

A LITERATURE REVIEW ON AGILITY- IS THERE A NEED TO DEVELOP A NEW INSTRUMENT?

Syed Arslan Haider, Sunway University Business School
Shehnaz Tehseen, University Business
Soha Khan, Prince Mohammad bin Fahd University
Mário Nuno Mata, Lisbon Accounting and Business School
José Moleiro Martins, Instituto Politécnico de Lisboa
António Abreu, Instituto Superior de Engenharia de Lisboa

ABSTRACT

The current research provides a review of the literature while contributing to the academic understanding of agility concepts and their backgrounds. The study identified 73 peer-reviewed articles on a systematic review process, based on a three-phase purification process. Data reduction processes use combinations, sentence strings, and keyword updates, title, abstract, and conclusion used in the search. The papers identified focused on agility sub-domains business, organizational, strategic, and operational agility. The acknowledged gaps in understanding and developing the art and sub-domains have been identified and categorized according to the conceptual, contextual, and practical areas. Apart from that, the findings show that there is a need to develop separate scales for agility sub-domains to achieve, to get better results without having their scale researcher struggle to get the desired results using a simple agility scale. The paper concludes by highlighting the implications for managers, researchers and suggests a number of future research areas.

KEYWORDS: Agility, Business Agility, Strategic Agility, Organizational Agility, Operational Agility.

INTRODUCTION

Nowadays, many use the word "agility" excessively, and many organizations even use it as an advertising term without questioning its meaning (Chuang, 2020; Kurniawan et al., 2020). However, the concept of durability is not new or different from any particular domain such as software development. It was first emerged in the 1990s through a study by the Iacocca Institute in the United States and focused on creating rapidly changing market demands (Rimiené, 2011). Later, the definition of agility was expanded into sub-sectors under Business Agility (Ronzon et al., 2019), Strategic Agility (Tallon & Pinsonneault, 2011) Organizational (Teece et al., 2016), and Operational Agility (Huang et al., 2012) respectively. However, the concepts behind resilience and, in particular, sub-domains are still important to organizations in today's competitive and rapidly changing environment. Investigators and staff have discussed this flexible basis in practice under the motto of new and innovative technology and the process of suspension that is in line with new staff and skills and management needs.

Surprisingly, apart from further research on this topic, researchers do not have a clearly defined framework for defining sharpness from organizational, business, operational, and strategic perspectives. Although several frameworks are available, they are varied and varied

from each other, suggesting that researchers do not agree on the definitions and size of the liver. As Darvishmotevali et al. (2020); Haider & Kayani (2020) put it, "this lack of art limits the ability to work", which reduces the effectiveness of research results in practice. Although these approaches are equally important in understanding certain aspects of elegance, they are not sufficient when it comes to sharpening analysis in these regional perspectives below. Therefore, there is a gap in research regarding the subdomains of competence in the entire species industry. Thus, the main similarities and differences of concepts and meanings will be discussed; after that, a descriptive explanation for this study will be created. Table 1 shown the names of the used-databases and their particular website links.

No.	Name of Database	Website of Database
1.	Google Scholar	https://scholar.google.com.pk/
2.	Science Direct	www.sciencedirect.com/
3.	Taylor & Francis	www.tandfonline.com/page/looking-for-something
4.	Springer Link	http://link.springer.com/
5.	Emerald Insight	www.emeraldinsight.com
6.	Wiley and Sons	http://eu.wiley.com/WileyCDA/
7.	SAGE	http://online.sagepub.com
8.	Elsevier	www.elsevier.com/

The definition of agility was expanded into sub-sectors under Business Agility (Ronzon et al., 2019), Strategic Agility (Tallon & Pinsonneault, 2011), Organizational (Teece et al., 2016), and Operational Agility (Huang. et al., 2012) respectively. Moreover, figure 1 presents each sub-sector has its own dimensions. Organizational strengths include the following dimensions: Speed, activism, responsibility, collaboration, flexibility, and knowledge/technology system (Emperor et al., 2013; Gao et al., 2020.). In business agility, the IT-enabled business concept has attracted a lot of research attention. Since its launch, flexibility and have added speed and acceleration.

According to Tan et al. (2019), to achieve operational agility, organizations need to be broadly divided into three distinct categories: resilience, responsiveness, and efficiency. In strategic agility, many complementary elements have been used to highlight the need for organizations to respond to rapid climate change, such as strategy flexibility, resilience, flexibility, and absorption capacity (Lungu, 2020).

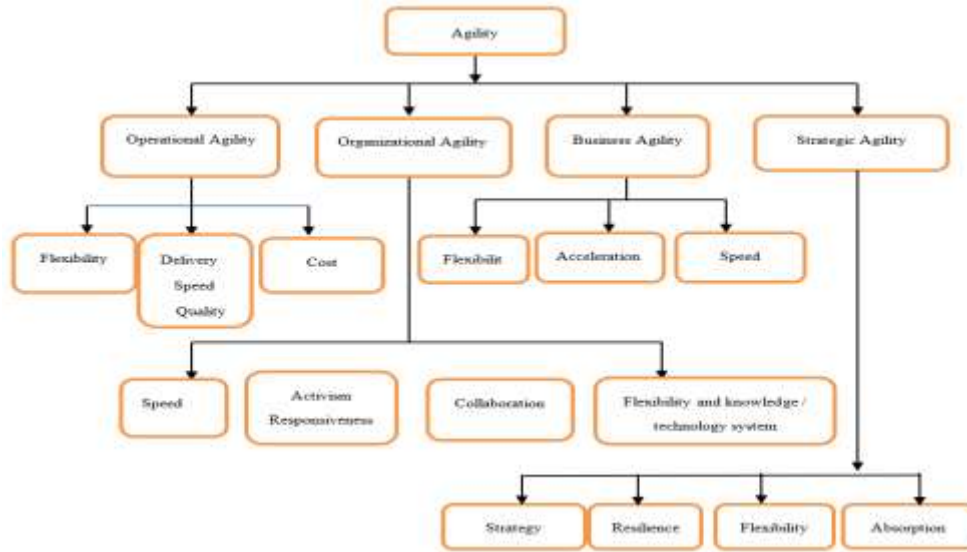


Figure 1
CONCEPTUAL MODEL

Table 2 describes the process of finding set of 45 studies considered for final review. We look at the available frameworks and move on to previous work by investigating the problem of agility across all types of the industry using a holistic approach. We conceptually determine the relevant factors in assessing the domain of agility. Despite the current research on speed, researchers still lack a universal definition of agility subdomains. Therefore, currently, scholars are struggling to get their desired result in their studies because not having agility sub domain questionnaires to investigate agility presented in Table 3. Thus, the question arises how they can investigate different domains i.e. business agility, strategic agility, organizational agility and operational agility and term with agility (for example supply chain agility (Umam, & Sommanawat, 2019), leadership agility (Joiner, 2019), customer agility (Ngo, 2020), co-creating social media agility (Chuang, 2020) without having their questionnaire.

Total studies	Serial no.	Name of database	No. of studies accessed	No. of papers excluded based on duplication	No. of papers excluded based on title	No. of papers excluded based on Abstract	No. of papers excluded based on key words	No. of papers excluded based on full text review	Remaining set of papers considered for final review
	1	Google Scholar	86	15	40	15	3	8	5
	2	Taylor & Francis	49	5	16	5	4	4	15
	3	Science Direct	66	3	28	20	4	7	4
	4	Springer Link	37	4	4	10	2	3	14

	5	Wiley and Sons	33	5	10	2	4	2	10
	6	Elsevier	35	2	15	3	6	3	6
	7	Emerald Insight	73	3	25	20	8	2	15
	8	SAGE	37	4	10	16	2	1	4
Total			416	41	148	91	33	30	73

Table 3
DEFINITIONS

Definitions	Authors
Agility	
“A business-wide capability that embraces organizational structures, information systems, logistical processes and in particular, mindsets”.	Christopher et al. (2000)
“The capability of a manufacturing system to provide an effective response to unanticipated changes”.	Kidd (1995)
According to agility is about “...to adapt and respond quickly to changing customer requirements”. etc.	Sambamurthy et al. (2003)
“Agility is a business potential to perform profitable tasks in an international market that is always changing and dividing.”	Tsourveloudis and Valavanis (2002)
“Moreover, they defined it with some descriptions like high-quality production, high performance, and customized goods and services.”	Mathiassen et al. (2006)
Business agility	
"Ability of a business system to rapidly respond to change by adapting its initial stable configuration".	Strohmaier et al. (2005)
“The ability of an organization to sense environmental change and to respond efficiently and effectively to it”	Prikladnicki et al. (2020)
“A firm’s capabilities related to interactions with customers, orchestration of internal operations, and utilization of its ecosystem of external partners.”	Sambamurthy et al. (2003)
“Is the set of possible business initiatives a firm can readily implement leveraging Predetermined competencies with managed cost and risk.”	Sambamurthy et al. (2003)
“The ability of an organization to thrive in a continuously changing. Unpredictable business environment.”	Dove (2002)
Strategic Agility	
“The ability for companies to stay competitive in their business by adjusting and adapting to new innovative ideas.”	Roth (1996)
“Strategic agility has been defined as the ability to rediscover or review the organization and organization's strategy in a dynamic manner with rapid changes in the external business environment”	Doz & Kosonen, (2008)
“”Strategic agility can advance the quality of competitive activity inventory of an organization and pertinent responses to environmental fluctuations and, hence, can enhance performance.”	Tallon & Pinsonneault, (2011)
“Strategic ability is the ability of an organization to continuously adjust and adapt strategic direction in the core business, as a function of strategic ambitions and changing circumstances and create not just new product and services, but also the new business model and innovative ways create value.”	Doz & Kosonen (2007b)
“Strategic Agility is described as flexibility and speed that gives organizations the ability to change the business to respond to changes in their markets and face substantial risks.”	Arbussa et al. (2017)
Organizational Agility	

“The capability of a company to rapidly change or adapt in response to changes in the market. A high degree of organizational agility can help a company to react successfully to the emergence of new competitors, the development of new industry-changing technologies, or sudden shifts in overall market conditions.”	Crocitto et al. (2003)
Crocitto et al. (2003)	Sull (2010)
changes	Teece et al. (2016)
“Organizational agility is fundamentally necessary for organizations facing changing conditions to use production factors to achieve the objectives of the organization, employees, and shareholders.”	Shahrabi (2012)
“Organizational agility refers to the continuous close coordination among business, stakeholders, and other environmental factors allowing the organization to respond effectively to constantly changing situations.”	Van Oosterhout et al. (2006)
Operational Agility	
“A company's ability or capacity to find and seize opportunities to improve operations and processes, within a focused business model.”	“A company's ability or capacity to find and seize opportunities to improve operations and processes, within a focused business model.”
“They focus on business processes to illustrate operational agility, which they define as the ability of the firm to redesign their existing processes rapidly and create new processes in a timely fashion to be able to take advantage of dynamic market conditions.”	Ashrafi et al., (2005)
“The ability to excel simultaneously on operations capabilities of quality, delivery, flexibility, and Cost in a coordinated fashion.”	Menor et al., (2001)
“This is a system in which the manufacturing processes of a wide range of products with varying production programmes has been automated in conditions that can be considered similar to mass production, with a lower or similar prime cost and higher productivity.”	(Krupski 2008)
“Operational agility enables a company to reduce information asymmetry between buyers and sellers by immediately providing comprehensive information, often through the use of electronic distribution channels.”	(Sambamurthy et al. 2003).

Because the questionnaire is a way of collecting data in which the respondent provides answers to a series of questions. It takes effort and time to create a questionnaire that collects the data you need. However, by taking a step-by-step approach to question development, you can come up with effective ways to gather data that will answer your particular research question.

1. What is the goal of your questionnaire?
2. What kind of information do you want to collect with your questionnaire?
3. What is your main goal?
4. Is the questionnaire the best way to gather this information?

Hence, future studies need to develop agility sub-domains questionnaires separately to get more accurate results of their studies.

	Enabled	Disabled	Mixed	Role as Variable	Source
Business agility (BA)					

	x			Mediator	Ashrafi et al. (2005)
	x			Independent	Strohmaier et al. (2005)
			x	Dependent	Seebach et al. (2011)
			x	Dependent	Denning (2019)
			x	Independent	Hendriyani et al. (2019)
Strategic agility (SA)					
			x	Dependent	Weill et al. (2002)
	x			Dependent	Brueller et al. (2014)
			x	Independent	Shin et al. (2015)
			x	Independent	Arbussa et al. (2017)
	x			Mediator	Ivory et al. (2018)
			x	Mediator	Vaillant et al. (2019)
			x	Mediator	Haider et al. (2020)
	x			Independent	Debellis et al. (2020)
			x	Independent	Shams et al. (2020)
Organizational agility					
			x	Dependent	Zain et al. (2005)
	x			Mediator	Tallon et al. (2011)
			x	Mediator	Lu et al. (2011)
			x	Mediator	Chakravarty et al. (2013)
			x	Dependent	Lee et al. (2015)

			x	Mediator	Cegarra-Navarro et al. (2016)
	x			Independent	Khoshlahn et al. (2016)
	x			Independent	Mihardjo et al., (2019)
	x			Mediator	Cheng et al. (2020)
			x	Moderator	Darvishmotevali et al. (2020)
			x	Dependent	Gao et al. (2020)
Operational agility					
			x	Dependent	Ter Chian Felix Tan et al. (2014)
			x	Dependent	Huang et al. (2014)
	x			Dependent	Tan et al. (2017)
		x		Mediator	Queiroz et al. (2018)
	x			dependent	Akhtar et al. (2018)
	x			Independent	Tan et al. (2019).

LITERATURE REVIEW

Agility

Agility in the 21st century is not something that should be chosen in business organizations (Kid, 1995). Organizational expertise and rapid response capabilities to the external environment have become a prerequisite for differentiating effective firms, weakening the integration of market forces where effective business practices are available globally. These ongoing changes require immediate response and adaptability (Ezcon et al., 2020). However, the natural need for growth and competitiveness in other industries hinders the ability of companies to adapt and respond quickly to market changes. The sheer size and strength of the market often find changes that enhance competition and impede the ability to respond quickly (Gerald et al., 2020). Urgent thinking emerged as a management concept in accepting changes in the organization and the need for organizations to respond to the organizational changes. The emergence of earlier concepts such as the nature of competition and flexibility, market direction, dynamic forces (TC et al., 2016), and absorbing forces (kale et al., 2019). This concept was first

introduced by government-sponsored research in the US and UK in the 1990s, and US research, which began in 1990, views forces as a barrier to business as an institutional form (Christopher et al., 2000). Two major potentials for customer enrichment, collaboration to improve competition, planning change, and the use of personal impact and knowledge were identified as part of the study.

Organizational Agility

Agility is a solution for sustainable development organizations to address these challenges. In the context of sustainable business transformation, organizational excellence is considered essential to a business that contributes to success in a dynamic and competitive environment (Lee et al., 2015; Munteanu et al., 2020). Organizational strengths include the following dimensions: speed, activism, responsiveness, collaboration, flexibility, and knowledge/technology system (Emperor et al., 2013; Gao et al., 2020). Understandably, estimates of organizational size are formed by combining factors directly related, for example, speed, time, and rapid introduction of new products (Iberico-Tafoor et al., 2020). Importantly, if these measures are taken correctly, they can increase the organization's professionalism and contribute to its prosperity during times of turmoil.

Business Agility

This definition covers important aspects of business efficiency and provides an understanding of effective business operations (June et al., 2018). Some researchers have argued that business speed is not a monolithic concept and cannot be achieved by modifying it. Business acumen is essential for companies to survive in dynamic environments characterized by rapid technological change, customer preferences, and a competitive world (Hendriani et al., 2019). The competitive environment is characterized by a large gap between leaders and a reduction in environmental shortages and widespread confusion among competitors in the sector. With the transformation of categories, IT is an important business platform for Sambamurthy et al. 2003), and is very important in business operations (Prikladniki et al., 2020). Data management investigators focus on the IT skills of the organization. As an important enemy that strengthens the unity and integration of the organization. Therefore, the IT-enabled business concept has attracted a lot of research attention. Since its launch, flexibility and have added speed and acceleration. Researchers say companies have successfully stocked their computers with digital options that can be used to build new customer access channels, build real-time connections with chain-sharing chains, gain power for internal operations, and deliver new products or services.

Thus, begins the use of the business. Therefore, current research provides the basis for future studies to think about the above perspective when improving the level of business competence.

Operational Agility

The competitive environment in many industries involves a high level of competition, which requires flexibility, delivery speed, cost, quality, and innovation (Reid et al. 2016). According to Tan et al. (2019), to achieve operational agility, organizations need to be broadly divided into three distinct categories: resilience, responsiveness, and efficiency. In the response phase, these interventions strategically strengthen robust business processes to maximize

response to market needs. An example of this is the introduction of planning and control tools to better see the business process (Huang et al., 2012). The company is ready to work and participate in building better skills and capabilities, pursuing new customers, entering new markets, or building new production lines.

	Agility	Organizational Agility	Business Agility	Strategic Agility	Operational Agility
Construction Firms	Owen et al. (2006)	Chakravarty et al. (2013)			
	Ezcan et al. (2020)	Nejatian et al. (2013)			
		GhalichKhani et al. (2016)			
		Oga et al. (2020)			
IT Firms	Iberico-Tafur et al. (2020)	Mao et al. (2015)	Strohmaier (2005)	Ahsan et al. (2005)	Tan et al. (2019)
		Tallon et al. (2019)	Mathiassen et al. (2006)	Mavengere (2013)	
		Gao et al. (2020)	Lee (2012)	Kale et al. (2019)	
		Mao et al. (2020)	Couto et al. (2015)	Gerald et al. (2020)	
			Juneja et al. (2018)	Haider et al. (2020)	
				Lungu (2020)	
SME				Arbussa et al. (2017)	Reid et al. (2016)
				Kurniawan et al. (2020)	Huang et al. (2014)

Strategic Agility

The view of environmental turmoil includes uncertainty and volatility due to rapid technological advances and market-leading changes (Arbussa et al., 2017) due to unexpected market demands, consumer preferences, competitive work, new technologies, distribution, and unexpected developments. The difficulty to assess a turbulent environment ex-ante requires organizations to respond swiftly to remain competitive (Haider et al., 2020). Therefore, strategic

ingenuity, the ability to always find market opportunities quickly and smoothly (Kale et al., 2019), is considered an important precursor to business success (Ivory et al., 2018) and has seen great interest from academics and medical communities. Many complementary elements have been used to highlight the need for organizations to respond to rapid climate change, such as strategy flexibility, resilience, flexibility, and absorption capacity (Lungu, 2020). After reviewing the literature, we identify the most are based on strategic strategies focused on IT firms and SMEs as shown in Table 5 and few studies were conducted in other field futures studies need to look at the strategic agility in other fields also consider the point mentioned above while developing scale for strategic agility.

CONCLUSION AND RECOMMENDATIONS

This research paper aims to identify the importance and significance of agility sub-domains and the need to build a separate questionnaire for sub-domain of agility. The sub-domains of agility are: Business agility, strategic agility, organizational and operational agility. Although the ideas are new, they collectively provide a framework for the expansion of a fast-moving organization that responds strongly to the external environment. However, the system can change, and understand how well a company registers the pillars will allow managers to make their organizations more successful in the future. All of the above domains use the same developed questionnaire in their research and now recommended having a separate and newly developed questionnaire so they can easily measure each domain according to their specification. There is a need for a separate agility questionnaire to evaluate the appropriate tool. The use of the same tool or questionnaire is not given the desire results. A gap in research about the subdomains aspects of agility in all kinds of industry exists.

Our theory supports the conclusions of previous studies, based on the combination of traditional human resource management practices and supporting the agility of the workforce is normal. Each of these has a small or large impact on improving the quality of life of employees, and each of these contributes to the success of the organization. In short, the operational capacity of a business function is a business function that includes organizational structure, information systems, planning processes, and most importantly, minds. A leader feels empowered and can respond to changes in business situations with focus, quick and consistent action. It is about the ability of leaders to prepare all the workers in the world that enables them to change their mindset and support skills.

ACKNOWLEDGMENTS

This work was partially supported by the Polytechnic Institute of Lisbon through the Projects for Research, Development, Innovation and Artistic Creation (IDI&CA), within the framework of the project ANEEC - Assessment of the level of business efficiency to increase competitiveness, IPL/2020/ANEEC_ISCAL.

REFERENCES

- Ahsan, M., & Ngo-Ye, L. (2005). The relationship between IT infrastructure and strategic agility in organizations. *AMCIS 2005 Proceedings*, 266.
- Akhtar, P., Khan, Z., Tarba, S., & Jayawickrama, U. (2018). The internet of things, dynamic data and information processing capabilities, and operational agility. *Technological Forecasting and Social Change*, 136, 307-316.

- Arbussa, A., Bikfalvi, A., & Marquès, P. (2017). Strategic agility-driven business model renewal: the case of an SME. *Management Decision*, 55(2), 271–293.
- Ashrafi, N., Xu, P., Sathasivam, M., Kuilboer, J.P., Koelher, W., Heimann, D., & Waage, F. (2005). A framework for implementing business agility through knowledge management systems. In Seventh IEEE International Conference on E-Commerce Technology Workshops (pp. 116-121).<https://doi.org/10.1109/CECW.2005.2>
- Brueller, N.N., Carmeli, A., & Drori, I. (2014). How do different types of mergers and acquisitions facilitate strategic agility? *California Management Review*, 56(3), 39-57.
- Cegarra-Navarro, J.G., Soto-Acosta, P., & Wensley, A.K.P. (2016). Structured knowledge processes and firm performance: The role of organizational agility. *Journal of Business Research*, 69(5), 1544-1549.
- Chakravarty, A., Grewal, R., & Sambamurthy, V. (2013). Information technology competencies, organizational agility, and firm performance: Enabling and facilitating roles. *Information Systems Research*, 24(4), 976–997.
- Cheng, C., Zhong, H., & Cao, L. (2020). Facilitating speed of internationalization: The roles of business intelligence and organizational agility. *Journal of Business Research*, 110, 95-103.
- Christopher, M., Towill, D. (2000). Supply chain migration from lean and functional to agile and customised. *Supply Chain Management*, 5(4), 206–213.
- Chuang, S.H. (2020). Co-creating social media agility to build strong customer-firm relationships. *Industrial Marketing Management*, 84, 202-211.
- Couto, E.S., Lopes, M.F.C., & Sousa, R.D. (2015). Can IS/IT Governance Contribute to Business Agility? *Procedia Computer Science*, 64, 1099–1106.
- Crocitto, M., & Youssef, M. (2003). The human side of organizational agility. *Industrial Management & Data Systems*, 103(6), 388–397.
- Darvishmotevali, M., Altinay, L., & Köseoglu, M. A. (2020). The link between environmental uncertainty, organizational agility, and organizational creativity in the hotel industry. *International Journal of Hospitality Management*, 87, 102499.
- Debellis, F., De Massis, A., Petruzzelli, A.M., Frattini, F., & Del Giudice, M. (2020). Strategic agility and international joint ventures: The willingness-ability paradox of family firms. *Journal of International Management*.
- Denning, S. (2019). The quest for genuine business agility. *Strategy & Leadership*, 48(1), 1087-8572.
- Dove, R. (2002). *Response-ability: the language, structure, and culture of the agile enterprise*. John Wiley & Sons.
- Doz, Y.L., & Kosonen, M. (2007). The new deal at the top. *Harvard Business Review*, 85(6), 98-104.
- Doz, Y., Doz, Y.L., & Kosonen, M. (2008). *Fast Strategy: How strategic agility will help you stay ahead of the game*. Pearson Education.
- Ezcan, V., Goulding, J.S., & Arif, M. (2020). Redefining ICT embeddedness in the construction industry: maximizing technology diffusion capabilities to support agility. *Building Research & Information*, 1-23.
- Gao, P., Zhang, J., Gong, Y., & Li, H. (2020). Effects of technical IT capabilities on organizational agility. *Industrial Management & Data Systems*.
- Gerald, E., Obianuju, A., & Chukwunonso, N. (2020). Strategic agility and performance of small and medium enterprises in the phase of Covid-19 pandemic. *International Journal of Financial, Accounting, and Management*, 2(1), 41-50.
- GhalichKhani, R.D., & Hakkak, M. (2016). A model for measuring the direct and indirect impact of business intelligence on organizational agility with partial mediatory role of empowerment (Case Study: Tehran Construction Engineering Organization (CEO) and ETKA Organization Industries. co). *Procedia-Social and Behavioral Sciences*, 230, 413-421.
- Haider, S.A., & Kayani, U.N. (2020). The impact of customer knowledge management capability on project performance-mediating role of strategic agility. *Journal of Knowledge Management*. <https://doi.org/10.1108/JKM-01-2020-0026>
- Hendriyani, C., & Raharja, S.U.J. (2019). Business Agility Strategy: Peer-to-Peer Lending of Fintech Startup in the Era of Digital Finance in Indonesia. *Review of Integrative Business and Economics Research*, 8, 239-246.
- Huang, P.Y., Pan, S.L., & Ouyang, T.H. (2014). Developing information processing capability for operational agility: implications from a Chinese manufacturer. *European Journal of Information Systems*, 23(4), 462-480.
- Huang, P.Y., Ouyang, T.H., Pan, S.L., & Chou, T.C. (2012). The role of IT in achieving operational agility: A case study of Haier, China. *International Journal of Information Management*, 32(3), 294-298.
- Iberico-Tafur, C., Sun-Itazu, R., Perez-Paredes, M., Mamani-Macedo, N., Raymundo-Ibañez, C., & Dominguez, F. (2020, April). Management projects model to reduce lead time of base station telecom construction in SME

- based on lean focus and agility. In *International Conference on Human Interaction and Emerging Technologies* (pp. 676-682). Springer, Cham.
- Ivory, S.B., & Brooks, S.B. (2018). Managing corporate sustainability with a paradoxical lens: Lessons from strategic agility. *Journal of business ethics*, 148(2), 347-361.
- Joiner, B. (2019). Leadership agility for organizational agility. *Journal of Creating Value*, 5(2), 139-149.
- Juneja, C., Kothari, H., & Rai, R.S. (2018). Business agility. *A Systematic Review of Literature and Design Oriented Research Synthesis*, 15(6).
- Kale, E., Aknar, A., & Başar, Ö. (2019). Absorptive capacity and firm performance: The mediating role of strategic agility. *International Journal of Hospitality Management*, 78, 276-283.
- Khoshlahn, M., & Ardabili, F.S. (2016). The role of organizational agility and transformational leadership in service recovery prediction. *Procedia-Social and Behavioral Sciences*, 230, 142-149.
- Kidd, P.T. (1995). Agile manufacturing: A strategy for the 21st century. <https://doi.org/10.1049/ic:19951097>
- Kurniawan, R., Budiastuti, D., Hamsal, M., & Kosasih, W. (2020). The impact of balanced agile project management on firm performance: the mediating role of market orientation and strategic agility. *Review of International Business and Strategy*. <https://doi.org/10.1108/RIBS-03-2020-0022>
- Lee, O.K.D. (2012). IT-enabled organizational transformations to achieve business agility. *Review of Business Information Systems (RBIs)*, 16(2), 43-52.
- Lee, O.K., Sambamurthy, V., Lim, K.H., & Wei, K.K. (2015). How does IT ambidexterity impact organizational agility? *Information Systems Research*, 26(2), 398-417.
- Lu, Y., & Ramamurthy, K. (2011). Understanding the link between information technology capability and organizational agility: An empirical examination. *MIS quarterly*, 931-954.
- Lungu, M.F. (2020). The influence of strategic agility on firm performance. In *Proceedings of the International Conference on Business Excellence*, 14(1), 102-110.
- Mao, H., Liu, S., & Zhang, J. (2015). How the effects of IT and knowledge capability on organizational agility are contingent on environmental uncertainty and information intensity. *Information Development*, 31(4), 358-382.
- Mao, H., Liu, S., Zhang, J., Zhang, Y., & Gong, Y. (2020). Information technology competency and organizational agility: roles of absorptive capacity and information intensity. *Information Technology & People*. <https://doi.org/10.1108/ITP-12-2018-0560>
- Mathiassen, L., & Pries-Heje, J. (2006). Business agility and diffusion of information technology. *European Journal of Information Systems*, 15(2), 116-119.
- Mavengere, N.B. (2013). Information technology role in supply chain's strategic agility. *International Journal of Agile Systems and Management*, 6(1), 7-24.
- Menor, L.J., Roth, A.V., & Mason, C.H. (2001). Agility in retail banking: numerical taxonomy of strategic service groups. *Manufacturing & Service Operations Management*, 3(4), 273-292.
- Mihardjo, L.W., & Rukmana, R.A. (2019). Customer experience and organizational agility driven business model innovation to shape sustainable development. *Polish Journal of Management Studies*, 20.
- Munteanu, A.I., Bibu, N., Nastase, M., Cristache, N., & Matis, C. (2020). Analysis of Practices to Increase the Workforce Agility and to Develop a Sustainable and Competitive Business. *Sustainability*, 12(9), 3545.
- Ngo, V.M., & Vu, H.M. (2020). Customer agility and firm performance in the tourism industry. *Tourism: An International Interdisciplinary Journal*, 68(1), 68-82.
- Oga, K.C., & Onouha, B.C. (2020). Entrepreneurial Talent Management and Organizational Agility of Construction Firms in Rivers State. *International Journal of Management Sciences*, 7(4), 61-77.
- Owen, Robert., & Koskela, Lauri. (2006) Agility in construction. In The Proceedings of 20th IPMA World Congress on Project Management. *International Project Management Association*, pp. 1-4.
- Prikladnicki, R., Lassenius, C., & Carver, J.C. (2020). Trends in agile: Business agility. *IEEE Software*, 37(1), 78-80.
- Queiroz, M., Tallon, P.P., Sharma, R., & Coltman, T. (2018). The role of IT application orchestration capability in improving agility and performance. *The Journal of Strategic Information Systems*, 27(1), 4-21.
- Reid, I., Ismail, H., & Sharifi, H. (2016). A framework for operational agility: how SMEs are evaluating their supply chain integration. *Managing in a VUCA World* (pp. 151-168). Springer, Cham. https://doi.org/10.1007/978-3-319-16889-0_10
- Rimienė, K. (2011). Supply chain agility concept evolution (1990-2010). *Economics & Management*, 16.
- Ronzon, T., Buck, J., & Eckstein, J. (2019). Making Companies Nimble-From Software Agility to Business Agility: A Conversation with the Authors. *IEEE Software*, 36(1), 79-85.

- Roth, A.V. (1996). Achieving strategic agility through economies of knowledge. *Strategy & leadership*, 24(2), 30-36.
- Sambamurthy, V., Bharadwaj, A., & Grover, V. (2003). Shaping agility through digital options: Reconceptualizing the role of information technology in contemporary firms. *MIS quarterly*, 237-263.
- Seebach, C., Pahlke, I., & Beck, R. (2011). Tracking the digital footprints of customers: How firms can improve their sensing abilities to achieve business agility. <https://aisel.aisnet.org/ecis2011/258>
- Shahrabi, B. (2012). The role of organizational learning and agility in change management in state enterprises: A customer-oriented approach. *International Research Journal of Applied and Basic Sciences*, 3(12), 2540–2547.
- Shams, R., Vrontis, D., Belyaeva, Z., Ferraris, A., & Czinkota, M. R. (2020). Strategic agility in international business: A conceptual framework for agile multinationals. *Journal of International Management*, 100737. <https://doi.org/10.1016/j.intman.2020.100737>
- Shin, H., Lee, J.N., Kim, D., & Rhim, H. (2015). Strategic agility of Korean small and medium enterprises and its influence on operational and firm performance. *International Journal of Production Economics*, 168, 181–196.
- Strohmaier, M., & Rollett, H. (2005). Future research challenges in business agility-time, control and information systems. In Seventh IEEE International Conference on E-Commerce Technology Workshops (pp. 109-115). <https://doi.org/10.1109/CECW.2005.11>
- Sull, D. (2010). Competing through organizational agility. (cover story). *McKinsey Quarterly*,(1), 48–56.
- Tallon, P.P., & Pinsonneault, A. (2011). Competing perspectives on the link between strategic information technology alignment and organizational agility: Insights from a mediation model. *MIS Quarterly*, 35(2), 463–486.
- Tallon, P.P., Queiroz, M., Coltman, T., & Sharma, R. (2019). Information technology and the search for organizational agility: A systematic review with future research possibilities. *The Journal of Strategic Information Systems*, 28(2), 218-237.
- Tan, F.T.C., Pan, S.L., & Zuo, M. (2018). Realising platform operational agility through information technology-enabled capabilities: A resource-interdependence perspective. *Information Systems Journal*.
- Tan, F.T.C., Pan, S.L., & Zuo, M. (2019). Realising platform operational agility through information technology-enabled capabilities: A resource-interdependence perspective. *Information Systems Journal*, 29(3), 582-608.
- Tan, F.T.C., Tan, B., Wang, W., & Sedera, D. (2017). IT-enabled operational agility: An interdependencies perspective. *Information & Management*, 54(3), 292-303. <https://doi.org/10.1016/j.im.2016.08.001>
- Teece, D., Peteraf, M., & Leih, S. (2016). Dynamic Capabilities and Organizational Agility: Risk, Uncertainty, and Strategy in the Innovation Economy. *California Management Review*, 58(4), 13–35.
- Ter Chian Felix Tan, Wang, W., & Tan, B. (2014). Toward Management Innovation for IT-Enabled Operational Agility: a Dependencies Perspective. In *PACIS* (p. 345). <http://aisel.aisnet.org/pacis2014/345>
- Tsourveloudis, N.C., & Valavanis, K.P. (2002). On the measurement of enterprise agility. *Journal of Intelligent and Robotic Systems*, 33(3), 329–342.
- Umam, R., & Sommanawat, K. (2019). Strategic flexibility, manufacturing flexibility, and firm performance under the presence of an agile supply chain: A case of strategic management in fashion industry. *Polish Journal of Management Studies*, 19.
- Vaillant, Y., & Lafuente, E. (2019). The increased international propensity of serial entrepreneurs demonstrating ambidextrous strategic agility. *International Marketing Review*. <https://doi.org/10.1108/IMR-01-2018-0015>
- Van Oosterhout, M., Waarts, E., & Van Hillegersberg, J. (2006). Change factors requiring agility and implications for IT. *European Journal of Information Systems*, 15(2), 132–145.
- Weill, P., Subramani, M., & Broadbent, M. (2002). IT infrastructure for strategic agility. <http://dx.doi.org/10.2139/ssrn.317307>
- Zain, M., Rose, R. C., Abdullah, I., & Masrom, M. (2005). The relationship between information technology acceptance and organizational agility in Malaysia. *Information & Management*, 42(6), 829–839.

Authors

Syed Arslan Haider, Sunway University Business School
Shehnaz Tehseen, University Business

Soha Khan, Prince Mohammad bin Fahd University

Mário Nuno Mata, Lisbon Accounting and Business School Lisbon Polytechnic Institute and Polytechnic Institute of Santarém, School of Management and Technology

José Moleiro Martins, Instituto Politécnico de Lisboa, Avenida Miguel Bombarda 20, 1069-035 Lisboa, Portugal and Instituto Universitário de Lisboa (ISCTE-IUL), Business Research Unit (BRU-IUL)

António Abreu, Instituto Superior de Engenharia de Lisboa (ISEL), Instituto Politécnico de Lisboa, 1959-007 Lisboa and CTS Uninova, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, 2829-516 Lisboa