the impact of customer satisfaction on future cost of selling
Driving sustainability in SMEs' performance: the effect of strategic flexibility	Gorondutse, AH; Arshad, D; Alshuaibi, AS	(2020)	Quantitative	This research aims to investigate the effect of SF by moderating the effects of sustainability strategy on the SMEs' performance in Nigeria from a business strategy perspective
Exploring the relationship between scenario planning and strategic flexibility and complexity	Bouhalleb, A; Smida, A	(2020)	Quantitative	This paper explores the direct contributions of scenario planning (SP) and SF and complexity

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Table A1.

Title	Authors	Year	Methodology	Focus/aim of research
Impermanence Mindset and Market-Focused Dynamic Capability	Tian, VI; Au, AKM; Tse, ACB	(2020)	Quantitative	This article uses the cognitive content theory to develop a theoretical link between an impermanence mindset and a market-focused dynamic capability, the latter being an essential antecedent factor for superior business performance
Inflexible Repositioning: Commitment in Competition and Uncertainty	Cong, JJ; Zhou, W	2020	Qualitative	The study is on the value of commitment in a business environment that is both competitive and uncertain, in which two firms face stochastic demands and compete in positioning and repositioning. If the future demand tends to disperse or the demand uncertainty is sufficiently large, one firm chooses rigidity (i.e. commits not to change its positions), and the other chooses flexibility (i.e. to reposition freely)
Integrated exploratory factor analysis and Data Envelopment Analysis to evaluate balanced ambidexterity fostering innovation in manufacturing SMEs	Ahmadi, M; Osman, MHM; Aghdam, MM	(2020)	Qualitative + Quantitative	The objective of the study is to understand the moderating effect of ambidexterity on the relationship between SF and performance of SMEs
Market orientation, strategic flexibility and business model innovation	Yang, D; Wei, ZL; Shi, HB; Zhao, J	(2020)	Quantitative	This study aims to investigate how market orientation (MO) motivates firms to develop business model innovation and how such effects are moderated by SF
Mixed effects of business and political ties in planning flexibility: Insights from Turkey	Yeniaras, V; Kaya, I; Dayan, M	(2020)	Quantitative	This study refines the explanatory role of planning flexibility in how business and political ties relate to both financial and non-financial firm performance
Organisational unlearning, relearning and strategic flexibility: from the perspective of updating routines and knowledge	Zhao, YX; Wang, XY	(2020)	Quantitative	This study aims to adopt the perspective of updating routines and knowledge to explore how organizational unlearning and relearning jointly facilitate SF

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Table A1.

Title	Authors	Year	Methodology	Focus/aim of research
Proactive marketing response to population aging: The roles of capabilities and commitment of firms	Matsuno, K; Kohlbacher, F	(2020)	Qualitative + Quantitative	This paper investigates the roles of a firm's EM processes in the form of three capabilities (i.e. SF, and explorative and exploitative capabilities) and organizational commitment in addressing an external environment with uncertain opportunity–threat implications
Re-examining Strategic Flexibility: A Meta-Analysis of its Antecedents, Consequences and Contingencies	Herhausen, D; Morgan, RE; Brozović, D; Volberda, HW	(2021)	Literature Review	The purpose of this paper is to bring more clarity to the domain of SF by empirically resolving several existing tensions in the relevant literature because meta-analysis is an indispensable research tool for integrating and expanding a domain's knowledge base
Strategic flexibility analysis of HRD research and practice post COVID-19 pandemic	Yawson, R	(2020)	Conceptual paper	To determine if firms can enhance their competitiveness in dynamic environments by applying SF to form alternative courses of action or strategic options
Strategic flexibility, strategic leadership and business sustainability nexus	Nwachukwu, C; Vu, HM	(2020)	Quantitative	Drawing on the theoretical lens of dynamic capability and contingency theory, a framework of hypotheses is established that focuses on SF, strategic leadership and its implications on business sustainability
Temporary organizations in the creation of dynamic capabilities: effects of temporariness on innovative capacity and strategic flexibility	Spanuth, T; Heidenreich, S; Wald, A	(2020)	Quantitative	This study seeks to analyze how the use of temporary forms of organizing can generate two important dynamic capabilities: innovative capacity and SF

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Title	Authors	Year	Methodology	Focus/aim of research
The effect of performance feedback on firms' unplanned marketing investments	Wang, XC; Lou, TY	(2020)	Quantitative	The present study aims to provide new insight by investigating how performance feedback influences subsequent marketing investment by a firm that cannot be explained by organization routines alone and by uncovering the mechanisms through which performance feedback interacts with a firm's environmental context to influence its marketing investment
The role of entrepreneurship on the foundations of dynamic capabilities	Dias, AL; dos Santos, JMB; Pereira, RTD	(2020)	Quantitative	By considering the existence of two levels of capabilities, the purpose of our research is, through empirical observation, identifying the role of specific dynamic capabilities like entrepreneurial management and SF on operational capabilities, and analyzing their effect on performance
Theoretical Framework for a Local, Agile Supply Chain to Create Innovative Product Closer to End-user: Onshore-Offshore Debate	Gyarmathy, A; Peszynski, K; Young, L	(2020)	Qualitative	This study explores how agile supply chain management assists in creating value-added innovative products closer to end-users
Unlocking solution provision competence in knowledge-intensive business service firms	Siahtiri, V; Heirati, N; O'Cass, A	(2020)	Quantitative	To investigate how solution-provision competence (SPC), as a firm-level competence, contributes to the delivery of effective solutions, and how and when KIBS firms leverage SPC to transform knowledge gained from various search paths into effective solutions for customers
Absorptive capacity, strategic flexibility, and business model innovation: Empirical evidence from Italian SMEs	Miroshnychenko, I; Strobl, A; Matzler, K; De Massis, A	(2021)	Quantitative	Recognizing that business model innovation (BMI) is a constant source of value creation in the digital economy, the study examines the nexus between absorptive capacity and SF, and their effects on BMI
Assessment of the relationship between farm size and flexibility: the case of Ukraine	Skydan, O; Nykolyuk, O; Pyvovar, P	(2021)	Quantitative	This research assesses and benchmarks the flexibility level of differently sized agricultural enterprises

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Title	Authors	Year	Methodology	Focus/aim of research
Digitalization and strategic flexibility – a recipe for business growth	Matalamaki, MJ; Joensuu-Salo, S	(2021)	Qualitative	This paper examines how digitalization can affect three aspects of firm growth
Effects of strategic flexibility and organizational slack on the relationship between green operational practices adoption and firm performance	Jiao, JX; Liu, CG; Xu, Y; Hao, ZR	(2021)	Quantitative	This study examines the moderating effects of SF and organizational slack on the relationship between GOPs adoption and firm performance (including environmental and financial performance)
Entrepreneurial bricolage and marketing capability: contingent roles of market turbulence and strategic flexibility	Li, XL; Wang, CY	(2021)	Quantitative	This study explores the relationship between bricolage and marketing capability by taking both internal strategic characteristics (i.e. SF) and external environmental conditions (i.e. market turbulence) as boundary conditions
Fostering individual creativity in startups: comprehensive performance measurement systems, role clarity and strategic flexibility	Frare, AB; Beuren, IM	(2021)	Quantitative	The purpose of this study is to investigate the effects of comprehensive performance measurement systems, role clarity and SF on the individual creativity of founders/managers of startups
How can firms locate proactive strategic flexibility in their new product development process?: The effects of market and technological alignment	Kandemir, D; Acur, N	(2022)	Quantitative	This study examines proactive decision-making and design flexibilities in new product development as critical forms of SF
How Yin-Yang cognition affects organizational ambidexterity: the mediating role of strategic flexibility	Jiang, FF; Wang, DH; Wei, ZL	(2021)	Quantitative	This study examines the underlying mechanisms through which Yin-Yang cognition, an Eastern philosophy of paradoxical cognition, affects firm ambidexterity
Influencing mechanism of strategic flexibility on corporate performance: the mediating role of business model innovation	Xiao, HJ; Yang, Z; Hu, YL	(2021)	Quantitative	This paper explores the internal mechanism of corporate SF on corporate performance

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Title	Authors	Year	Methodology	Focus/aim of research
Interfirm collaboration as a performance-enhancing survival strategy within the business models of ethnic minority-owned urban restaurants affected by COVID-19	Crick, JM; Crick, D; Chaudhry, S	(2023)	Qualitative	Guided by resource-based theory, this investigation examines the extent to which knowledge sharing as part of interfirm collaboration serves as a performance-enhancing strategy
Intrapreneurship in the digital era: driven by big data and human resource management?	Wan, WH; Liu, LJ	(2021)	Quantitative	This study aims to investigate whether big data enabling and empowerment-focused human resource management can effectively promote employee intrapreneurship and their effects on platform enterprises' innovation performance
Multiple strategic orientations and strategic flexibility in product innovation	Han, C; Zhang, SM	(2021)	Quantitative	This research investigates how multiple strategic orientations and SF collectively influence firm product innovation
Network capability and strategic performance in SMEs: the role of strategic flexibility and organizational ambidexterity	Majid, A; Yasir, M; Yousaf, Z	(2021)	Quantitative	This study examines the association among network capability (NC), strategic flexibility (SF), organizational ambidexterity (OA), and strategic performance (SP)
Revisiting the "concentration vs spreading debate": perceived risk and strategic flexibility in decision-making following an unanticipated environmental market disruption	Crick, JM; Crick, D	(2021)	Qualitative	The objective of this study is to revisit the market concentration versus spreading debate; specifically, to investigate the extent to which owner-managers that concentrate on targeting a specific product/market faced by severe disruption are likely to experience difficulties in comparison to counterparts that diversify operations across a number of product-market strategies
Strategic flexibility and performance: effects of potential and realized absorptive capacity	Nowak, R	(2021)	Quantitative	The objective of this paper is to put forward a set of new hypotheses that empirically test the effects of two dimensions of absorptive capacity, potential and realized absorptive capacity, on SF in the context of business performance

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Title	Authors	Year	Methodology	Focus/aim of research
Tackling organizational innovativeness through strategic orientation: strategic alignment and moderating role of strategic flexibility	Nassani, AA; Aldakhil, AM	(2021)	Quantitative	The purpose of the research is to examine the effect of strategic orientation on organizational innovativeness of small and medium enterprises (SMEs). Moreover, in order to highlight the constructive role of strategic orientation, the study also observes the intervening role of strategic alignment and moderating role of SF
The effects of entrepreneurial bricolage and alternative resources on new venture capabilities: Evidence from China	Yu, XY; Wang, XC	(2021)	Quantitative	This study draws on the resource orchestration perspective and propose that efficient resource management may be more important for new ventures than their existing resources when developing superior firm capabilities that are critical for new venture success
The integrative business model as a linkage to venture growth: An insight from the outside box of strategic decisions	Chebo, AK; Wubetie, YF	(2021)	Quantitative	This study links strategic decisions from the perspective of SF, strategic alliance, and competitive advantage and the exercise of firms networking to value creation, proposition, and capturing
The three dimensions of strategic flexibility	Hoeft, F	(2021)	Conceptual + Qualitative	The purpose of this paper is to develop a conceptual model identifying key factors determining SF
Valuation of brand equity and retailer growth strategies using real options	Trigeorgis, L; Baldi, F; Katsikeas, CS	(2021)	Quantitative	To develop a real options-based framework that takes account of brand expansion and extension options to value brand equity and retailer growth strategies
Which export channels provide real options to SMEs?	Ipsmiller, E; Brouthers, KD; Dikova, D	(2021)	Quantitative	To theorize that firm-level SF (i.e. the depth and breadth of export experience) negatively moderates the relationship between uncertainty and real option export channel choice

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Title	Authors	Year	Methodology	Focus/aim of research
Ambidextrous leadership and organizational innovation: the importance of knowledge search and strategic flexibility	Jia, RQ; Hu, WA; Li, SW	(2022)	Quantitative	The first purpose of this study is to clarify the mechanism of ambidextrous leadership on organizational innovation on the basis of knowledge search. The second purpose of this study is to examine the contingent role of SF in the relationship between knowledge search and innovation
Foundations of strategic flexibility: focus on cognitive diversity and structural empowerment	Nowak, R	(2022)	Quantitative	The purpose of this paper is to investigate the effects of cognitive diversity and structural empowerment on SF in the context of empirically tests the mediating effect of SF on the relationship among cognitive diversity, structural empowerment and business performance
Leveraging resources to achieve high competitive advantage for digital new ventures: an empirical study in China	Zhu, XM; Yu, SB; Yang, S	(2022)	Quantitative	This study examines the impact of the digital technology and entrepreneurial support policy on the competitive advantage of digital new ventures in China, with a particular emphasis on the interaction role between them. It also examines the roles of digital capability as a mediator and SF as a moderator
Promoting business model innovation through social media strategic capability: A moderated mediation model	Zhang, F; Zhu, L	(2022)	Quantitative	This study examines the relationship between social media strategic capability (SMSC) and BMI by focusing on the mediating role of SF and the moderating effects of top management team (TMT) heterogeneity and environmental dynamism
Strategic Flexibility in Small Firms	Sen, S; Savitskie, K; Mahto, RV; Kumar, S; Khanin, D	(2022)	Quantitative	In this paper, we argue that SMEs need to overcome resource disadvantages, leverage structural advantages, and develop new relational advantages in collaboration with partners to enhance their SF for gaining competitive advantage

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Title	Authors	Year	Methodology	Focus/aim of research
Strategic flexibility or persistence? Examining the survival path of export enterprises under COVID-19	Chen, WY; Jin, R; Xie, YCA	(2022)	Quantitative	1.) This study aims to explore which strategy is suitable for export enterprises to develop sustainably under COVID-19. It applies a survival analysis method to explore the impact of SF on export firms' survival and financial performance. Furthermore, this study uses the difference-in-difference model to test the relationship between SF and firms' profits in the context of the pandemic
Temporary business model innovation - SMEs' innovation response to the Covid-19 crisis	Clauss, T; Breier, M; Kraus, S; Durst, S; Mahto, RV	(2022)	Qualitative	This study investigates temporary BMs using a multiple case study approach based on five SMEs who within a short period of time applied their core competencies and networks to integrate new BMs, which were in some cases very different from existing ones. The research analyzes the reactions of SMEs to the Covid-19 crisis
The impact of market orientation on small firm performance: a configurational approach	Chaudhary, S; Sangroya, D; Arrigo, E; Cappiello, G	(2022)	Quantitative	This study examines the influence of market orientation on small firms' performance. It also investigates the role of SF as an organizational capability in enhancing the efficacy of the market orientation in the context of a highly competitive environment

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