

# Cover Letter

Dr. I Wayan Edi Arsawan, SE.,MM  
Department of Business Administration, Politeknik Negeri Bali  
Kampus Bukit Jimbaran, Kuta Selatan Badung Bali Indonesia

July 30<sup>th</sup>, 2022

Dear Prof. Dr. Jin Hyo Joseph Yun  
*Editor-in-Chief Journal of Open Innovation: Technology, Market, and Complexity*

We wish to submit a new manuscript entitled “**Developing Organizational Agility: Examining Complexities of Social Capital, Collaborative Knowledge Creation and Innovation**” for consideration by the Journal of Open Innovation: Technology, Market, and Complexity.

We confirm that this work is original and has not been published elsewhere nor is it currently under consideration for publication elsewhere. In this paper, we report on process of organizational agility in SMEs sector in Indonesia. This is significant finding because the research finding has filled the research gap about empirical evidence on the impact of collaborative knowledge creation on organizational agility that remained limited. In general perspectives, researchers have examined social capital and collaborative knowledge creation were considered essential drivers in maintaining competitive advantage. This paper should be of interest to readers because provided the insight and enhancing the dynamic capabilities theory and our significant findings about collaborative knowledge creation was not significantly impacted organizational agility.

Please address all correspondence concerning this manuscript to me at [wayanediarsawan@pnb.ac.id](mailto:wayanediarsawan@pnb.ac.id)  
Thank you for your consideration of this manuscript.

Sincerely,  
Dr. I Wayan Edi Arsawan



Article

# Developing Organizational Agility: Examining Complexities of Social Capital, Collaborative Knowledge Creation and Innovation

1  
2  
3  
2  
\*

1  
2  
3  
4  
5  
6  
7  
8  
9  
10

**Abstract:** Although social capital and collaborative knowledge creation were considered essential drivers in maintaining competitive advantage, empirical evidence on the impact of collaborative knowledge creation on organizational agility remained limited. Therefore, this study examined the relationship between social capital and collaborative knowledge creation in building innovation and agility and testing strategic flexibility as a moderating variable. It employed a quantitative design by distributing questionnaires to 414 managers and assistant managers of SMEs analyzed by SmartPLS -SEM. The results showed that social capital significantly affected collaborative knowledge creation, innovation, and organizational agility. Meanwhile, collaborative knowledge creation was not significantly impacted organizational agility. Furthermore, strategic flexibility was not a moderating variable of the relationship between innovation and organizational agility. Based on these findings, this study produced recommendations for managers to strengthen organizational agility

11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22

**Keywords:** social capital, collaborative knowledge creation, innovation, strategic flexibility, organizational agility

23  
24  
25

**Citation:** Lastname, F.; Lastname, F.; Lastname, F. Title. *J. Open Innov. Technol. Mark. Complex.* **2022**, *8*, x. <https://doi.org/10.3390/xxxxx>

Received: date  
Accepted: date  
Published: date

**Publisher’s Note:** MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



**Copyright:** © 2022 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

## 1. Introduction

26

Encountering market turbulence, competitor challenges, and even devastating effects of the pandemic, an organization requires the capability and agility to respond to changes, performs certain adjustments (Baškarada and Koronios, 2018), and strengthen its innovations ability (Audretsch and Belitski, 2022; Miroshnychenko et al., 2021; Yildiz and Aykanat, 2021) to maintain performance, and sustainable competitiveness (Chung et al., 2019a; Liu and Yang, 2020). Moreover, in the current Covid-19 pandemic situation, everything has become unpredictable, causing turbulence in multiple sectors. Thus, the conventional competitive strategy was no longer effective (Al-Omoush et al., 2020a). The pandemic prompted the organization to continuously innovate by maintaining good relationships with the customers (Dabić et al., 2021), optimizing available resources (Liu and Yang, 2020), and focusing on their product development (Cai et al., 2019). The managers strived to identify opportunities through innovation. However, many failed to utilize precious resources to achieve strategic competitiveness (Audretsch and Belitski, 2022). Therefore, the business organization need resistance ability by enforcing a variety of scenarios under uncertain contexts (Chan and Muthuveloo, 2020)(Baškarada and Koronios, 2018; Koçyiğit and Akkaya, 2020; Teece et al., n.d.). However, innovation was considered vital during a crisis, and how the company had laid the foundation for a resilient organization through increasing the role of innovation needed further empirical

27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44

evidence (Al-Omouh et al., 2020b) (Teixeira and Werther, 2013). Nevertheless, it was urgently needed given the intense disturbance that required anticipation and exploitation of innovation ability towards sustained competitive advantages (Belhadi et al., 2021).

The present study attempted to close research gaps as follows. First, the role of social capital and collaborative knowledge creation the turbulence caused by the pandemic remained unexplored (Al-Omouh et al., 2020b). Although social capital and collaborative knowledge creation have contributed to sustaining competitive advantages, the empirical evidence between this construct and innovation remained limited (Ganguly et al., 2019; Singh et al., 2021). Second, the previous research disregard the effect of collaborative knowledge creation on organizational agility (Al-Omouh et al., 2020b). After all, by building adequate collaborative knowledge, an organization will have the critical notion of developing dynamic capabilities (Harsch and Festing, 2020), creating a culturally resilient culture (Felipe et al., 2017), thus enduring each potential crisis scenario. Third, while strategic value from collaborative knowledge creation practice was evident, most companies could not understand how this practice can be adapted to enhance their innovation abilities in the face of crisis, especially in SMEs. Moreover, SMEs have limited resources (Özbuğday et al., 2020).

The existing literature described organizational agility as a complex construct. It can be impacted by many drivers such as organizational culture value (Felipe et al., 2017), organizational flexibility (Koçyiğit and Akkaya, 2020), collaborative knowledge creation (Chung et al., 2019a), and innovation (Al-Omouh et al., 2020b; Cai et al., 2019; Ravichandran, 2018). However, there was still a scarcity of insight into mechanism underpinning innovation that strengthens agility. Thus, the role of moderation should be considered. Furthermore, it was hoped to enrich the understanding of innovation's role in building agility. Hence, this study aimed to explore the predictor of organizational agility using a relevant variable called strategic flexibility that was not been extensively studied yet. Therefore, strategic flexibility has become the key element to making changes in organizational strategic planning so that the impact on innovation and organizational agility will be even more substantial in the future.

Motivated by the research gaps, the present study aimed to examining the nexus between social capital and collaborative knowledge creation towards innovation and organizational agility by proposing a structural equation model for SMEs in Indonesia based on three primary reasons. First, SMEs were grown exponentially with a total of 64,5 million units that potentially became the backbone of the economy (Surya et al., 2021). Therefore, it indicated the magnitude of the potential of social capital that needed to be empowered as the strength to build resilience in facing the turbulences. Second, Indonesian SMEs had a weak internal driver in a business dynamic; hence it required knowledge collaboration to improve innovation (Arsawan, Koval, et al., 2022) for the employees from the grassroots level up to the organization (Arsawan, Kariati, et al., 2022; Parwita et al., 2021). Third, SMEs need to prepare strategic flexibility when facing turbulence caused by market shifts or the pandemic (Khan, Majid, Yasir, et al., 2020; Miroshnychenko et al., 2021) so that they can survive in difficult situations (Felipe et al., 2017). The second section of the article discusses the literature and hypotheses development followed by method and result to propose a scenario and discussion about agility.

## 2. Literature Review

### 2.1 Organizational Agility and Dynamic Capabilities in SMEs

Organizational agility was the brainchild of Sherehiy et al., (2007) that was rooted in two primary concepts called adaptation (reactive) and organizational flexibility (proactive). Organizational agility reveals the ability to recognize environmental transition and counter it quickly by reshaping the resource set, business processes, and strategies (Wageeh, 2016; Žitkienė and Deksnys, 2018). In the SME sector, adapting to

change was essential to reduce resource issues for future development (Liu and Yang, 2020). Consequently, ensuing the inclusive approach bring out by previous researchers (Ahmadi and Ershadi, 2021; Al-Omoush et al., 2020b; Zhou et al., 2018), this study conceptualized organizational agility as responsive capabilities aiming for a more efficient approach in a complex environment (Panda and Rath, 2016). This approach involved rapid responses to changing situations (Walter, 2021) and the ability to predict and take the opportunity, primarily by innovation and learning (Teece et al., n.d.; Zhou et al., 2018).

Furthermore, the dynamic capabilities theory was employed to frame this study considering the recent turbulence of the business landscape. This theory was the expansion of the resource based view (Barney, 1991), which stated that the reason for the difference among organizations was their competitive advantage attributed to unique, valuable, non-replicable, non-reproducible, and non-replaceable (Barney and Barney, 2001). Dynamic capabilities theory center on the organizations's ability to respond to a constantly changing business environment. In other words, organizations must be sensitive in sensing, seizing, and shaping internal and external opportunities and threats for the purpose of the right strategic decisions and reconfigure and reuse all potential and resources (Ferreira et al., 2020; Harsch and Festing, 2020; Weaven et al., 2021). As a fact, over the past decade, dynamic managerial competencies and capabilities have resulted from the increasing quality of knowledge (Ganguly et al., 2019; Sabetzadeh and Tsui, 2015) that formed from a collaborative process that was implemented as an essential feature of the organization (Al-Shami and Rashid, 2022; Harsch and Festing, 2020; Weaven et al., 2021). Furthermore, dynamic capabilities were hard for competitors to imitate based on particular characteristics, cultural values (Teece et al., 1997), and complex imitability (Teece et al., 2009). Therefore, strong dynamic capabilities served as a solid foundation for organizational agility.

## 2.2 Social Capital and Collaborative Knowledge Creation

Previous research revealed the function of social capital in supporting knowledge management to achieve sustainable performance (Tu, 2020). The literature also explored how collaborative knowledge creation considered as a dynamic process that happens during SI between organizations and their partners (Al-Omoush et al., 2020b; Chung et al., 2019a). The social network in the organization served as a channel for transmitting and integrating knowledge, thus could optimize the role of sharing and creating dynamic ideas and new values (Ode and Ayavoo, 2020). Collaborative knowledge creation was seen as a collaborative mechanism (Calantone et al., 2002) to create and develop knowledge between partners to improve insight into changes (Zhao et al., 2020a). Collaboration described a knowledge transfer mechanism that was harmonized and unified through dynamic social interactions (Faccin and Balestrin, 2018) and thus could produce collaborative knowledge (Nonaka and von Krogh, 2009) both directly and indirectly between partners (Tu, 2020). Social capital allowed the organization to survive a crisis by pooling expertise and resources (Zhao et al., 2020b). Furthermore, (Faccin and Balestrin, 2018) revealed that collaborative knowledge creation was reflected in the knowledge of organizations that develop sustainably, resulting in adjustment to environmental changes and rapidly changing market needs. Meanwhile, social capital formed a synergistic and coordinated network that allowed the company to adopt the necessary changes swiftly by means of knowledge (Khan, Majid and Yasir, 2020a). Finally, social capital produces relational and cognitive skills, increasing organizational agility to respond to environmental changes briskly, flexibly, and structured (Ooi et al., 2017) to manage challenges, seize new opportunities, create value and ensure long-term viability(Liu et al., 2016). Based on this, the hypothesis is formulated as follows:

H1 Social capital significant to collaborative knowledge creation

H2 Social capital significant to organizational agility

### 2.3 Social capital and firm innovation

149

Social capital describes the interaction process between organizations and stakeholders that can affect the exchange of knowledge, ideas and resources among organizations (Ganguly et al., 2019). The literature showed that building strong bonds with business affiliations through social interaction dynamically affected favorable outcome in acquiring resources and capacity for innovation (Chen, Jiao, et al., 2016). Experts already highlighted that the social approaches supply a fundamental basis for describing the impact of external and internal relationships on innovation (Steinmo and Rasmussen, 2018; Tu, 2020; Yildiz and Aykanat, 2021). Moreover, social capital has been considered a vital contributor to the success of innovation (Thompson, 2018; Yeşil and Doğan, 2019) because it involves collaboration-oriented leadership behavior in the achievement of innovation (Chen, Zheng, et al., 2016). Furthermore, substantial social capital promotes efficiency and ensures the quality of knowledge flow, thereby encouraging innovation activities without agonizing about risks and barriers (Ganguly et al., 2019). Thus, interaction among organizations helped reduce knowledge limitations and updated the knowledge base, providing a high-quality source of motivation for innovation. Based on the discussion above, the hypothesis is formulated as follows:

H3 Social capital significant to firm innovation

166

### 2.4 Collaborative knowledge creation and organizational agility

167

In building organizational agility, the role of collaborative knowledge creation has not been studied extensively (Al-Omouh et al., 2020b). At the same time, organizational agility was seen as the ability to govern and apply knowledge beneficially (Bouton et al., 2021; Tu, 2020) in responding and adapting organizations to market turbulence and competition dynamics (Chen, Jiao, et al., 2016; Dung et al., 2020). In order to achieve existence, agility requires applying knowledge, idea quality and collaboration to explore new opportunities in a volatile market (Chen, Jiao, et al., 2016). Tu, (2020) claimed that the creation and dissemination of knowledge reflect the value chain of knowledge capital in building agility (Chang et al., 2021). Furthermore, organizational agility requires more dynamic learning and collaborative knowledge creation strategies than competitors (Wang and Hu, 2017) to transform this new ideas into responsive activities (Chung et al., 2019b; Koçyiğit and Akkaya, 2020; Liu and Yang, 2020). Hence, the proposed hypothesis was as follows:

H4 Collaborative knowledge creation significant to organizational agility

181

### 2.5 Innovation and organizational agility

182

Innovative and less innovative organizations differed in terms of adaptation, risk management, and perspectives on uncertainty (Ravichandran, 2018). Innovative companies focus on learning and experimentation, overcoming uncertainty, and encouraging risk-taking (Hock-Doepgen et al., 2021). In contrast, less innovative organizations are afraid of taking risks and uncertainty and tend to be weak in preparing business strategies (Teece et al., 2016). It indicated that innovative companies had an organizational climate open to new ideas that affected their ability to identify new market opportunities and products than competitors (Cai et al., 2019; Chen and Liu, 2020; Falahat et al., 2020). Thus, organizations built new business models to pool existing resources into more dynamic mobile capital (Hock-Doepgen et al., 2021). Thus, the changes brought about by innovation make organizations more agile (Cepeda and Arias-Pérez, 2019a; Ravichandran, 2018; Teece et al., 2016; Yildiz and Aykanat, 2021). Thus, we positioned:

H5 Innovation significant to organizational agility

195

### 2.6 The mediating role of collaborative knowledge creation

196

Social capital has pivotal role in transferring and integrating knowledge was vital in forming collaborative knowledge (Ode and Ayavoo, 2020) and therefore increased

198

adaptation to rapid change (Zhao et al., 2020a). This mechanism was the implementation of the interaction of all social resources (Faccin and Balestrin, 2018), which produced collaborative knowledge both directly and indirectly (Tu, 2020). In a crisis, whether due to market turbulence or other disturbances, social capital contributes to the organization's survival (Zhao et al., 2020b) and optimizes the diffusion of skills and resources (Yi et al., 2021). Moreover, collaborative knowledge creation becomes the foundation for organizations to adapt to environmental changes and dynamic markets (Faccin and Balestrin, 2018). In order to build agility, organizations need to form a coordinated network to collect ideas and turn them into knowledge (Khan, Majid, Yasir, et al., 2020). It produced relational skills that ultimately improved organizational agility, especially in responding to changes flexibly (Ooi et al., 2017). It ultimately enabled organizations to manage challenges and opportunities, also value and sustainability (Dung et al., 2020; Kamboj and Rahman, 2017; Liu et al., 2016). Predicated on the discussion above, the hypothesis was proposed as follows:

H6 collaborative knowledge creation mediates social capital and organizational agility.

### *2.7 Mediating the role of firm innovation*

The existence of social capital was as a liaison between organizations and stakeholders through the exchange of ideas, knowledge and resources (Ganguly et al., 2019). Therefore, it was necessary to develop strong ties with partners to generate resources and capabilities for innovation (Chen, Jiao, et al., 2016). Expert's findings revealed that social capital provided the foundation of the relationship between partners (Steinmo and Rasmussen, 2018; Tu, 2020; Yildiz and Aykanat, 2021) and was an essential driver of successful innovation (Thompson, 2018; Yeşil and Doğan, 2019). Furthermore, innovative organizations focused on learning and risk-taking (Hock-Doepgen et al., 2021), indicating an organizational climate that was open to new ideas (Cai et al., 2019; Chen and Liu, 2020; Falahat et al., 2020), and ultimately made the organization more agile (Cepeda and Arias-Pérez, 2019a; Ravichandran, 2018; Teece et al., 2016; Yildiz and Aykanat, 2021). Thus, innovation provided the power to face the risk of uncertainty (Teece et al., 2016) to have sustainable performance and competitive advantage (Arsawan, Koval, et al., 2022). Formulated on the discussion, the hypothesis was as follows:

H7 Innovation mediates social capital and organizational agility.

### *2.8 The moderating role of strategic flexibility*

According to dynamic capabilities (Teece et al., 1997), organizations must be sensitive to opportunities and threats to develop and configure plans and strategic decisions (Ferreira et al., 2020; Harsch and Festing, 2020; Weaven et al., 2021). Therefore, the organization must have a strategy that can adapt the organizational conditions to the changes that occur (Baškarada and Koronios, 2018). Strategic flexibility was the ability to quickly combine and reconfigure the company's stock of resources (Teece et al., 2009) and carry out the actions taken by the company in real-time (Brozovic, 2018; Teece et al., 2016). In compliance with (Gorondutse et al., 2020; Miroshnychenko et al., 2021; Yang et al., 2015a), strategic flexibility was achieved through optimizing resource flexibility. If the resource was scarce, the organization must find other resources; meanwhile, if the resource was sufficient, it allowed the company to use resources more efficiently for new purposes (Cai et al., 2019; Liu and Yang, 2020). In addition, high strategic flexibility allowed companies to build, transfer, and integrate ideas quickly and prepare new patterns according to the current situation (Xiu et al., 2017). As a result, a company with strategic flexibility can reduce response time to dynamic changes (Cingöz and Akdoğan, 2013) by creating, expanding, or modifying knowledge bases (Thomas, 2014) that enable the company to process its knowledge resources effectively, thereby increasing the value

of knowledge for organizational agility (Gorondutse et al., 2020; Yang et al., 2015b). Hence, we recommend that:

H8 Strategic flexibility positively moderates innovation and organizational agility so innovation is linked with better organizational agility in companies with high levels of strategic flexibility.

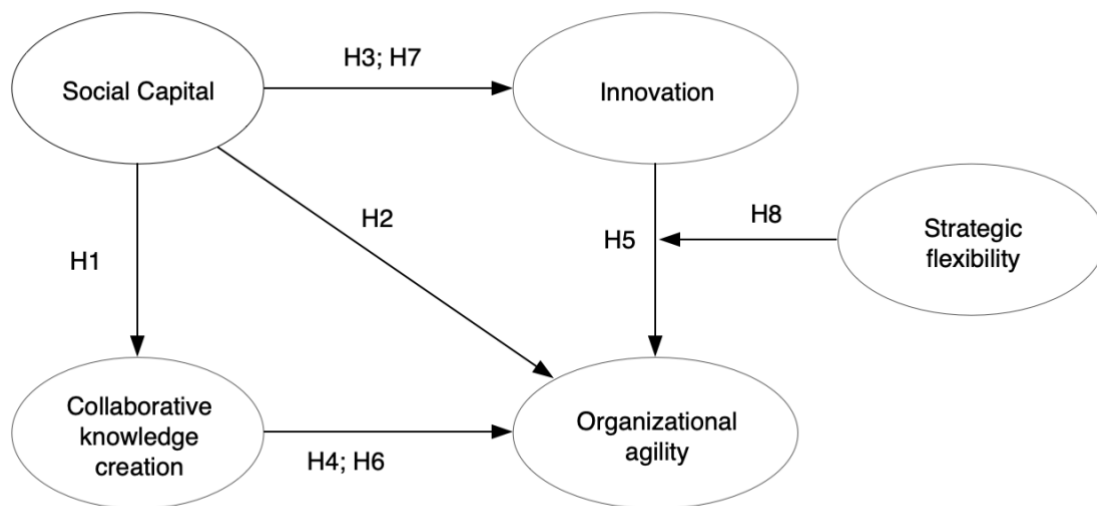


Figure 1. Conceptual framework

### 3. Methodology

#### 3.1 Data and sampling method

This study involved SMEs, which were the backbone of the Indonesian economy. In order to obtain the initial sample, we used the local government database of the Bali province to identify SMEs for research purposes. The population of this study was 450 woodcraft SMEs in Bali Province, Indonesia. Accordingly, the sample was determined by a simple random sampling method called the lottery method, meaning that each member of the population received the same opportunity as the sample once. The formula determined the total number of sample frames (Krejcie and Morgan, 1970); hence 207 SMEs were asked to complete the research questionnaire. Research respondents were managers and assistant managers as the ideal targets as they have a strategic view of organizational characteristics related to organizational practices. The data was collected for 6 months from February to July 2022 via email, Google Forms, and the direct visit by first sending a prior email notification regarding this study. We obtained a total of 414 responses which can be analyzed to achieve the objectives of this study.

#### 3.2 Measurements

Since previous studies had evaluated the construct variables used for this study, the construct measurement was adopted from the existing literature. Social capital was measured by 5 indicators adopted from (Al-Omouh et al., 2020b; Hayton, 2005; Liu et al., 2016). collaborative knowledge creation was measured by 8 indicators adopted from (Al-Omouh et al., 2020b; Chen, Jiao, et al., 2016; Faccin and Balestrin, 2018; Nonaka and Takeuchi, 1995). Firm innovation had 10 indicators adopted from studies by (Calantone et al., 2002; Ngo and O’Cass, 2009; Ode and Ayavoo, 2020). Organizational agility was measured by 5 indicators adopted from (Al-Omouh et al., 2020b; Nafei, 2016; Preston et

al., 2008). Lastly, strategic flexibility with 6 indicators adopted from (Brozovic, 2018; Miroshnychenko et al., 2021).

To evaluate the constructs, we employed A 7-point Likert scale ranging from “1: strongly disagree to 7: strongly agree”. For ensuring clarity of instructions and statements, the questionnaire written in the Indonesian language was piloted on 30 SME managers who were experienced in corporate strategic planning. This process caused minor changes to the wording of instructions and questions of the questionnaire.

**Table 1.** Constructs measurement

Variable	Sources
Social capital	(Al-Omoush et al., 2020b; Hayton, 2005; Liu et al., 2016)
Collaborative knowledge creation	(Al-Omoush et al., 2020b; Chen, Jiao, et al., 2016; Faccin and Balestrin, 2018; Nonaka and Takeuchi, 1995)
Firm innovation	(Calantone et al., 2002; Ngo and O’Cass, 2009; Ode and Ayavoo, 2020)
Organizational agility	(Al-Omoush et al., 2020b; Nafei, 2016; Preston et al., 2008)
Strategic flexibility	(Brozovic, 2018; Miroshnychenko et al., 2021)

This present study employed partial least square based on variance (PLS-SEM) to estimate the proposed organizational agility model and assess the relationship between variables, either directly or indirectly. For this purpose, this study employed the SmartPLS 3.2.8 software. In order to evaluate the validity and reliability of the construct variables, as recommended by (Hair et al., 2016), this study evaluated the measurement model. Furthermore, to test the hypothesis about the relationship between variables, this study assessed the structural model. Since the research objective was to validate the theory of dynamic capabilities in building organizational agility models, using SEM-PLS was acceptable (Hair Jr et al., 2017).

**4. Results**

*4.1 Respondent Profile*

Table 2 showed the demographic outline of the sample. It showed that the respondents mostly had a higher education background. It was one of the critical pillars of how managers earned quality knowledge (Ganguly et al., 2019; Zhang et al., 2019) to develop plans and strategies for dealing with various turbulences (Thomas, 2014).

**Table 2.** Demographical facts

Description		Frequency	Percentage (%)
Age	<25	35	8,5
	25-30	142	34,3
	31-35	135	32,6
	36-40	79	19,1
	41-45	23	5,5
Gender	Male	239	57,7
	Female	175	42,3
Education	Bachelor	277	66,9
	Master	126	30,4



	Doctor	11	2,7
Experiences	<5	2	0,5
	6-10	181	43,7
	11-15	129	31,2
	16-20	102	24,6

306

307

308

309

310

311

312

313

314

315

316

**The assessment of the measurement model**

Table 3. showed that all indicators had a loading factor value higher than 0,6. Furthermore, the CR value was more than 0,7, while the AVE value was more than the recommended level of 0,5. Furthermore, data analysis determined that the square root value of AVE was more than the construct correlation value, indicating that the discriminant validity requirement was met. These indicators showed that the validity and construct reliability requirements were met (Hair Jr et al., 2017). Furthermore, the value of VIF was between 1.437- 4.468 (smaller than the recommended level of 5), indicating did not exhibit any issues connected to the variance of the general method (Hair et al., 2016).

**Table 3.** Measurement MIs

Indicators	Loading**	CR	AVE
Social capital		0.928	0.725
1. Social networks enhance the opportunities, ideas and insights	0.940		
2. Bond connections and collective with partners	0.904		
3. Partners actively involved in decision making	0.935		
4. Social networks’ feedback and recommendations.	0.752		
5. Social networks influence processes, products, and services	0.696		
Collaborative knowledge creation		0.911	0.564
1. Getting novel ideas and technologies	0.691		
2. Collaborating with partners to gain new knowledge	0.639		
3. Launching and exchanging creative ideas	0.626		
4. Sharing repositories of knowledge and best practices	0.862		
5. Reconfiguring new knowledge.	0.783		
6. Sharing new values and thoughts	0.757		
7. Collaborative learning experiments	0.788		
8. Strengthening knowledge and experience transfer	0.831		
Firm innovation		0.932	0.582
1. Developing new products using available of resources	0.830		
2. The company pursues up to date strategy to do things	0.775		
3. Respond to activities that involves technology	0.775		
4. Availability of knowledge to develop new products	0.718		
5. Company continually explores new ideas	0.634		
6. Competency to process technologies	0.692		
7. The company’s creativity in its methods of operation	0.817		
8. Adopting the products and processing technologies to accomplish future needs	0.834		

9. Company often sells its new products and services	0.836		
10. The perception about innovation as something risky and resisted	0.687		
Organizational Agility		0.921	0.701
1. The opportunities produced by the crisis is pursued	0.732		
2. Recognizing dynamic environmental transition	0.835		
3. Improvement in terms of the agility of decision making	0.849		
4. Adaption for resources to accomodating the changing environment	0.911		
5. New strategies were taken into consideration.	0.849		
Strategic flexibility		0.919	0.657
1. If there is change of circumstances, our organization can adjust its current plans effortlessly	0.888		
2. If there is change of circumstances, our organization is well-prepared to act accordingly	0.888		
3. If there is change of circumstances, organization can adjust the strategy changes	0.898		
4. If there is change of circumstances, organization has the required competency to modify daily routines and practices	0.723		
5. If there is change of circumstances, our organization can generate a new project proactively	0.737		
6. If there is change of circumstances, our organization can prioritize projects with the highest likelihood to succeed	0.702		

4.2 Structural Model Testing

This study applied the bootstrap method with 5000 samples to evaluate the significance of the indicators and path coefficients (Chin, 2010). The results showed that the goodness-of-fit (GoF) model had a value of 0,675, which indicated that the fitness model was significant. In conclusion, these findings indicated that the proposed organizational agility model could be applied to the woodcraft SME sector. In addition, testing on the standard residual root mean square (SRMR) dan normed fit index (NFI) showed that the SRMR value was 0,086, while the NFI was 0,687, indicating that the model was fit (Tenenhaus et al., 2005). Furthermore, the examination of R2 revealed that social capital, collaborative knowledge creation, and innovation described a 0,295 (29,5%) variance in organizational agility. Finally, all Q2 had positive values, which indicated that all variables had good relevance predictions (Chin, 2010).

4.3 Hypotheses Testing

The analysis results showed that 4 of the 5 hypotheses of the direct relationship were confirmed (Table 4.). The relationship between social capital dan collaborative knowledge creation was significant ( $\beta = 0.442$ , STDEV 0.054, T Statistik 8.323>1.96); hence hypothesis 1 was accepted. The relationship between social capital and organizational agility was significant ( $\beta = 0.198$ , STDEV 0.058, T Statistic 3.413>1,96); hence hypothesis 2 was accepted. The relationship between social capital and innovation was significant ( $\beta = 0.534$ , STDEV 0.047, T Statistic 11.287>1,96); hence hypothesis 3 was accepted. The relationship between collaborative knowledge creation and organizational agility was not significant ( $\beta = 0.062$ , STDEV 0,053, T Statistic 1.177<1,96); hence hypothesis 4 was rejected.

Lastly, the direct relationship between innovation and organizational agility was significant ( $\beta = 0.375$ , STDEV 0,054, T Statistic 7.012>1,96); hence hypothesis 5 was accepted.

**Table 4.** Path Coefficients

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	P Values	Decision
SC -> Collaborative Knowledge Creation	0,442	0,446	0,054	8,232	0,000	Sig
SC -> Org Agility	0,198	0,194	0,058	3,413	0,001	Sig
SC -> Firm Innovation	0,534	0,535	0,047	11,287	0,000	Sig
Collaborative Knowledge Creation -> Org Agility	0,062	0,059	0,053	1,177	0,240	Non-sig
Firm Innovation -> Org Agility	0,375	0,376	0,054	7,012	0,000	sig

*4.4 Mediation Testing*

Following the identification of the direct relationship between variables, the next stage was to test the positions of mediating variable. In this study, we tested two mediation pathways. According to (Hair Jr et al., 2017), the method used was to measure the VAF value < 0,20, meaning that mediation was not found, while 0,20-0,80 indicates partial and VAF value > 0,80, meaning that there was full mediation. In order to test the mediating effect of the model, non-parametric bootstrap was used (Hair et al., 2016). Finally, the variance accounted for (VAF) was calculated to obtain the indirect link and total sizes. When the VAF was greater than 80%, it indicated full mediation; between 20 to 80% were partial; below 20% indicated no mediating effect (Hair et al., 2016). Furthermore, the results were presented in Table 5.

**Table 5.** Mediation Analysis

Link*	Mediator*	Independent Variable-Mediator	Mediator-Dependent Variable	Direct	Indirect	Total effect	VAF (%)	Decision
SC-OA	CKC	0.442	0.062	0.198	0.274	0.472	0.581	Partial mediation
SC-OA	INNOV	0.534	0.375	0.198	0.200	0.398	0.503	Partial mediation

The role of mediation in the causal relationship between social capital, collaborative knowledge creation, and organizational agility, along with social capital, innovation, and organizational agility, was examined using the VAF test. Because this study examined two mediation pathways, we assumed that collaborative knowledge creation partially mediates the relationship between social capital and organizational agility, where the VAF value was 58,1%, indicating that hypothesis 6 was accepted. Furthermore, innovation

partially mediated the relationship between social capital and organizational agility with a VAF value of 50,3%, indicating that hypothesis 7 was accepted.

Finally, we analyzed the MV in this research model. Multigroup analysis using PLS examined the moderating role of strategic flexibility (Henseler and Fassott, 2010). However, the analysis showed that strategic flexibility did not mediate the relationship between innovation and organizational agility ( $\beta = 0,084$ , STDEV 0,044, T Statistic 1.912<1,96, PV 0,056); hence hypothesis 8 was rejected. The analysis results were presented in Table 6. and Figure 2.

Table 6. Moderating testing

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	P Values	Decision
Firm_in*Strategic Flex -> Org Agility	0,084	0,086	0,044	1,912	0,056	Non-sig

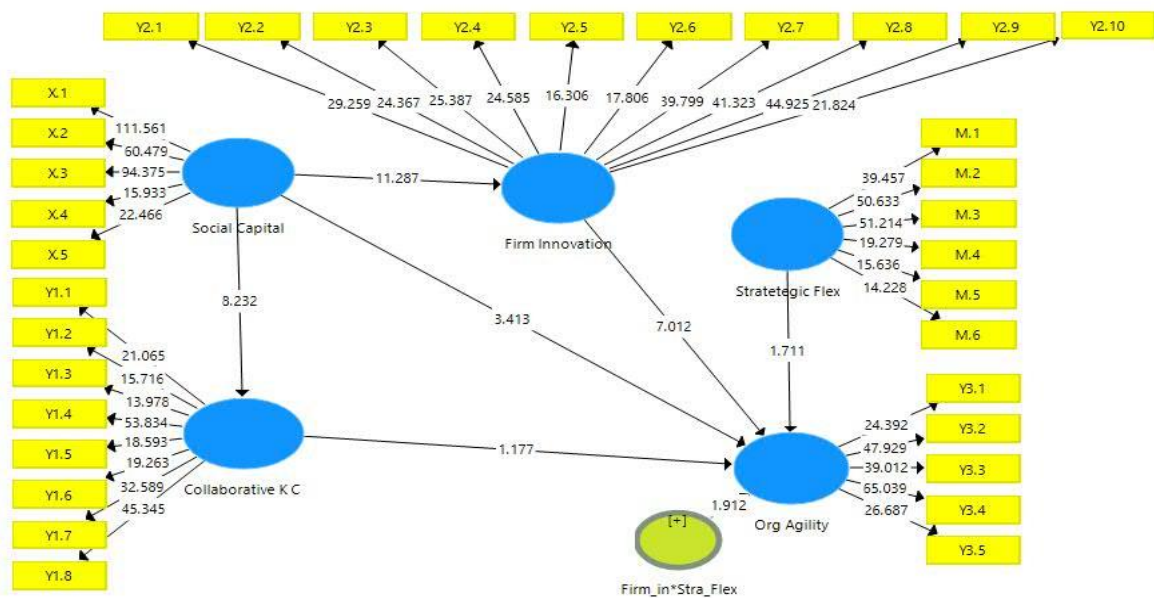


Figure 2. Output Analysis

### 5. Discussion

This study examined the factors that affect organizational agility and strategic flexibility in anticipating the turbulence and challenges of globalization. Using PLS-SEM analysis, this study revealed that organizational agility was significantly influenced by innovation followed by social capital. These results validated previous research in the context of SMEs by (Ganguly et al., 2019; Singh et al., 2021), which found the critical role of social capital in building innovation. Furthermore, these results implied that social capital was essential in building knowledge collaboration that led to innovation capabilities, further enhancing organizational agility. This finding strengthened previous research on organizational efforts, especially SMEs, in improving organizational agility (Al-Omoush et al., 2020b; Cepeda and Arias-Pérez, 2019b; Chung et al., 2019b; Ravichandran, 2018).

Contrary to what was expected, collaborative knowledge creation did not significantly affect organizational agility. This result contradicted the study conducted by

(Al-Omouh et al., 2020b), which found that collaborative knowledge creation was an essential driver in building organizational agility because knowledge was the principal capital in building agility (Cegarra-Navarro and Martelo-Landroguez, 2020; Panda and Rath, 2021). Therefore, a possible explanation for the insignificant effect of collaborative knowledge creation on organizational agility could be that SMEs were still not open to building collaborative knowledge. SMEs viewed knowledge as exclusive capital and were unwilling to share it, fearing that it could increase the competitiveness of the competitors (Arain et al., 2019). Furthermore, strategic flexibility was not a MV of the relationship between innovation and organizational agility. This result was contrary to a study conducted by Nassani and Aldakhil, (2021) that strategic flexibility strengthened the strategic orientation of SMEs. A possible explanation was that woodcraft SMEs already had agility because they had unique, distinctive products that competitors could not imitate. Furthermore, they could anticipate and seize opportunities when the market appetite changes (Yildiz and Aykanat, 2021). These findings also refuted the statement from Özbuğday et al., (2020) that SMEs had limited resources. Instead, SMEs could anticipate and seize opportunities and reconfigure their resource sets, business processes, strategies, and innovations (Wageeh, 2016; Žitkienė and Deksnys, 2018) Walter, 2021).

The present study contributed to enhanced the literature on organizational agility and DC theory in four main elements. First, this study proposed and examined an integrated model of supporting social capital, collaborative knowledge creation, and innovation in woodcraft SMEs, where the combination of these three drivers was the key to building organizational agility. It turned out that the organizational agility model had good compatibility and explanatory power. Thus, it confirmed that social capital, collaborative knowledge creation, and innovation were generally accepted (Al-Omouh et al., 2020b), especially in the SME sector (Khan, Majid and Yasir, 2020b). More specifically, social capital played a vital role in increasing collaborative knowledge creation and innovation and encouraging SMEs to increase agility to face challenges and turbulences. The results proved that social capital and collaborative knowledge creation were the basis for forming innovations that ultimately made SMEs more agile. Furthermore, this study assessed organizational agility by integrating social capital into the organizational agility model. The results of analysis showed that the organizational agility integration model for SMEs was fit. In addition, the inclusion of innovation in the organizational agility model increased its explanatory power. Conceptually, the results of this study strengthened the social capital - organizational agility model (Al-Omouh et al., 2020b) in the SME sector. This finding showed that in SMEs, social capital and collaborative knowledge creation could simultaneously strengthen the influence of innovation on organizational agility. Thus, the organizational agility model in the context of SMEs was conceptually extended to the social capital -innovation- organizational agility model. Furthermore, these findings provided further evidence for the conclusions of previous studies (Cepeda and Arias-Pérez, 2019a; Dabić et al., 2021; Yıldiz and Aykanat, 2021), which claimed that innovation was an essential determinant of organizational agility.

Second, this study revealed that collaborative knowledge creation and innovation mediated the relationship between social capital and organizational agility. Although the mediation relationships tested were significant, the relationship between social capital, collaborative knowledge creation, and organizational agility had a greater value. These results proved that SMEs were highly focused on establishing practical collaborative knowledge (Cegarra-Navarro and Martelo-Landroguez, 2020; Haider and Kayani, 2021) to develop potential and quality knowledge (Ganguly et al., 2019). Furthermore, managers' involvement was required in knowledge-sharing practices (Arsawan, Kariati, et al., 2022) to generate knowledge capability (Mao et al., 2015) and knowledge application (Cegarra-Navarro and Martelo-Landroguez, 2020; Ode and Ayavoo, 2020). Therefore, SMEs must take notice of knowledge and prioritize it for organizational sustainability, productivity improvement, innovation, and competitiveness.

Third, organizational agility was an interesting topic for researchers, policymakers, and practitioners, but the existing literature on how Indonesian SMEs can build agility, especially in a crisis, was not comprehensive yet. Most relevant research focused on European countries, while this study contributed to the organizational agility literature in developing countries. The results showed that social capital and innovation affected organizational agility. Furthermore, it was the first study to link social capital, collaborative knowledge creation, and innovation as antecedents of organizational agility when it was majorly studied in developed countries such as Germany (Harsch and Festing, 2020), Taiwan (Liu and Yang, 2020), dan Spain (Felipe et al., 2017).

Fourth, this study increased insights into dynamic capabilities related to the ability of SMEs to respond to the rapidly changing business environment. The results showed that social capital was the key element of dynamic capabilities used for capturing new opportunities through strengthening collaborative knowledge creation to improve managerial competence (Teece et al., 2016), designing and improving business models innovation to build organizational agility (Ahmadi and Ershadi, 2021; Teece et al., n.d.; Wageeh, 2016). Notably, social capital triggers the emergence of collaborative knowledge creation in SMEs, which positively affect the emergence of innovation. Furthermore, from the perspective of dynamic capabilities, the results showed the importance of integrating these drivers into a competitive advantage (Ferreira et al., 2020) because the better performance was a combination and interaction between knowledge resources and their capabilities (Teece et al., 2009; Weaven et al., 2021). Finally, this study showed the urgency of organizational agility as a performance evaluation measure in countering to turbulence and other similar pandemics (Al-Omouh et al., 2020a). This evaluation helped to gain new theoretical insights to investigate advanced knowledge about the value of collaborative knowledge creation and innovation to anticipate risks due to turbulence.

#### Managerial Implications

In managerial implication, this research provided insight into three elements. First, understanding the critical role of social capital and collaborative knowledge creation in attaining innovation and its impact on organizational agility provides managers with valuable insight into governing severe turbulence. Achieving innovation required investing in social capital and collaborative knowledge creation to answer the crisis. Managers had to realize that abundant and measurable quality of collaborative knowledge enabled the development of innovation in both products, processes, and methods to strengthen innovation capabilities. Second, the organization had to provide a robust mechanism for building ties, social networks, and collaboration with all stakeholders (such as suppliers, business partners, government, and even competitors) who offered renewable knowledge resources to sense and seize the opportunities that enabled innovation under an unprecedented and highly volatile environment. Eventually, the research model presented a paradigm for achieving organizational agility that guides organizations on the implementation to thriving social capital, collaborative knowledge creation, and high cruising range on the ability of innovation to overcome challenges and turbulence.

#### Limitations and Future Study

Although the present study provided theoretical and managerial contributions, this study had several limitations that are worth examining and urges for research in the future. First, this present study was conducted while the pandemic was still occurring in Indonesia, but the world began to accept and make peace with Covid-19. Undeniably at this point, mobility was still limited by rules such as regional lockdowns and health protocols. Under these conditions, collecting a large sample of data was difficult, especially from SMEs in Indonesia. Therefore, the discoveries of the present study cannot be generalized conclusively to different industries or countries. Consequently, the research model in the present study should be assessed in further studies, targeting a

substantial amount of sample from different sectors, countries, and regions to authenticate these results. Second, the measurement of the variables in the present study was chosen at the enterprise level, while the development of capabilities and the realization of increased agility began at the level of individual business processes in different departments or units. Therefore, future research can be completed at the individual or team level within the organization.

**Author Contributions:** Conceptualization, I.W.E.A. and D.S.; methodology, I.W.E.A.; software, N.K.D.H.; validation, I.W.E.A., D.S. and V.K.; formal analysis, I.M.D.A.S.A.; investigation, N.K.D.H.; resources, I.W.E.A.; data curation, N.K.D.H.; writing—original draft preparation, I.W.E.A.; writing—review and editing, D.S.; visualization, V.K.; supervision, D.S.; project administration, N.K.D.H.; funding acquisition, I.W.E.A.

**Funding:** Thank you to the Ministry of Education and Cultural, Research Technology and Higher Education of the Republic of Indonesia, Directorate of Research and Community Service (DRPTM) for the year of 2022 research grant No. 085/SPK/D4/PPK.01.APTV/VII/2022 and 3163/PL8/PG/2022.

**Institutional Review Board Statement:** Not applicable.

**Informed Consent Statement:** Not applicable.

**Data Availability Statement:** Not applicable.

**Conflicts of Interest:** The authors declare no conflict of interest.

## References

- Ahmadi, S. and Ershadi, M.J. (2021), "Investigating the role of social networking technology on the organizational agility: a structural equation modeling approach", *Journal of Advances in Management Research*, Emerald Group Holdings Ltd., Vol. 18 No. 4, pp. 568–584.
- Al-Omoush, K.S., Simón-Moya, V. and Sendra-García, J. (2020a), "The impact of social capital and collaborative knowledge creation on e-business proactiveness and organizational agility in responding to the COVID-19 crisis", *Journal of Innovation and Knowledge*, Elsevier B.V., Vol. 5 No. 4, pp. 279–288.
- Al-Omoush, K.S., Simón-Moya, V. and Sendra-García, J. (2020b), "The impact of social capital and collaborative knowledge creation on e-business proactiveness and organizational agility in responding to the COVID-19 crisis", *Journal of Innovation and Knowledge*, Elsevier B.V., Vol. 5 No. 4, pp. 279–288.
- Al-Shami, S. and Rashid, N. (2022), "A holistic model of dynamic capabilities and environment management system towards eco-product innovation and sustainability in automobile firms", *Journal of Business and Industrial Marketing*, Vol. 37 No. 2, pp. 402–416.
- Arain, G.A., Bhatti, Z.A., Hameed, I. and Fang, Y.H. (2019), "Top-down knowledge hiding and innovative work behavior (IWB): a three-way moderated-mediation analysis of self-efficacy and local/foreign status", *Journal of Knowledge Management*, Vol. 24 No. 2, pp. 127–149.
- Arsawan, I.W.E., Kariati, N.M., Shchokina, Y., Prayustika, P.A., Rustiarini, N.W. and Koval, V. (2022), "INVIGORATING EMPLOYEE ' S INNOVATIVE WORK BEHAVIOR : EXPLORING THE SEQUENTIAL MEDIATING ROLE OF ORGANIZATIONAL COMMITMENT AND KNOWLEDGE SHARING", Vol. 23 No. 1, pp. 117–130.
- Arsawan, I.W.E., Koval, V., Rajjani, I., Rustiarini, N.W., Supartha, W.G. and Suryantini, N.P.S. (2022), "Leveraging knowledge sharing and innovation culture into SMEs sustainable competitive advantage", *International Journal of Productivity and Performance Management*, Emerald Publishing Limited, Vol. 71 No. 2, pp. 405–428.
- Audretsch, B.D. and Belitski, M. (2022), "The limits to open innovation and its impact on innovation performance", *Technovation*, Elsevier BV, p. 102519.

9. Barney, J. (1991), "Firm Resources and Sustained Competitive Advantage", *Journal of Management*, Vol. 17 No. 1, pp. 99–120. 538  
539
10. Barney, J.B. and Barney, J.B. (2001), "year retrospective on the resource-based view", available 540  
at:<https://doi.org/10.1177/014920630102700602>. 541
11. Baškarada, S. and Koronios, A. (2018), "The 5S organizational agility framework: a dynamic capabilities perspective", 542  
*International Journal of Organizational Analysis*, Emerald Group Publishing Ltd., Vol. 26 No. 2, pp. 331–342. 543
12. Belhadi, A., Mani, V., Kamble, S.S., Khan, S.A.R. and Verma, S. (2021), "Artificial intelligence-driven innovation for 544  
enhancing supply chain resilience and performance under the effect of supply chain dynamism: an empirical 545  
investigation", *Annals of Operations Research*, available at:<https://doi.org/10.1007/s10479-021-03956-x>. 546
13. Bouton, E., Tal, S.B. and Asterhan, C.S.C. (2021), "Students, social network technology and learning in higher education: 547  
Visions of collaborative knowledge construction vs. the reality of knowledge sharing", *The Internet and Higher Education*, 548  
Vol. 49, p. 100787. 549
14. Brozovic, D. (2018), "Strategic Flexibility: A Review of the Literature", *International Journal of Management Reviews*, Vol. 20 550  
No. 1, available at:<https://doi.org/10.1111/ijmr.12111>. 551
15. Cai, Z., Liu, H., Huang, Q. and Liang, L. (2019), "Developing organizational agility in product innovation: the roles of IT 552  
capability, KM capability, and innovative climate", *R and D Management*, Blackwell Publishing Ltd, Vol. 49 No. 4, pp. 421– 553  
438. 554
16. Calantone, R.J., Cavusgil, S.T. and Zhao, Y. (2002), "Learning orientation, firm innovation capability, and firm 555  
performance", *Industrial Marketing Management*, Vol. 31 No. 6, available at:[https://doi.org/10.1016/S0019-8501\(01\)00203-6](https://doi.org/10.1016/S0019-8501(01)00203-6). 556
17. Cegarra-Navarro, J.G. and Martelo-Landroguez, S. (2020), "The effect of organizational memory on organizational agility: 557  
Testing the role of counter-knowledge and knowledge application", *Journal of Intellectual Capital*, Emerald Group Holdings 558  
Ltd., Vol. 21 No. 3, pp. 459–479. 559
18. Cepeda, J. and Arias-Pérez, J. (2019a), "Information technology capabilities and organizational agility: The mediating 560  
effects of open innovation capabilities", *Multinational Business Review*, Emerald Group Holdings Ltd., Vol. 27 No. 2, pp. 561  
198–216. 562
19. Cepeda, J. and Arias-Pérez, J. (2019b), "Information technology capabilities and organizational agility: The mediating 563  
effects of open innovation capabilities", *Multinational Business Review*, Emerald Group Holdings Ltd., Vol. 27 No. 2, pp. 564  
198–216. 565
20. Chan, J.I.L. and Muthuveloo, R. (2020), "Vital organisational capabilities for strategic agility: an empirical study", *Asia- 566  
Pacific Journal of Business Administration*, Emerald Group Holdings Ltd., Vol. 12 No. 3–4, pp. 223–236. 567
21. Chang, F., Zhou, G., Zhang, C., Ding, K., Cheng, W. and Chang, F. (2021), "A maintenance decision-making oriented 568  
collaborative cross-organization knowledge sharing blockchain network for complex multi-component systems", *Journal 569  
of Cleaner Production*, Vol. 282, p. 124541. 570
22. Chen, J. and Liu, L. (2020), "Customer participation, and green product innovation in SMEs: The mediating role of 571  
opportunity recognition and exploitation", *Journal of Business Research*, Vol. 119, pp. 151–162. 572
23. Chen, L., Zheng, W., Yang, B. and Bai, S. (2016), "Transformational leadership, social capital and organizational 573  
innovation", *Leadership and Organization Development Journal*, Vol. 37 No. 7, available at:[https://doi.org/10.1108/LODJ-07- 574  
2015-0157](https://doi.org/10.1108/LODJ-07-2015-0157). 575
24. Chen, W., Jiao, H., Zeng, Q. and Wu, J. (2016), "Ios-enabled collaborative knowledge creation and supply chain flexibility: 576  
The moderate role of market uncertainty", *Pacific Asia Conference on Information Systems, PACIS 2016 - Proceedings*. 577
25. Chin, W.W. (2010), "How to Write Up and Report PLS Analyses", *Handbook of Partial Least Squares*, pp. 655–690. 578



26. Chung, T.-T., Liang, T.-P., Peng, C.-H., Chen, D.-N. and Sharma, P. (2019a), "Knowledge Creation and Organizational Performance: Moderating and Mediating Processes from an Organizational Agility Perspective", *AIS Transactions on Human-Computer Interaction*, pp. 79–106. 579  
580  
581
27. Chung, T.-T., Liang, T.-P., Peng, C.-H., Chen, D.-N. and Sharma, P. (2019b), "Knowledge Creation and Organizational Performance: Moderating and Mediating Processes from an Organizational Agility Perspective", *AIS Transactions on Human-Computer Interaction*, pp. 79–106. 582  
583  
584
28. Cingöz, A. and Akdoğan, A.A. (2013), "Strategic Flexibility, Environmental Dynamism, and Innovation Performance: An Empirical Study", *Procedia - Social and Behavioral Sciences*, Elsevier BV, Vol. 99, pp. 582–589. 585  
586
29. Dabić, M., Stojčić, N., Simić, M., Potocan, V., Slavković, M. and Nedelko, Z. (2021), "Intellectual agility and innovation in micro and small businesses: The mediating role of entrepreneurial leadership", *Journal of Business Research*, Elsevier Inc., Vol. 123, pp. 683–695. 587  
588  
589
30. Dung, T.Q., Bonney, L.B., Adhikari, R.P. and Miles, M.P. (2020), "Entrepreneurial orientation, knowledge acquisition and collaborative performance in agri-food value-chains in emerging markets", *Supply Chain Management*, Vol. 25 No. 5, pp. 521–533. 590  
591  
592
31. Faccin, K. and Balestrin, A. (2018), "The dynamics of collaborative practices for knowledge creation in joint R&D projects", *Journal of Engineering and Technology Management - JET-M*, Elsevier B.V., Vol. 48, pp. 28–43. 593  
594
32. Falahat, M., Ramayah, T., Soto-Acosta, P. and Lee, Y.Y. (2020), "SMEs internationalization: The role of product innovation, market intelligence, pricing and marketing communication capabilities as drivers of SMEs' international performance", *Technological Forecasting and Social Change*, Elsevier, Vol. 152 No. January, p. 119908. 595  
596  
597
33. Felipe, C.M., Roldán, J.L. and Leal-Rodríguez, A.L. (2017), "Impact of organizational culture values on organizational agility", *Sustainability (Switzerland)*, MDPI, Vol. 9 No. 12, available at:<https://doi.org/10.3390/su9122354>. 598  
599
34. Ferreira, J., Coelho, A. and Moutinho, L. (2020), "Dynamic capabilities, creativity and innovation capability and their impact on competitive advantage and firm performance: The moderating role of entrepreneurial orientation", *Technovation*, Elsevier Ltd, Vol. 92–93 No. July, pp. 0–1. 600  
601  
602
35. Ganguly, A., Talukdar, A. and Chatterjee, D. (2019), *Evaluating the Role of Social Capital, Tacit Knowledge Sharing, Knowledge Quality and Reciprocity in Determining Innovation Capability of an Organization*, *Journal of Knowledge Management*, Vol. 23, available at:<https://doi.org/10.1108/JKM-03-2018-0190>. 603  
604  
605
36. Gorodutse, A.H., Arshad, D. and Alshuaibi, A.S. (2020), "Driving sustainability in SMEs' performance: the effect of strategic flexibility", *Journal of Strategy and Management*, Emerald Publishing Limited. 606  
607
37. Haider, S.A. and Kayani, U.N. (2021), "The impact of customer knowledge management capability on project performance-mediating role of strategic agility", *Journal of Knowledge Management*, Emerald Group Holdings Ltd., Vol. 25 No. 2, pp. 298–312. 608  
609  
610
38. Hair, J.F., Hult, G., Tomas, M., Ringle, C.M. and Sarstedt, M. (2016), *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*, Sage publications. 611  
612
39. Hair Jr, J.F., Matthews, L.M., Matthews, R.L. and Sarstedt, M. (2017), "PLS-SEM or CB-SEM: updated guidelines on which method to use", *International Journal of Multivariate Data Analysis*, Inderscience Publishers (IEL), Vol. 1 No. 2, pp. 107–123. 613  
614
40. Harsch, K. and Festing, M. (2020), "Dynamic talent management capabilities and organizational agility – A qualitative exploration", *Human Resource Management*, Wiley-Liss Inc., Vol. 59 No. 1, pp. 43–61. 615  
616
41. Hayton, J.C. (2005), "Competing in the new economy: The effect of intellectual capital on corporate entrepreneurship in high-technology new ventures", *R and D Management*, Vol. 35 No. 2, available at:<https://doi.org/10.1111/j.1467-9310.2005.00379.x>. 617  
618  
619

42. Henseler, J. and Fassott, G. (2010), "Testing moderating effects in PLS path models: An illustration of available procedures", *Handbook of Partial Least Squares*, Springer, pp. 713–735. 620  
621
43. Hock-Doepgen, M., Clauss, T., Kraus, S. and Cheng, C.F. (2021), "Knowledge management capabilities and organizational risk-taking for business model innovation in SMEs", *Journal of Business Research*, Elsevier Inc., Vol. 130 No. January 2020, pp. 683–697. 622  
623  
624
44. Kamboj, S. and Rahman, Z. (2017), "Market orientation, marketing capabilities and sustainable innovation: The mediating role of sustainable consumption and competitive advantage", *Management Research Review*, Vol. 40 No. 6, pp. 698–724. 625  
626
45. Khan, S.H., Majid, A. and Yasir, M. (2020a), "Strategic renewal of SMEs: the impact of social capital, strategic agility and absorptive capacity", *Management Decision*, Emerald Group Holdings Ltd., Vol. 59 No. 8, pp. 1877–1894. 627  
628
46. Khan, S.H., Majid, A. and Yasir, M. (2020b), "Strategic renewal of SMEs: the impact of social capital, strategic agility and absorptive capacity", *Management Decision*, Emerald Group Holdings Ltd., Vol. 59 No. 8, pp. 1877–1894. 629  
630
47. Khan, S.H., Majid, A., Yasir, M., Javed, A. and Shah, H.A. (2020), "The role of social capital in augmenting strategic renewal of SMEs: does entrepreneurial orientation and organizational flexibility really matter?", *World Journal of Entrepreneurship, Management and Sustainable Development*, Emerald Group Holdings Ltd., Vol. 17 No. 2, pp. 227–245. 631  
632  
633
48. Koçyiğit, Y. and Akkaya, B. (2020), "The Role of Organizational Flexibility in Organizational Agility: A Research on SMEs", *Business Management and Strategy*, Macrothink Institute, Inc., Vol. 11 No. 1, p. 110. 634  
635
49. Krejcie, R. V and Morgan, D.W. (1970), "Determining sample size for research activities", *Educational and Psychological Measurement*, Vol. 30 No. 3, pp. 607–610. 636  
637
50. Liu, H., Ke, W., Wei, K.K. and Lu, Y. (2016), "The effects of social capital on firm substantive and symbolic performance: In the context of E-business", *Journal of Global Information Management*, Vol. 24 No. 1, available at:<https://doi.org/10.4018/JGIM.2016010104>. 638  
639  
640
51. Liu, H.M. and Yang, H.F. (2020), "Network resource meets organizational agility: Creating an idiosyncratic competitive advantage for SMEs", *Management Decision*, Emerald Group Holdings Ltd., Vol. 58 No. 1, pp. 58–75. 641  
642
52. Mao, H., Liu, S. and Zhang, J. (2015), "How the effects of IT and knowledge capability on organizational agility are contingent on environmental uncertainty and information intensity", *Information Development*, SAGE Publications Ltd, Vol. 31 No. 4, pp. 358–382. 643  
644  
645
53. Miroshnychenko, I., Strobl, A., Matzler, K. and de Massis, A. (2021), "Absorptive capacity, strategic flexibility, and business model innovation: Empirical evidence from Italian SMEs", *Journal of Business Research*, Elsevier Inc., Vol. 130, pp. 670–682. 646  
647  
648
54. Nafei, W.A. (2016), "The Role of Organizational Agility in Reinforcing Job Engagement: A Study on Industrial Companies in Egypt", *International Business Research*, Vol. 9 No. 2, available at:<https://doi.org/10.5539/ibr.v9n2p153>. 649  
650
55. Nassani, A.A. and Aldakhil, A.M. (2021), "Tackling organizational innovativeness through strategic orientation: strategic alignment and moderating role of strategic flexibility", *European Journal of Innovation Management*, available at:<https://doi.org/10.1108/EJIM-04-2021-0198>. 651  
652  
653
56. Ngo, L.V. and O’Cass, A. (2009), "Creating value offerings via operant resource-based capabilities", *Industrial Marketing Management*, Vol. 38 No. 1, available at:<https://doi.org/10.1016/j.indmarman.2007.11.002>. 654  
655
57. Nonaka, I. and von Krogh, G. (2009), "Perspective—Tacit knowledge and knowledge conversion: Controversy and advancement in organizational knowledge creation theory", *Organization Science*, INFORMS, Vol. 20 No. 3, pp. 635–652. 656  
657
58. Nonaka, I. and Takeuchi, H. (1995), *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*, Oxford university press. 658  
659
59. Ode, E. and Ayavoo, R. (2020), "The mediating role of knowledge application in the relationship between knowledge management practices and firm innovation", *Journal of Innovation and Knowledge*, Elsevier B.V., Vol. 5 No. 3, pp. 210–218. 660  
661

60. Ooi, C.A., Hooy, C.W. and Mat Som, A.P. (2017), "The influence of board diversity in human capital and social capital in crisis", *Managerial Finance*, Vol. 43 No. 6, pp. 700–719. 662  
663
61. Özbuğday, F.C., Fındık, D., Metin Özcan, K. and Başçı, S. (2020), "Resource efficiency investments and firm performance: Evidence from European SMEs", *Journal of Cleaner Production*, Vol. 252, p. 119824. 664  
665
62. Panda, S. and Rath, S.K. (2016), "Investigating the structural linkage between IT capability and organizational agility: A study on Indian financial enterprises", *Journal of Enterprise Information Management*, Emerald Group Publishing Ltd., Vol. 29 No. 5, pp. 751–773. 666  
667  
668
63. Panda, S. and Rath, S.K. (2021), "Information technology capability, knowledge management capability, and organizational agility: The role of environmental factors", *Journal of Management and Organization*, Cambridge University Press, Vol. 27 No. 1, pp. 148–174. 669  
670  
671
64. Parwita, G.B.S., Arsawan, I.W.E., Koval, V., Hrinchenko, R., Bogdanova, N. and Tamosiuniene, R. (2021), "Organizational innovation capability: Integrating human resource management practice, knowledge management and individual creativity", *Intellectual Economics*, Vol. 15 No. 2. 672  
673  
674
65. Preston, D.S., Leidner, D.E., Chen, D., Uarterly, M.Q. and Xecutive, E. (2008), *Created CIO Positions*, *MIS Quarterly Executive*, Vol. 7. 675  
676
66. Ravichandran, T. (2018), "Exploring the relationships between IT competence, innovation capacity and organizational agility", *Journal of Strategic Information Systems*, Elsevier B.V., Vol. 27 No. 1, pp. 22–42. 677  
678
67. Sabetzadeh, F. and Tsui, E. (2015), "An effective knowledge quality framework based on knowledge resources interdependencies", *Vine*, Vol. 45 No. 3, pp. 360–375. 679  
680
68. Sherehiy, B., Karwowski, W. and Layer, J.K. (2007), "A review of enterprise agility: Concepts, frameworks, and attributes", *International Journal of Industrial Ergonomics*, Vol. 37 No. 5, available 681  
682  
683  
at:<https://doi.org/10.1016/j.ergon.2007.01.007>.
69. Singh, S.K., Mazzucchelli, A., Vessal, S.R. and Solidoro, A. (2021), "Knowledge-based HRM practices and innovation performance: Role of social capital and knowledge sharing", *Journal of International Management*, Elsevier Inc., Vol. 27 No. 1, p. 100830. 684  
685  
686
70. Steinmo, M. and Rasmussen, E. (2018), "The interplay of cognitive and relational social capital dimensions in university-industry collaboration: Overcoming the experience barrier", *Research Policy*, Vol. 47 No. 10, available 687  
688  
689  
at:<https://doi.org/10.1016/j.respol.2018.07.004>.
71. Surya, B., Menne, F., Sabhan, H., Suriani, S., Abubakar, H. and Idris, M. (2021), "Economic growth, increasing productivity of smes, and open innovation", *Journal of Open Innovation: Technology, Market, and Complexity*, Vol. 7 No. 1, pp. 1–37. 690  
691  
692
72. Teece, D., Peteraf, M. and Leih, S. (2016), "Dynamic capabilities and organizational agility: Risk, uncertainty, and strategy in the innovation economy", *California Management Review*, Vol. 58 No. 4, available 693  
694  
695  
at:<https://doi.org/10.1525/cmr.2016.58.4.13>.
73. Teece, D., Peteraf, M. and Leih, S. (n.d.). *Dynamic Capabilities and Organizational Agility: RISK, UNCERTAINTY, AND STRATEGY IN THE INNOVATION ECONOMY*. 696  
697
74. Teece, D.J., Pisano, G. and Shuen, A. (1997), "Dynamic capabilities and strategic management", *Strategic Management Journal*, Wiley Online Library, Vol. 18 No. 7, pp. 509–533. 698  
699
75. Teece, D.J., Pisano, G. and Shuen, A. (2009), "Dynamic capabilities and strategic management", *Knowledge and Strategy*, Vol. 18 No. March, pp. 77–116. 700  
701
76. Teixeira, E. de O. and Werther, W.B. (2013), "Resilience: Continuous renewal of competitive advantages", *Business Horizons*, Vol. 56 No. 3, available at:<https://doi.org/10.1016/j.bushor.2013.01.009>. 702  
703

77. Tenenhaus, M., Vinzi, V.E., Chatelin, Y.-M. and Lauro, C. (2005), "PLS path modeling", *Computational Statistics & Data Analysis*, Elsevier, Vol. 48 No. 1, pp. 159–205. 704  
705
78. Thomas, E.F. (2014), "Platform-based product design and environmental turbulence: The mediating role of strategic flexibility", *European Journal of Innovation Management*, Vol. 17 No. 1, pp. 107–124. 706  
707
79. Thompson, M. (2018), "Social capital, innovation and economic growth", *Journal of Behavioral and Experimental Economics*, Vol. 73, available at:<https://doi.org/10.1016/j.socec.2018.01.005>. 708  
709
80. Tu, J. (2020), "The role of dyadic social capital in enhancing collaborative knowledge creation", *Journal of Informetrics*, Vol. 14 No. 2, available at:<https://doi.org/10.1016/j.joi.2020.101034>. 710  
711
81. Wageeh, N.A. (2016), "Organizational Agility: The Key to Organizational Success", *International Journal of Business and Management*, Canadian Center of Science and Education, Vol. 11 No. 5, p. 296. 712  
713
82. Walter, A.T. (2021), "Organizational agility: ill-defined and somewhat confusing? A systematic literature review and conceptualization", *Management Review Quarterly*, Springer Science and Business Media Deutschland GmbH, Vol. 71 No. 2, pp. 343–391. 714  
716
83. Wang, C. and Hu, Q. (2017), "Technovation Knowledge sharing in supply chain networks : Effects of collaborative innovation activities and capability on innovation performance", *Technovation*, Elsevier Ltd, No. November 2015, pp. 1–13. 717  
718
84. Weaven, S., Quach, S., Thaichon, P., Frazer, L., Billot, K. and Grace, D. (2021), "Surviving an economic downturn: Dynamic capabilities of SMEs", *Journal of Business Research*, Vol. 128, pp. 109–123. 719  
720
85. Xiu, L., Liang, X., Chen, Z. and Xu, W. (2017), "Strategic flexibility, innovative HR practices, and firm performance", *Personnel Review*, Emerald Publishing Limited. 721  
722
86. Yang, J., Zhang, F., Jiang, X. and Sun, W. (2015a), "Strategic flexibility, green management, and firm competitiveness in an emerging economy", *Technological Forecasting and Social Change*, Elsevier Inc., Vol. 101, pp. 347–356. 723  
724
87. Yang, J., Zhang, F., Jiang, X. and Sun, W. (2015b), "Strategic flexibility, green management, and firm competitiveness in an emerging economy", *Technological Forecasting and Social Change*, Elsevier Inc., Vol. 101, pp. 347–356. 725  
726
88. Yeşil, S. and Doğan, I.F. (2019), "Exploring the relationship between social capital, innovation capability and innovation", *Innovation: Organization and Management*, Vol. 21 No. 4, available at:<https://doi.org/10.1080/14479338.2019.1585187>. 727  
728
89. Yi, L., Wang, Y., Upadhaya, B., Zhao, S. and Yin, Y. (2021), "Knowledge spillover, knowledge management capabilities, and innovation among returnee entrepreneurial firms in emerging markets: Does entrepreneurial ecosystem matter?", *Journal of Business Research*, Elsevier Inc., Vol. 130 No. January 2020, pp. 283–294. 729  
730  
731
90. Yildiz, T. and Aykanat, Z. (2021), "The mediating role of organizational innovation on the impact of strategic agility on firm performance", *World Journal of Entrepreneurship, Management and Sustainable Development*, Emerald Group Holdings Ltd., Vol. 17 No. 4, pp. 765–786. 732  
733  
734
91. Zhang, Y., Zhang, M., Luo, N., Wang, Y. and Niu, T. (2019), "Understanding the formation mechanism of high-quality knowledge in social question and answer communities: A knowledge co-creation perspective", *International Journal of Information Management*, Elsevier, Vol. 48 No. July 2018, pp. 72–84. 735  
736  
737
92. Zhao, S., Jiang, Y., Peng, X. and Hong, J. (2020a), "Knowledge sharing direction and innovation performance in organizations: Do absorptive capacity and individual creativity matter?", *European Journal of Innovation Management*, Vol. 24 No. 2, pp. 371–394. 738  
739  
740
93. Zhao, S., Jiang, Y., Peng, X. and Hong, J. (2020b), "Knowledge sharing direction and innovation performance in organizations: Do absorptive capacity and individual creativity matter?", *European Journal of Innovation Management*, available at:<https://doi.org/10.1108/EJIM-09-2019-0244>. 741  
742  
743

- 
94. Zhou, J., Bi, G., Liu, H., Fang, Y. and Hua, Z. (2018), "Understanding employee competence, operational IS alignment, and organizational agility – An ambidexterity perspective", *Information and Management*, Elsevier B.V., Vol. 55 No. 6, pp. 695–708. 744  
745  
746
95. Žitkienė, R. and Deksnys, M. (2018), "Organizational agility conceptual model", *Montenegrin Journal of Economics*, Economic Laboratory for Transition Research, Vol. 14 No. 2, pp. 115–129. 747  
748

## Response to Reviewer 1 comments

Point 1. in line 121, the authors used the abbreviation SI in the sentence "The literature also explored how collaborative knowledge creation is considered as a dynamic process that happens during SI between organizations and their partners", as well as the abbreviation MV in line 386 in the sentence "Furthermore, strategic flexibility was not a MV of the relationship between innovation and organizational agility." I believe it is necessary to provide the full spelling of these abbreviations

Response 1. Thank you for your comments, SI stands for social interaction and MV stands for moderating variable. Authors have fixed the issue in the manuscript

Point 2. In section 3.2 Measurements (line 268 et seq.) the authors refer to the concept of social capital reflected in current publications and provide questions from the questionnaire for managers that describe social capital also on the basis of relevant publications of various authors. Considering that the study affected managers of only one of the fields of activity (woodworking), it is of interest to understand / interpret social capital and organizational agility of representatives of this particular field of activity. What exactly is the social capital of employees expressed for them and how / with the help of what indicators do they assess the organizational agility of their enterprises (if such information was collected during the study and / or is available).

Response 2. Authors add significant literature in section Discussion and Research Implications (highlight in red -track changes)

In woodcraft SMEs, the social capital construct was adopted from previous research (Al-Omoush et al., 2020; Hayton, 2005; Liu et al., 2016). The social capital involved was 1) the ability to increase opportunities, ideas, and concepts, called exploration aimed to increase contribution in the international market because it has unique and high-value products; 2) close partners and collaborations included suppliers, producers, governments, and competitors. Woodcraft SMEs had mutually beneficial collaborations (Leckel et al., 2020; Patricio et al., 2018; Zaridis et al., 2021), especially in the provision of high artistic value handcraft products (Parwita et al., 2021); 3) partners could make decisions, especially when confronted with varied market factors (Liu and Yang, 2020; Quaye, 2019); as a result, social capital was strengthened as a source of strength in developing long-term performance. (Tan and Sousa, 2015); 4) recommendations from the social networks built between them (Williams et al., 2020) became a strength in facing market turbulence (Hsin Chang et al., 2019); and 5) social networks influenced processes, products, and services (Ahmadi and Ershadi, 2021; Williams et al., 2020); thus, SMEs' stability and productivity were strengthened.

Authors add significant literature in section Literature Review (highlight in red - trackchanges)

While the indicators used to measure organizational agility were 1) seizing possibilities in potential (Falahat et al., 2020), markets, and minimizing threats so that they have a strategic intent to build production stability (Ciszewska-Mlinarič, 2016; Gavrilă Gavrilă and de Lucas Ancillo, 2021); 2) exhibit sensitivity to environmental changes (Stekelorum et al., 2020) in order to deal with dynamics (Cosenz and Bivona, 2020; Faccin and Balestrin, 2018; Weaven et al., 2021); 3) increase decision-making agility (Khan et al., 2020; Liu and Yang, 2020; Quaye, 2019); 4) resource, process, and technology adaptation to address changing environmental needs (Azudin and Mansor, 2018; Chege and Wang, 2020; Meijer et al., 2019); and 5) taking into account new price, marketing, manufacturing, and/or partnership actions (Ciszewska-Mlinari, 2016; Falahat et al., 2020; King et al., 2020). Organizational agility in woodcraft SMEs occurred because they produced highly artistic products, high quality, hard to imitate, and of high value (Parwita et al., 2021) and had export shares in various European and American countries.

## Response to Reviewer 2 comments

Point 1. Long title of the article, hard to read and understand - it is recommended to optimize, put part of it in keywords.

**Response 1.** Thank you for your comments and suggestion, authors has change the tittle of the paper: **Developing Organizational Agility in SMEs: An Investigation of Innovation's Roles and Strategic Flexibility.**

Point 2. The title is duplicated in keywords - it is recommended to remove duplication.

**Response 2:** Authors deleted duplicated keywords in the tittle

**Point 3:** In the annotation, the emphasis is more on strategic flexibility, and not on organizational agility - perhaps for the author these are synonymous concepts, then the article needs argumentation.

**Response 3:** Authors add significant literature in section Literature Review (highlight in red -track changes).

While the indicators used to measure organizational agility were 1) seizing possibilities in potential (Falahat et al., 2020), markets, and minimizing threats so that they have a strategic intent to build production stability (Ciszewska-Mlinarič, 2016; Gavrila Gavrila and de Lucas Ancillo, 2021); 2) exhibit sensitivity to environmental changes (Stekelorum et al., 2020) in order to deal with dynamics (Cosenz and Bivona, 2020; Faccin and Balestrin, 2018; Weaven et al., 2021); 3) increase decision-making agility (Khan et al., 2020; Liu and Yang, 2020; Quaye, 2019); 4) resource, process, and technology adaptation to address changing environmental needs (Azudin and Mansor, 2018; Chege and Wang, 2020; Meijer et al., 2019); and 5) taking into account new price, marketing, manufacturing, and/or partnership actions (Ciszewska-Mlinari, 2016; Falahat et al., 2020; King et al., 2020). Organizational agility in woodcraft SMEs occurred because they produced highly artistic products, high quality, hard to imitate, and of high value (Parwita et al., 2021) and had export shares in various European and American countries.

**Point 4:** Part of the Literary Review is excellent - modern, relevant publications

**Response 4:** thank you for the appreciation

**Point 5:** This research factors influencing organizational agility and strategic flexibility –it is recommended that title and abstract be consistent, given that the authors are internally investigating two factors.

**Response 5:** authors has changed the tittle of the paper and deleted duplicated keywords in the tittle.



**Point 6:** The article must be brought to the requirements of the editors (links to literature, tables, etc.)

**Response 6:** authors have fixed referencing style, table, figure and body of the paper

**Point 7:** It is recommended to make conclusions more clear and structured

**Response 7:** Authors add section Conclusion and future study and also enhance the limitations and future study (highlight in red-track changes)



Article

# Developing Organizational Agility in SMEs: An Investigation of Innovation's Roles and Strategic Flexibility

1  
2  
3  
2  
\*

1  
2  
3  
4  
5  
6  
7  
8  
9

**Abstract:** Although social capital and collaborative knowledge creation were considered essential drivers in maintaining competitive advantage, empirical evidence on the impact of collaborative knowledge creation on organizational agility remained limited. Therefore, this study examined the relationship between social capital and collaborative knowledge creation in building innovation and agility and testing strategic flexibility as a moderating variable. It employed a quantitative design by distributing questionnaires to 414 managers and assistant managers of SMEs analyzed by SmartPLS-SEM. The results showed that social capital significantly affected collaborative knowledge creation, innovation, and organizational agility. Meanwhile, collaborative knowledge creation was not significantly impacted organizational agility. Furthermore, strategic flexibility was not a moderating variable of the relationship between innovation and organizational agility. Based on these findings, this study produced recommendations for managers to strengthen organizational agility

**Keywords:** social capital, collaborative knowledge creation, innovation, strategic flexibility, organizational agility

## 1. Introduction

Encountering market turbulence, competitor challenges, and even devastating effects of the pandemic, an organization requires the capability and agility to respond to changes, performs certain adjustments [1] and strengthen its innovations ability [2]–[4] to maintain performance, and sustainable competitiveness [5], [6]. Moreover, in the current Covid-19 pandemic situation, everything has become unpredictable, causing turbulence in multiple sectors. Thus, the conventional competitive strategy was no longer effective [7]. The pandemic prompted the organization to continuously innovate by maintaining good relationships with the customers [8] optimizing available resources [9] and focusing on their product development [10]. The managers strived to identify opportunities through innovation. However, many failed to utilize precious resources to achieve strategic competitiveness [2]. Therefore, the business organization need resistance ability by enforcing a variety of scenarios under uncertain contexts [1], [11]–[13]. However, innovation was considered vital during a crisis, and how the company had laid the foundation for a resilient organization through increasing the role of innovation needed further empirical evidence [7], [14]. Nevertheless, it was urgently needed given the intense disturbance that required anticipation and exploitation of innovation ability towards sustained competitive advantages [15].

The present study attempted to close research gaps as follows. First, the role of social capital and collaborative knowledge creation the turbulence caused by the pandemic remained unexplored [7]. Although social capital and collaborative knowledge creation

**Citation:** Lastname, F.; Lastname, F.; Lastname, F. Title. *J. Open Innov. Technol. Mark. Complex.* **2022**, *8*, x. <https://doi.org/10.3390/xxxxx>

Received: date  
Accepted: date  
Published: date

**Publisher's Note:** MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



**Copyright:** © 2022 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

have contributed to sustaining competitive advantages, the empirical evidence between this construct and innovation remained limited [16], [17]. Second, the previous research disregards the effect of collaborative knowledge creation on organizational agility [18]. After all, by building adequate collaborative knowledge, an organization will have the critical notion of developing dynamic capabilities [19] creating a culturally resilient culture [20] thus enduring each potential crisis scenario. Third, while strategic value from collaborative knowledge creation practice was evident, most companies could not understand how this practice can be adapted to enhance their innovation abilities in the face of crisis, especially in SMEs. Moreover, SMEs have limited resources [21].

The existing literature described organizational agility as a complex construct. It can be impacted by many drivers such as organizational culture value [20], organizational flexibility [12], collaborative knowledge creation [5], and innovation [7], [10], [22]. However, there was still a scarcity of insight into mechanism underpinning innovation that strengthens agility. Thus, the role of moderation should be considered. Furthermore, it was hoped to enrich the understanding of innovation's role in building agility. Hence, this study aimed to explore the predictor of organizational agility using a relevant variable called strategic flexibility that was not been extensively studied yet. Therefore, strategic flexibility has become the key element to making changes in organizational strategic planning so that the impact on innovation and organizational agility will be even more substantial in the future.

Motivated by the research gaps, the present study aimed to examining the nexus between social capital and collaborative knowledge creation towards innovation and organizational agility by proposing a structural equation model for SMEs in Indonesia based on three primary reasons. First, SMEs were grown exponentially with a total of 64,5 million units that potentially became the backbone of the economy [23]. Therefore, it indicated the magnitude of the potential of social capital that needed to be empowered as the strength to build resilience in facing the turbulences. Second, Indonesian SMEs had a weak internal driver in a business dynamic; hence it required knowledge collaboration to improve innovation [24] for the employees from the grassroots level up to the organization [25], [26]. Third, SMEs need to prepare strategic flexibility when facing turbulence caused by market shifts or the pandemic [27], [28] so that they can survive in difficult situations [20]. The second section of the article discusses the literature and hypotheses development followed by method and result to propose a scenario and discussion about agility.

## 2. Literature Review

### 2.1 Organizational Agility and Dynamic Capabilities in SMEs

Organizational agility was the brainchild of [29] that was rooted in two primary concepts called adaptation (reactive) and organizational flexibility (proactive). Organizational agility reveals the ability to recognize environmental transition and counter it quickly by reshaping the resource set, business processes, and strategies [30], [31]. In the SME sector, adapting to change was essential to reduce resource issues for future development [6]. Consequently, ensuing the inclusive approach bring out by previous researchers [7], [32], [33], this study conceptualized organizational agility as responsive capabilities aiming for a more efficient approach in a complex environment [34]. This approach involved rapid responses to changing situations [35] and the ability to predict and take the opportunity, primarily by innovation and learning [13], [33].

While the indicators used to measure organizational agility were 1) seizing possibilities in potential [36], markets, and minimizing threats so that they have a strategic intent to build production stability [37], [38]; 2) exhibit sensitivity to environmental changes [39] in order to deal with dynamics [40]–[42]; 3) increase decision-making agility [6], [43], [44]; 4) resource, process, and technology adaptation to address

changing environmental needs [37], [45]–[47]; and 5) taking into account new price, marketing, manufacturing, and/or partnership actions [25], [36], [37], [48]. Organizational agility in woodcraft SMEs occurred because they produced highly artistic products, high quality, hard to imitate, and of high value and had export shares in various European and American countries [25]. In addition, the present study adopted the study of [7], [49], [50] in measuring organizational agility.

Furthermore, the dynamic capabilities theory was employed to frame this study considering the recent turbulence of the business landscape. This theory was the expansion of the resource-based view [51], which stated that the reason for the difference among organizations was their competitive advantage attributed to unique, valuable, non-replicable, non-reproducible, and non-replaceable [52]. Dynamic capabilities theory center on the organizations' ability to respond to a constantly changing business environment. In other words, organizations must be sensitive in sensing, seizing, and shaping internal and external opportunities and threats for the purpose of the right strategic decisions and reconfigure and reuse all potential and resources [19], [42], [53]. As a fact, over the past decade, dynamic managerial competencies and capabilities have resulted from the increasing quality of knowledge [16], [54] that formed from a collaborative process that was implemented as an essential feature of the organization [19], [42], [55]. Furthermore, dynamic capabilities were hard for competitors to imitate based on particular characteristics, cultural values [56], and complex imitability [57]. Therefore, strong dynamic capabilities served as a solid foundation for organizational agility.

## 2.2 Social Capital and Collaborative Knowledge Creation

Previous research revealed the function of social capital in supporting knowledge management to achieve sustainable performance [58]. The literature also explored how collaborative knowledge creation considered as a dynamic process that happens during social interaction between organizations and their partners [5], [7]. The social network in the organization served as a channel for transmitting and integrating knowledge, thus could optimize the role of sharing and creating dynamic ideas and new values [59]. Collaborative knowledge creation was seen as a collaborative mechanism [60] to create and develop knowledge between partners to improve insight into changes [61]. Collaboration described a knowledge transfer mechanism that was harmonized and unified through dynamic social interactions [41] and thus could produce collaborative knowledge [62] both directly and indirectly between partners [58]. Social capital allowed the organization to survive a crisis by pooling expertise and resources [61]. Furthermore, [41] revealed that collaborative knowledge creation was reflected in the knowledge of organizations that develop sustainably, resulting in adjustment to environmental changes and rapidly changing market needs. Meanwhile, social capital formed a synergistic and coordinated network that allowed the company to adopt the necessary changes swiftly by means of knowledge [43]. Finally, social capital produces relational and cognitive skills, increasing organizational agility to respond to environmental changes briskly, flexibly, and structured [63] to manage challenges, seize new opportunities, create value and ensure long-term viability [50]. Based on this, the hypothesis is formulated as follows:

H1 Social capital significant to collaborative knowledge creation

H2 Social capital significant to organizational agility

## 2.3 Social capital and firm innovation

Social capital describes the interaction process between organizations and stakeholders that can affect the exchange of knowledge, ideas and resources among organizations [16]. The literature showed that building strong bonds with business affiliations through social interaction dynamically affected favorable outcome in

acquiring resources and capacity for innovation [64]. Experts already highlighted that the social approaches supply a fundamental basis for describing the impact of external and internal relationships on innovation [4], [58], [65]. Moreover, social capital has been considered a vital contributor to the success of innovation [66], [67] because it involves collaboration-oriented leadership behavior in the achievement of innovation [68]. Furthermore, substantial social capital promotes efficiency and ensures the quality of knowledge flow, thereby encouraging innovation activities without agonizing about risks and barriers [16]. Thus, interaction among organizations helped reduce knowledge limitations and updated the knowledge base, providing a high-quality source of motivation for innovation. Based on the discussion above, the hypothesis is formulated as follows:

H3 Social capital significant to firm innovation

#### 2.4 Collaborative knowledge creation and organizational agility

In building organizational agility, the role of collaborative knowledge creation has not been studied extensively [7]. At the same time, organizational agility was seen as the ability to govern and apply knowledge beneficially [58], [69] in responding and adapting organizations to market turbulence and competition dynamics [64], [70]. In order to achieve existence, agility requires applying knowledge, idea quality and collaboration to explore new opportunities in a volatile market [64]. [58] claimed that the creation and dissemination of knowledge reflect the value chain of knowledge capital in building agility [71]. Furthermore, organizational agility requires more dynamic learning and collaborative knowledge creation strategies than competitors [72] to transform new ideas into responsive activities [5], [6], [12]. Hence, the proposed hypothesis was as follows:

H4 Collaborative knowledge creation significant to organizational agility

#### 2.5 Innovation and organizational agility

Innovative and less innovative organizations differed in terms of adaptation, risk management, and perspectives on uncertainty [22]. Innovative companies focus on learning and experimentation, overcoming uncertainty, and encouraging risk-taking [73]. In contrast, less innovative organizations are afraid of taking risks and uncertainty and tend to be weak in preparing business strategies [13]. It indicated that innovative companies had an organizational climate open to new ideas that affected their ability to identify new market opportunities and products than competitors [10], [36], [74]. Thus, organizations built new business models to pool existing resources into more dynamic mobile capital [73]. Thus, the changes brought about by innovation make organizations more agile [13], [22], [75], [76]. Thus, we positioned:

H5 Innovation significant to organizational agility

#### 2.6 The mediating role of collaborative knowledge creation

Social capital has pivotal role in transferring and integrating knowledge was vital in forming collaborative knowledge [59] and therefore increased adaptation to rapid change [61]. This mechanism was the implementation of the interaction of all social resources [41], which produced collaborative knowledge both directly and indirectly [58]. In a crisis, whether due to market turbulence or other disturbances, social capital contributes to the organization's survival [61] and optimizes the diffusion of skills and resources [77]. Moreover, collaborative knowledge creation becomes the foundation for organizations to adapt to environmental changes and dynamic markets [41]. In order to build agility, organizations need to form a coordinated network to collect ideas and turn them into knowledge [43]. It produced relational skills that ultimately improved organizational agility, especially in responding to changes flexibly [63]. It ultimately enabled

organizations to manage challenges and opportunities, also value and sustainability [50], [70], [78]. Predicated on the discussion above, the hypothesis was proposed as follows:

H6 collaborative knowledge creation mediates social capital and organizational agility.

### 2.7 Mediating the role of firm innovation

The existence of social capital was as a liaison between organizations and stakeholders through the exchange of ideas, knowledge and resources [16]. Therefore, it was necessary to develop strong ties with partners to generate resources and capabilities for innovation [64]. Expert's findings revealed that social capital provided the foundation of the relationship between partners [4], [58], [65] and was an essential driver of successful innovation [66], [67]. Furthermore, innovative organizations focused on learning and risk-taking [73], indicating an organizational climate that was open to new ideas [10], [36], [74], and ultimately made the organization more agile [13], [22], [75], [76]. Thus, innovation provided the power to face the risk of uncertainty [13] to have sustainable performance and competitive advantage [24]. Formulated on the discussion, the hypothesis was as follows:

H7 Innovation mediates social capital and organizational agility.

### 2.8 The moderating role of strategic flexibility

According to dynamic capabilities theory [56], organizations must be sensitive to opportunities and threats to develop and configure plans and strategic decisions [19], [42], [53]. Therefore, the organization must have a strategy that can adapt the organizational conditions to the changes that occur [1]. Strategic flexibility was the ability to quickly combine and reconfigure the company's stock of resources [57] and carry out the actions taken by the company in real-time [13], [79]. In compliance with [3], [80], [81], strategic flexibility was achieved through optimizing resource flexibility. If the resource was scarce, the organization must find other resources; meanwhile, if the resource was sufficient, it allowed the company to use resources more efficiently for new purposes [6], [10]. In addition, high strategic flexibility allowed companies to build, transfer, and integrate ideas quickly and prepare new patterns according to the current situation [82]. As a result, a company with strategic flexibility can reduce response time to dynamic changes [83] by creating, expanding, or modifying knowledge bases [84] that enable the company to process its knowledge resources effectively, thereby increasing the value of knowledge for organizational agility [80], [81]. Hence, we recommend that:

H8 Strategic flexibility positively moderates innovation and organizational agility so innovation is linked with better organizational agility in companies with high levels of strategic flexibility.

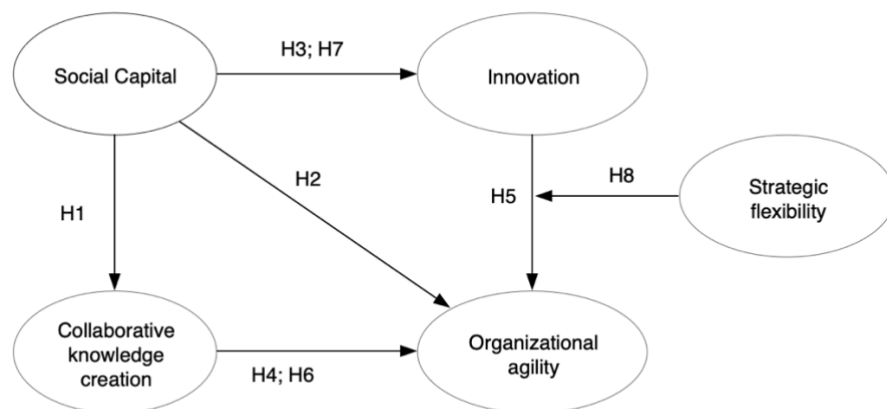


Figure 1. Conceptual framework

### 3. Methodology

#### 3.1 Data and sampling method

This study involved SMEs, which were the backbone of the Indonesian economy. In order to obtain the initial sample, we used the local government database of the Bali province to identify SMEs for research purposes. The population of this study was 450 woodcraft SMEs in Bali Province, Indonesia. Accordingly, the sample was determined by a simple random sampling method called the lottery method, meaning that each member of the population received the same opportunity as the sample once. The formula determined the total number of sample frames [85]; hence 207 SMEs were asked to complete the research questionnaire. Research respondents were managers and assistant managers as the ideal targets as they have a strategic view of organizational characteristics related to organizational practices. The data was collected for 6 months from February to July 2022 via email, Google Forms, and the direct visit by first sending a prior email notification regarding this study. We obtained a total of 414 responses which can be analyzed to achieve the objectives of this study.

#### 3.2 Measurements

Since previous studies had evaluated the construct variables used for this study, the construct measurement was adopted from the existing literature. Social capital was measured by 5 indicators adopted from [7], [49], [50]. Collaborative knowledge creation was measured by 8 indicators adopted from [7], [41], [64], [86]. Firm innovation had 10 indicators adopted from studies by [59], [60], [87]. Organizational agility was measured by 5 indicators adopted from [7], [88], [89]. Lastly, strategic flexibility with 6 indicators adopted from [3], [79].

To evaluate the constructs, we employed A 7-point Likert scale ranging from “1: strongly disagree to 7: strongly agree”. For ensuring clarity of instructions and statements, the questionnaire written in the Indonesian language was piloted on 30 SME managers who were experienced in corporate strategic planning. This process caused minor changes to the wording of instructions and questions of the questionnaire.

Table 1. Constructs measurement

Variable	Sources
Social capital	[7], [49], [50]
Collaborative knowledge creation	[7], [41], [64], [86]
Firm innovation	[59], [60], [87]

Variable	Sources
Organizational agility	[7], [88], [89]
Strategic flexibility	[3], [79]

This present study employed partial least square based on variance (PLS-SEM) to estimate the proposed organizational agility model and assess the relationship between variables, either directly or indirectly. For this purpose, this study employed the SmartPLS 3.2.8 software. In order to evaluate the validity and reliability of the construct variables, as recommended by [90], this study evaluated the measurement model. Furthermore, to test the hypothesis about the relationship between variables, this study assessed the structural model. Since the research objective was to validate the theory of dynamic capabilities in building organizational agility models, using SEM-PLS was acceptable [91].

#### 4. Results

##### 4.1 Respondent Profile

Table 2 showed the demographic outline of the sample. It showed that the respondents mostly had a higher education background. It was one of the critical pillars of how managers earned quality knowledge [16], [92] to develop plans and strategies for dealing with various turbulences [84].

**Table 2.** Demographical facts

	Description	Frequency	Percentage (%)
Age	<25	35	8,5
	25-30	142	34,3
	31-35	135	32,6
	36-40	79	19,1
	41-45	23	5,5
Gender	Male	239	57,7
	Female	175	42,3
Education	Bachelor	277	66,9
	Master	126	30,4
	Doctor	11	2,7
Experiences	<5	2	0,5
	6-10	181	43,7
	11-15	129	31,2
	16-20	102	24,6

##### 4.2 The Assesment of The Measurement Model

Table 3. showed that all indicators had a loading factor value higher than 0,6. Furthermore, the CR value was more than 0,7, while the AVE value was more than the recommended level of 0,5. Furthermore, data analysis determined that the square root value of AVE was more than the construct correlation value, indicating that the discriminant validity requirement was met. These indicators showed that the validity and construct reliability requirements were met [90]. Furthermore, the value of VIF was



between 1.437- 4.468 (smaller than the recommended level of 5), indicating did not exhibit any issues connected to the variance of the general method [91].

**Table 3.** Measurement Model Indicators

Indicators	Loading**	CR	AVE
Social capital		0.928	0.725
1. Social networks enhance the opportunities, ideas and insights	0.940		
2. Bond connections and collective with partners	0.904		
3. Partners actively involved in decision making	0.935		
4. Social networks' feedback and recommendations.	0.752		
5. Social networks influence processes, products, and services	0.696		
Collaborative knowledge creation		0.911	0.564
1. Getting novel ideas and technologies	0.691		
2. Collaborating with partners to gain new knowledge	0.639		
3. Launching and exchanging creative ideas	0.626		
4. Sharing repositories of knowledge and best practices	0.862		
5. Reconfiguring new knowledge.	0.783		
6. Sharing new values and thoughts	0.757		
7. Collaborative learning experiments	0.788		
8. Strengthening knowledge and experience transfer	0.831		
Firm innovation		0.932	0.582
1. Developing new products using available of resources	0.830		
2. The company pursues up to date strategy to do things	0.775		
3. Respond to activities that involves technology	0.775		
4. Availability of knowledge to develop new products	0.718		
5. Company continually explores new ideas	0.634		
6. Competency to process technologies	0.692		
7. The company's creativity in its methods of operation	0.817		
8. Adopting the products and processing technologies to accomplish future needs	0.834		
9. Company often sells its new products and services	0.836		
10. The perception about innovation as something risky and resisted	0.687		
Organizational Agility		0.921	0.701
1. The opportunities produced by the crisis is pursued	0.732		
2. Recognizing dynamic environmental transition	0.835		
3. Improvement in terms of the agility of decision making	0.849		
4. Adaption for resources to accommodating the changing environment	0.911		
5. New strategies were taken into consideration	0.849		
Strategic flexibility		0.919	0.657

298  
299

300

	Indicators	Loading**	CR	AVE
1.	If there is change of circumstances, our organization can adjust its current plans effortlessly	0.888		
2.	If there is change of circumstances, our organization is well-prepared to act accordingly	0.888		
3.	If there is change of circumstances, organization can adjust the strategy changes	0.898		
4.	If there is change of circumstances, organization has the required competency to modify daily routines and practices	0.723		
5.	If there is change of circumstances, our organization can generate a new project proactively	0.737		
6.	If there is change of circumstances, our organization can prioritize projects with the highest likelihood to succeed	0.702		

301

#### 4.3 Structural Model Testing

302

This study applied the bootstrap method with 5000 samples to evaluate the significance of the indicators and path coefficients [93]. The results showed that the goodness-of-fit (GoF) model had a value of 0,675, which indicated that the fitness model was significant. In conclusion, these findings indicated that the proposed organizational agility model could be applied to the woodcraft SME sector. In addition, testing on the standard residual root mean square (SRMR) dan normed fit index (NFI) showed that the SRMR value was 0,086, while the NFI was 0,687, indicating that the model was fit [94]. Furthermore, the examination of R2 revealed that social capital, collaborative knowledge creation, and innovation described a 0,295 (29,5%) variance in organizational agility. Finally, all Q2 had positive values, which indicated that all variables had good relevance predictions [93].

303

304

305

306

307

308

309

310

311

312

313

314

#### 4.4 Hypotheses Testing

315

The analysis results showed that 4 of the 5 hypotheses of the direct relationship were confirmed (Table 4.). The relationship between social capital dan collaborative knowledge creation was significant ( $\beta = 0.442$ , STDEV 0.054, T Statistic 8.323>1.96); hence hypothesis 1 was accepted. The relationship between social capital and organizational agility was significant ( $\beta = 0.198$ , STDEV 0.058, T Statistic 3.413>1,96); hence hypothesis 2 was accepted. The relationship between social capital and innovation was significant ( $\beta = 0.534$ , STDEV 0.047, T Statistic 11.287>1,96); hence hypothesis 3 was accepted. The relationship between collaborative knowledge creation and organizational agility was not significant ( $\beta = 0.062$ , STDEV 0,053, T Statistic 1.177<1,96); hence hypothesis 4 was rejected. Lastly, the direct relationship between innovation and organizational agility was significant ( $\beta = 0.375$ , STDEV 0,054, T Statistic 7.012>1,96); hence hypothesis 5 was accepted.

316

317

318

319

320

321

322

323

324

325

326

327

**Table 4.** Path Coefficients

328

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	P Values	Decision
SC -> Collaborative Knowledge Creation	0,442	0,446	0,054	8,232	0,000	Sig
SC -> Org Agility	0,198	0,194	0,058	3,413	0,001	Sig
SC -> Firm Innovation	0,534	0,535	0,047	11,287	0,000	Sig
Collaborative Knowledge Creation -> Org Agility	0,062	0,059	0,053	1,177	0,240	Non-sig
Firm Innovation -> Org Agility	0,375	0,376	0,054	7,012	0,000	sig

4.5 Mediation Testing

Following the identification of the direct relationship between variables, the next stage was to test the positions of mediating variable. In this study, we tested two mediation pathways. According to [90], [91] the method used was to measure the VAF value < 0,20, meaning that mediation was not found, while 0,20-0,80 indicates partial and VAF value > 0,80, meaning that there was full mediation. In order to test the mediating effect of the model, non-parametric bootstrap was used [95]. Finally, the variance accounted for (VAF) was calculated to obtain the indirect link and total sizes. When the VAF was greater than 80%, it indicated full mediation; between 20 to 80% were partial; below 20% indicated no mediating effect [91]. Furthermore, the results were presented in Table 5.

Table 5. Mediation Analysis

Link*	Mediator*	Independent Variable-Mediator	Mediator-Dependent Variable	Direct	Indirect	Total effect	VAF (%)	Decision
SC-OA	CKC	0.442	0.062	0.198	0.274	0.472	0.581	Partial mediation
SC-OA	Innov	0.534	0.375	0.198	0.200	0.398	0.503	Partial mediation

The role of mediation in the causal relationship between social capital, collaborative knowledge creation, and organizational agility, along with social capital, innovation, and organizational agility, was examined using the VAF test. Because this study examined two mediation pathways, we assumed that collaborative knowledge creation partially mediates the relationship between social capital and organizational agility, where the VAF value was 58,1%, indicating that hypothesis 6 was accepted. Furthermore, innovation partially mediated the relationship between social capital and organizational agility with a VAF value of 50,3%, indicating that hypothesis 7 was accepted.

Finally, we analyzed the moderating variable in this research model. Multigroup analysis using PLS examined the moderating role of strategic flexibility [96]. However, the analysis showed that strategic flexibility did not mediate the relationship between innovation and organizational agility ( $\beta = 0,084$ , STDEV 0,044, T Statistic 1.912<1,96, PV 0,056); hence hypothesis 8 was rejected. The analysis results were presented in Table 6 and Figure 2.

Table 6. Moderating testing

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	P Values	Decision
Firm_in*Strat_Fl						
ex -> Org Agility	0,084	0,086	0,044	1,912	0,056	Non-sig

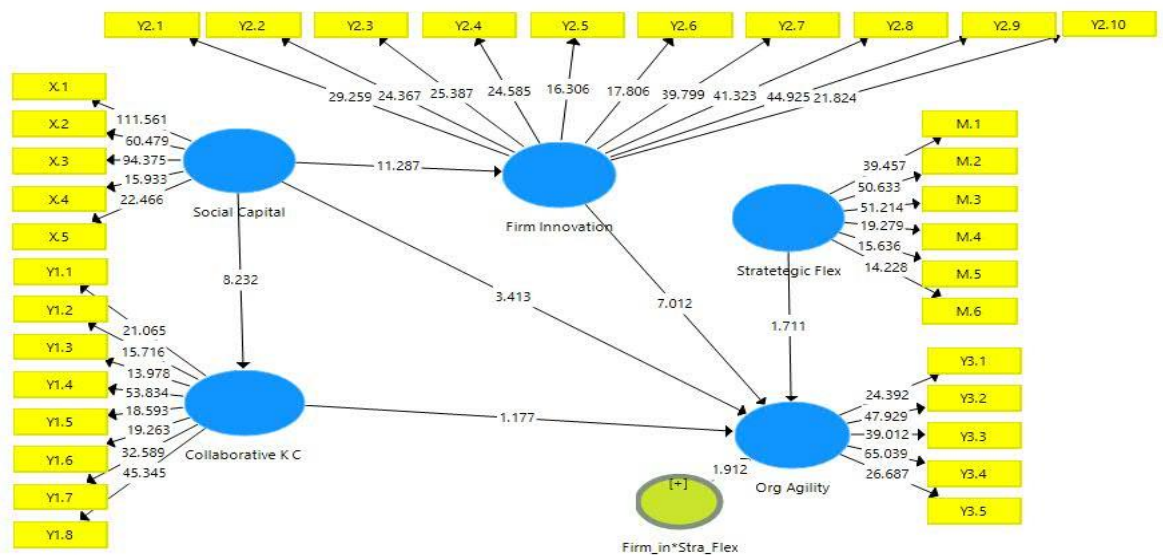


Figure 2. Output Analysis

### 5. Discussion and Research Implications

This study examined the factors that affect organizational agility in anticipating the turbulence and challenges of globalization. Using PLS-SEM analysis, this study revealed that organizational agility was significantly influenced by innovation followed by social capital. These results validated previous research in the context of SMEs by [7], [16], [17], which found the critical role of social capital in building innovation. Furthermore, these results implied that social capital was essential in building knowledge collaboration that led to innovation capabilities, further enhancing organizational agility. This finding strengthened previous research on organizational efforts, especially SMEs, in improving organizational agility [5], [7], [22], [75].

In woodcraft SMEs, the social capital construct was adopted from previous research [7], [49], [50]. The social capital involved was 1) the ability to increase opportunities, ideas, and concepts, called exploration aimed to increase contribution in the international market because it has unique and high-value products; 2) close partners and collaborations included suppliers, producers, governments, and competitors. Woodcraft SMEs had mutually beneficial collaborations [97]–[99], especially in the provision of high artistic value handcraft products [25]; 3) partners could make decisions, especially when confronted with varied market factors [6], [44]; as a result, social capital was strengthened

as a source of strength in developing long-term performance [100]; 4) recommendations from the social networks built between them [101] became a strength in facing market turbulence [102]; and 5) social networks influenced processes, products, and services [32]; thus, SMEs stability and productivity were strengthened.

Contrary to what was expected, collaborative knowledge creation did not significantly affect organizational agility. This result contradicted the study conducted by [7], which found that collaborative knowledge creation was an essential driver in building organizational agility because knowledge was the principal capital in building agility [34], [103]. Therefore, a possible explanation for the insignificant effect of collaborative knowledge creation on organizational agility could be that SMEs were still not open to building collaborative knowledge. SMEs viewed knowledge as exclusive capital and were unwilling to share it, fearing that it could increase the competitiveness of the competitors [104].

In mediating path, collaborative knowledge creation and innovation mediated the relationship between social capital and organizational agility. Social capital has pivotal role in transferring and integrating knowledge was vital in forming collaborative knowledge [7] and therefore increased adaptation to rapid change [61]. This mechanism was the implementation of the interaction of all social resources which produced collaborative knowledge both directly and indirectly. Moreover, collaborative knowledge creation becomes the foundation for organizations to adapt to environmental changes and dynamic markets [41]. In order to build agility, organizations need to form a coordinated network to collect ideas and turn them into knowledge [43]. In addition, innovative organizations focused on learning and risk-taking [73] indicating an organizational climate that was open to new ideas [10] and ultimately made the organization more agile [4], [75]

Furthermore, strategic flexibility was not a MV of the relationship between innovation and organizational agility. This result was contrary to a study conducted by [105] that strategic flexibility strengthened the strategic orientation of SMEs. A possible explanation was that woodcraft SMEs already had agility because they had unique, distinctive products that competitors could not imitate. Furthermore, they could anticipate and seize opportunities when the market appetite changes [4]. These findings also refuted the statement from [21] that SMEs had limited resources. Instead, SMEs could anticipate and seize opportunities and reconfigure their resource sets, business processes, strategies, and innovations [30], [35], [106].

### 5.1 Theoretical Implications

The present study contributed to enhanced the literature on organizational agility and dynamic capabilities theory in four main elements. First, this study proposed and examined an integrated model of supporting social capital, collaborative knowledge creation, and innovation in woodcraft SMEs, where the combination of these three drivers was the key to building organizational agility. It turned out that the organizational agility model had good compatibility and explanatory power. Thus, it confirmed that social capital, collaborative knowledge creation, and innovation were generally accepted [7], [43], especially in the SME sector [28]. More specifically, social capital played a vital role in increasing collaborative knowledge creation and innovation and encouraging SMEs to increase agility to face challenges and turbulences. The results proved that social capital and collaborative knowledge creation were the basis for forming innovations that ultimately made SMEs more agile. Furthermore, this study assessed organizational agility by integrating social capital into the organizational agility model. The results of analysis showed that the organizational agility integration model for SMEs was fit. In addition, the inclusion of innovation in the organizational agility model increased its explanatory power. Conceptually, the results of this study strengthened the social capital - organizational agility model in the SME sector [7]. This finding showed that in SMEs, social capital and collaborative knowledge creation could simultaneously strengthen the

influence of innovation on organizational agility. Thus, the organizational agility model in the context of SMEs was conceptually extended to the social capital -innovation-organizational agility model. Furthermore, these findings provided further evidence for the conclusions of previous studies [8], [75], [76], which claimed that innovation was an essential determinant of organizational agility.

Second, this study revealed that collaborative knowledge creation and innovation mediated the relationship between social capital and organizational agility. Although the mediation relationships tested were significant, the relationship between social capital, collaborative knowledge creation, and organizational agility had a greater value. These results proved that SMEs were highly focused on establishing practical collaborative knowledge [103], [107] to develop potential and quality knowledge [16], [26]. Furthermore, managers' involvement was required in knowledge-sharing practices [26] to generate knowledge capability [108] and knowledge application [59], [103]. Therefore, SMEs must take notice of knowledge and prioritize it for organizational sustainability, productivity improvement, innovation, and competitiveness.

Third, organizational agility was an interesting topic for researchers, policymakers, and practitioners, but the existing literature on how Indonesian SMEs can build agility, especially in a crisis, was not comprehensive yet. Most relevant research focused on European countries, while this study contributed to the organizational agility literature in developing countries. The results showed that social capital and innovation affected organizational agility. Furthermore, it was the first study to link social capital, collaborative knowledge creation, and innovation as antecedents of organizational agility when it was majorly studied in developed countries such as Germany [19], Taiwan [6], and Spain [20].

Fourth, this study increased insights into dynamic capabilities related to the ability of SMEs to respond to the rapidly changing business environment. The results showed that social capital was the key element of dynamic capabilities used for capturing new opportunities through strengthening collaborative knowledge creation to improve managerial competence [13], designing and improving business model innovation to build organizational agility [30], [32], [56]. Notably, social capital triggers the emergence of collaborative knowledge creation in SMEs, which positively affect the emergence of innovation. Furthermore, from the perspective of dynamic capabilities, the results showed the importance of integrating these drivers into a competitive advantage [53] because the better performance was a combination and interaction between knowledge resources and their capabilities [7], [42], [56]. Finally, this study showed the urgency of organizational agility as a performance evaluation measure in countering to turbulence and other similar pandemics [7]. This evaluation helped to gain new theoretical insights to investigate advanced knowledge about the value of collaborative knowledge creation and innovation to anticipate risks due to turbulence.

## 5.2 Managerial Implications

In managerial implication, this research provided insight into three elements. First, understanding the critical role of social capital and collaborative knowledge creation in attaining innovation and its impact on organizational agility provides managers with valuable insight into governing severe turbulence. Achieving innovation required investing in social capital and collaborative knowledge creation to answer the crisis. Managers had to realize that abundant and measurable quality of collaborative knowledge enabled the development of innovation in both products, processes, and methods to strengthen innovation capabilities. Second, the organization had to provide a robust mechanism for building ties, social networks, and collaboration with all stakeholders (such as suppliers, business partners, government, and even competitors) who offered renewable knowledge resources to sense and seize the opportunities that

enabled innovation under an unprecedented and highly volatile environment. Eventually, the research model presented a paradigm for achieving organizational agility that guides organizations on the implementation to thriving social capital, collaborative knowledge creation, and high cruising range on the ability of innovation to overcome challenges and turbulence

## 6. Conclusions and Future Study

Most previous study examined organizational agility but did not focus on integrating firm innovation driver's namely social capital and collaborative knowledge creation especially in emerging country like Indonesia. The organizational agility provides opportunities and encourages every country, industry, and business entity to adapt with market turbulence even pandemic to maintain organizational performance and build sustainable competitive advantage. The present study examines the role of social capital, collaborative knowledge creation and firm innovation on organizational agility in the SMEs sector. Furthermore, examining strategic flexibility as moderating variable.

Three important conclusions can be drawn from the present study. First, organizational agility are complex constructions, which consist not only social capital but also firm innovation. Second, collaborative knowledge creation and firm innovation act as mediating variable relationship between social capital and organizational agility. Furthermore, two sequential mediating pattern as strategic path to enhance organizational agility. Finally, strategic flexibility did not act as moderating variable the relationship between innovation and organizational agility.

### 6.1 Limitations and Further Study

Although the present study provided theoretical and managerial contributions, this study had several limitations that are worth examining and urges for research in the future. First, this present study was conducted while the pandemic was still occurring in Indonesia, but the world began to accept and make peace with Covid-19. Undeniably at this point, mobility was still limited by rules such as regional lockdowns and health protocols. Under these conditions, collecting a large sample of data was difficult, especially from SMEs in Indonesia. Therefore, the discoveries of the present study cannot be generalized conclusively to different industries or countries. Consequently, the research model in the present study should be assessed in further studies, targeting a substantial amount of sample from different sectors, countries, and regions to authenticate these results. Second, the measurement of the variables in the present study was chosen at the enterprise level, while the development of capabilities and the realization of increased agility began at the level of individual business processes in different departments or units. Therefore, future research can be completed at the individual or team level within the organization. Finally, the present study was conducted only in woodworking SMEs; therefore, the result cannot be generalized to other SMEs or industries. For this reason, future studies about the organizational agility model must be conducted in more diverse sectors or organizations.

**Author Contributions:** Conceptualization, I.W.E.A. and D.S.; methodology, I.W.E.A.; software, N.K.D.H.; validation, I.W.E.A., D.S. and V.K.; formal analysis, I.M.D.A.S.A.; investigation, N.K.D.H.; resources, I.W.E.A.; data curation, N.K.D.H.; writing—original draft preparation, I.W.E.A.; writing—review and editing, D.S.; visualization, V.K.; supervision, D.S.; project administration, N.K.D.H.; funding acquisition, I.W.E.A.

**Funding:** Thank you to the Ministry of Education and Cultural, Research Technology and Higher Education of the Republic of Indonesia, Directorate of Research and Community Service (DRPTM) for the year of 2022 research grant No. 085/SPK/D4/PPK.01.APTV/VII/2022 and 3163/PL8/PG/2022.

**Institutional Review Board Statement:** Not applicable.

**Informed Consent Statement:** Not applicable. 533

**Data Availability Statement:** Not applicable. 534

**Conflicts of Interest:** The authors declare no conflict of interest. 535

## References 536

- [1] S. Baškarada and A. Koronios, "The 5S organizational agility framework: a dynamic capabilities perspective," *International Journal of Organizational Analysis*, vol. 26, no. 2, pp. 331–342, May 2018, doi: 10.1108/IJOA-05-2017-1163. 537
- [2] B. D. Audretsch and M. Belitski, "The limits to open innovation and its impact on innovation performance," *Technovation*, p. 102519, Mar. 2022, doi: 10.1016/j.technovation.2022.102519. 540
- [3] I. Miroshnychenko, A. Strobl, K. Matzler, and A. de Massis, "Absorptive capacity, strategic flexibility, and business model innovation: Empirical evidence from Italian SMEs," *Journal of Business Research*, vol. 130, pp. 670–682, Jun. 2021, doi: 10.1016/j.jbusres.2020.02.015. 542
- [4] T. Yildiz and Z. Aykanat, "The mediating role of organizational innovation on the impact of strategic agility on firm performance," *World Journal of Entrepreneurship, Management and Sustainable Development*, vol. 17, no. 4, pp. 765–786, Sep. 2021, doi: 10.1108/WJEMSD-06-2020-0070. 545
- [5] T.-T. Chung, T.-P. Liang, C.-H. Peng, D.-N. Chen, and P. Sharma, "Knowledge Creation and Organizational Performance: Moderating and Mediating Processes from an Organizational Agility Perspective," *AIS Transactions on Human-Computer Interaction*, pp. 79–106, 2019, doi: 10.17705/1thci.00114. 548
- [6] H. M. Liu and H. F. Yang, "Network resource meets organizational agility: Creating an idiosyncratic competitive advantage for SMEs," *Management Decision*, vol. 58, no. 1, pp. 58–75, Jan. 2020, doi: 10.1108/MD-10-2017-1061. 551
- [7] K. S. Al-Omoush, V. Simón-Moya, and J. Sendra-García, "The impact of social capital and collaborative knowledge creation on e-business proactiveness and organizational agility in responding to the COVID-19 crisis," *Journal of Innovation and Knowledge*, vol. 5, no. 4, pp. 279–288, Oct. 2020, doi: 10.1016/j.jik.2020.10.002. 554
- [8] M. Dabić, N. Stojčić, M. Simić, V. Potocan, M. Slavković, and Z. Nedelko, "Intellectual agility and innovation in micro and small businesses: The mediating role of entrepreneurial leadership," *Journal of Business Research*, vol. 123, pp. 683–695, Feb. 2021, doi: 10.1016/j.jbusres.2020.10.013. 556
- [9] H. M. Liu and H. F. Yang, "Network resource meets organizational agility: Creating an idiosyncratic competitive advantage for SMEs," *Management Decision*, vol. 58, no. 1, pp. 58–75, Jan. 2020, doi: 10.1108/MD-10-2017-1061. 559
- [10] Z. Cai, H. Liu, Q. Huang, and L. Liang, "Developing organizational agility in product innovation: the roles of IT capability, KM capability, and innovative climate," *R and D Management*, vol. 49, no. 4, pp. 421–438, 2019, doi: 10.1111/radm.12305. 561
- [11] J. I. L. Chan and R. Muthuveloo, "Vital organisational capabilities for strategic agility: an empirical study," *Asia-Pacific Journal of Business Administration*, vol. 12, no. 3–4, pp. 223–236, Nov. 2020, doi: 10.1108/APJBA-12-2019-0261. 564
- [12] Y. Koçyiğit and B. Akkaya, "The Role of Organizational Flexibility in Organizational Agility: A Research on SMEs," *Business Management and Strategy*, vol. 11, no. 1, p. 110, Apr. 2020, doi: 10.5296/bms.v11i1.16867. 567
- [13] D. Teece, M. Peteraf, and S. Leih, "Dynamic capabilities and organizational agility: Risk, uncertainty, and strategy in the innovation economy," *California Management Review*, vol. 58, no. 4, 2016, doi: 10.1525/cm.2016.58.4.13. 569
- [14] E. de O. Teixeira and W. B. Werther, "Resilience: Continuous renewal of competitive advantages," *Business Horizons*, vol. 56, no. 3, 2013, doi: 10.1016/j.bushor.2013.01.009. 572



- [15] A. Belhadi, V. Mani, S. S. Kamble, S. A. R. Khan, and S. Verma, "Artificial intelligence-driven innovation for enhancing supply chain resilience and performance under the effect of supply chain dynamism: an empirical investigation," *Annals of Operations Research*, 2021, doi: 10.1007/s10479-021-03956-x. 574-576
- [16] A. Ganguly, A. Talukdar, and D. Chatterjee, *Evaluating the role of social capital, tacit knowledge sharing, knowledge quality and reciprocity in determining innovation capability of an organization*, vol. 23, no. 6, 2019. doi: 10.1108/JKM-03-2018-0190. 577-579
- [17] S. K. Singh, A. Mazzucchelli, S. R. Vessal, and A. Solidoro, "Knowledge-based HRM practices and innovation performance: Role of social capital and knowledge sharing," *Journal of International Management*, vol. 27, no. 1, p. 100830, 2021, doi: 10.1016/j.intman.2021.100830. 580-582
- [18] K. S. Al-Omoush, V. Simón-Moya, and J. Sendra-García, "The impact of social capital and collaborative knowledge creation on e-business proactiveness and organizational agility in responding to the COVID-19 crisis," *Journal of Innovation and Knowledge*, vol. 5, no. 4, pp. 279–288, Oct. 2020, doi: 10.1016/j.jik.2020.10.002. 583-585
- [19] K. Harsch and M. Festing, "Dynamic talent management capabilities and organizational agility – A qualitative exploration," *Human Resource Management*, vol. 59, no. 1, pp. 43–61, Jan. 2020, doi: 10.1002/hrm.21972. 586-587
- [20] C. M. Felipe, J. L. Roldán, and A. L. Leal-Rodríguez, "Impact of organizational culture values on organizational agility," *Sustainability (Switzerland)*, vol. 9, no. 12, Dec. 2017, doi: 10.3390/su9122354. 588-589
- [21] F. C. Özbuğday, D. Findik, K. Metin Özcan, and S. Başçı, "Resource efficiency investments and firm performance: Evidence from European SMEs," *Journal of Cleaner Production*, vol. 252, p. 119824, 2020, doi: <https://doi.org/10.1016/j.jclepro.2019.119824>. 590-592
- [22] T. Ravichandran, "Exploring the relationships between IT competence, innovation capacity and organizational agility," *Journal of Strategic Information Systems*, vol. 27, no. 1, pp. 22–42, Mar. 2018, doi: 10.1016/j.jsis.2017.07.002. 593-594
- [23] I. W. E. Arsawan, V. Koval, G. Duginets, O. Kalinin, and I. Korostova, "The impact of green innovation on environmental performance of SMEs in an emerging economy," in *E3S Web of Conferences*, 2021, vol. 255, p. 1012. 595-596
- [24] I. W. E. Arsawan, V. Koval, I. Rajiani, N. W. Rustiarini, W. G. Supartha, and N. P. S. Suryantini, "Leveraging knowledge sharing and innovation culture into SMEs sustainable competitive advantage," *International Journal of Productivity and Performance Management*, vol. 71, no. 2, pp. 405–428, Jan. 2022, doi: 10.1108/IJPPM-04-2020-0192. 597-598
- [25] G. B. S. Parwita, I. W. E. Arsawan, V. Koval, R. Hrinchenko, N. Bogdanova, and R. Tamosiuniene, "Organizational innovation capability: Integrating human resource management practice, knowledge management and individual creativity," *Intellectual Economics*, vol. 15, no. 2, 2021. 600-602
- [26] I. W. E. Arsawan, N. M. Kariati, Y. Shchokina, P. A. Prayustika, N. W. Rustiarini, and V. Koval, "INVIGORATING EMPLOYEE ' S INNOVATIVE WORK BEHAVIOR : EXPLORING THE SEQUENTIAL MEDIATING ROLE OF ORGANIZATIONAL COMMITMENT AND KNOWLEDGE SHARING," vol. 23, no. 1, pp. 117–130, 2022. 603-606
- [27] I. Miroshnychenko, A. Strobl, K. Matzler, and A. de Massis, "Absorptive capacity, strategic flexibility, and business model innovation: Empirical evidence from Italian SMEs," *Journal of Business Research*, vol. 130, pp. 670–682, Jun. 2021, doi: 10.1016/j.jbusres.2020.02.015. 607-609
- [28] S. H. Khan, A. Majid, and M. Yasir, "Strategic renewal of SMEs: the impact of social capital, strategic agility and absorptive capacity," *Management Decision*, vol. 59, no. 8, pp. 1877–1894, 2020, doi: 10.1108/MD-12-2019-1722. 610-611
- [29] B. Sherehiy, W. Karwowski, and J. K. Layer, "A review of enterprise agility: Concepts, frameworks, and attributes," *International Journal of Industrial Ergonomics*, vol. 37, no. 5, 2007, doi: 10.1016/j.ergon.2007.01.007. 612-613
- [30] N. A. Wageeh, "Organizational Agility: The Key to Organizational Success," *International Journal of Business and Management*, vol. 11, no. 5, p. 296, Apr. 2016, doi: 10.5539/ijbm.v11n5p296. 614-615

- [31] R. Žitkienė and M. Deksnys, "Organizational agility conceptual model," *Montenegrin Journal of Economics*, vol. 14, no. 2, pp. 115–129, 2018, doi: 10.14254/1800-5845/2018.14-2.7. 616  
617
- [32] S. Ahmadi and M. J. Ershadi, "Investigating the role of social networking technology on the organizational agility: a structural equation modeling approach," *Journal of Advances in Management Research*, vol. 18, no. 4, pp. 568–584, Oct. 2021, doi: 10.1108/JAMR-04-2020-0052. 618  
619  
620
- [33] J. Zhou, G. Bi, H. Liu, Y. Fang, and Z. Hua, "Understanding employee competence, operational IS alignment, and organizational agility – An ambidexterity perspective," *Information and Management*, vol. 55, no. 6, pp. 695–708, Sep. 2018, doi: 10.1016/j.im.2018.02.002. 621  
622  
623
- [34] S. Panda and S. K. Rath, "Investigating the structural linkage between IT capability and organizational agility: A study on Indian financial enterprises," *Journal of Enterprise Information Management*, vol. 29, no. 5, pp. 751–773, Sep. 2016, doi: 10.1108/JEIM-04-2015-0033. 624  
625  
626
- [35] A. T. Walter, "Organizational agility: ill-defined and somewhat confusing? A systematic literature review and conceptualization," *Management Review Quarterly*, vol. 71, no. 2, pp. 343–391, Apr. 2021, doi: 10.1007/s11301-020-00186-6. 627  
628  
629
- [36] M. Falahat, T. Ramayah, P. Soto-Acosta, and Y. Y. Lee, "SMEs internationalization: The role of product innovation, market intelligence, pricing and marketing communication capabilities as drivers of SMEs' international performance," *Technological Forecasting and Social Change*, vol. 152, no. January, p. 119908, 2020, doi: 10.1016/j.techfore.2020.119908. 630  
631  
632  
633
- [37] M. Ciszewska-Mlinarič, "Foreign market knowledge and SME's international performance: Moderating effects of strategic intent and time-to-internationalization," *Entrepreneurial Business and Economics Review*, vol. 4, no. 4, pp. 51–66, 2016, doi: 10.15678/EBER.2016.040404. 634  
635  
636
- [38] S. Gavrilă Gavrilă and A. de Lucas Ancillo, "Spanish SMEs' digitalization enablers: E-Receipt applications to the offline retail market," *Technological Forecasting and Social Change*, vol. 162, p. 120381, 2021, doi: <https://doi.org/10.1016/j.techfore.2020.120381>. 637  
638  
639
- [39] R. Stekelorum, I. Laguir, and J. ElBaz, "Can you hear the Eco? From SME environmental responsibility to social requirements in the supply chain," *Technological Forecasting and Social Change*, vol. 158, p. 120169, 2020, doi: <https://doi.org/10.1016/j.techfore.2020.120169>. 640  
641  
642
- [40] F. Cosenz and E. Bivona, "Fostering growth patterns of SMEs through business model innovation. A tailored dynamic business modelling approach," *Journal of Business Research*, 2020, doi: <https://doi.org/10.1016/j.jbusres.2020.03.003>. 643  
644  
645
- [41] K. Faccin and A. Balestrin, "The dynamics of collaborative practices for knowledge creation in joint R&D projects," *Journal of Engineering and Technology Management - JET-M*, vol. 48, pp. 28–43, Apr. 2018, doi: 10.1016/j.jengtecman.2018.04.001. 646  
647  
648
- [42] S. Weaven, S. Quach, P. Thaichon, L. Frazer, K. Billot, and D. Grace, "Surviving an economic downturn: Dynamic capabilities of SMEs," *Journal of Business Research*, vol. 128, pp. 109–123, 2021, doi: <https://doi.org/10.1016/j.jbusres.2021.02.009>. 649  
650  
651
- [43] S. H. Khan, A. Majid, and M. Yasir, "Strategic renewal of SMEs: the impact of social capital, strategic agility and absorptive capacity," *Management Decision*, vol. 59, no. 8, pp. 1877–1894, 2020, doi: 10.1108/MD-12-2019-1722. 652  
653
- [44] D. Quaye, "Marketing innovation and sustainable competitive advantage of manufacturing SMEs in Ghana," *Management Decision*, vol. 57, no. 7, pp. 1535–1553, 2019, doi: 10.1108/MD-08-2017-0784. 654  
655

- [45] A. Azudin and N. Mansor, "Management accounting practices of SMEs: The impact of organizational DNA, business potential and operational technology," *Asia Pacific Management Review*, vol. 23, no. 3, pp. 222–226, 2018, doi: <https://doi.org/10.1016/j.apmr.2017.07.014>.
- [46] S. M. Chege and D. Wang, "The influence of technology innovation on SME performance through environmental sustainability practices in Kenya," *Technology in Society*, vol. 60, p. 101210, 2020, doi: <https://doi.org/10.1016/j.techsoc.2019.101210>.
- [47] L. L. J. Meijer, J. C. C. M. Huijben, A. van Boxstael, and A. G. L. Romme, "Barriers and drivers for technology commercialization by SMEs in the Dutch sustainable energy sector," *Renewable and Sustainable Energy Reviews*, vol. 112, pp. 114–126, 2019, doi: <https://doi.org/10.1016/j.rser.2019.05.050>.
- [48] S. King, D. Lusher, J. Hopkins, and G. W. Simpson, "Industrial symbiosis in Australia: The social relations of making contact in a matchmaking marketplace for SMEs," *Journal of Cleaner Production*, vol. 270, p. 122146, 2020, doi: <https://doi.org/10.1016/j.jclepro.2020.122146>.
- [49] J. C. Hayton, "Competing in the new economy: The effect of intellectual capital on corporate entrepreneurship in high-technology new ventures," *R and D Management*, vol. 35, no. 2, 2005, doi: [10.1111/j.1467-9310.2005.00379.x](https://doi.org/10.1111/j.1467-9310.2005.00379.x).
- [50] H. Liu, W. Ke, K. K. Wei, and Y. Lu, "The effects of social capital on firm substantive and symbolic performance: In the context of E-business," *Journal of Global Information Management*, vol. 24, no. 1, 2016, doi: [10.4018/JGIM.2016010104](https://doi.org/10.4018/JGIM.2016010104).
- [51] J. Barney, "Firm Resources and Sustained Competitive Advantage," *Journal of Management*, vol. 17, no. 1, pp. 99–120, 1991, doi: [10.1177/014920639101700108](https://doi.org/10.1177/014920639101700108).
- [52] J. B. Barney and J. B. Barney, "year retrospective on the resource-based view," 2001, doi: [10.1177/014920630102700602](https://doi.org/10.1177/014920630102700602).
- [53] J. Ferreira, A. Coelho, and L. Moutinho, "Dynamic capabilities, creativity and innovation capability and their impact on competitive advantage and firm performance: The moderating role of entrepreneurial orientation," *Technovation*, vol. 92–93, no. July, pp. 0–1, 2020, doi: [10.1016/j.technovation.2018.11.004](https://doi.org/10.1016/j.technovation.2018.11.004).
- [54] F. Sabetzadeh and E. Tsui, "An effective knowledge quality framework based on knowledge resources interdependencies," *Vine*, vol. 45, no. 3, pp. 360–375, 2015, doi: [10.1108/VINE-07-2014-0048](https://doi.org/10.1108/VINE-07-2014-0048).
- [55] S. Al-Shami and N. Rashid, "A holistic model of dynamic capabilities and environment management system towards eco-product innovation and sustainability in automobile firms," *Journal of Business and Industrial Marketing*, vol. 37, no. 2, pp. 402–416, Jan. 2022, doi: [10.1108/JBIM-04-2020-0217](https://doi.org/10.1108/JBIM-04-2020-0217).
- [56] D. J. Teece, G. Pisano, and A. Shuen, "Dynamic capabilities and strategic management," *Strategic management journal*, vol. 18, no. 7, pp. 509–533, 1997.
- [57] D. J. Teece, G. Pisano, and A. Shuen, "Dynamic capabilities and strategic management," *Knowledge and Strategy*, vol. 18, no. March, pp. 77–116, 2009, doi: [10.1093/0199248540.003.0013](https://doi.org/10.1093/0199248540.003.0013).
- [58] J. Tu, "The role of dyadic social capital in enhancing collaborative knowledge creation," *Journal of Informetrics*, vol. 14, no. 2, 2020, doi: [10.1016/j.joi.2020.101034](https://doi.org/10.1016/j.joi.2020.101034).
- [59] E. Ode and R. Ayavoo, "The mediating role of knowledge application in the relationship between knowledge management practices and firm innovation," *Journal of Innovation and Knowledge*, vol. 5, no. 3, pp. 210–218, Jul. 2020, doi: [10.1016/j.jik.2019.08.002](https://doi.org/10.1016/j.jik.2019.08.002).
- [60] R. J. Calantone, S. T. Cavusgil, and Y. Zhao, "Learning orientation, firm innovation capability, and firm performance," *Industrial Marketing Management*, vol. 31, no. 6, 2002, doi: [10.1016/S0019-8501\(01\)00203-6](https://doi.org/10.1016/S0019-8501(01)00203-6).

- [61] S. Zhao, Y. Jiang, X. Peng, and J. Hong, "Knowledge sharing direction and innovation performance in organizations: Do absorptive capacity and individual creativity matter?," *European Journal of Innovation Management*, vol. 24, no. 2, pp. 371–394, 2020, doi: 10.1108/EJIM-09-2019-0244.
- [62] I. Nonaka and G. von Krogh, "Perspective—Tacit knowledge and knowledge conversion: Controversy and advancement in organizational knowledge creation theory," *Organization science*, vol. 20, no. 3, pp. 635–652, 2009.
- [63] C. A. Ooi, C. W. Hooy, and A. P. Mat Som, "The influence of board diversity in human capital and social capital in crisis," *Managerial Finance*, vol. 43, no. 6, pp. 700–719, 2017, doi: 10.1108/MF-08-2016-0226.
- [64] W. Chen, H. Jiao, Q. Zeng, and J. Wu, "Ios-enabled collaborative knowledge creation and supply chain flexibility: The moderate role of market uncertainty," 2016.
- [65] M. Steinmo and E. Rasmussen, "The interplay of cognitive and relational social capital dimensions in university-industry collaboration: Overcoming the experience barrier," *Research Policy*, vol. 47, no. 10, 2018, doi: 10.1016/j.respol.2018.07.004.
- [66] S. Yeşil and I. F. Doğan, "Exploring the relationship between social capital, innovation capability and innovation," *Innovation: Organization and Management*, vol. 21, no. 4, 2019, doi: 10.1080/14479338.2019.1585187.
- [67] M. Thompson, "Social capital, innovation and economic growth," *Journal of Behavioral and Experimental Economics*, vol. 73, 2018, doi: 10.1016/j.socec.2018.01.005.
- [68] L. Chen, W. Zheng, B. Yang, and S. Bai, "Transformational leadership, social capital and organizational innovation," *Leadership and Organization Development Journal*, vol. 37, no. 7, 2016, doi: 10.1108/LODJ-07-2015-0157.
- [69] E. Bouton, S. B. Tal, and C. S. C. Asterhan, "Students, social network technology and learning in higher education: Visions of collaborative knowledge construction vs. the reality of knowledge sharing," *The Internet and Higher Education*, vol. 49, p. 100787, 2021, doi: <https://doi.org/10.1016/j.iheduc.2020.100787>.
- [70] T. Q. Dung, L. B. Bonney, R. P. Adhikari, and M. P. Miles, "Entrepreneurial orientation, knowledge acquisition and collaborative performance in agri-food value-chains in emerging markets," *Supply Chain Management*, vol. 25, no. 5, pp. 521–533, 2020, doi: 10.1108/SCM-09-2019-0327.
- [71] F. Chang, G. Zhou, C. Zhang, K. Ding, W. Cheng, and F. Chang, "A maintenance decision-making oriented collaborative cross-organization knowledge sharing blockchain network for complex multi-component systems," *Journal of Cleaner Production*, vol. 282, p. 124541, 2021, doi: <https://doi.org/10.1016/j.jclepro.2020.124541>.
- [72] C. Wang and Q. Hu, "Technovation Knowledge sharing in supply chain networks : Effects of collaborative innovation activities and capability on innovation performance," *Technovation*, no. November 2015, pp. 1–13, 2017, doi: 10.1016/j.technovation.2017.12.002.
- [73] M. Hock-Doepgen, T. Clauss, S. Kraus, and C. F. Cheng, "Knowledge management capabilities and organizational risk-taking for business model innovation in SMEs," *Journal of Business Research*, vol. 130, no. January 2020, pp. 683–697, 2021, doi: 10.1016/j.jbusres.2019.12.001.
- [74] J. Chen and L. Liu, "Customer participation, and green product innovation in SMEs: The mediating role of opportunity recognition and exploitation," *Journal of Business Research*, vol. 119, pp. 151–162, 2020, doi: <https://doi.org/10.1016/j.jbusres.2019.05.033>.
- [75] J. Cepeda and J. Arias-Pérez, "Information technology capabilities and organizational agility: The mediating effects of open innovation capabilities," *Multinational Business Review*, vol. 27, no. 2, pp. 198–216, Aug. 2019, doi: 10.1108/MBR-11-2017-0088.
- [76] T. Yildiz and Z. Aykanat, "The mediating role of organizational innovation on the impact of strategic agility on firm performance," *World Journal of Entrepreneurship, Management and Sustainable Development*, vol. 17, no. 4, pp. 765–786, Sep. 2021, doi: 10.1108/WJEMSD-06-2020-0070.

- [77] L. Yi, Y. Wang, B. Upadhaya, S. Zhao, and Y. Yin, "Knowledge spillover, knowledge management capabilities, and innovation among returnee entrepreneurial firms in emerging markets: Does entrepreneurial ecosystem matter?," *Journal of Business Research*, vol. 130, no. January 2020, pp. 283–294, 2021, doi: 10.1016/j.jbusres.2021.03.024. 738  
739  
740  
741
- [78] S. Kamboj and Z. Rahman, "Market orientation, marketing capabilities and sustainable innovation: The mediating role of sustainable consumption and competitive advantage," *Management Research Review*, vol. 40, no. 6, pp. 698–724, 2017, doi: 10.1108/MRR-09-2014-0225. 742  
743  
744
- [79] D. Brozovic, "Strategic Flexibility: A Review of the Literature," *International Journal of Management Reviews*, vol. 20, no. 1, 2018, doi: 10.1111/ijmr.12111. 745  
746
- [80] A. H. Gorondutse, D. Arshad, and A. S. Alshuaibi, "Driving sustainability in SMEs' performance: the effect of strategic flexibility," *Journal of Strategy and Management*, 2020. 747  
748
- [81] J. Yang, F. Zhang, X. Jiang, and W. Sun, "Strategic flexibility, green management, and firm competitiveness in an emerging economy," *Technological Forecasting and Social Change*, vol. 101, pp. 347–356, Dec. 2015, doi: 10.1016/j.techfore.2015.09.016. 749  
750  
751
- [82] L. Xiu, X. Liang, Z. Chen, and W. Xu, "Strategic flexibility, innovative HR practices, and firm performance," *Personnel Review*, 2017. 752  
753
- [83] A. Cingöz and A. A. Akdoğan, "Strategic Flexibility, Environmental Dynamism, and Innovation Performance: An Empirical Study," *Procedia - Social and Behavioral Sciences*, vol. 99, pp. 582–589, Nov. 2013, doi: 10.1016/j.sbspro.2013.10.528. 754  
755  
756
- [84] E. F. Thomas, "Platform-based product design and environmental turbulence: The mediating role of strategic flexibility," *European Journal of Innovation Management*, vol. 17, no. 1, pp. 107–124, 2014, doi: 10.1108/EJIM-06-2013-0055. 757  
758  
759
- [85] R. v Krejcie and D. W. Morgan, "Determining sample size for research activities," *Educational and Psychological Measurement*, vol. 30, no. 3, pp. 607–610, 1970. 760  
761
- [86] I. Nonaka and H. Takeuchi, *The knowledge-creating company: How Japanese companies create the dynamics of innovation*. Oxford university press, 1995. 762  
763
- [87] L. V. Ngo and A. O' Cass, "Creating value offerings via operant resource-based capabilities," *Industrial Marketing Management*, vol. 38, no. 1, 2009, doi: 10.1016/j.indmarman.2007.11.002. 764  
765
- [88] W. A. Nafei, "The Role of Organizational Agility in Reinforcing Job Engagement: A Study on Industrial Companies in Egypt," *International Business Research*, vol. 9, no. 2, 2016, doi: 10.5539/ibr.v9n2p153. 766  
767
- [89] D. S. Preston, D. E. Leidner, D. Chen, M. Q. Uarterly, and E. Xecutive, "created CIO positions," 2008. 768
- [90] J. F. Hair Jr, L. M. Matthews, R. L. Matthews, and M. Sarstedt, "PLS-SEM or CB-SEM: updated guidelines on which method to use," *International Journal of Multivariate Data Analysis*, vol. 1, no. 2, pp. 107–123, 2017. 769  
770
- [91] J. F. Hair, G. Hult, M. Tomas, C. M. Ringle, and M. Sarstedt, *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage publications, 2016. 771  
772
- [92] S. Zhang, Z. Wang, and X. Zhao, "Effects of proactive environmental strategy on environmental performance: Mediation and moderation analyses," *Journal of Cleaner Production*, vol. 235, pp. 1438–1449, Oct. 2019, doi: 10.1016/j.jclepro.2019.06.220. 773  
774  
775
- [93] W. W. Chin, "How to Write Up and Report PLS Analyses," in *Handbook of Partial Least Squares*, 2010, pp. 655–690. 776  
777
- [94] M. Tenenhaus, V. E. Vinzi, Y.-M. Chatelin, and C. Lauro, "PLS path modeling," *Comput Stat Data Anal*, vol. 48, no. 1, pp. 159–205, 2005. 778  
779

- [95] J. F. Hair Jr, M. Sarstedt, L. M. Matthews, and C. M. Ringle, "Identifying and treating unobserved heterogeneity with FIMIX-PLS: part I–method," *European Business Review*, vol. 28, no. 1, pp. 63–76, 2016, doi: 10.1108/EBR-09-2015-0094. 780  
781  
782
- [96] J. Henseler and G. Fassott, "Testing moderating effects in PLS path models: An illustration of available procedures," in *Handbook of partial least squares*, Springer, 2010, pp. 713–735. 783  
784
- [97] A. Leckel, S. Veilleux, and L. P. Dana, "Local Open Innovation: A means for public policy to increase collaboration for innovation in SMEs," *Technological Forecasting and Social Change*, vol. 153, p. 119891, 2020, doi: 785  
786  
787  
<https://doi.org/10.1016/j.techfore.2019.119891>.
- [98] J. Patricio, L. Axelsson, S. Blomé, and L. Rosado, "Enabling industrial symbiosis collaborations between SMEs from a regional perspective," *Journal of Cleaner Production*, vol. 202, pp. 1120–1130, 2018, doi: 788  
789  
790  
<https://doi.org/10.1016/j.jclepro.2018.07.230>.
- [99] A. Zaridis, I. Vlachos, and M. Bourlakis, "SMEs strategy and scale constraints impact on agri-food supply chain collaboration and firm performance," *Production Planning and Control*, vol. 32, no. 14, pp. 1165–1178, 2021, doi: 791  
792  
793  
10.1080/09537287.2020.1796136.
- [100] Q. Tan and C. M. P. Sousa, "Leveraging marketing capabilities into competitive advantage and export performance," *International Marketing Review*, vol. 32, no. 1, pp. 78–102, 2015, doi: 10.1108/IMR-12-2013-0279. 794  
795
- [101] C. Williams, J. Du, and H. Zhang, "International orientation of Chinese internet SMEs: Direct and indirect effects of foreign and indigenous social networking site use," *Journal of World Business*, vol. 55, no. 3, p. 101051, 2020, 796  
797  
798  
doi: <https://doi.org/10.1016/j.jwb.2019.101051>.
- [102] H. Hsin Chang, K. Hong Wong, and W. Sheng Chiu, "The effects of business systems leveraging on supply chain performance: Process innovation and uncertainty as moderators," *Information and Management*, vol. 56, no. 6, p. 799  
800  
801  
103140, 2019, doi: 10.1016/j.im.2019.01.002.
- [103] J. G. Cegarra-Navarro and S. Martelo-Landroguez, "The effect of organizational memory on organizational agility: Testing the role of counter-knowledge and knowledge application," *Journal of Intellectual Capital*, vol. 21, 802  
803  
804  
no. 3, pp. 459–479, Jun. 2020, doi: 10.1108/JIC-03-2019-0048.
- [104] G. A. Arain, Z. A. Bhatti, I. Hameed, and Y. H. Fang, "Top-down knowledge hiding and innovative work behavior (IWB): a three-way moderated-mediation analysis of self-efficacy and local/foreign status," *Journal of 805  
806  
807  
Knowledge Management*, vol. 24, no. 2, pp. 127–149, 2019, doi: 10.1108/JKM-11-2018-0687.
- [105] A. A. Nassani and A. M. Aldakhil, "Tackling organizational innovativeness through strategic orientation: strategic alignment and moderating role of strategic flexibility," *European Journal of Innovation Management*, 2021, 808  
809  
810  
doi: 10.1108/EJIM-04-2021-0198.
- [106] R. Žitkienė and M. Deksnys, "Organizational agility conceptual model," *Montenegrin Journal of Economics*, vol. 14, no. 2, pp. 115–129, 2018, doi: 10.14254/1800-5845/2018.14-2.7. 811  
812
- [107] S. A. Haider and U. N. Kayani, "The impact of customer knowledge management capability on project performance-mediating role of strategic agility," *Journal of Knowledge Management*, vol. 25, no. 2, pp. 298–312, 813  
814  
815  
Mar. 2021, doi: 10.1108/JKM-01-2020-0026.
- [108] H. Mao, S. Liu, and J. Zhang, "How the effects of IT and knowledge capability on organizational agility are contingent on environmental uncertainty and information intensity," *Information Development*, vol. 31, no. 4, pp. 816  
817  
818  
358–382, Sep. 2015, doi: 10.1177/0266666913518059.



Article

# Developing Organizational Agility in SMEs: An Investigation of Innovation's Roles and Strategic Flexibility

I Wayan Edi Arsawan <sup>1,\*</sup>, Ni Kadek Dessy Hariyanti <sup>1</sup>, I Made Ari Dwi Suta Atmaja <sup>2</sup>, Dwi Suhartanto <sup>3</sup> and Viktor Koval <sup>4</sup>

<sup>1</sup> Department of Business Administration, Politeknik Negeri Bali, Badung 80364, Indonesia; dessyhariyanti@pnb.ac.id

<sup>2</sup> Department of Electrical Engineering, Politeknik Negeri Bali, Badung 80364, Indonesia; arisuta@pnb.ac.id

<sup>3</sup> Department of Business Administration, Politeknik Negeri Bandung, Bandung 40012, Indonesia; dwi.suhartanto@polban.ac.id

<sup>4</sup> Department of Business and Tourism Management, Izmail State University of Humanities, 68600 Izmail, Ukraine; victor-koval@ukr.net

\* Correspondence: wayanediarsawan@pnb.ac.id

**Abstract:** Although social capital and collaborative knowledge creation were considered essential drivers in maintaining competitive advantage, empirical evidence on the impact of collaborative knowledge creation on organizational agility remained limited. Therefore, this study examined the relationship between social capital and collaborative knowledge creation in building innovation and agility and testing strategic flexibility as a moderating variable. It employed a quantitative design by distributing questionnaires to 414 managers and assistant managers of SMEs analyzed by SmartPLS-SEM. The results showed that social capital significantly affected collaborative knowledge creation, innovation, and organizational agility. Meanwhile, collaborative knowledge creation has no significant impact on organizational agility. Furthermore, strategic flexibility was not a moderating variable of the relationship between innovation and organizational agility. Based on these findings, this study produced recommendations for managers to strengthen organizational agility.

**Keywords:** social capital; collaborative knowledge creation; innovation; strategic flexibility; organizational agility

## 1. Introduction

Encountering market turbulence, competitor challenges, and even devastating effects of the pandemic, an organization requires the capability and agility to respond to changes, perform certain adjustments [1] and strengthen its innovation ability [2–4] to maintain performance and sustainable competitiveness [5,6]. Moreover, in the current COVID-19 pandemic situation, everything has become unpredictable, causing turbulence in multiple sectors. Thus, the conventional competitive strategy was no longer effective [7]. The pandemic prompted the organization to continuously innovate by maintaining good relationships with the customers [8], optimizing available resources [6], and focusing on their product development [10]. The managers strived to identify opportunities through innovation. However, many failed to utilize precious resources to achieve strategic competitiveness [2]. Therefore, the business organization needs resistance ability by enforcing a variety of scenarios under uncertain contexts [1,11–13]. However, innovation was considered vital during a crisis, and how the company had laid the foundation for a resilient organization through increasing the role of innovation needed further empirical evidence [7,14]. Nevertheless, it was urgently needed given the intense disturbance that required anticipation and exploitation of innovation ability towards sustained competitive advantages [15].

The present study attempted to close research gaps as follows. First, the role of social capital and collaborative knowledge creation in the turbulence caused by the pandemic remained unexplored [7]. Although social capital and collaborative knowledge creation have contributed to sustaining competitive advantages, the empirical evidence between this construct and innovation remained limited [16,17]. Second, the previous research disregards the effect of collaborative knowledge creation on organizational agility [7]. After all, by building adequate collaborative knowledge, an organization will have the critical notion of developing dynamic capabilities [19], creating a culturally resilient culture [20], thus enduring each potential crisis scenario. Third, while strategic value from collaborative knowledge creation practice was evident, most companies could not understand how this practice can be adapted to enhance their innovation abilities in the face of crisis, especially in SMEs. Moreover, SMEs have limited resources [21].

The existing literature described organizational agility as a complex construct. It can be impacted by many drivers such as organizational culture value [20], organizational flexibility [12], collaborative knowledge creation [5], and innovation [7,10,22]. However, there was still a scarcity of insight into the mechanism underpinning innovation that strengthens agility. Thus, the role of moderation should be considered. Furthermore, it was hoped to enrich the understanding of innovation's role in building agility. Hence, this study aimed to explore the predictor of organizational agility using a relevant variable called strategic flexibility that had not been extensively studied yet. Therefore, strategic flexibility has become the key element to making changes in organizational strategic planning so that the impact on innovation and organizational agility will be even more substantial in the future.

Motivated by the research gaps, the present study aimed to examine the nexus between social capital and collaborative knowledge creation towards innovation and organizational agility by proposing a structural equation model for SMEs in Indonesia, based on three primary reasons. First, SMEs were grown exponentially with a total of 64.5 million units that potentially became the backbone of the economy [23]. Therefore, it indicated the magnitude of the potential of social capital that needed to be empowered as the strength to build resilience in facing the turbulences. Second, Indonesian SMEs had a

**Citation:** Arsawan, I.W.E.; Hariyanti, N.K.D.; Atmaja, I.M.A.D.S.; Suhartanto, D.; Koval, V. Developing Organizational Agility in SMEs: An Investigation of Innovation's Roles and Strategic Flexibility. *J. Open Innov. Technol. Mark. Complex.* **2022**, *8*, x. <https://doi.org/10.3390/xxxxx>

Received: 30 July 2022

Accepted: 16 August 2022

Published: date

**Publisher's Note:** MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



**Copyright:** © 2022 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).



weak internal driver in a business dynamic; hence they required knowledge collaboration to improve innovation [24] for the employees from the grassroots level up to the organization [25,26]. Third, SMEs need to prepare strategic flexibility when facing turbulence caused by market shifts or the pandemic [43] so that they can survive in difficult situations [20]. The second section of the article discusses the literature and hypotheses development, followed by method and result to propose a scenario and discussion about agility.

## 2. Literature Review

### 2.1. Organizational Agility and Dynamic Capabilities in SMEs

Organizational agility was the brainchild of [29] that was rooted in two primary concepts called adaptation (reactive) and organizational flexibility (proactive). Organizational agility reveals the ability to recognize environmental transition and counter it quickly by reshaping the resource set, business processes, and strategies [30,31]. In the SME sector, adapting to change was essential to reduce resource issues for future development [6]. Consequently, ensuing the inclusive approach brought out by previous researchers [7,32,33], this study conceptualized organizational agility as responsive capabilities aiming for a more efficient approach in a complex environment [34]. This approach involved rapid responses to changing situations [35] and the ability to predict and take opportunity, primarily by innovation and learning [13,33].

The indicators used to measure organizational agility were (1) seizing possibilities in potential [36], markets, and minimizing threats so that they have a strategic intent to build production stability [37,38]; (2) exhibit sensitivity to environmental changes [39] in order to deal with dynamics [40–42]; (3) increase decision-making agility [6,43,44]; (4) resource, process, and technology adaptation to address changing environmental needs [37,45–47]; and (5) taking into account new price, marketing, manufacturing, and/or partnership actions [25,36,37,48]. Organizational agility in woodcraft SMEs occurred because they produced highly artistic products that were high quality, hard to imitate, and of high value, and they had export shares in various European and American countries [25]. In addition, the present study adopted the study of [7,49,50] in measuring organizational agility.

Furthermore, the dynamic capabilities theory was employed to frame this study, considering the recent turbulence of the business landscape. This theory was the expansion of the resource-based view [51], which stated that the reason for the difference among organizations was their competitive advantage attributed to being unique, valuable, non-replicable, non-reproducible, and non-replaceable [52]. Dynamic capabilities theory center on the organizations' ability to respond to a constantly changing business environment. In other words, organizations must be sensitive in sensing, seizing, and shaping internal and external opportunities and threats for the purpose of the right strategic decisions and reconfigure and reuse all potential and resources [19,42,53]. As a fact, over the past decade, dynamic managerial competencies and capabilities have resulted from the increasing quality of knowledge [16,54] that formed from a collaborative process that was implemented as an essential feature of the organization [19,42,55]. Furthermore, dynamic capabilities were hard for competitors to imitate based on particular characteristics, cultural values [56], and complex imitability [57]. Therefore, strong dynamic capabilities served as a solid foundation for organizational agility.

### 2.2. Social Capital and Collaborative Knowledge Creation

Previous research revealed the function of social capital in supporting knowledge management to achieve sustainable performance [58]. The literature also explored how collaborative knowledge creation is considered as a dynamic process that happens during social interaction between organizations and their partners [5,7]. The social network in the organization served as a channel for transmitting and integrating knowledge, thus could

optimize the role of sharing and creating dynamic ideas and new values [59]. Collaborative knowledge creation was seen as a collaborative mechanism [60] to create and develop knowledge between partners to improve insight into changes [61]. Collaboration described a knowledge transfer mechanism that was harmonized and unified through dynamic social interactions [41] and thus could produce collaborative knowledge [62] both directly and indirectly between partners [58]. Social capital allowed the organization to survive a crisis by pooling expertise and resources [61]. Furthermore, [41] revealed that collaborative knowledge creation was reflected in the knowledge of organizations that develop sustainably, resulting in adjustment to environmental changes and rapidly changing market needs. Meanwhile, social capital formed a synergistic and coordinated network that allowed the company to adopt the necessary changes swiftly by means of knowledge [43]. Finally, social capital produces relational and cognitive skills, increasing organizational agility to respond to environmental changes briskly, flexibly, and in a structured way [63] to manage challenges, seize new opportunities, create value and ensure long-term viability [50]. Based on this, the hypothesis is formulated as follows:

**Hypothesis 1 H1.** *Social capital is significant to collaborative knowledge creation.*

**Hypothesis 2 H2.** *Social capital is significant to organizational agility.*

### 2.3. Social Capital and Firm Innovation

Social capital describes the interaction process between organizations and stakeholders that can affect the exchange of knowledge, ideas and resources among organizations [16]. The literature showed that building strong bonds with business affiliations through social interaction dynamically affected favorable outcomes in acquiring resources and capacity for innovation [64]. Experts already highlighted that the social approaches supply a fundamental basis for describing the impact of external and internal relationships on innovation [4,58,65]. Moreover, social capital has been considered a vital contributor to the success of innovation [66,67] because it involves collaboration-oriented leadership behavior in the achievement of innovation [68]. Furthermore, substantial social capital promotes efficiency and ensures the quality of knowledge flow, thereby encouraging innovation activities without agonizing about risks and barriers [16]. Thus, interaction among organizations helped reduce knowledge limitations and updated the knowledge base, providing a high-quality source of motivation for innovation. Based on the discussion above, the hypothesis is formulated as follows:

**Hypothesis 3 H3.** *Social capital is significant to firm innovation.*

### 2.4. Collaborative Knowledge Creation and Organizational Agility

In building organizational agility, the role of collaborative knowledge creation has not been studied extensively [7]. At the same time, organizational agility was seen as the ability to govern and apply knowledge beneficially [58,69] in responding and adapting organizations to market turbulence and competition dynamics [64,70]. In order to achieve existence, agility requires applying knowledge, idea quality and collaboration to explore new opportunities in a volatile market [64]. Furthermore, Tu [58] claimed that the creation and dissemination of knowledge reflect the value chain of knowledge capital in building agility [71]. Furthermore, organizational agility requires more dynamic learning and collaborative knowledge creation strategies than competitors [72] to transform new ideas into responsive activities [5,6,12]. Hence, the proposed hypothesis was as follows:

**Hypothesis 4 H4.** *Collaborative knowledge creation is significant to organizational agility.*

### 2.5. Innovation and Organizational Agility

Innovative and less innovative organizations differed in terms of adaptation, risk management, and perspectives on uncertainty [22]. Innovative companies focus on learning and experimentation, overcoming uncertainty, and encouraging risk-taking [73]. In contrast, less innovative organizations are afraid of taking risks and uncertainty and tend to be weak in preparing business strategies [13]. It indicated that innovative companies had an organizational climate open to new ideas that affected their ability to identify new market opportunities and products than competitors [10,36,74]. Thus, organizations built new business models to pool existing resources into more dynamic mobile capital [73]. Thus, the changes brought about by innovation make organizations more agile [13,22,75]. Thus, we positioned:

**Hypothesis 5 H5.** *Innovation is significant to organizational agility.*

#### 2.6. *The Mediating Role of Collaborative Knowledge Creation*

Social capital has a pivotal role in transferring and integrating knowledge and was vital in forming collaborative knowledge [59], and therefore increased adaptation to rapid change [61]. This mechanism was the implementation of the interaction of all social resources [41], which produced collaborative knowledge both directly and indirectly [58]. In a crisis, whether due to market turbulence or other disturbances, social capital contributes to the organization's survival [61] and optimizes the diffusion of skills and resources [77]. Moreover, collaborative knowledge creation becomes the foundation for organizations to adapt to environmental changes and dynamic markets [41]. In order to build agility, organizations need to form a coordinated network to collect ideas and turn them into knowledge [43]. It produced relational skills that ultimately improved organizational agility, especially in responding to changes flexibly [63]. It ultimately enabled organizations to manage challenges and opportunities, and also value and sustainability [50,70,78]. Predicated on the discussion above, the hypothesis was proposed as follows:

**Hypothesis 6 H6.** *Collaborative knowledge creation mediates social capital and organizational agility.*

#### 2.7. *Mediating the Role of Firm Innovation*

The existence of social capital was as a liaison between organizations and stakeholders through the exchange of ideas, knowledge and resources [16]. Therefore, it was necessary to develop strong ties with partners to generate resources and capabilities for innovation [64]. Experts' findings revealed that social capital provided the foundation of the relationship between partners [4,58,65] and was an essential driver of successful innovation [66,67]. Furthermore, innovative organizations focused on learning and risk-taking [73], indicating an organizational climate that was open to new ideas [10,36,74], and ultimately made the organization more agile [13,22,75]. Thus, innovation provided the power to face the risk of uncertainty [13] to have sustainable performance and competitive advantage [24]. Formulated on the discussion, the hypothesis was as follows:

**Hypothesis 7 H7.** *Innovation mediates social capital and organizational agility.*

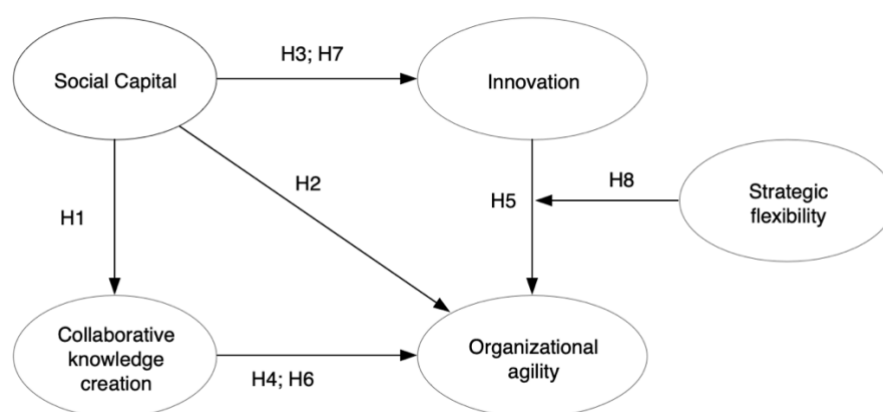
#### 2.8. *The Moderating Role of Strategic Flexibility*

According to dynamic capabilities theory [56], organizations must be sensitive to opportunities and threats to develop and configure plans and strategic decisions [19,42,53]. Therefore, the organization must have a strategy that can adapt the organizational conditions to the changes that occur [1]. Strategic flexibility was the ability to quickly combine and reconfigure the company's stock of resources [57] and carry out the actions taken by the company in real-time [13,79]. In compliance with [3,80,81],

strategic flexibility was achieved through optimizing resource flexibility. If the resource was scarce, the organization must find other resources; meanwhile, if the resource was sufficient, it allowed the company to use resources more efficiently for new purposes [6,10]. In addition, high strategic flexibility allowed companies to build, transfer, and integrate ideas quickly and prepare new patterns according to the current situation [82]. As a result, a company with strategic flexibility can reduce response time to dynamic changes [83] by creating, expanding, or modifying knowledge bases [84] that enable the company to process its knowledge resources effectively, thereby increasing the value of knowledge for organizational agility [80,81]. Hence, we recommend that:

**Hypothesis 8 H8.** *Strategic flexibility positively moderates innovation and organizational agility, so innovation is linked with better organizational agility in companies with high levels of strategic flexibility.*

Therefore, the present study examined the relationships between social capital, collaborative knowledge creation, firm innovation, organizational agility, and strategic flexibility in direct, mediation, and moderation. The conceptual framework is shown in Figure 1.



**Figure 1.** Conceptual framework.

### 3. Methodology

#### 3.1. Data and Sampling Method

This study involved SMEs, which were the backbone of the Indonesian economy. In order to obtain the initial sample, we used the local government database of the Bali province to identify SMEs for research purposes. The population of this study was 450 woodcraft SMEs in Bali Province, Indonesia. Accordingly, the sample was determined by a simple random sampling method called the lottery method, meaning that each member of the population received the same opportunity as the sample once. The formula determined the total number of sample frames [85]; hence, 207 SMEs were asked to complete the research questionnaire. Research respondents were managers and assistant managers as the ideal targets as they have a strategic view of organizational characteristics related to organizational practices. The data was collected for 6 months from February to July 2022 via email, Google Forms, and a direct visit by first sending a prior email notification regarding this study. We obtained a total of 414 responses, which can be analyzed to achieve the objectives of this study.

#### 3.2. Measurements

Since previous studies had evaluated the construct variables used for this study, the construct measurement was adopted from the existing literature. Social capital was measured by 5 indicators adopted from [7,49,50]. Collaborative knowledge creation was measured by 8 indicators adopted from [7,41,64,86]. Firm innovation had 10 indicators adopted from studies by [59,60,87]. Organizational agility was measured by 5 indicators adopted from [7,88,89]. Lastly, strategic flexibility with 6 indicators adopted from [3,79].

To evaluate the constructs, we employed A 7-point Likert scale ranging from “1: strongly disagree to 7: strongly agree”. For ensuring clarity of instructions and statements, the questionnaire written in the Indonesian language was piloted on 30 SME managers who were experienced in corporate strategic planning. This process caused minor changes to the wording of instructions and questions of the questionnaire. The constructs measurement are presented in Table 1.

**Table 1.** Constructs measurement.

Variable	Sources
Social capital	[7,49,50]
Collaborative knowledge creation	[7,41,64,86]
Firm innovation	[59,60,87]
Organizational agility	[7,88,89]
Strategic flexibility	[3,79]

This present study employed partial least square based on variance (PLS-SEM) to estimate the proposed organizational agility model and assess the relationship between variables, either directly or indirectly. In order to evaluate the validity and reliability of the construct variables, as recommended by [90], this study evaluated the measurement model. Furthermore, to test the hypothesis about the relationship between variables, this study assessed the structural model. Since the research objective was to validate the theory of dynamic capabilities in building organizational agility models, using SEM-PLS was acceptable [91].

## 4. Results

### 4.1. Respondent Profile

Table 2 showed the demographic outline of the sample. It showed that the respondents mostly had a higher education background. It was one of the critical pillars of how managers earned quality knowledge [16,92] to develop plans and strategies for dealing with various turbulences [84].

**Table 2.** Demographical facts.

Description	Frequency	Percentage (%)
Age	<25	8.5
	25–30	34.3
	31–35	32.6
	36–40	19.1
	41–45	5.5
Gender	Male	57.7
	Female	42.3
Education	Bachelor	66.9
	Master	30.4
	Doctor	2.7
Experiences	<5	0.5
	6–10	43.7

---

11–15	129	31.2
16–20	102	24.6

---

#### 4.2. The Assessment of The Measurement Model

Table 3 showed that all indicators had a loading factor value higher than 0.6. Furthermore, the CR value was more than 0.7, while the AVE value was more than the recommended level of 0.5. Furthermore, data analysis determined that the square root value of AVE was more than the construct correlation value, indicating that the discriminant validity requirement was met. These indicators showed that the validity and construct reliability requirements were met [90]. Furthermore, the value of VIF was between 1.437–4.468 (smaller than the recommended level of 5), indicating it did not exhibit any issues connected to the variance of the general method [91].

**Table 3.** Measurement Model Indicators.

<b>Indicators</b>	<b>Loading*</b>	<b>CR</b>	<b>AVE</b>
<b>Social capital</b>			
		0.928	0.725
1. Social networks enhance the opportunities, ideas and insights	0.940		
2. Bond connections and collective with partners	0.904		
3. Partners actively involved in decision making	0.935		
4. Social networks' feedback and recommendations.	0.752		
5. Social networks influence processes, products, and services	0.696		
<b>Collaborative knowledge creation</b>			
		0.911	0.564
1. Getting novel ideas and technologies	0.691		
2. Collaborating with partners to gain new knowledge	0.639		
3. Launching and exchanging creative ideas	0.626		
4. Sharing repositories of knowledge and best practices	0.862		
5. Reconfiguring new knowledge.	0.783		
6. Sharing new values and thoughts	0.757		
7. Collaborative learning experiments	0.788		
8. Strengthening knowledge and experience transfer	0.831		
<b>Firm innovation</b>			
		0.932	0.582
1. Developing new products using available of resources	0.830		
2. The company pursues up-to-date strategy to do things	0.775		
3. Respond to activities that involves technology	0.775		
4. Availability of knowledge to develop new products	0.718		
5. Company continually explores new ideas	0.634		
6. Competency to process technologies	0.692		
7. The company's creativity in its methods of operation	0.817		
8. Adopting the products and processing technologies to accomplish future needs	0.834		
9. Company often sells its new products and services	0.836		
10. The perception about innovation as something risky and resisted	0.687		
<b>Organizational Agility</b>			
		0.921	0.701
1. The opportunities produced by the crisis is pursued	0.732		
2. Recognizing dynamic environmental transition	0.835		
3. Improvement in terms of the agility of decision making	0.849		
4. Adaption for resources to accommodating the changing environment	0.911		
5. New strategies were taken into consideration	0.849		
<b>Strategic flexibility</b>			
		0.919	0.657
1. If there is change of circumstances, our organization can adjust its current plans effortlessly	0.888		
2. If there is change of circumstances, our organization is well-prepared to act accordingly	0.888		
3. If there is change of circumstances, organization can adjust the strategy changes	0.898		
4. If there is change of circumstances, organization has the required competency to modify daily routines and practices	0.723		
5. If there is change of circumstances, our organization can generate a new project proactively	0.737		
6. If there is change of circumstances, our organization can prioritize projects with the highest likelihood to succeed	0.702		

### 4.3. Structural Model Testing

This study applied the bootstrap method with 5000 samples to evaluate the significance of the indicators and path coefficients [93]. The results showed that the goodness-of-fit (GoF) model had a value of 0.675, which indicated that the fitness model was significant. In conclusion, these findings indicated that the proposed organizational agility model could be applied to the woodcraft SME sector. In addition, testing on the standard residual root mean square (SRMR) and normed fit index (NFI) showed that the SRMR value was 0.086, while the NFI was 0.687, indicating that the model was fit [94]. Furthermore, the examination of R2 revealed that social capital, collaborative knowledge creation, and innovation described a 0.295 (29.5%) variance in organizational agility. Finally, all Q2 had positive values, which indicated that all variables had good relevance predictions [93].

### 4.4. Hypotheses Testing

The analysis results showed that four of the five hypotheses of the direct relationship were confirmed (Table 4). The relationship between social capital and collaborative knowledge creation was significant ( $\beta = 0.442$ , STDEV 0.054, T Statistic 8.323 > 1.96); hence hypothesis 1 was accepted. The relationship between social capital and organizational agility was significant ( $\beta = 0.198$ , STDEV 0.058, T Statistic 3.413 > 1.96); hence hypothesis 2 was accepted. The relationship between social capital and innovation was significant ( $\beta = 0.534$ , STDEV 0.047, T Statistic 11.287 > 1.96); hence hypothesis 3 was accepted. The relationship between collaborative knowledge creation and organizational agility was not significant ( $\beta = 0.062$ , STDEV 0.053, T Statistic 1.177 < 1.96); hence hypothesis 4 was rejected. Lastly, the direct relationship between innovation and organizational agility was significant ( $\beta = 0.375$ , STDEV 0.054, T Statistic 7.012 > 1.96); hence hypothesis 5 was accepted.

Table 4. Path Coefficients.

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	p Values	Decision
SC → Collaborative K C	0.442	0.446	0.054	8.232	0.000	Sig
SC → Org Agility	0.198	0.194	0.058	3.413	0.001	Sig
SC → Firm Innovation	0.534	0.535	0.047	11.287	0.000	Sig
Collaborative K C → Org Agility	0.062	0.059	0.053	1.177	0.240	Non-sig
Firm Innovation → Org Agility	0.375	0.376	0.054	7.012	0.000	sig

### 4.5. Mediation Testing

Following the identification of the direct relationship between variables, the next stage was to test the positions of mediating variables. In this study, we tested two mediation pathways. According to [90,91], the method used was to measure the VAF value < 0.20, meaning that mediation was not found, while 0.20–0.80 indicates partial and VAF value > 0.80, meaning that there was full mediation. In order to test the mediating effect of the model, non-parametric bootstrap was used [95]. Finally, the variance accounted for (VAF) was calculated to obtain the indirect link and total sizes. When the VAF was greater than 80%, it indicated full mediation; between 20 to 80% was partial; below 20% indicated no mediating effect [91]. Furthermore, the results were presented in Table 5.





Table 5. Mediation Analysis.

Link	Mediator	Independent Variable-Mediator	Mediator-Dependent Variable	Direct	Indirect	Total Effect	VAF (%)	Decision
SC-OA	CKC	0.442	0.062	0.198	0.274	0.472	0.581	Partial mediation
SC-OA	Innov	0.534	0.375	0.198	0.200	0.398	0.503	Partial mediation

The role of mediation in the causal relationship between social capital, collaborative knowledge creation, and organizational agility, along with social capital, innovation, and organizational agility, was examined using the VAF test. Because this study examined two mediation pathways, we assumed that collaborative knowledge creation partially mediates the relationship between social capital and organizational agility, where the VAF value was 58.1%, indicating that hypothesis 6 was accepted. Furthermore, innovation partially mediated the relationship between social capital and organizational agility with a VAF value of 50.3%, indicating that hypothesis 7 was accepted.

Finally, we analyzed the moderating variable in this research model. Multigroup analysis using PLS examined the moderating role of strategic flexibility [96]. However, the analysis showed that strategic flexibility did not mediate the relationship between innovation and organizational agility ( $\beta = 0.084$ , STDEV 0.044, T Statistic 1.912 < 1.96, PV 0.056); hence hypothesis 8 was rejected. The analysis results were presented in Table 6 and Figure 2.

Table 6. Moderating testing.

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	p Values	Decision
Firm_in $\rightarrow$ Stra_Flex $\rightarrow$ Org Agility	0.084	0.086	0.044	1.912	0.056	Non-sig

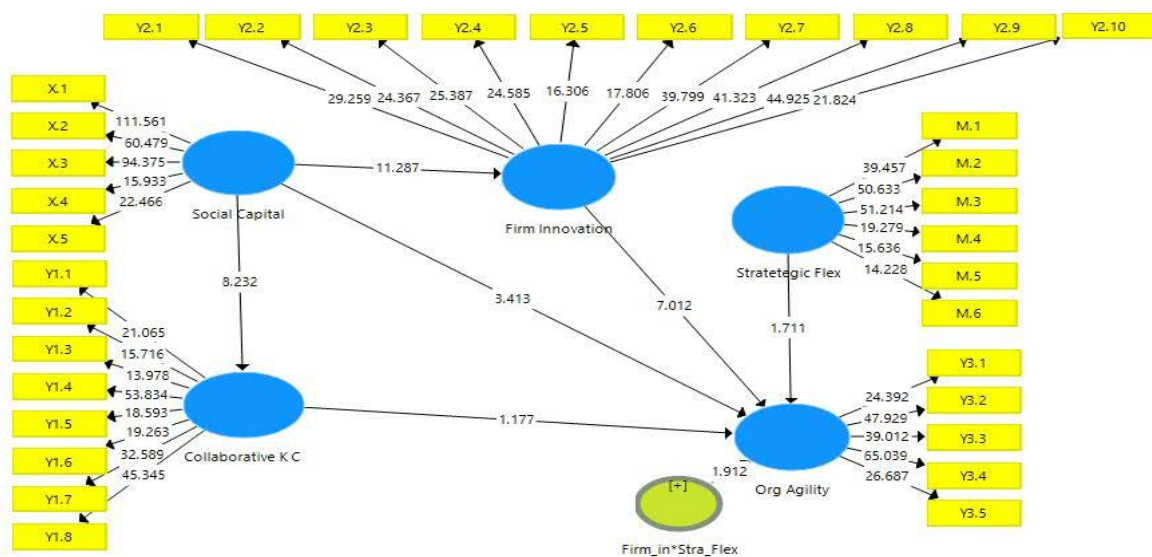


Figure 2. Output Analysis.

## 5. Discussion and Research Implications

This study examined the factors that affect organizational agility in anticipating the turbulence and challenges of globalization. Using PLS-SEM analysis, this study revealed that organizational agility was significantly influenced by innovation, followed by social capital. These results validated previous research in the context of SMEs by [7,16,17], which found the critical role of social capital in building innovation. Furthermore, these results implied that social capital was essential in building knowledge collaboration that led to innovation capabilities, further enhancing organizational agility. This finding strengthened previous research on organizational efforts, especially SMEs, in improving organizational agility [5,7,22,75].

In woodcraft SMEs, the social capital construct was adopted from previous research [7,49,50]. The social capital involved was (1) the ability to increase opportunities, ideas, and concepts, called exploration, aimed to increase contribution in the international market because it has unique and high-value products; (2) close partners and collaborations included suppliers, producers, governments, and competitors. Woodcraft SMEs had mutually beneficial collaborations [97–99], especially in the provision of high artistic value handcraft products [25]; (3) partners could make decisions, especially when confronted with varied market factors [6,44]; as a result, social capital was strengthened as a source of strength in developing long-term performance [100]; (4) recommendations from the social networks built between them [101] became a strength in facing market turbulence [102]; and (5) social networks influenced processes, products, and services [32]; thus, SMEs stability and productivity were strengthened.

Contrary to what was expected, collaborative knowledge creation did not significantly affect organizational agility. This result contradicted the study conducted by [7], which found that collaborative knowledge creation was an essential driver in building organizational agility because knowledge was the principal capital in building agility [34,98]. Therefore, a possible explanation for the insignificant effect of collaborative knowledge creation on organizational agility could be that SMEs were still not open to building collaborative knowledge. SMEs viewed knowledge as exclusive capital and were unwilling to share it, fearing that it could increase the competitiveness of the competitors [99].

In a mediating path, collaborative knowledge creation and innovation mediated the relationship between social capital and organizational agility. Social capital has a pivotal role in transferring and integrating knowledge and was vital in forming collaborative knowledge [7] and therefore increased adaptation to rapid change [61]. This mechanism was the implementation of the interaction of all social resources which produced collaborative knowledge both directly and indirectly. Moreover, collaborative knowledge creation becomes the foundation for organizations to adapt to environmental changes and dynamic markets [41]. In order to build agility, organizations need to form a coordinated network to collect ideas and turn them into knowledge [43]. In addition, innovative organizations focused on learning and risk-taking [73], indicating an organizational climate that was open to new ideas [10], and ultimately made the organization more agile [4,75]

Furthermore, strategic flexibility was not an MV of the relationship between innovation and organizational agility. This result was contrary to a study conducted by [100], which found that strategic flexibility strengthened the strategic orientation of SMEs. A possible explanation was that woodcraft SMEs already had agility because they had unique, distinctive products that competitors could not imitate. Furthermore, they could anticipate and seize opportunities when the market appetite changes [4]. These findings also refuted the statement from [21] that SMEs had limited resources. Instead, SMEs could anticipate and seize opportunities and reconfigure their resource sets, business processes, strategies, and innovations [30,35,31].

### 5.1. Theoretical Implications

The present study contributed to enhancing the literature on organizational agility and dynamic capabilities theory in four main elements. First, this study proposed and examined an integrated model of supporting social capital, collaborative knowledge creation, and innovation in woodcraft SMEs, where the combination of these three drivers was the key to building organizational agility. It turned out that the organizational agility model had good compatibility and explanatory power. Thus, it confirmed that social capital, collaborative knowledge creation, and innovation were generally accepted [7,43], especially in the SME sector [43]. More specifically, social capital played a vital role in increasing collaborative knowledge creation and innovation and encouraging SMEs to increase agility to face challenges and turbulences. The results proved that social capital and collaborative knowledge creation were the basis for forming innovations that ultimately made SMEs more agile. Furthermore, this study assessed organizational agility by integrating social capital into the organizational agility model. The results of analysis showed that the organizational agility integration model for SMEs was fit. In addition, the inclusion of innovation in the organizational agility model increased its explanatory power. Conceptually, the results of this study strengthened the social capital–organizational agility model in the SME sector [7]. This finding showed that in SMEs, social capital and collaborative knowledge creation could simultaneously strengthen the influence of innovation on organizational agility. Thus, the organizational agility model in the context of SMEs was conceptually extended to the social capital–innovation–organizational agility model. Furthermore, these findings provided further evidence for the conclusions of previous studies [8,75], which claimed that innovation was an essential determinant of organizational agility.

Second, this study revealed that collaborative knowledge creation and innovation mediated the relationship between social capital and organizational agility. Although the mediation relationships tested were significant, the relationship between social capital, collaborative knowledge creation, and organizational agility had a greater value. These results proved that SMEs were highly focused on establishing practical collaborative knowledge [98,101] to develop potential and quality knowledge [16,26]. Furthermore, managers' involvement was required in knowledge-sharing practices [26] to generate knowledge capability [102] and knowledge application [59,98]. Therefore, SMEs must take notice of knowledge and prioritize it for organizational sustainability, productivity improvement, innovation, and competitiveness.

Third, organizational agility was an interesting topic for researchers, policymakers, and practitioners, but the existing literature on how Indonesian SMEs can build agility, especially in a crisis, was not yet comprehensive. Most relevant research focused on European countries, while this study contributed to the organizational agility literature in developing countries. The results showed that social capital and innovation affected organizational agility. Furthermore, it was the first study to link social capital, collaborative knowledge creation, and innovation as antecedents of organizational agility when it was majorly studied in developed countries such as Germany [19], Taiwan [6], and Spain [20].

Fourth, this study increased insights into dynamic capabilities related to the ability of SMEs to respond to the rapidly changing business environment. The results showed that social capital was the key element of dynamic capabilities used for capturing new opportunities through strengthening collaborative knowledge creation to improve managerial competence [13], designing and improving business model innovation to build organizational agility [30,32,56]. Notably, social capital triggers the emergence of collaborative knowledge creation in SMEs, which positively affect the emergence of innovation. Furthermore, from the perspective of dynamic capabilities, the results showed the importance of integrating these drivers into a competitive advantage [53] because the better performance was a combination and interaction between knowledge resources and their capabilities [7,42,56]. Finally, this study showed the urgency of organizational agility

as a performance evaluation measure in countering to turbulence and other similar pandemics [7]. This evaluation helped to gain new theoretical insights to investigate advanced knowledge about the value of collaborative knowledge creation and innovation to anticipate risks due to turbulence.

### *5.2. Managerial Implications*

In managerial implication, this research provided insight into three elements. First, understanding the critical role of social capital and collaborative knowledge creation in attaining innovation and its impact on organizational agility provides managers with valuable insight into governing severe turbulence. Achieving innovation required investing in social capital and collaborative knowledge creation to answer the crisis. Managers had to realize that abundant and measurable quality of collaborative knowledge enabled the development of innovation in products, processes, and methods to strengthen innovation capabilities. Second, the organization had to provide a robust mechanism for building ties, social networks, and collaboration with all stakeholders (such as suppliers, business partners, government, and even competitors) who offered renewable knowledge resources to sense and seize the opportunities that enabled innovation under an unprecedented and highly volatile environment. Eventually, the research model presented a paradigm for achieving organizational agility that guides organizations on the implementation to thriving social capital, collaborative knowledge creation, and high cruising range on the ability of innovation to overcome challenges and turbulence.

## **6. Conclusions and Future Study**

Most previous studies examined organizational agility but did not focus on integrating firm innovation drivers, namely social capital and collaborative knowledge creation, especially in an emerging country such as Indonesia. Organizational agility provides opportunities and encourages every country, industry, and business entity to adapt with market turbulence, even a pandemic, to maintain organizational performance and build sustainable competitive advantage. The present study examines the role of social capital, collaborative knowledge creation, and firm innovation on organizational agility in the SMEs sector. Furthermore, it examined strategic flexibility as a moderating variable.

Three important conclusions can be drawn from the present study. First, organizational agility is a complex construction, which consists not only of social capital but also firm innovation. Second, collaborative knowledge creation and firm innovation have a mediating variable relationship between social capital and organizational agility. Furthermore, two mediating patterns acted as a strategic path to enhance organizational agility. Finally, strategic flexibility did not act as a moderating variable in the relationship between innovation and organizational agility.

### *Limitations and Further Study*

Although the present study provided theoretical and managerial contributions, this study had several limitations that are worth examining and urges for research in the future. First, this present study was conducted while the pandemic was still occurring in Indonesia, but the world began to accept and make peace with COVID-19. Undeniably at this point, mobility was still limited by rules such as regional lockdowns and health protocols. Under these conditions, collecting a large sample of data was difficult, especially from SMEs in Indonesia. Therefore, the discoveries of the present study cannot be generalized conclusively to different industries or countries. Consequently, the research model in the present study should be assessed in further studies, targeting a substantial amount of samples from different sectors, countries, and regions to authenticate these results. Second, the measurement of the variables in the present study

was chosen at the enterprise level, while the development of capabilities and the realization of increased agility began at the level of individual business processes in different departments or units. Therefore, future research can be completed at the individual or team level within the organization. Finally, the present study was conducted only in woodworking SMEs; therefore, the results cannot be generalized to other SMEs or industries. For this reason, future studies about the organizational agility model must be conducted in more diverse sectors or organizations.

**Author Contributions:** Conceptualization, I.W.E.A. and D.S.; methodology, I.W.E.A.; software, N.K.D.H.; validation, I.W.E.A., D.S. and V.K.; formal analysis, I.M.A.D.S.A.; investigation, N.K.D.H.; resources, I.W.E.A.; data curation, N.K.D.H.; writing—original draft preparation, I.W.E.A.; writing—review and editing, D.S.; visualization, V.K.; supervision, D.S.; project administration, N.K.D.H.; funding acquisition, I.W.E.A. All authors have read and agreed to the published version of the manuscript.

**Funding:** Ministry of Education and Cultural, Research Technology and Higher Education of the Republic of Indonesia, Directorate of Research, Technology and Community Service (DRTPM): No. 085/SPK/D4/PPK.01.APTV/VII/2022 and 3163/PL8/PG/2022.

**Institutional Review Board Statement:** Not applicable.

**Informed Consent Statement:** Not applicable.

**Data Availability Statement:** Not applicable.

**Conflicts of Interest:** The authors declare no conflict of interest.

## References

1. Baškarada, S.; Koronios, A. The 5S organizational agility framework: A dynamic capabilities perspective. *Int. J. Organ. Anal.* **2018**, *26*, 331–342. <https://doi.org/10.1108/IJOA-05-2017-1163>.
2. Audretsch, B.D.; Belitski, M. The limits to open innovation and its impact on innovation performance. *Technovation* **2022**, 102519. <https://doi.org/10.1016/j.technovation.2022.102519>.
3. Miroshnychenko, I.; Strobl, A.; Matzler, K.; de Massis, A. Absorptive capacity, strategic flexibility, and business model innovation: Empirical evidence from Italian SMEs. *J. Bus. Res.* **2021**, *130*, 670–682. <https://doi.org/10.1016/j.jbusres.2020.02.015>.
4. Yildiz, T.; Aykanat, Z. The mediating role of organizational innovation on the impact of strategic agility on firm performance. *World J. Entrep. Manag. Sustain. Dev.* **2021**, *17*, 765–786. <https://doi.org/10.1108/WJEMSD-06-2020-0070>.
5. Chung, T.-T.; Liang, T.-P.; Peng, C.-H.; Chen, D.-N.; Sharma, P. Knowledge Creation and Organizational Performance: Moderating and Mediating Processes from an Organizational Agility Perspective. *AIS Trans. Hum.-Comput. Interact.* **2019**, *11*, 79–106. <https://doi.org/10.17705/1thci.00114>.
6. Liu, H.M.; Yang, H.F. Network resource meets organizational agility: Creating an idiosyncratic competitive advantage for SMEs. *Manag. Decis.* **2020**, *58*, 58–75. <https://doi.org/10.1108/MD-10-2017-1061>.
7. Al-Omoush, K.S.; Simón-Moya, V.; Sendra-García, J. The impact of social capital and collaborative knowledge creation on e-business proactiveness and organizational agility in responding to the COVID-19 crisis. *J. Innov. Knowl.* **2020**, *5*, 279–288. <https://doi.org/10.1016/j.jik.2020.10.002>.
8. Dabić, M.; Stojčić, N.; Simić, M.; Potocan, V.; Slavković, M.; Nedelko, Z. Intellectual agility and innovation in micro and small businesses: The mediating role of entrepreneurial leadership. *J. Bus. Res.* **2021**, *123*, 683–695. <https://doi.org/10.1016/j.jbusres.2020.10.013>.
9. Cai, Z.; Liu, H.; Huang, Q.; Liang, L. Developing organizational agility in product innovation: The roles of IT capability, KM capability, and innovative climate. *R D Manag.* **2019**, *49*, 421–438. <https://doi.org/10.1111/radm.12305>.
10. Chan, J.I.L.; Muthuveloo, R. Vital organisational capabilities for strategic agility: An empirical study. *Asia-Pac. J. Bus. Adm.* **2020**, *12*, 223–236. <https://doi.org/10.1108/APJBA-12-2019-0261>.
11. Koçyiğit, Y.; Akkaya, B. The Role of Organizational Flexibility in Organizational Agility: A Research on SMEs. *Bus. Manag. Strategy* **2020**, *11*, 110. <https://doi.org/10.5296/bms.v11i1.16867>.
12. Teece, D.; Peteraf, M.; Leih, S. Dynamic capabilities and organizational agility: Risk, uncertainty, and strategy in the innovation economy. *Calif. Manag. Rev.* **2016**, *58*, 13–35. <https://doi.org/10.1525/cm.2016.58.4.13>.
13. Teixeira, E.d.O.; Werther, B.W., Jr. Resilience: Continuous renewal of competitive advantages. *Bus. Horiz.* **2013**, *56*, 333–342. <https://doi.org/10.1016/j.bushor.2013.01.009>.
14. Belhadi, A.; Mani, V.; Kamble, S.S.; Khan, S.A.R.; Verma, S. Artificial intelligence-driven innovation for enhancing supply chain resilience and performance under the effect of supply chain dynamism: An empirical investigation. *Ann. Oper. Res.* **2021**, 1–26. <https://doi.org/10.1007/s10479-021-03956-x>.

15. Ganguly, A.; Talukdar, A.; Chatterjee, D. Evaluating the role of social capital, tacit knowledge sharing, knowledge quality and reciprocity in determining innovation capability of an organization. *J. Knowl. Manag.* **2019**, *23*, 1105–1135. <https://doi.org/10.1108/JKM-03-2018-0190>.
16. Singh, S.K.; Mazzucchelli, A.; Vessal, S.R.; Solidoro, A. Knowledge-based HRM practices and innovation performance: Role of social capital and knowledge sharing. *J. Int. Manag.* **2021**, *27*, 100830. <https://doi.org/10.1016/j.intman.2021.100830>
17. Harsch, K.; Festing, M. Dynamic talent management capabilities and organizational agility—A qualitative exploration. *Hum. Resour. Manag.* **2020**, *59*, 43–61. <https://doi.org/10.1002/hrm.21972>.
18. Felipe, C.M.; Roldán, J.L.; Leal-Rodríguez, A.L. Impact of organizational culture values on organizational agility. *Sustainability* **2017**, *9*, 2354. <https://doi.org/10.3390/su9122354>.
19. Özbuğday, F.C.; Findik, D.; Özcan, K.M.; Başçı, S. Resource efficiency investments and firm performance: Evidence from European SMEs. *J. Clean. Prod.* **2020**, *252*, 119824. <https://doi.org/10.1016/j.jclepro.2019.119824>.
20. Ravichandran, T. Exploring the relationships between IT competence, innovation capacity and organizational agility. *J. Strateg. Inf. Syst.* **2018**, *27*, 22–42. <https://doi.org/10.1016/j.jsis.2017.07.002>.
21. Arsawan, I.W.E.; Koval, V.; Duginets, G.; Kalinin, O.; Korostova, I. The impact of green innovation on environmental performance of SMEs in an emerging economy. *E3S Web Conf.* **2021**, *255*, 1012.
22. Arsawan, I.W.E.; Koval, V.; Rajiani, I.; Rustiarini, N.W.; Supartha, W.G.; Suryantini, N.P.S. Leveraging knowledge sharing and innovation culture into SMEs sustainable competitive advantage. *Int. J. Product. Perform. Manag.* **2022**, *71*, 405–428. <https://doi.org/10.1108/IJPPM-04-2020-0192>.
23. Parwita, G.B.S.; Arsawan, I.W.E.; Koval, V.; Hrinchenko, R.; Bogdanova, N.; Tamosiuniene, R. Organizational innovation capability: Integrating human resource management practice, knowledge management and individual creativity. *Intellect. Econ.* **2021**, *15*, 22–45
24. Arsawan, I.W.E.; Kariati, N.M.; Shchokina, Y.; Prayustika, P.A.; Rustiarini, N.W.; Koval, V. Invigorating Employee's Innovative Work Behavior: Exploring The Sequential Mediating Role Of Organizational Commitment And Knowledge. *Verslas Teor. Ir Prakt. Vilnius* **2022**, *23*, 117–130.
25. Sherehiy, B.; Karwowski, W.; Layer, J.K. A review of enterprise agility: Concepts, frameworks, and attributes. *Int. J. Ind. Ergon.* **2007**, *37*, 445–460. <https://doi.org/10.1016/j.ergon.2007.01.007>.
26. Wageeh, N.A. Organizational Agility: The Key to Organizational Success. *Int. J. Bus. Manag.* **2016**, *11*, 296. <https://doi.org/10.5539/ijbm.v11n5p296>.
27. Žitkienė, R.; Deksnys, M. Organizational agility conceptual model. *Montenegrin J. Econ.* **2018**, *14*, 115–129. <https://doi.org/10.14254/1800-5845/2018.14-2.7>.
28. Ahmadi, S.; Ershadi, M.J. Investigating the role of social networking technology on the organizational agility: A structural equation modeling approach. *J. Adv. Manag. Res.* **2021**, *18*, 568–584. <https://doi.org/10.1108/JAMR-04-2020-0052>.
29. Zhou, J.; Bi, G.; Liu, H.; Fang, Y.; Hua, Z. Understanding employee competence, operational IS alignment, and organizational agility—An ambidexterity perspective. *Inf. Manag.* **2018**, *55*, 695–708. <https://doi.org/10.1016/j.im.2018.02.002>.
30. Panda, S.; Rath, S.K. Investigating the structural linkage between IT capability and organizational agility: A study on Indian financial enterprises. *J. Enterp. Inf. Manag.* **2016**, *29*, 751–773. <https://doi.org/10.1108/JEIM-04-2015-0033>.
31. Walter, A.T. Organizational agility: Ill-defined and somewhat confusing? A systematic literature review and conceptualization. *Manag. Rev. Q.* **2021**, *71*, 343–391. <https://doi.org/10.1007/s11301-020-00186-6>.
32. Falahat, M.; Ramayah, T.; Soto-Acosta, P.; Lee, Y.Y. SMEs internationalization: The role of product innovation, market intelligence, pricing and marketing communication capabilities as drivers of SMEs' international performance. *Technol. Forecast. Soc. Chang.* **2020**, *152*, 119908. <https://doi.org/10.1016/j.techfore.2020.119908>.
33. Ciszewska-Mlinarič, M. Foreign market knowledge and SME's international performance: Moderating effects of strategic intent and time-to-internationalization. *Entrep. Bus. Econ. Rev.* **2016**, *4*, 51–66. <https://doi.org/10.15678/EBER.2016.040404>.
34. Gavrilă, S.G.; Ancillo, A.d.L. Spanish SMEs' digitalization enablers: E-Receipt applications to the offline retail market. *Technol. Forecast. Soc. Chang.* **2021**, *162*, 120381. <https://doi.org/10.1016/j.techfore.2020.120381>.
35. Stekelorum, R.; Laguir, I.; ElBaz, J. Can you hear the Eco? From SME environmental responsibility to social requirements in the supply chain. *Technol. Forecast. Soc. Chang.* **2020**, *158*, 120169. <https://doi.org/10.1016/j.techfore.2020.120169>.
36. Cosenz, F.; Bivona, E. Fostering growth patterns of SMEs through business model innovation. A tailored dynamic business modelling approach. *J. Bus. Res.* **2021**, *130*, 658–669. <https://doi.org/10.1016/j.jbusres.2020.03.003>.
37. Faccin, K.; Balestrin, A. The dynamics of collaborative practices for knowledge creation in joint R&D projects. *J. Eng. Technol. Manag.* **2018**, *48*, 28–43. <https://doi.org/10.1016/j.jengtecman.2018.04.001>.
38. Weaven, S.; Quach, S.; Thaichon, P.; Frazer, L.; Billot, K.; Grace, D. Surviving an economic downturn: Dynamic capabilities of SMEs. *J. Bus. Res.* **2021**, *128*, 109–123. <https://doi.org/10.1016/j.jbusres.2021.02.009>.
39. Khan, S.H.; Majid, A.; Yasir, M. Strategic renewal of SMEs: The impact of social capital, strategic agility and absorptive capacity. *Manag. Decis.* **2020**, *59*, 1877–1894. <https://doi.org/10.1108/MD-12-2019-1722>.
40. Quaye, D. Marketing innovation and sustainable competitive advantage of manufacturing SMEs in Ghana. *Manag. Decis.* **2019**, *57*, 1535–1553. <https://doi.org/10.1108/MD-08-2017-0784>.
41. Azudin, A.; Mansor, N. Management accounting practices of SMEs: The impact of organizational DNA, business potential and operational technology. *Asia Pac. Manag. Rev.* **2018**, *23*, 222–226. <https://doi.org/10.1016/j.apmr.2017.07.014>.

42. Chege, S.M.; Wang, D. The influence of technology innovation on SME performance through environmental sustainability practices in Kenya. *Technol. Soc.* **2020**, *60*, 101210. <https://doi.org/10.1016/j.techsoc.2019.101210>.
43. Meijer, L.L.J.; Huijben, J.C.C.M.; van Boxstael, A.; Romme, A.G.L. Barriers and drivers for technology commercialization by SMEs in the Dutch sustainable energy sector. *Renew. Sustain. Energy Rev.* **2019**, *112*, 114–126. <https://doi.org/10.1016/j.rser.2019.05.050>.
44. King, S.; Lusher, D.; Hopkins, J.; Simpson, G.W. Industrial symbiosis in Australia: The social relations of making contact in a matchmaking marketplace for SMEs. *J. Clean. Prod.* **2020**, *270*, 122146. <https://doi.org/10.1016/j.jclepro.2020.122146>.
45. Hayton, J.C. Competing in the new economy: The effect of intellectual capital on corporate entrepreneurship in high-technology new ventures. *R D Manag.* **2005**, *35*, 137–155. <https://doi.org/10.1111/j.1467-9310.2005.00379.x>.
46. Liu, H.; Ke, W.; Wei, K.K.; Lu, Y. The effects of social capital on firm substantive and symbolic performance: In the context of E-business. *J. Glob. Inf. Manag.* **2016**, *24*, 18–44. <https://doi.org/10.4018/JGIM.2016010104>.
47. Barney, J. Firm Resources and Sustained Competitive Advantage. *J. Manag.* **1991**, *17*, 99–120. <https://doi.org/10.1177/014920639101700108>.
48. Barney, J.B. Year Retrospective On The Resource-Based. 2001. Available online: <https://doi.org/10.1177/014920630102700602> (accessed on 23 July 2022).
49. Ferreira, J.; Coelho, A.; Moutinho, L. Dynamic capabilities, creativity and innovation capability and their impact on competitive advantage and firm performance: The moderating role of entrepreneurial orientation. *Technovation* **2020**, 92–93, 102061. <https://doi.org/10.1016/j.technovation.2018.11.004>.
50. Sabetzadeh, F.; Tsui, E. An effective knowledge quality framework based on knowledge resources interdependencies. *Vine* **2015**, *45*, 360–375. <https://doi.org/10.1108/VINE-07-2014-0048>.
51. Al-Shami, S.; Rashid, N. A holistic model of dynamic capabilities and environment management system towards eco-product innovation and sustainability in automobile firms. *J. Bus. Ind. Mark.* **2022**, *37*, 402–416. <https://doi.org/10.1108/JBIM-04-2020-0217>.
52. Teece, D.J.; Pisano, G.; Shuen, A. Dynamic capabilities and strategic management. *Strateg. Manag. J.* **1997**, *18*, 509–533.
53. Teece, D.J.; Pisano, G.; Shuen, A. Dynamic capabilities and strategic management. *Knowl. Strategy* **2009**, *18*, 77–116. <https://doi.org/10.1093/0199248540.003.0013>.
54. Tu, J. The role of dyadic social capital in enhancing collaborative knowledge creation. *J. Informetr.* **2020**, *14*, 101034. <https://doi.org/10.1016/j.joi.2020.101034>.
55. Ode, E.; Ayavoo, R. The mediating role of knowledge application in the relationship between knowledge management practices and firm innovation. *J. Innov. Knowl.* **2020**, *5*, 210–218. <https://doi.org/10.1016/j.jik.2019.08.002>.
56. Calantone, R.J.; Cavusgil, S.T.; Zhao, Y. Learning orientation, firm innovation capability, and firm performance. *Ind. Mark. Manag.* **2002**, *31*, 515–524. [https://doi.org/10.1016/S0019-8501\(01\)00203-6](https://doi.org/10.1016/S0019-8501(01)00203-6).
57. Zhao, S.; Jiang, Y.; Peng, X.; Hong, J. Knowledge sharing direction and innovation performance in organizations: Do absorptive capacity and individual creativity matter? *Eur. J. Innov. Manag.* **2020**, *24*, 371–394. <https://doi.org/10.1108/EJIM-09-2019-0244>.
58. Nonaka, I.; von Krogh, G. Perspective—Tacit knowledge and knowledge conversion: Controversy and advancement in organizational knowledge creation theory. *Organ. Sci.* **2009**, *20*, 635–652.
59. Ooi, C.A.; Hooy, C.W.; Som, A.P.M. The influence of board diversity in human capital and social capital in crisis. *Manag. Financ.* **2017**, *43*, 700–719. <https://doi.org/10.1108/MF-08-2016-0226>.
60. Chen, W.; Jiao, H.; Zeng, Q.; Wu, J. Ios-enabled collaborative knowledge creation and supply chain flexibility: The moderate role of market 2016. Available online: <https://aisel.aisnet.org/pacis2016/37/> (accessed on 23 July 2022).
61. Steinmo, M.; Rasmussen, E. The interplay of cognitive and relational social capital dimensions in university-industry collaboration: Overcoming the experience barrier. *Res. Policy* **2018**, *47*, 1964–1974. <https://doi.org/10.1016/j.respol.2018.07.004>.
62. Yeşil, S.; Doğan, I.F. Exploring the relationship between social capital, innovation capability and innovation. *Innov. Organ. Manag.* **2019**, *21*, 506–532. <https://doi.org/10.1080/14479338.2019.1585187>.
63. Thompson, M. Social capital, innovation and economic growth. *J. Behav. Exp. Econ.* **2018**, *73*, 46–52. <https://doi.org/10.1016/j.socec.2018.01.005>.
64. Chen, L.; Zheng, W.; Yang, B.; Bai, S. Transformational leadership, social capital and organizational innovation. *Leadersh. Organ. Dev. J.* **2016**, *37*, 843–859. <https://doi.org/10.1108/LODJ-07-2015-0157>.
65. Bouton, E.; Tal, S.B.; Asterhan, C.S.C. Students, social network technology and learning in higher education: Visions of collaborative knowledge construction vs. the reality of knowledge sharing. *Internet High. Educ.* **2021**, *49*, 100787. <https://doi.org/10.1016/j.ieduc.2020.100787>.
66. Dung, T.Q.; Bonney, L.B.; Adhikari, R.P.; Miles, M.P. Entrepreneurial orientation, knowledge acquisition and collaborative performance in agri-food value-chains in emerging markets. *Supply Chain. Manag.* **2020**, *25*, 521–533. <https://doi.org/10.1108/SCM-09-2019-0327>.
67. Chang, F.; Zhou, G.; Zhang, C.; Ding, K.; Cheng, W.; Chang, F. A maintenance decision-making oriented collaborative cross-organization knowledge sharing blockchain network for complex multi-component systems. *J. Clean. Prod.* **2021**, *282*, 124541. <https://doi.org/10.1016/j.jclepro.2020.124541>.
68. Wang, C.; Hu, Q. Technovation Knowledge sharing in supply chain networks: Effects of collaborative innovation activities and capability on innovation performance. *Technovation* **2020**, 94–95, 102010. <https://doi.org/10.1016/j.technovation.2017.12.002>.



69. Hock-Doepgen, M.; Clauss, T.; Kraus, S.; Cheng, C.F. Knowledge management capabilities and organizational risk-taking for business model innovation in SMEs. *J. Bus. Res.* **2021**, *130*, 683–697. <https://doi.org/10.1016/j.jbusres.2019.12.001>.
70. Chen, J.; Liu, L. Customer participation, and green product innovation in SMEs: The mediating role of opportunity recognition and exploitation. *J. Bus. Res.* **2020**, *119*, 151–162. <https://doi.org/10.1016/j.jbusres.2019.05.033>.
71. Cepeda, J.; Arias-Pérez, J. Information technology capabilities and organizational agility: The mediating effects of open innovation capabilities. *Multinatl. Bus. Rev.* **2019**, *27*, 198–216. <https://doi.org/10.1108/MBR-11-2017-0088>.
72. Yi, L.; Wang, Y.; Upadhaya, B.; Zhao, S.; Yin, Y. Knowledge spillover, knowledge management capabilities, and innovation among returnee entrepreneurial firms in emerging markets: Does entrepreneurial ecosystem matter? *J. Bus. Res.* **2021**, *130*, 283–294. <https://doi.org/10.1016/j.jbusres.2021.03.024>.
73. Kamboj, S.; Rahman, Z. Market orientation, marketing capabilities and sustainable innovation: The mediating role of sustainable consumption and competitive advantage. *Manag. Res. Rev.* **2017**, *40*, 698–724. <https://doi.org/10.1108/MRR-09-2014-0225>.
74. Brozovic, D. Strategic Flexibility: A Review of the Literature. *Int. J. Manag. Rev.* **2018**, *20*, 3–31. <https://doi.org/10.1111/ijmr.12111>.
75. Gorondutse, A.H.; Arshad, D.; Alshuaibi, A.S. Driving sustainability in SMEs' performance: The effect of strategic flexibility. *J. Strategy Manag.* **2020**, *14*, 64–81.
76. Yang, J.; Zhang, F.; Jiang, X.; Sun, W. Strategic flexibility, green management, and firm competitiveness in an emerging economy. *Technol. Forecast. Soc. Chang.* **2015**, *101*, 347–356. <https://doi.org/10.1016/j.techfore.2015.09.016>.
77. Xiu, L.; Liang, X.; Chen, Z.; Xu, W. Strategic flexibility, innovative HR practices, and firm performance. *Pers. Rev.* **2017**, *46*, 1335–1357.
78. Cingöz, A.; Akdoğan, A.A. Strategic Flexibility, Environmental Dynamism, and Innovation Performance: An Empirical Study. *Procedia-Soc. Behav. Sci.* **2013**, *99*, 582–589. <https://doi.org/10.1016/j.sbspro.2013.10.528>.
79. Thomas, E.F. Platform-based product design and environmental turbulence: The mediating role of strategic flexibility. *Eur. J. Innov. Manag.* **2014**, *17*, 107–124. <https://doi.org/10.1108/EJIM-06-2013-0055>.
80. Krejcie, R.V.; Morgan, D.W. Determining sample size for research activities. *Educ. Psychol. Meas.* **1970**, *30*, 607–610, .
81. Nonaka, I.; Takeuchi, H. *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*; Oxford university press: Oxford, UK, 1995.
82. Ngo, L.V.; O' Cass, A. Creating value offerings via operant resource-based capabilities. *Ind. Mark. Manag.* **2009**, *38*, 45–59. <https://doi.org/10.1016/j.indmarman.2007.11.002>.
83. Nafei, W.A. The Role of Organizational Agility in Reinforcing Job Engagement: A Study on Industrial Companies in Egypt. *Int. Bus. Res.* **2016**, *9*, 153–167. <https://doi.org/10.5539/ibr.v9n2p153>.
84. Preston, D.S.; Leidner, D.E.; Chen, D.; Uarterly, M.Q.; Xecutive, E. created CIO 2008. Available online: <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1540-5915.2008.00206.x> (accessed on 23 July 2022)
85. Hair, J.F., Jr.; Matthews, L.M.; Matthews, R.L.; Sarstedt, M. PLS-SEM or CB-SEM: Updated guidelines on which method to use. *Int. J. Multivar. Data Anal.* **2017**, *1*, 107–123.
86. Hair, J.F.; Hult, G.; Tomas, M.; Ringle, C.M.; Sarstedt, M. *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*; Sage publications: Sauzend oaks, CA, USA, 2016.
87. Zhang, S.; Wang, Z.; Zhao, X. Effects of proactive environmental strategy on environmental performance: Mediation and moderation analyses. *J. Clean. Prod.* **2019**, *235*, 1438–1449. <https://doi.org/10.1016/j.jclepro.2019.06.220>.
88. Chin, W.W. How to Write Up and Report PLS Analyses. In *Handbook of Partial Least Squares*; Springer: Berlin/Heidelberg, Germany, 2010; pp. 655–690.
89. Tenenhaus, M.; Vinzi, V.E.; Chatelin, Y.-M.; Lauro, C. PLS path modeling. *Comput. Stat. Data Anal.* **2005**, *48*, 159–205.
90. Hair, J.F., Jr.; Sarstedt, M.; Matthews, L.M.; Ringle, C.M. Identifying and treating unobserved heterogeneity with FIMIX-PLS: Part I—method. *Eur. Bus. Rev.* **2016**, *28*, 63–76. <https://doi.org/10.1108/EBR-09-2015-0094>.
91. Henseler, J.; Fassott, G. Testing moderating effects in PLS path models: An illustration of available procedures. In *Handbook of partial least squares*; Springer: Berlin/Heidelberg, Germany, 2010; pp. 713–735.
92. Leckel, A.; Veilleux, S.; Dana, L.P. Local Open Innovation: A means for public policy to increase collaboration for innovation in SMEs. *Technol. Forecast. Soc. Chang.* **2020**, *153*, 119891. <https://doi.org/10.1016/j.techfore.2019.119891>.
93. Patricio, J.; Axelsson, L.; Blomé, S.; Rosado, L. Enabling industrial symbiosis collaborations between SMEs from a regional perspective. *J. Clean. Prod.* **2018**, *202*, 1120–1130. <https://doi.org/10.1016/j.jclepro.2018.07.230>.
94. Zaridis, A.; Vlachos, I.; Bourlakis, M. SMEs strategy and scale constraints impact on agri-food supply chain collaboration and firm performance. *Prod. Plan. Control* **2021**, *32*, 1165–1178. <https://doi.org/10.1080/09537287.2020.1796136>.
95. Tan, Q.; Sousa, C.M.P. Leveraging marketing capabilities into competitive advantage and export performance. *Int. Mark. Rev.* **2015**, *32*, 78–102. <https://doi.org/10.1108/IMR-12-2013-0279>.
96. Williams, C.; Du, J.; Zhang, H. International orientation of Chinese internet SMEs: Direct and indirect effects of foreign and indigenous social networking site use. *J. World Bus.* **2020**, *55*, 101051. <https://doi.org/10.1016/j.jwb.2019.101051>.
97. Chang, H.H.; Wong, K.H.; Chiu, W.S. The effects of business systems leveraging on supply chain performance: Process innovation and uncertainty as moderators. *Inf. Manag.* **2019**, *56*, 103140. <https://doi.org/10.1016/j.im.2019.01.002>.
98. Cegarra-Navarro, J.G.; Martelo-Landroguez, S. The effect of organizational memory on organizational agility: Testing the role of counter-knowledge and knowledge application. *J. Intellect. Cap.* **2020**, *21*, 459–479. <https://doi.org/10.1108/JIC-03-2019-0048>.

99. Arain, G.A.; Bhatti, Z.A.; Hameed, I.; Fang, Y.H. Top-down knowledge hiding and innovative work behavior (IWB): A three-way moderated-mediation analysis of self-efficacy and local/foreign status. *J. Knowl. Manag.* **2019**, *24*, 127–149. <https://doi.org/10.1108/JKM-11-2018-0687>.
100. Nassani, A.A.; Aldakhil, A.M. Tackling organizational innovativeness through strategic orientation: Strategic alignment and moderating role of strategic flexibility. *Eur. J. Innov. Manag.* **2021**, 115–129. <https://doi.org/10.1108/EJIM-04-2021-0198>.
101. Haider, S.A.; Kayani, U.N. The impact of customer knowledge management capability on project performance-mediating role of strategic agility. *J. Knowl. Manag.* **2021**, *25*, 298–312. <https://doi.org/10.1108/JKM-01-2020-0026>.
102. Mao, H.; Liu, S.; Zhang, J. How the effects of IT and knowledge capability on organizational agility are contingent on environmental uncertainty and information intensity. *Inf. Dev.* **2015**, *31*, 358–382. <https://doi.org/10.1177/0266666913518059>.



Article

# Developing Organizational Agility in SMEs: An Investigation of Innovation's Roles and Strategic Flexibility

I Wayan Edi Arsawan <sup>1,\*</sup> , Ni Kadek Dessy Hariyanti <sup>1</sup> , I Made Ari Dwi Suta Atmaja <sup>2</sup>, Dwi Suhartanto <sup>3</sup> and Viktor Koval <sup>4</sup>

<sup>1</sup> Department of Business Administration, Politeknik Negeri Bali, Badung 80364, Indonesia

<sup>2</sup> Department of Electrical Engineering, Politeknik Negeri Bali, Badung 80364, Indonesia

<sup>3</sup> Department of Business Administration, Politeknik Negeri Bandung, Badung 40012, Indonesia

<sup>4</sup> Department of Business and Tourism Management, Izmail State University of Humanities, 68600 Izmail, Ukraine

\* Correspondence: wayanediarsawan@pnb.ac.id

**Abstract:** Although social capital and collaborative knowledge creation were considered essential drivers in maintaining competitive advantage, empirical evidence on the impact of collaborative knowledge creation on organizational agility remained limited. Therefore, this study examined the relationship between social capital and collaborative knowledge creation in building innovation and agility and testing strategic flexibility as a moderating variable. It employed a quantitative design by distributing questionnaires to 414 managers and assistant managers of SMEs analyzed by SmartPLS-SEM. The results showed that social capital significantly affected collaborative knowledge creation, innovation, and organizational agility. Meanwhile, collaborative knowledge creation has no significant impact on organizational agility. Furthermore, strategic flexibility was not a moderating variable of the relationship between innovation and organizational agility. Based on these findings, this study produced recommendations for managers to strengthen organizational agility.

**Keywords:** social capital; collaborative knowledge creation; innovation; strategic flexibility; organizational agility



**Citation:** Arsawan, I.W.E.; Hariyanti, N.K.D.; Atmaja, I.M.A.D.S.; Suhartanto, D.; Koval, V. Developing Organizational Agility in SMEs: An Investigation of Innovation's Roles and Strategic Flexibility. *J. Open Innov. Technol. Mark. Complex.* **2022**, *8*, 149. <https://doi.org/10.3390/joitmc8030149>

Received: 30 July 2022

Accepted: 16 August 2022

Published: 24 August 2022

**Publisher's Note:** MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



**Copyright:** © 2022 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

## 1. Introduction

Encountering market turbulence, competitor challenges, and even devastating effects of the pandemic, an organization requires the capability and agility to respond to changes, perform certain adjustments [1] and strengthen its innovation ability [2–4] to maintain performance and sustainable competitiveness [5,6]. Moreover, in the current COVID-19 pandemic situation, everything has become unpredictable, causing turbulence in multiple sectors. Thus, the conventional competitive strategy was no longer effective [7]. The pandemic prompted the organization to continuously innovate by maintaining good relationships with the customers [8], optimizing available resources [6], and focusing on their product development [9]. The managers strived to identify opportunities through innovation. However, many failed to utilize precious resources to achieve strategic competitiveness [2]. Therefore, the business organization needs resistance ability by enforcing a variety of scenarios under uncertain contexts [1,10–12]. However, innovation was considered vital during a crisis, and how the company had laid the foundation for a resilient organization through increasing the role of innovation needed further empirical evidence [7,13]. Nevertheless, it was urgently needed given the intense disturbance that required anticipation and exploitation of innovation ability towards sustained competitive advantages [14].

The present study attempted to close research gaps as follows. First, the role of social capital and collaborative knowledge creation in the turbulence caused by the pandemic remained unexplored [7]. Although social capital and collaborative knowledge creation

have contributed to sustaining competitive advantages, the empirical evidence between this construct and innovation remained limited [15,16]. Second, the previous research disregards the effect of collaborative knowledge creation on organizational agility [7]. After all, by building adequate collaborative knowledge, an organization will have the critical notion of developing dynamic capabilities [17], creating a culturally resilient culture [18], thus enduring each potential crisis scenario. Third, while strategic value from collaborative knowledge creation practice was evident, most companies could not understand how this practice can be adapted to enhance their innovation abilities in the face of crisis, especially in SMEs. Moreover, SMEs have limited resources [19].

The existing literature described organizational agility as a complex construct. It can be impacted by many drivers such as organizational culture value [18], organizational flexibility [11], collaborative knowledge creation [5], and innovation [7,9,20]. However, there was still a scarcity of insight into the mechanism underpinning innovation that strengthens agility. Thus, the role of moderation should be considered. Furthermore, it was hoped to enrich the understanding of innovation's role in building agility. Hence, this study aimed to explore the predictor of organizational agility using a relevant variable called strategic flexibility that had not been extensively studied yet. Therefore, strategic flexibility has become the key element to making changes in organizational strategic planning so that the impact on innovation and organizational agility will be even more substantial in the future.

Motivated by the research gaps, the present study aimed to examine the nexus between social capital and collaborative knowledge creation towards innovation and organizational agility by proposing a structural equation model for SMEs in Indonesia, based on three primary reasons. First, SMEs were grown exponentially with a total of 64.5 million units that potentially became the backbone of the economy [21]. Therefore, it indicated the magnitude of the potential of social capital that needed to be empowered as the strength to build resilience in facing the turbulences. Second, Indonesian SMEs had a weak internal driver in a business dynamic; hence they required knowledge collaboration to improve innovation [22] for the employees from the grassroots level up to the organization [23,24]. Third, SMEs need to prepare strategic flexibility when facing turbulence caused by market shifts or the pandemic [25] so that they can survive in difficult situations [18]. The Section 2 of the article discusses the literature and hypotheses development, followed by method and result to propose a scenario and discussion about agility.

## 2. Literature Review

### 2.1. Organizational Agility and Dynamic Capabilities in SMEs

Organizational agility was the brainchild of [26] that was rooted in two primary concepts called adaptation (reactive) and organizational flexibility (proactive). Organizational agility reveals the ability to recognize environmental transition and counter it quickly by reshaping the resource set, business processes, and strategies [27,28]. In the SME sector, adapting to change was essential to reduce resource issues for future development [6]. Consequently, ensuing the inclusive approach brought out by previous researchers [7,29,30], this study conceptualized organizational agility as responsive capabilities aiming for a more efficient approach in a complex environment [31]. This approach involved rapid responses to changing situations [32] and the ability to predict and take opportunity, primarily by innovation and learning [12,30].

The indicators used to measure organizational agility were (1) seizing possibilities in potential [33], markets, and minimizing threats so that they have a strategic intent to build production stability [34,35]; (2) exhibit sensitivity to environmental changes [36] in order to deal with dynamics [37–39]; (3) increase decision-making agility [6,25,40]; (4) resource, process, and technology adaptation to address changing environmental needs [34,41–43]; and (5) taking into account new price, marketing, manufacturing, and/or partnership actions [23,33,34,44]. Organizational agility in woodcraft SMEs occurred because they produced highly artistic products that were high quality, hard to imitate, and of high value,

and they had export shares in various European and American countries [23]. In addition, the present study adopted the study of [7,45,46] in measuring organizational agility.

Furthermore, the dynamic capabilities theory was employed to frame this study, considering the recent turbulence of the business landscape. This theory was the expansion of the resource-based view [47], which stated that the reason for the difference among organizations was their competitive advantage attributed to being unique, valuable, non-replicable, non-reproducible, and non-replaceable [48]. Dynamic capabilities theory center on the organizations' ability to respond to a constantly changing business environment. In other words, organizations must be sensitive in sensing, seizing, and shaping internal and external opportunities and threats for the purpose of the right strategic decisions and reconfigure and reuse all potential and resources [19,42,49]. As a fact, over the past decade, dynamic managerial competencies and capabilities have resulted from the increasing quality of knowledge [16,50] that formed from a collaborative process that was implemented as an essential feature of the organization [17,39,51]. Furthermore, dynamic capabilities were hard for competitors to imitate based on particular characteristics, cultural values [52], and complex imitability [49]. Therefore, strong dynamic capabilities served as a solid foundation for organizational agility.

### 2.2. Social Capital and Collaborative Knowledge Creation

Previous research revealed the function of social capital in supporting knowledge management to achieve sustainable performance [53]. The literature also explored how collaborative knowledge creation is considered as a dynamic process that happens during social interaction between organizations and their partners [5,7]. The social network in the organization served as a channel for transmitting and integrating knowledge, thus could optimize the role of sharing and creating dynamic ideas and new values [54]. Collaborative knowledge creation was seen as a collaborative mechanism [55] to create and develop knowledge between partners to improve insight into changes [56]. Collaboration described a knowledge transfer mechanism that was harmonized and unified through dynamic social interactions [38] and thus could produce collaborative knowledge [57] both directly and indirectly between partners [53]. Social capital allowed the organization to survive a crisis by pooling expertise and resources [56]. Furthermore, [38] revealed that collaborative knowledge creation was reflected in the knowledge of organizations that develop sustainably, resulting in adjustment to environmental changes and rapidly changing market needs. Meanwhile, social capital formed a synergistic and coordinated network that allowed the company to adopt the necessary changes swiftly by means of knowledge [25]. Finally, social capital produces relational and cognitive skills, increasing organizational agility to respond to environmental changes briskly, flexibly, and in a structured way [58] to manage challenges, seize new opportunities, create value and ensure long-term viability [46]. Based on this, the hypothesis is formulated as follows:

**Hypothesis 1 (H1).** *Social capital is significant to collaborative knowledge creation.*

**Hypothesis 2 (H2).** *Social capital is significant to organizational agility.*

### 2.3. Social Capital and Firm Innovation

Social capital describes the interaction process between organizations and stakeholders that can affect the exchange of knowledge, ideas and resources among organizations [15]. The literature showed that building strong bonds with business affiliations through social interaction dynamically affected favorable outcomes in acquiring resources and capacity for innovation [59]. Experts already highlighted that the social approaches supply a fundamental basis for describing the impact of external and internal relationships on innovation [4,53,60]. Moreover, social capital has been considered a vital contributor to the success of innovation [61,62] because it involves collaboration-oriented leadership behavior in the achievement of innovation [63]. Furthermore, substantial social capital

promotes efficiency and ensures the quality of knowledge flow, thereby encouraging innovation activities without agonizing about risks and barriers [15]. Thus, interaction among organizations helped reduce knowledge limitations and updated the knowledge base, providing a high-quality source of motivation for innovation. Based on the discussion above, the hypothesis is formulated as follows:

**Hypothesis 3 (H3).** *Social capital is significant to firm innovation.*

#### 2.4. Collaborative Knowledge Creation and Organizational Agility

In building organizational agility, the role of collaborative knowledge creation has not been studied extensively [7]. At the same time, organizational agility was seen as the ability to govern and apply knowledge beneficially [53,64] in responding and adapting organizations to market turbulence and competition dynamics [59,65]. In order to achieve existence, agility requires applying knowledge, idea quality and collaboration to explore new opportunities in a volatile market [59]. Furthermore, Tu [53] claimed that the creation and dissemination of knowledge reflect the value chain of knowledge capital in building agility [66]. Furthermore, organizational agility requires more dynamic learning and collaborative knowledge creation strategies than competitors [67] to transform new ideas into responsive activities [5,6,11]. Hence, the proposed hypothesis was as follows:

**Hypothesis 4 (H4).** *Collaborative knowledge creation is significant to organizational agility.*

#### 2.5. Innovation and Organizational Agility

Innovative and less innovative organizations differed in terms of adaptation, risk management, and perspectives on uncertainty [20]. Innovative companies focus on learning and experimentation, overcoming uncertainty, and encouraging risk-taking [68]. In contrast, less innovative organizations are afraid of taking risks and uncertainty and tend to be weak in preparing business strategies [12]. It indicated that innovative companies had an organizational climate open to new ideas that affected their ability to identify new market opportunities and products than competitors [9,33,69]. Thus, organizations built new business models to pool existing resources into more dynamic mobile capital [68]. Thus, the changes brought about by innovation make organizations more agile [12,20,70]. Thus, we positioned:

**Hypothesis 5 (H5).** *Innovation is significant to organizational agility.*

#### 2.6. The Mediating Role of Collaborative Knowledge Creation

Social capital has a pivotal role in transferring and integrating knowledge and was vital in forming collaborative knowledge [54], and therefore increased adaptation to rapid change [56]. This mechanism was the implementation of the interaction of all social resources [38], which produced collaborative knowledge both directly and indirectly [53]. In a crisis, whether due to market turbulence or other disturbances, social capital contributes to the organization's survival [56] and optimizes the diffusion of skills and resources [71]. Moreover, collaborative knowledge creation becomes the foundation for organizations to adapt to environmental changes and dynamic markets [38]. In order to build agility, organizations need to form a coordinated network to collect ideas and turn them into knowledge [25]. It produced relational skills that ultimately improved organizational agility, especially in responding to changes flexibly [58]. It ultimately enabled organizations to manage challenges and opportunities, and also value and sustainability [46,65,72]. Predicated on the discussion above, the hypothesis was proposed as follows:

**Hypothesis 6 (H6).** *Collaborative knowledge creation mediates social capital and organizational agility.*

### 2.7. Mediating the Role of Firm Innovation

The existence of social capital was as a liaison between organizations and stakeholders through the exchange of ideas, knowledge and resources [15]. Therefore, it was necessary to develop strong ties with partners to generate resources and capabilities for innovation [59]. Experts' findings revealed that social capital provided the foundation of the relationship between partners [4,53,60] and was an essential driver of successful innovation [61,64]. Furthermore, innovative organizations focused on learning and risk-taking [68], indicating an organizational climate that was open to new ideas [9,33,69], and ultimately made the organization more agile [12,20,70]. Thus, innovation provided the power to face the risk of uncertainty [12] to have sustainable performance and competitive advantage [22]. Formulated on the discussion, the hypothesis was as follows:

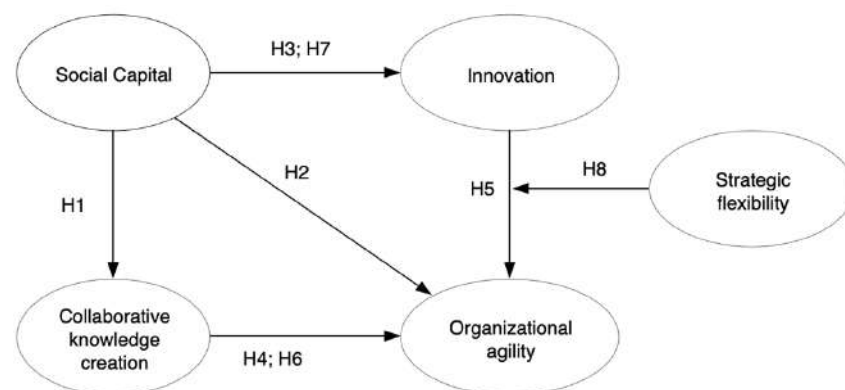
**Hypothesis 7 (H7).** *Innovation mediates social capital and organizational agility.*

### 2.8. The Moderating Role of Strategic Flexibility

According to dynamic capabilities theory [52], organizations must be sensitive to opportunities and threats to develop and configure plans and strategic decisions [17,39,73]. Therefore, the organization must have a strategy that can adapt the organizational conditions to the changes that occur [1]. Strategic flexibility was the ability to quickly combine and reconfigure the company's stock of resources [49] and carry out the actions taken by the company in real-time [12,74]. In compliance with [3,75,76], strategic flexibility was achieved through optimizing resource flexibility. If the resource was scarce, the organization must find other resources; meanwhile, if the resource was sufficient, it allowed the company to use resources more efficiently for new purposes [6,9]. In addition, high strategic flexibility allowed companies to build, transfer, and integrate ideas quickly and prepare new patterns according to the current situation [77]. As a result, a company with strategic flexibility can reduce response time to dynamic changes [78] by creating, expanding, or modifying knowledge bases [79] that enable the company to process its knowledge resources effectively, thereby increasing the value of knowledge for organizational agility [75,76]. Hence, we recommend that:

**Hypothesis 8 (H8).** *Strategic flexibility positively moderates innovation and organizational agility, so innovation is linked with better organizational agility in companies with high levels of strategic flexibility.*

Therefore, the present study examined the relationships between social capital, collaborative knowledge creation, firm innovation, organizational agility, and strategic flexibility in direct, mediation, and moderation. The conceptual framework is shown in Figure 1.



**Figure 1.** Conceptual framework.

### 3. Methodology

#### 3.1. Data and Sampling Method

This study involved SMEs, which were the backbone of the Indonesian economy. In order to obtain the initial sample, we used the local government database of the Bali province to identify SMEs for research purposes. The population of this study was 450 woodcraft SMEs in Bali Province, Indonesia. Accordingly, the sample was determined by a simple random sampling method called the lottery method, meaning that each member of the population received the same opportunity as the sample once. The formula determined the total number of sample frames [80]; hence, 207 SMEs were asked to complete the research questionnaire. Research respondents were managers and assistant managers as the ideal targets as they have a strategic view of organizational characteristics related to organizational practices. The data was collected for 6 months from February to July 2022 via email, Google Forms, and a direct visit by first sending a prior email notification regarding this study. We obtained a total of 414 responses, which can be analyzed to achieve the objectives of this study.

#### 3.2. Measurements

Since previous studies had evaluated the construct variables used for this study, the construct measurement was adopted from the existing literature. Social capital was measured by 5 indicators adopted from [7,45,76]. Collaborative knowledge creation was measured by 8 indicators adopted from [7,38,59,81]. Firm innovation had 10 indicators adopted from studies by [54,55,82]. Organizational agility was measured by 5 indicators adopted from [7,83,84]. Lastly, strategic flexibility with 6 indicators adopted from [3,74].

To evaluate the constructs, we employed A 7-point Likert scale ranging from “1: strongly disagree to 7: strongly agree”. For ensuring clarity of instructions and statements, the questionnaire written in the Indonesian language was piloted on 30 SME managers who were experienced in corporate strategic planning. This process caused minor changes to the wording of instructions and questions of the questionnaire. The constructs measurement are presented in Table 1.

**Table 1.** Constructs measurement.

Variable	Sources
Social capital	[7,45,46]
Collaborative knowledge creation	[7,38,59,81]
Firm innovation	[54,55,82]
Organizational agility	[7,83,84]
Strategic flexibility	[3,74]

This present study employed partial least square based on variance (PLS-SEM) to estimate the proposed organizational agility model and assess the relationship between variables, either directly or indirectly. In order to evaluate the validity and reliability of the construct variables, as recommended by [85], this study evaluated the measurement model. Furthermore, to test the hypothesis about the relationship between variables, this study assessed the structural model. Since the research objective was to validate the theory of dynamic capabilities in building organizational agility models, using SEM-PLS was acceptable [86].

### 4. Results

#### 4.1. Respondent Profile

Table 2 showed the demographic outline of the sample. It showed that the respondents mostly had a higher education background. It was one of the critical pillars of how managers earned quality knowledge [15,87] to develop plans and strategies for dealing with various turbulences [79].



**Table 2.** Demographical facts.

Description		Frequency	Percentage (%)
Age	<25	35	8.5
	25–30	142	34.3
	31–35	135	32.6
	36–40	79	19.1
	41–45	23	5.5
Gender	Male	239	57.7
	Female	175	42.3
Education	Bachelor	277	66.9
	Master	126	30.4
	Doctor	11	2.7
Experiences	<5	2	0.5
	6–10	181	43.7
	11–15	129	31.2
	16–20	102	24.6

4.2. The Assessment of the Measurement Model

Table 3 showed that all indicators had a loading factor value higher than 0.6. Furthermore, the CR value was more than 0.7, while the AVE value was more than the recommended level of 0.5. Furthermore, data analysis determined that the square root value of AVE was more than the construct correlation value, indicating that the discriminant validity requirement was met. These indicators showed that the validity and construct reliability requirements were met [85]. Furthermore, the value of VIF was between 1.437–4.468 (smaller than the recommended level of 5), indicating it did not exhibit any issues connected to the variance of the general method [86].

**Table 3.** Measurement Model Indicators.

Indicators	Loading	CR	AVE
Social capital		0.928	0.725
1. Social networks enhance the opportunities, ideas and insights	0.940		
2. Bond connections and collective with partners	0.904		
3. Partners actively involved in decision making	0.935		
4. Social networks’ feedback and recommendations.	0.752		
5. Social networks influence processes, products, and services	0.696		
Collaborative knowledge creation		0.911	0.564
1. Getting novel ideas and technologies	0.691		
2. Collaborating with partners to gain new knowledge	0.639		
3. Launching and exchanging creative ideas	0.626		
4. Sharing repositories of knowledge and best practices	0.862		
5. Reconfiguring new knowledge.	0.783		
6. Sharing new values and thoughts	0.757		
7. Collaborative learning experiments	0.788		
8. Strengthening knowledge and experience transfer	0.831		

**Table 3.** Cont.

Indicators		Loading	CR	AVE
Firm innovation			0.932	0.582
1.	Developing new products using available of resources	0.830		
2.	The company pursues up-to-date strategy to do things	0.775		
3.	Respond to activities that involves technology	0.775		
4.	Availability of knowledge to develop new products	0.718		
5.	Company continually explores new ideas	0.634		
6.	Competency to process technologies	0.692		
7.	The company’s creativity in its methods of operation	0.817		
8.	Adopting the products and processing technologies to accomplish future needs	0.834		
9.	Company often sells its new products and services	0.836		
10.	The perception about innovation as something risky and resisted	0.687		
Organizational Agility			0.921	0.701
1.	The opportunities produced by the crisis is pursued	0.732		
2.	Recognizing dynamic environmental transition	0.835		
3.	Improvement in terms of the agility of decision making	0.849		
4.	Adaption for resources to accommodating the changing environment	0.911		
5.	New strategies were taken into consideration	0.849		
Strategic flexibility			0.919	0.657
1.	If there is change of circumstances, our organization can adjust its current plans effortlessly	0.888		
2.	If there is change of circumstances, our organization is well-prepared to act accordingly	0.888		
3.	If there is change of circumstances, organization can adjust the strategy changes	0.898		
4.	If there is change of circumstances, organization has the required competency to modify daily routines and practices	0.723		
5.	If there is change of circumstances, our organization can generate a new project proactively	0.737		
6.	If there is change of circumstances, our organization can prioritize projects with the highest likelihood to succeed	0.702		

**4.3. Structural Model Testing**

This study applied the bootstrap method with 5000 samples to evaluate the significance of the indicators and path coefficients [88]. The results showed that the goodness-of-fit (GoF) model had a value of 0.675, which indicated that the fitness model was significant. In conclusion, these findings indicated that the proposed organizational agility model could be applied to the woodcraft SME sector. In addition, testing on the standard residual root mean square (SRMR) and normed fit index (NFI) showed that the SRMR value was 0.086, while the NFI was 0.687, indicating that the model was fit [89]. Furthermore, the examination of R2 revealed that social capital, collaborative knowledge creation, and innovation described a 0.295 (29.5%) variance in organizational agility. Finally, all Q2 had positive values, which indicated that all variables had good relevance predictions [88].

**4.4. Hypotheses Testing**

The analysis results showed that four of the five hypotheses of the direct relationship were confirmed (Table 4). The relationship between social capital and collaborative knowledge creation was significant ( $\beta = 0.442$ , STDEV 0.054, T Statistic 8.323 > 1.96); hence hypothesis 1 was accepted. The relationship between social capital and organizational agility was significant ( $\beta = 0.198$ , STDEV 0.058, T Statistic 3.413 > 1.96); hence hypothesis 2 was accepted. The relationship between social capital and innovation was significant ( $\beta = 0.534$ , STDEV 0.047, T Statistic 11.287 > 1.96); hence hypothesis 3 was accepted. The relationship between collaborative knowledge creation and organizational agility was not significant ( $\beta = 0.062$ , STDEV 0.053, T Statistic 1.177 < 1.96); hence hypothesis 4 was rejected. Lastly, the direct relationship between innovation and organizational agility was significant ( $\beta = 0.375$ , STDEV 0.054, T Statistic 7.012 > 1.96); hence hypothesis 5 was accepted.

**Table 4.** Path Coefficients.

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	p Values	Decision
SC → Collaborative K C	0.442	0.446	0.054	8.232	0.000	Sig
SC → Org Agility	0.198	0.194	0.058	3.413	0.001	Sig
SC → Firm Innovation	0.534	0.535	0.047	11.287	0.000	Sig
Collaborative K C → Org Agility	0.062	0.059	0.053	1.177	0.240	Non-sig
Firm Innovation → Org Agility	0.375	0.376	0.054	7.012	0.000	sig

*4.5. Mediation Testing*

Following the identification of the direct relationship between variables, the next stage was to test the positions of mediating variables. In this study, we tested two mediation pathways. According to [85,86], the method used was to measure the VAF value < 0.20, meaning that mediation was not found, while 0.20–0.80 indicates partial and VAF value > 0.80, meaning that there was full mediation. In order to test the mediating effect of the model, non-parametric bootstrap was used [90]. Finally, the variance accounted for (VAF) was calculated to obtain the indirect link and total sizes. When the VAF was greater than 80%, it indicated full mediation; between 20 to 80% was partial; below 20% indicated no mediating effect [86]. Furthermore, the results were presented in Table 5.

**Table 5.** Mediation Analysis.

Link	Mediator	Independent Variable-Mediator	Mediator-Dependent Variable	Direct	Indirect	Total Effect	VAF (%)	Decision
SC-OA	CKC	0.442	0.062	0.198	0.274	0.472	0.581	Partial mediation
SC-OA	Innov	0.534	0.375	0.198	0.200	0.398	0.503	Partial mediation

The role of mediation in the causal relationship between social capital, collaborative knowledge creation, and organizational agility, along with social capital, innovation, and organizational agility, was examined using the VAF test. Because this study examined two mediation pathways, we assumed that collaborative knowledge creation partially mediates the relationship between social capital and organizational agility, where the VAF value was 58.1%, indicating that hypothesis 6 was accepted. Furthermore, innovation partially mediated the relationship between social capital and organizational agility with a VAF value of 50.3%, indicating that hypothesis 7 was accepted.

Finally, we analyzed the moderating variable in this research model. Multigroup analysis using PLS examined the moderating role of strategic flexibility [91]. However, the analysis showed that strategic flexibility did not mediate the relationship between innovation and organizational agility ( $\beta = 0.084$ , STDEV 0.044, T Statistic 1.912 < 1.96, PV 0.056); hence hypothesis 8 was rejected. The analysis results were presented in Table 6 and Figure 2.

**Table 6.** Moderating testing.

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	p Values	Decision
Firm_in → Stra_Flex → Org Agility	0.084	0.086	0.044	1.912	0.056	Non-sig

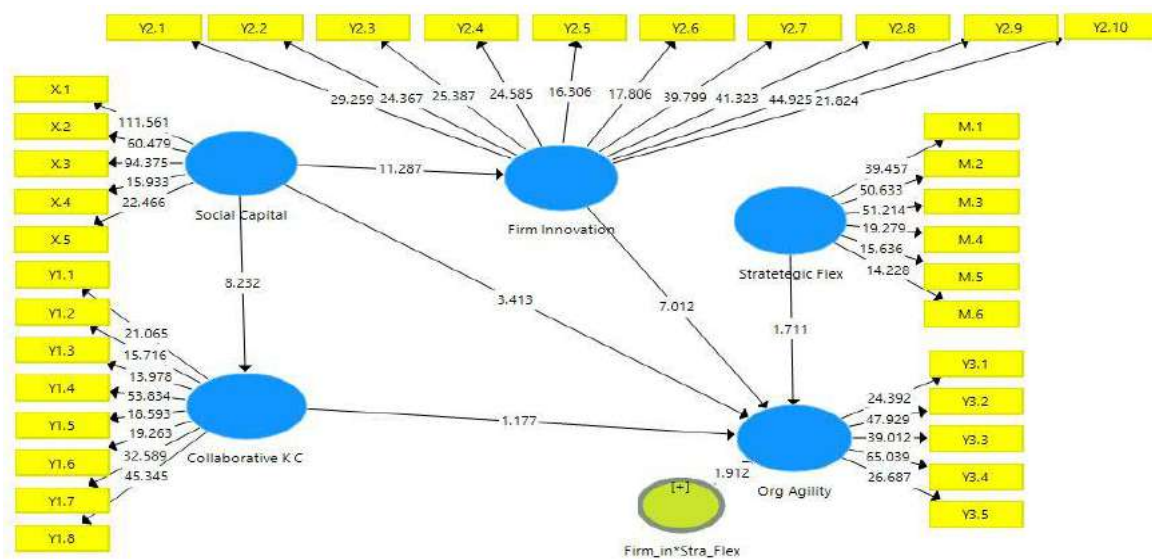


Figure 2. Output Analysis.

### 5. Discussion and Research Implications

This study examined the factors that affect organizational agility in anticipating the turbulence and challenges of globalization. Using PLS-SEM analysis, this study revealed that organizational agility was significantly influenced by innovation, followed by social capital. These results validated previous research in the context of SMEs by [7,15,16], which found the critical role of social capital in building innovation. Furthermore, these results implied that social capital was essential in building knowledge collaboration that led to innovation capabilities, further enhancing organizational agility. This finding strengthened previous research on organizational efforts, especially SMEs, in improving organizational agility [5,7,20,70].

In woodcraft SMEs, the social capital construct was adopted from previous research [7,45,46]. The social capital involved was (1) the ability to increase opportunities, ideas, and concepts, called exploration, aimed to increase contribution in the international market because it has unique and high-value products; (2) close partners and collaborations included suppliers, producers, governments, and competitors. Woodcraft SMEs had mutually beneficial collaborations [92–94], especially in the provision of high artistic value handcraft products [23]; (3) partners could make decisions, especially when confronted with varied market factors [6,40]; as a result, social capital was strengthened as a source of strength in developing long-term performance [95]; (4) recommendations from the social networks built between them [96] became a strength in facing market turbulence [97]; and (5) social networks influenced processes, products, and services [29]; thus, SMEs stability and productivity were strengthened.

Contrary to what was expected, collaborative knowledge creation did not significantly affect organizational agility. This result contradicted the study conducted by [7], which found that collaborative knowledge creation was an essential driver in building organizational agility because knowledge was the principal capital in building agility [31,98]. Therefore, a possible explanation for the insignificant effect of collaborative knowledge creation on organizational agility could be that SMEs were still not open to building collaborative knowledge. SMEs viewed knowledge as exclusive capital and were unwilling to share it, fearing that it could increase the competitiveness of the competitors [99].

In a mediating path, collaborative knowledge creation and innovation mediated the relationship between social capital and organizational agility. Social capital has a pivotal role in transferring and integrating knowledge and was vital in forming collaborative knowledge [7] and therefore increased adaptation to rapid change [56]. This mechanism was the implementation of the interaction of all social resources which produced collaborative knowledge both directly and indirectly. Moreover, collaborative knowledge creation

becomes the foundation for organizations to adapt to environmental changes and dynamic markets [38]. In order to build agility, organizations need to form a coordinated network to collect ideas and turn them into knowledge [25]. In addition, innovative organizations focused on learning and risk-taking [68], indicating an organizational climate that was open to new ideas [9], and ultimately made the organization more agile [4,70]

Furthermore, strategic flexibility was not an MV of the relationship between innovation and organizational agility. This result was contrary to a study conducted by [100], which found that strategic flexibility strengthened the strategic orientation of SMEs. A possible explanation was that woodcraft SMEs already had agility because they had unique, distinctive products that competitors could not imitate. Furthermore, they could anticipate and seize opportunities when the market appetite changes [4]. These findings also refuted the statement from [19] that SMEs had limited resources. Instead, SMEs could anticipate and seize opportunities and reconfigure their resource sets, business processes, strategies, and innovations [27,28,32].

### 5.1. Theoretical Implications

The present study contributed to enhancing the literature on organizational agility and dynamic capabilities theory in four main elements. First, this study proposed and examined an integrated model of supporting social capital, collaborative knowledge creation, and innovation in woodcraft SMEs, where the combination of these three drivers was the key to building organizational agility. It turned out that the organizational agility model had good compatibility and explanatory power. Thus, it confirmed that social capital, collaborative knowledge creation, and innovation were generally accepted [7,25], especially in the SME sector [25]. More specifically, social capital played a vital role in increasing collaborative knowledge creation and innovation and encouraging SMEs to increase agility to face challenges and turbulences. The results proved that social capital and collaborative knowledge creation were the basis for forming innovations that ultimately made SMEs more agile. Furthermore, this study assessed organizational agility by integrating social capital into the organizational agility model. The results of analysis showed that the organizational agility integration model for SMEs was fit. In addition, the inclusion of innovation in the organizational agility model increased its explanatory power. Conceptually, the results of this study strengthened the social capital–organizational agility model in the SME sector [7]. This finding showed that in SMEs, social capital and collaborative knowledge creation could simultaneously strengthen the influence of innovation on organizational agility. Thus, the organizational agility model in the context of SMEs was conceptually extended to the social capital–innovation–organizational agility model. Furthermore, these findings provided further evidence for the conclusions of previous studies [8,70], which claimed that innovation was an essential determinant of organizational agility.

Second, this study revealed that collaborative knowledge creation and innovation mediated the relationship between social capital and organizational agility. Although the mediation relationships tested were significant, the relationship between social capital, collaborative knowledge creation, and organizational agility had a greater value. These results proved that SMEs were highly focused on establishing practical collaborative knowledge [98,101] to develop potential and quality knowledge [15,24]. Furthermore, managers' involvement was required in knowledge-sharing practices [24] to generate knowledge capability [102] and knowledge application [54,98]. Therefore, SMEs must take notice of knowledge and prioritize it for organizational sustainability, productivity improvement, innovation, and competitiveness.

Third, organizational agility was an interesting topic for researchers, policymakers, and practitioners, but the existing literature on how Indonesian SMEs can build agility, especially in a crisis, was not yet comprehensive. Most relevant research focused on European countries, while this study contributed to the organizational agility literature in developing countries. The results showed that social capital and innovation affected organizational agility. Furthermore, it was the first study to link social capital, collaborative

knowledge creation, and innovation as antecedents of organizational agility when it was majorly studied in developed countries such as Germany [17], Taiwan [6], and Spain [18].

Fourth, this study increased insights into dynamic capabilities related to the ability of SMEs to respond to the rapidly changing business environment. The results showed that social capital was the key element of dynamic capabilities used for capturing new opportunities through strengthening collaborative knowledge creation to improve managerial competence [12], designing and improving business model innovation to build organizational agility [27,29,52]. Notably, social capital triggers the emergence of collaborative knowledge creation in SMEs, which positively affect the emergence of innovation. Furthermore, from the perspective of dynamic capabilities, the results showed the importance of integrating these drivers into a competitive advantage [73] because the better performance was a combination and interaction between knowledge resources and their capabilities [7,39,52]. Finally, this study showed the urgency of organizational agility as a performance evaluation measure in countering to turbulence and other similar pandemics [7]. This evaluation helped to gain new theoretical insights to investigate advanced knowledge about the value of collaborative knowledge creation and innovation to anticipate risks due to turbulence.

### *5.2. Managerial Implications*

In managerial implication, this research provided insight into three elements. First, understanding the critical role of social capital and collaborative knowledge creation in attaining innovation and its impact on organizational agility provides managers with valuable insight into governing severe turbulence. Achieving innovation required investing in social capital and collaborative knowledge creation to answer the crisis. Managers had to realize that abundant and measurable quality of collaborative knowledge enabled the development of innovation in products, processes, and methods to strengthen innovation capabilities. Second, the organization had to provide a robust mechanism for building ties, social networks, and collaboration with all stakeholders (such as suppliers, business partners, government, and even competitors) who offered renewable knowledge resources to sense and seize the opportunities that enabled innovation under an unprecedented and highly volatile environment. Eventually, the research model presented a paradigm for achieving organizational agility that guides organizations on the implementation to thriving social capital, collaborative knowledge creation, and high cruising range on the ability of innovation to overcome challenges and turbulence.

## **6. Conclusions and Future Study**

Most previous studies examined organizational agility but did not focus on integrating firm innovation drivers, namely social capital and collaborative knowledge creation, especially in an emerging country such as Indonesia. Organizational agility provides opportunities and encourages every country, industry, and business entity to adapt with market turbulence, even a pandemic, to maintain organizational performance and build sustainable competitive advantage. The present study examines the role of social capital, collaborative knowledge creation, and firm innovation on organizational agility in the SMEs sector. Furthermore, it examined strategic flexibility as a moderating variable.

Three important conclusions can be drawn from the present study. First, organizational agility is a complex construction, which consists not only of social capital but also firm innovation. Second, collaborative knowledge creation and firm innovation have a mediating variable relationship between social capital and organizational agility. Furthermore, two mediating patterns acted as a strategic path to enhance organizational agility. Finally, strategic flexibility did not act as a moderating variable in the relationship between innovation and organizational agility.

### *Limitations and Further Study*

Although the present study provided theoretical and managerial contributions, this study had several limitations that are worth examining and urges for research in the future.

First, this present study was conducted while the pandemic was still occurring in Indonesia, but the world began to accept and make peace with COVID-19. Undeniably at this point, mobility was still limited by rules such as regional lockdowns and health protocols. Under these conditions, collecting a large sample of data was difficult, especially from SMEs in Indonesia. Therefore, the discoveries of the present study cannot be generalized conclusively to different industries or countries. Consequently, the research model in the present study should be assessed in further studies, targeting a substantial amount of samples from different sectors, countries, and regions to authenticate these results. Second, the measurement of the variables in the present study was chosen at the enterprise level, while the development of capabilities and the realization of increased agility began at the level of individual business processes in different departments or units. Therefore, future research can be completed at the individual or team level within the organization. Finally, the present study was conducted only in woodworking SMEs; therefore, the results cannot be generalized to other SMEs or industries. For this reason, future studies about the organizational agility model must be conducted in more diverse sectors or organizations.

**Author Contributions:** Conceptualization, I.W.E.A. and D.S.; methodology, I.W.E.A.; software, N.K.D.H.; validation, I.W.E.A., D.S. and V.K.; formal analysis, I.M.A.D.S.A.; investigation, N.K.D.H.; resources, I.W.E.A.; data curation, N.K.D.H.; writing—original draft preparation, I.W.E.A.; writing—review and editing, D.S.; visualization, V.K.; supervision, D.S.; project administration, N.K.D.H.; funding acquisition, I.W.E.A. All authors have read and agreed to the published version of the manuscript.

**Funding:** Ministry of Education and Cultural, Research Technology and Higher Education of the Republic of Indonesia, Directorate of Research, Technology and Community Service (DRTPM): No. 085/SPK/D4/PPK.01.APTV/VII/2022 and 3163/PL8/PG/2022.

**Institutional Review Board Statement:** Not applicable.

**Informed Consent Statement:** Not applicable.

**Data Availability Statement:** Not applicable.

**Conflicts of Interest:** The authors declare no conflict of interest.

## References

1. Baškarada, S.; Koronios, A. The 5S organizational agility framework: A dynamic capabilities perspective. *Int. J. Organ. Anal.* **2018**, *26*, 331–342. [\[CrossRef\]](#)
2. Audretsch, B.D.; Belitski, M. The limits to open innovation and its impact on innovation performance. *Technovation* **2022**, 102519. [\[CrossRef\]](#)
3. Miroshnychenko, I.; Strobl, A.; Matzler, K.; de Massis, A. Absorptive capacity, strategic flexibility, and business model innovation: Empirical evidence from Italian SMEs. *J. Bus. Res.* **2021**, *130*, 670–682. [\[CrossRef\]](#)
4. Yildiz, T.; Aykanat, Z. The mediating role of organizational innovation on the impact of strategic agility on firm performance. *World J. Entrep. Manag. Sustain. Dev.* **2021**, *17*, 765–786. [\[CrossRef\]](#)
5. Chung, T.-T.; Liang, T.-P.; Peng, C.-H.; Chen, D.-N.; Sharma, P. Knowledge Creation and Organizational Performance: Moderating and Mediating Processes from an Organizational Agility Perspective. *AIS Trans. Hum. -Comput. Interact.* **2019**, *11*, 79–106. [\[CrossRef\]](#)
6. Liu, H.M.; Yang, H.F. Network resource meets organizational agility: Creating an idiosyncratic competitive advantage for SMEs. *Manag. Decis.* **2020**, *58*, 58–75. [\[CrossRef\]](#)
7. Al-Omoush, K.S.; Simón-Moya, V.; Sendra-García, J. The impact of social capital and collaborative knowledge creation on e-business proactiveness and organizational agility in responding to the COVID-19 crisis. *J. Innov. Knowl.* **2020**, *5*, 279–288. [\[CrossRef\]](#)
8. Dabić, M.; Stojčić, N.; Simić, M.; Potocan, V.; Slavković, M.; Nedelko, Z. Intellectual agility and innovation in micro and small businesses: The mediating role of entrepreneurial leadership. *J. Bus. Res.* **2021**, *123*, 683–695. [\[CrossRef\]](#)
9. Cai, Z.; Liu, H.; Huang, Q.; Liang, L. Developing organizational agility in product innovation: The roles of IT capability, KM capability, and innovative climate. *R D Manag.* **2019**, *49*, 421–438. [\[CrossRef\]](#)
10. Chan, J.I.L.; Muthuveloo, R. Vital organisational capabilities for strategic agility: An empirical study. *Asia-Pac. J. Bus. Adm.* **2020**, *12*, 223–236. [\[CrossRef\]](#)
11. Koçyiğit, Y.; Akkaya, B. The Role of Organizational Flexibility in Organizational Agility: A Research on SMEs. *Bus. Manag. Strategy* **2020**, *11*, 110. [\[CrossRef\]](#)

12. Teece, D.; Peteraf, M.; Leih, S. Dynamic capabilities and organizational agility: Risk, uncertainty, and strategy in the innovation economy. *Calif. Manag. Rev.* **2016**, *58*, 13–35. [[CrossRef](#)]
13. Teixeira, E.d.O.; Werther, B.W., Jr. Resilience: Continuous renewal of competitive advantages. *Bus. Horiz.* **2013**, *56*, 333–342. [[CrossRef](#)]
14. Belhadi, A.; Mani, V.; Kamble, S.S.; Khan, S.A.R.; Verma, S. Artificial intelligence-driven innovation for enhancing supply chain resilience and performance under the effect of supply chain dynamism: An empirical investigation. *Ann. Oper. Res.* **2021**, 1–26. [[CrossRef](#)]
15. Ganguly, A.; Talukdar, A.; Chatterjee, D. Evaluating the role of social capital, tacit knowledge sharing, knowledge quality and reciprocity in determining innovation capability of an organization. *J. Knowl. Manag.* **2019**, *23*, 1105–1135. [[CrossRef](#)]
16. Singh, S.K.; Mazzucchelli, A.; Vessal, S.R.; Solidoro, A. Knowledge-based HRM practices and innovation performance: Role of social capital and knowledge sharing. *J. Int. Manag.* **2021**, *27*, 100830. [[CrossRef](#)]
17. Harsch, K.; Festing, M. Dynamic talent management capabilities and organizational agility—A qualitative exploration. *Hum. Resour. Manag.* **2020**, *59*, 43–61. [[CrossRef](#)]
18. Felipe, C.M.; Roldán, J.L.; Leal-Rodríguez, A.L. Impact of organizational culture values on organizational agility. *Sustainability* **2017**, *9*, 2354. [[CrossRef](#)]
19. Özbüğday, F.C.; Findik, D.; Özcan, K.M.; Başçı, S. Resource efficiency investments and firm performance: Evidence from European SMEs. *J. Clean. Prod.* **2020**, *252*, 119824. [[CrossRef](#)]
20. Ravichandran, T. Exploring the relationships between IT competence, innovation capacity and organizational agility. *J. Strateg. Inf. Syst.* **2018**, *27*, 22–42. [[CrossRef](#)]
21. Arsawan, I.W.E.; Koval, V.; Duginets, G.; Kalinin, O.; Korostova, I. The impact of green innovation on environmental performance of SMEs in an emerging economy. *E3S Web Conf.* **2021**, *255*, 1012. [[CrossRef](#)]
22. Arsawan, I.W.E.; Koval, V.; Rajiani, I.; Rustiarini, N.W.; Supartha, W.G.; Suryantini, N.P.S. Leveraging knowledge sharing and innovation culture into SMEs sustainable competitive advantage. *Int. J. Product. Perform. Manag.* **2022**, *71*, 405–428. [[CrossRef](#)]
23. Parwita, G.B.S.; Arsawan, I.W.E.; Koval, V.; Hrinchenko, R.; Bogdanova, N.; Tamosiuniene, R. Organizational innovation capability: Integrating human resource management practice, knowledge management and individual creativity. *Intellect. Econ.* **2021**, *15*, 22–45.
24. Arsawan, I.W.E.; Kariati, N.M.; Shchokina, Y.; Prayustika, P.A.; Rustiarini, N.W.; Koval, V. Invigorating Employee's Innovative Work Behavior: Exploring the Sequential Mediating Role of Organizational Commitment and Knowledge. *Verslas Teor. Ir Prakt. Vilnius* **2022**, *23*, 117–130. [[CrossRef](#)]
25. Khan, S.H.; Majid, A.; Yasir, M. Strategic renewal of SMEs: The impact of social capital, strategic agility and absorptive capacity. *Manag. Decis.* **2020**, *59*, 1877–1894. [[CrossRef](#)]
26. Sherehiy, B.; Karwowski, W.; Layer, J.K. A review of enterprise agility: Concepts, frameworks, and attributes. *Int. J. Ind. Ergon.* **2007**, *37*, 445–460. [[CrossRef](#)]
27. Wageeh, N.A. Organizational Agility: The Key to Organizational Success. *Int. J. Bus. Manag.* **2016**, *11*, 296. [[CrossRef](#)]
28. Žitkienė, R.; Deksnys, M. Organizational agility conceptual model. *Montenegrin J. Econ.* **2018**, *14*, 115–129. [[CrossRef](#)]
29. Ahmadi, S.; Ershadi, M.J. Investigating the role of social networking technology on the organizational agility: A structural equation modeling approach. *J. Adv. Manag. Res.* **2021**, *18*, 568–584. [[CrossRef](#)]
30. Zhou, J.; Bi, G.; Liu, H.; Fang, Y.; Hua, Z. Understanding employee competence, operational IS alignment, and organizational agility—An ambidexterity perspective. *Inf. Manag.* **2018**, *55*, 695–708. [[CrossRef](#)]
31. Panda, S.; Rath, S.K. Investigating the structural linkage between IT capability and organizational agility: A study on Indian financial enterprises. *J. Enterp. Inf. Manag.* **2016**, *29*, 751–773. [[CrossRef](#)]
32. Walter, A.T. Organizational agility: Ill-defined and somewhat confusing? A systematic literature review and conceptualization. *Manag. Rev. Q.* **2021**, *71*, 343–391. [[CrossRef](#)]
33. Falahat, M.; Ramayah, T.; Soto-Acosta, P.; Lee, Y.Y. SMEs internationalization: The role of product innovation, market intelligence, pricing and marketing communication capabilities as drivers of SMEs' international performance. *Technol. Forecast. Soc. Chang.* **2020**, *152*, 119908. [[CrossRef](#)]
34. Ciszewska-Mlinarič, M. Foreign market knowledge and SME's international performance: Moderating effects of strategic intent and time-to-internationalization. *Entrep. Bus. Econ. Rev.* **2016**, *4*, 51–66. [[CrossRef](#)]
35. Gavriila, S.G.; Ancillo, A.d.L. Spanish SMEs' digitalization enablers: E-Receipt applications to the offline retail market. *Technol. Forecast. Soc. Chang.* **2021**, *162*, 120381. [[CrossRef](#)]
36. Stekelorum, R.; Laguir, I.; ElBaz, J. Can you hear the Eco? From SME environmental responsibility to social requirements in the supply chain. *Technol. Forecast. Soc. Chang.* **2020**, *158*, 120169. [[CrossRef](#)]
37. Cosenz, F.; Bivona, E. Fostering growth patterns of SMEs through business model innovation. A tailored dynamic business modelling approach. *J. Bus. Res.* **2021**, *130*, 658–669. [[CrossRef](#)]
38. Faccin, K.; Balestrin, A. The dynamics of collaborative practices for knowledge creation in joint R&D projects. *J. Eng. Technol. Manag.* **2018**, *48*, 28–43. [[CrossRef](#)]
39. Weaven, S.; Quach, S.; Thaichon, P.; Frazer, L.; Billot, K.; Grace, D. Surviving an economic downturn: Dynamic capabilities of SMEs. *J. Bus. Res.* **2021**, *128*, 109–123. [[CrossRef](#)]



40. Quaye, D. Marketing innovation and sustainable competitive advantage of manufacturing SMEs in Ghana. *Manag. Decis.* **2019**, *57*, 1535–1553. [[CrossRef](#)]
41. Azudin, A.; Mansor, N. Management accounting practices of SMEs: The impact of organizational DNA, business potential and operational technology. *Asia Pac. Manag. Rev.* **2018**, *23*, 222–226. [[CrossRef](#)]
42. Chege, S.M.; Wang, D. The influence of technology innovation on SME performance through environmental sustainability practices in Kenya. *Technol. Soc.* **2020**, *60*, 101210. [[CrossRef](#)]
43. Meijer, L.L.J.; Huijben, J.C.C.M.; van Boxtael, A.; Romme, A.G.L. Barriers and drivers for technology commercialization by SMEs in the Dutch sustainable energy sector. *Renew. Sustain. Energy Rev.* **2019**, *112*, 114–126. [[CrossRef](#)]
44. King, S.; Lusher, D.; Hopkins, J.; Simpson, G.W. Industrial symbiosis in Australia: The social relations of making contact in a matchmaking marketplace for SMEs. *J. Clean. Prod.* **2020**, *270*, 122146. [[CrossRef](#)]
45. Hayton, J.C. Competing in the new economy: The effect of intellectual capital on corporate entrepreneurship in high-technology new ventures. *R D Manag.* **2005**, *35*, 137–155. [[CrossRef](#)]
46. Liu, H.; Ke, W.; Wei, K.K.; Lu, Y. The effects of social capital on firm substantive and symbolic performance: In the context of E-business. *J. Glob. Inf. Manag.* **2016**, *24*, 18–44. [[CrossRef](#)]
47. Barney, J. Firm Resources and Sustained Competitive Advantage. *J. Manag.* **1991**, *17*, 99–120. [[CrossRef](#)]
48. Barney, J.B. Year Retrospective on The Resource-Based. 2001. Available online: <https://doi.org/10.1177/014920630102700602> (accessed on 23 July 2022).
49. Teece, D.J.; Pisano, G.; Shuen, A. Dynamic capabilities and strategic management. *Knowl. Strategy* **2009**, *18*, 77–116. [[CrossRef](#)]
50. Sabetzadeh, F.; Tsui, E. An effective knowledge quality framework based on knowledge resources interdependencies. *Vine* **2015**, *45*, 360–375. [[CrossRef](#)]
51. Al-Shami, S.; Rashid, N. A holistic model of dynamic capabilities and environment management system towards eco-product innovation and sustainability in automobile firms. *J. Bus. Ind. Mark.* **2022**, *37*, 402–416. [[CrossRef](#)]
52. Teece, D.J.; Pisano, G.; Shuen, A. Dynamic capabilities and strategic management. *Strateg. Manag. J.* **1997**, *18*, 509–533. [[CrossRef](#)]
53. Tu, J. The role of dyadic social capital in enhancing collaborative knowledge creation. *J. Informetr.* **2020**, *14*, 101034. [[CrossRef](#)]
54. Ode, E.; Ayavoo, R. The mediating role of knowledge application in the relationship between knowledge management practices and firm innovation. *J. Innov. Knowl.* **2020**, *5*, 210–218. [[CrossRef](#)]
55. Calantone, R.J.; Cavusgil, S.T.; Zhao, Y. Learning orientation, firm innovation capability, and firm performance. *Ind. Mark. Manag.* **2002**, *31*, 515–524. [[CrossRef](#)]
56. Zhao, S.; Jiang, Y.; Peng, X.; Hong, J. Knowledge sharing direction and innovation performance in organizations: Do absorptive capacity and individual creativity matter? *Eur. J. Innov. Manag.* **2020**, *24*, 371–394. [[CrossRef](#)]
57. Nonaka, I.; von Krogh, G. Perspective—Tacit knowledge and knowledge conversion: Controversy and advancement in organizational knowledge creation theory. *Organ. Sci.* **2009**, *20*, 635–652. [[CrossRef](#)]
58. Ooi, C.A.; Hooy, C.W.; Som, A.P.M. The influence of board diversity in human capital and social capital in crisis. *Manag. Financ.* **2017**, *43*, 700–719. [[CrossRef](#)]
59. Chen, W.; Jiao, H.; Zeng, Q.; Wu, J. Ios-Enabled Collaborative Knowledge Creation and Supply Chain Flexibility: The Moderate Role of Market 2016. Available online: <https://aisel.aisnet.org/pacis2016/37/> (accessed on 23 July 2022).
60. Steinmo, M.; Rasmussen, E. The interplay of cognitive and relational social capital dimensions in university-industry collaboration: Overcoming the experience barrier. *Res. Policy* **2018**, *47*, 1964–1974. [[CrossRef](#)]
61. Yeşil, S.; Doğan, I.F. Exploring the relationship between social capital, innovation capability and innovation. *Innov. Organ. Manag.* **2019**, *21*, 506–532. [[CrossRef](#)]
62. Thompson, M. Social capital, innovation and economic growth. *J. Behav. Exp. Econ.* **2018**, *73*, 46–52. [[CrossRef](#)]
63. Chen, L.; Zheng, W.; Yang, B.; Bai, S. Transformational leadership, social capital and organizational innovation. *Leadersh. Organ. Dev. J.* **2016**, *37*, 843–859. [[CrossRef](#)]
64. Bouton, E.; Tal, S.B.; Asterhan, C.S.C. Students, social network technology and learning in higher education: Visions of collaborative knowledge construction vs. the reality of knowledge sharing. *Internet High. Educ.* **2021**, *49*, 100787. [[CrossRef](#)]
65. Dung, T.Q.; Bonney, L.B.; Adhikari, R.P.; Miles, M.P. Entrepreneurial orientation, knowledge acquisition and collaborative performance in agri-food value-chains in emerging markets. *Supply Chain. Manag.* **2020**, *25*, 521–533. [[CrossRef](#)]
66. Chang, F.; Zhou, G.; Zhang, C.; Ding, K.; Cheng, W.; Chang, F. A maintenance decision-making oriented collaborative cross-organization knowledge sharing blockchain network for complex multi-component systems. *J. Clean. Prod.* **2021**, *282*, 124541. [[CrossRef](#)]
67. Wang, C.; Hu, Q. Technovation Knowledge sharing in supply chain networks: Effects of collaborative innovation activities and capability on innovation performance. *Technovation* **2020**, *94–95*, 102010. [[CrossRef](#)]
68. Hock-Doepgen, M.; Clauss, T.; Kraus, S.; Cheng, C.F. Knowledge management capabilities and organizational risk-taking for business model innovation in SMEs. *J. Bus. Res.* **2021**, *130*, 683–697. [[CrossRef](#)]
69. Chen, J.; Liu, L. Customer participation, and green product innovation in SMEs: The mediating role of opportunity recognition and exploitation. *J. Bus. Res.* **2020**, *119*, 151–162. [[CrossRef](#)]
70. Cepeda, J.; Arias-Pérez, J. Information technology capabilities and organizational agility: The mediating effects of open innovation capabilities. *Multinatl. Bus. Rev.* **2019**, *27*, 198–216. [[CrossRef](#)]

71. Yi, L.; Wang, Y.; Upadhaya, B.; Zhao, S.; Yin, Y. Knowledge spillover, knowledge management capabilities, and innovation among returnee entrepreneurial firms in emerging markets: Does entrepreneurial ecosystem matter? *J. Bus. Res.* **2021**, *130*, 283–294. [[CrossRef](#)]
72. Kamboj, S.; Rahman, Z. Market orientation, marketing capabilities and sustainable innovation: The mediating role of sustainable consumption and competitive advantage. *Manag. Res. Rev.* **2017**, *40*, 698–724. [[CrossRef](#)]
73. Ferreira, J.; Coelho, A.; Moutinho, L. Dynamic capabilities, creativity and innovation capability and their impact on competitive advantage and firm performance: The moderating role of entrepreneurial orientation. *Technovation* **2020**, *92–93*, 102061. [[CrossRef](#)]
74. Brozovic, D. Strategic Flexibility: A Review of the Literature. *Int. J. Manag. Rev.* **2018**, *20*, 3–31. [[CrossRef](#)]
75. Gorondutse, A.H.; Arshad, D.; Alshuaibi, A.S. Driving sustainability in SMEs' performance: The effect of strategic flexibility. *J. Strategy Manag.* **2020**, *14*, 64–81. [[CrossRef](#)]
76. Yang, J.; Zhang, F.; Jiang, X.; Sun, W. Strategic flexibility, green management, and firm competitiveness in an emerging economy. *Technol. Forecast. Soc. Chang.* **2015**, *101*, 347–356. [[CrossRef](#)]
77. Xiu, L.; Liang, X.; Chen, Z.; Xu, W. Strategic flexibility, innovative HR practices, and firm performance. *Pers. Rev.* **2017**, *46*, 1335–1357. [[CrossRef](#)]
78. Cingöz, A.; Akdoğan, A.A. Strategic Flexibility, Environmental Dynamism, and Innovation Performance: An Empirical Study. *Procedia-Soc. Behav. Sci.* **2013**, *99*, 582–589. [[CrossRef](#)]
79. Thomas, E.F. Platform-based product design and environmental turbulence: The mediating role of strategic flexibility. *Eur. J. Innov. Manag.* **2014**, *17*, 107–124. [[CrossRef](#)]
80. Krejcie, R.V.; Morgan, D.W. Determining sample size for research activities. *Educ. Psychol. Meas.* **1970**, *30*, 607–610. [[CrossRef](#)]
81. Nonaka, I.; Takeuchi, H. *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*; Oxford University Press: Oxford, UK, 1995.
82. Ngo, L.V.; O'Cass, A. Creating value offerings via operant resource-based capabilities. *Ind. Mark. Manag.* **2009**, *38*, 45–59. [[CrossRef](#)]
83. Nafei, W.A. The Role of Organizational Agility in Reinforcing Job Engagement: A Study on Industrial Companies in Egypt. *Int. Bus. Res.* **2016**, *9*, 153–167. [[CrossRef](#)]
84. Preston, D.S.; Leidner, D.E.; Chen, D.; Uarterly, M.Q.; Xecutive, E. Created CIO 2008. Available online: <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1540-5915.2008.00206.x> (accessed on 23 July 2022).
85. Hair, J.F., Jr.; Matthews, L.M.; Matthews, R.L.; Sarstedt, M. PLS-SEM or CB-SEM: Updated guidelines on which method to use. *Int. J. Multivar. Data Anal.* **2017**, *1*, 107–123. [[CrossRef](#)]
86. Hair, J.F.; Hult, G.; Tomas, M.; Ringle, C.M.; Sarstedt, M. *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*; Sage Publications: Sauzend oaks, CA, USA, 2016.
87. Zhang, S.; Wang, Z.; Zhao, X. Effects of proactive environmental strategy on environmental performance: Mediation and moderation analyses. *J. Clean. Prod.* **2019**, *235*, 1438–1449. [[CrossRef](#)]
88. Chin, W.W. How to Write Up and Report PLS Analyses. In *Handbook of Partial Least Squares*; Springer: Berlin/Heidelberg, Germany, 2010; pp. 655–690.
89. Tenenhaus, M.; Vinzi, V.E.; Chatelin, Y.-M.; Lauro, C. PLS path modeling. *Comput. Stat. Data Anal.* **2005**, *48*, 159–205. [[CrossRef](#)]
90. Hair, J.F., Jr.; Sarstedt, M.; Matthews, L.M.; Ringle, C.M. Identifying and treating unobserved heterogeneity with FIMIX-PLS: Part I—method. *Eur. Bus. Rev.* **2016**, *28*, 63–76. [[CrossRef](#)]
91. Henseler, J.; Fassott, G. Testing moderating effects in PLS path models: An illustration of available procedures. In *Handbook of Partial Least Squares*; Springer: Berlin/Heidelberg, Germany, 2010; pp. 713–735.
92. Leckel, A.; Veilleux, S.; Dana, L.P. Local Open Innovation: A means for public policy to increase collaboration for innovation in SMEs. *Technol. Forecast. Soc. Chang.* **2020**, *153*, 119891. [[CrossRef](#)]
93. Patricio, J.; Axelsson, L.; Blomé, S.; Rosado, L. Enabling industrial symbiosis collaborations between SMEs from a regional perspective. *J. Clean. Prod.* **2018**, *202*, 1120–1130. [[CrossRef](#)]
94. Zaridis, A.; Vlachos, I.; Bourlakis, M. SMEs strategy and scale constraints impact on agri-food supply chain collaboration and firm performance. *Prod. Plan. Control* **2021**, *32*, 1165–1178. [[CrossRef](#)]
95. Tan, Q.; Sousa, C.M.P. Leveraging marketing capabilities into competitive advantage and export performance. *Int. Mark. Rev.* **2015**, *32*, 78–102. [[CrossRef](#)]
96. Williams, C.; Du, J.; Zhang, H. International orientation of Chinese internet SMEs: Direct and indirect effects of foreign and indigenous social networking site use. *J. World Bus.* **2020**, *55*, 101051. [[CrossRef](#)]
97. Chang, H.H.; Wong, K.H.; Chiu, W.S. The effects of business systems leveraging on supply chain performance: Process innovation and uncertainty as moderators. *Inf. Manag.* **2019**, *56*, 103140. [[CrossRef](#)]
98. Cegarra-Navarro, J.G.; Martelo-Landroguez, S. The effect of organizational memory on organizational agility: Testing the role of counter-knowledge and knowledge application. *J. Intellect. Cap.* **2020**, *21*, 459–479. [[CrossRef](#)]
99. Arain, G.A.; Bhatti, Z.A.; Hameed, I.; Fang, Y.H. Top-down knowledge hiding and innovative work behavior (IWB): A three-way moderated-mediation analysis of self-efficacy and local/foreign status. *J. Knowl. Manag.* **2019**, *24*, 127–149. [[CrossRef](#)]
100. Nassani, A.A.; Aldakhil, A.M. Tackling organizational innovativeness through strategic orientation: Strategic alignment and moderating role of strategic flexibility. *Eur. J. Innov. Manag.* **2021**, *115–129*. [[CrossRef](#)]

101. Haider, S.A.; Kayani, U.N. The impact of customer knowledge management capability on project performance—mediating role of strategic agility. *J. Knowl. Manag.* **2021**, *25*, 298–312. [[CrossRef](#)]
102. Mao, H.; Liu, S.; Zhang, J. How the effects of IT and knowledge capability on organizational agility are contingent on environmental uncertainty and information intensity. *Inf. Dev.* **2015**, *31*, 358–382. [[CrossRef](#)]