

Agility and Resilience in Information Systems Research: A Thematic Analysis

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ABSTRACT

This research analyzes how the concepts of agility and resilience are treated in IS literature. While agility has been an object of study in IS research for many decades, resilience is a fairly new topic. Both are gaining strategic importance in a firm's sustainability and growth, especially given the remarkable changes in the landscape that the firm operates in. It is thus important to understand what agility and resilience mean in IS research. This paper is a first attempt to study IS literature and provide a thematic analysis of facets of each concept. In doing so, the authors identify aspects that are common to both agility and resilience and those that are unique to each. The results of this study can be used for an empirical examination of the two constructs and a validation of how they can be measured in firms. IS researchers and industrial practitioners can benefit from a deeper understanding of agility and resilience.

KEYWORDS

Agility, Information Systems, Resilience, Thematic Analysis

1. INTRODUCTION

The concept of agility has been looked at extensively in IS research over the duration of the field's existence (e.g., Sambamurthy et al., 2003; Chan et al., 2019; Baham et al., 2017; Lee & Xia, 2010; Venkatesh et al., 2020). Over time, various facets of agility have been studied in the context of IS-agility in systems development (Lyytinen & Rose 2006; McAvoy et al., 2013), the agility of systems themselves (Hobbs & Scheepers, 2010), and organizational agility enabled by information systems (Huang et al., 2014; Mao & Quan, 2015; Tallon et al., 2019). A more recent concept is that of resilience. Although resilience has been studied in multiple other fields, such as individual resilience (sometimes referred to as grit) (Crawford-Garrett, 2018; Gligor et al., 2019 citing McCubbin et al., 1998; Ledford et al., 2021, Miller-Graff, 2020), organizational resilience (Fiksel, 2006; Hamel & Valikangas 2003; Ortiz-de-Mandojana & Bansal 2016), and supply chain resilience (Jüttner & Maklan 2011; Ponomarov

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& Holcomb 2009; Scholten & Schilder, 2015), its application in information systems is relatively nascent. Both agility and resilience continue to receive attention in information systems literature, especially in light of recent exigencies, such as the COVID-19 pandemic (c.f. Batra, 2020).

At the surface, there seems to be some overlap between the notions of agility and resilience, especially when it comes to an information system being the object of analysis. Agility and resilience are often discussed together in the context of an organization's adaptive capability (McCann, Selsky, & Lee, 2009). However, in looking at specific facets of each concept, some aspects seem unique to each. For these concepts to mature in keeping with the development of systems and their use in organizations, it is important to better understand how each can be defined and applied in IS research.

To our knowledge, there is a gap in the literature that has studied the nature of the relationship between agility and resilience in IS literature. Doing so will inform research on the agility and resilience of information systems and help in the development of tools that can be used to study, measure, and develop them. It will also help companies evaluate their agile and resilient capabilities. Besides establishing face validity to these concepts as distinct theoretical notions, such research can be used as a starting point to identify unique processes and capabilities that companies can focus on to be agile and/or resilient. To address this gap, we embark on a literature review of the two concepts. Our sample comprises papers published in the basket of 8 IS journals that address agility and resilience. We use thematic analysis to help identify and code aspects within each concept.

Our contribution to IS literature is the mapping of the relationship between how agility and resilience have been studied in the field. We identify specific facets that are in common between the two and others that are unique to each concept.

The remainder of the paper proceeds as follows. The next section describes the data collection process for our structured literature review. Section 3 outlines our research methodology. Section 4 summarizes the findings and Section 5 presents their implications. The last section concludes the paper with contributions, limitations, and future research directions.

2. STRUCTURED LITERATURE REVIEW

In identifying reliable sources for this literature review, ABI/INFORM Collection is the primary database for searching for articles. ABI/INFORM Collection is the most comprehensive database with data from ABI/INFORM Global, ABI/INFORM Trade and Industry, and ABI/INFORM Dateline. The platform features thousands of full-text journals, the latest working papers, and downloadable articles on business, economics, and information technology. To ensure articles were peer-reviewed and primary source from the central database, we carried out the search by using the Basic Search function to narrow down to eight main journals: *European Journal of Information Systems*; *Information Systems Journal*; *Information Systems Research*; *Journal of the Association for Information Systems*; *Journal of Information Technology*; *Journal of Management Information Systems*; *Journal of Strategic Information Systems*; and *MIS Quarterly*. These represent the "AIS Scholars Basket of 8 Journals". While these journals represent a fraction of the journals in the field, they are considered representative by the IS scholarly community (Liu & Myers, 2011). The eight journals identified omit multidisciplinary outlets and specialty areas but include topical, methodological, and geographic diversity. Besides, many prior studies have been conducted by reviewing and analyzing the publications based on the basket of 8 journals, for instance, RFID applications and theories (Wamba, Anand, & Carter, 2013), evaluation methods for IS artifacts (Prat, Comyn-Wattiau, & Akoka, 2015), transparency in literature review (Templier & Pare, 2018), design science in IS research (Engel, Leicht, & Ebel, 2019), nature of "researcher perspective" (Clarke, Davison, & Jia, 2020), FinTech in IS research (Haried, Han, & Annino, 2021), and IS responses to addressing global crises (Gaskin & Rosengren, 2021). Hence, we believe that this subset of journals, while not comprehensive, serves the purpose of our sampling.

Once desired journals were allocated, five main keywords were utilized to achieve a more refined search within each journal, including: “agility,” “agile,” “resilient,” “resilience,” and “resiliency.” These keywords were combined using “AND” and “OR” commands in the Advanced Search function. In addition, each of the search keywords was set to appear in either the title or abstract of the article or both. We first looked for articles where we could find any of these search terms anywhere in the article. This initial search yielded 711 articles.

On initial inspection, we found that most of the articles had those words appear randomly in places such as references, the body of the text, etc., in contexts where it had little to do with the phenomenon of “agility” and/or “resilience” as such. We then limited our search to articles that had our search terms within the main document text. This resulted in 237 articles (434 articles were excluded). We then looked for the relevance of the articles to our research purpose and found that the sample still had a lot of articles that simply mentioned our terms but were not specifically about either agility or resilience. We then decided to include only those articles that have our search terms in either the title or the abstract of the article. This yielded 91 articles (147 articles were further excluded):

1. European Journal of Information Systems - 27
2. Information Systems Journal - 14
3. Information Systems Research - 10
4. Journal of the Association for Information Systems - 10
5. Journal of Information Technology - 6
6. Journal of Management Information System - 9
7. Journal of Strategic Information Systems - 7
8. MIS Quarterly - 6
9. Others - 1
- Total - 91

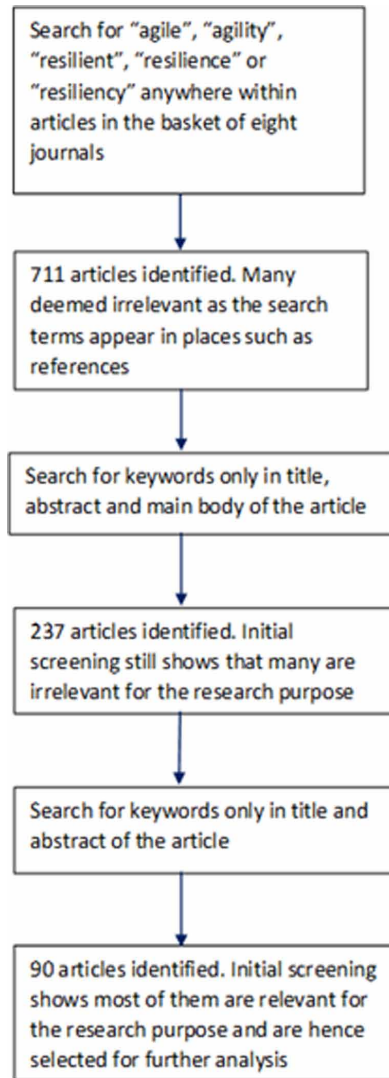
This sample appeared to be satisfactory, and most if not all of them were dealing specifically with the theme of agility and/or resilience. A list of citations of 91 articles in our sample is provided in . A flowchart representing our data collection is depicted in Figure 1.

3. RESEARCH METHODOLOGY

3.1 Thematic Analysis

As our objective was to identify various aspects of the two themes of agility and resilience, we decided that thematic analysis was an appropriate methodology for our research. “Thematic analysis is a method for identifying, analyzing and reporting patterns (themes) within data” (Braun & Clarke, 2006). It is helpful in organizing and describing the dataset. It can also help in identifying and interpreting various aspects of the research topic (Boyatzis, 1998). There are two main approaches for identifying themes or patterns in data. In inductive thematic analysis, researchers do not attempt to fit the data in a pre-existing coding frame. The analysis is not driven by the researchers’ theoretical interest in the topic. Instead, the themes or aspects of the research topic are strongly linked to the data itself. In other words, in a “bottom up” way, the researchers let the data reveal the themes or aspects of the research topic (e.g. Frith & Gleeson, 2004). On the other hand, deductive thematic analysis is driven by the researcher’s theoretical interests (e.g., Boyatzis, 1998). This “top-down” form of thematic analysis may provide a more detailed analysis of various aspects of a given theme. One way to look at it is that the deductive mode involves coding for a specific theme, whereas in the inductive mode, the research question evolves through the coding process (Braun & Clarke, 2006). In our research, we were looking for the specific themes of agility and resilience, which fit well with the deductive approach. Further, we also wanted to identify various aspects of these two themes

Figure 1. Data collection process



found in the literature, for which purpose the inductive approach is well suited. Hence, our thematic analysis was conducted through a hybrid deductive-inductive approach. This approach allowed us to get some sense of aggregate, quantitative, the occurrence of certain important aspects related to the two themes of agility and resilience (e.g., Fereday & Muir-Cochrane, 2006).

3.2 Coding Based on a Deductive-Inductive Approach

In the deductive mode, the analysis is driven by the researcher's theoretical interests. We were specifically looking for aspects related to agility and resilience. Thus, broadly, at an aggregate level, these were our two themes. Typical of deductive mode, we were "looking" for these themes in the identified articles. Next, we were interested in various aspects of these themes that may be found in the literature. In other words, we wanted the data to reveal to us various facets of agility and resilience. This required that we took the inductive approach and let the identified literature shed light on various aspects of these themes. Based on the guidance in the literature on thematic analysis (for example,

Braun & Clarke, 2006), we first read and familiarized ourselves with a few articles. We then discussed what we thought are some of the more frequently appearing aspects of these themes. We wanted to get a judgment about our reliability in identifying these key aspects of the two themes.

To that end, we found it appropriate to undertake the “coding reliability” approach (Braun & Clarke, 2006) to thematic analysis. We created a coding book that contained important details of all the selected articles. We utilized the services of a research assistant to help us create a spreadsheet with the attributes of keywords used in the search engine, such as journal name, authors, year of publication, article title, and article abstract. Two authors did an initial, exploratory scan of this early version of our coding book. As we anticipated, most of the articles are related to agility. Resilience has only recently started to appear, and very few articles dealt with resilience. During conversations regarding agility, as expected, existing research dealt with various aspects of agility, such as organizational agility (Chen & Siau, 2020; Bi et al., 2013; Škare & Soriano, 2021; Tallon et al., 2019), IS agility (Benaben & Vernadat, 2017; Hobbs & Scheepers, 2010), ISD agility (Conboy, 2009; Lyytinen & Rose, 2006), and so on. We also realized that there were certain aspects of the two themes that appeared more frequently than others. We then decided to list those aspects without necessarily referring to any articles but simply based on our overview of the coding file, in line with the inductive mode. After exchanging our lists, we were largely in agreement about the frequently appearing aspects or codes.

We then proceeded to a more rigorous examination of the selected literature to identify the important aspects/codes of the themes. Two authors then extracted the definitions used for agility and resilience for each article, the two main interests of inquiry for the article. Not every article dealt with both, and not every article presented its own definition. Some used definitions from other existing literature. We included these definitions when the authors explicitly stated such use. This resulted in adding “definitions” as another detail to our coding book.

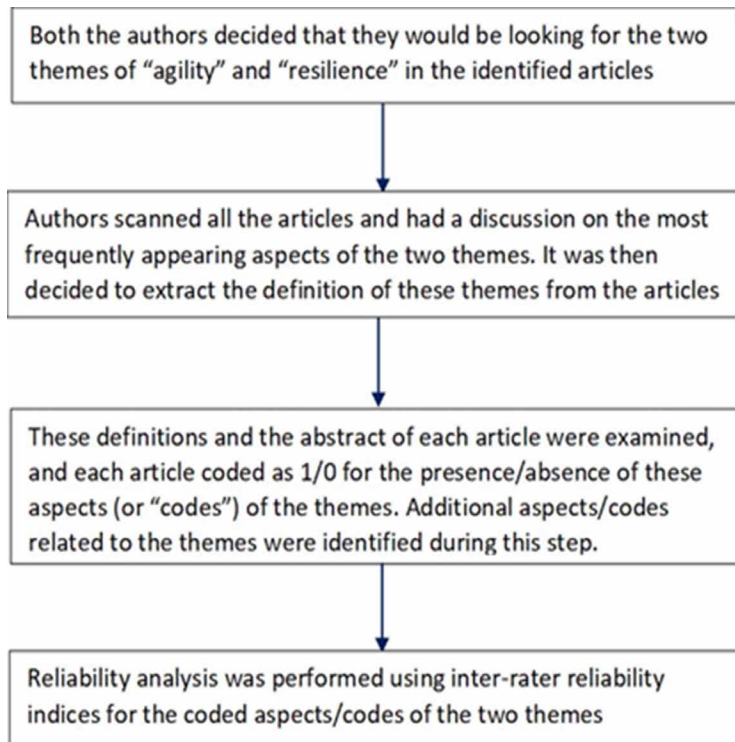
We next worked on assessing the frequency by which the few identified aspects/codes appeared in the selected articles by examining the definition and abstract of each article. The intent was not to make any definitive scholarly conclusions about the statistical significance of the appearance of these codes. Even though this is intended to be an exploratory investigation, we wanted to have some statistical measures to assess the reliability of our work. Hence, both the authors decided to code each article for the presence/absence of each aspect, with the two themes being the unit of analysis. Though we didn’t find anything in IS, there are instances in other functional areas with similar analysis (e.g., Park & Park, 2017). Each of the aspects/codes was then coded as either 1 (for the presence) or 0 (signifying the absence) for every article. The authors come from different disciplines, so we were expecting that there would be differences in how we each interpret the articles. As we examined the articles and coded them, we let other promising/interesting aspects/codes emerge. The flowchart in Figure 2 depicts the thematic analysis procedure employed in our research.

3.3 Reliability Analysis

With the coding completed, we proceeded to calculate reliability statistics to assess inter-rater reliability for our coding. We do not have enough sample size to follow the thorough protocol (e.g., Lombard et al., 2002) for finding these inter-rater reliability indicators. Given that this study is exploratory in nature, we don’t think this is a problem for us.

We decided to find three major intercoder reliability indices (e.g., Scott’s Pi, Cohen’s kappa, and Krippendorff’s alpha) as well as percent agreement (Lombard et al., 2002) for the six aspects/codes of the themes identified earlier. Percent agreement was found to be greater than 80% for all the aspects/codes of our themes. This meets the recommended standard found in the literature (O’Connor & Joffe (2020) citing Miles & Huberman (1994)). The frequency of occurrence of the various aspects of the two themes in the identified literature is as follows: Flexibility 23, Sense 19, Respond 26, Speed 27, External 32 and Internal 8.

Figure 2. Thematic analysis procedure



We used an online statistical program, ReCal2 (<http://dfreelon.org/utills/recalfront/recal2>), to calculate the inter-coder reliability indices (Freelon, 2010). Indices (Scott’s pi, Cohen’s kappa, and Krippendorff’s alpha) for all of the aspects/codes were greater than 0.60 and for one of the aspects, the indices are greater than 0.80. Recommendation based on Landis and Koch’s (1977) suggests interpreting values less than 0 as indicating no, between 0 and 0.20 as slight, 0.21 and 0.40 as fair, 0.41 and 0.60 as moderate, 0.61 and 0.80 as substantial, and 0.81 and 1 as nearly perfect agreement. Based on these recommendations, we conclude that there is substantial agreement in our ratings and that there is sufficient reliability in our coding, especially given that the authors come from different backgrounds. However, one caveat in the reliability analysis is that our relatively small sample size limits our ability to implement the complete protocol (Lombard et al., 2002) for finding the reliability indicators.

4. RESULTS

In keeping with the methodology of thematic analysis, we start our analysis in the form of a “thick description” (Geertz, 1973). In lieu of statistical techniques, such as word frequency counts or correlations, thick descriptions take an interpretivist stance and look for the “web of meaning” of concepts and the context within which they occur.

4.1 Thick Description

Within our sample, we found both agility and resilience to be used in varying contexts. There were several similarities along the multiple dimensions along which the two concepts were discussed. We identify at least five distinct dimensions when describing agility as well as resilience.

First, we found agility and resilience to be used to refer to varying levels and units of analysis. For example, “agile” was used to describe systems, development teams, organizational units, or the entire organization. Second, the locus of study varied as external or internal. For example, agility and resilience were described in the context of combatting external pressures, or as a mechanism for internal learning and growth. Third, agility and resilience were described as varying dynamic capability attributes. Adjectives such as speed, adaptability, change, and effectiveness were used to describe dynamic capabilities within the context of both agility and resilience. Fourth, both concepts were discussed in a predominantly positive context, with benefits of cost and value to the organization highlighted. Fifth, both concepts were discussed in the context of risk management. Aspects such as recovery after the change, or response to change, were mentioned in papers that discussed both agility and resilience.

Based on this thick description and our subsequent coding analysis, our initial list of six codes included: flexibility, sense, response, speed, external and internal. Possible graphical representations of thick descriptions include word clouds, evidence matrices, and cluster maps (Henderson & Segal, 2013). We chose to use the word cloud representation to depict the themes that emerged.

4.2 Word Cloud

We created two word clouds, one for each set of papers that represented agility and resilience. The word clouds are depicted below.

4.2.1 Agility Word Cloud

Figure 3 shows the word cloud for agility. The central theme of agility indicates an organization’s ability to sense and respond to external changes with speed. Other major considerations of agility include efficiency, flexibility, cost, value, control, and adaptability.

4.2.2 Resilience Word Cloud

Figure 4 shows the word cloud for resilience. The central theme of resilience indicates an organization’s ability to cope with and rebound from external changes with flexibility. Other major considerations of resilience include recovery, speed, and willingness.

4.3 Thematic Analysis

Based on our analysis, we found certain themes that had distinct overlap in both bodies of literature—agility and resilience. However, some themes were unique, or more salient, to each.

We found a significant overlap between agility and resilience in the themes related to external focus, speed, and flexibility. Themes salient in the literature on agility are related to benefits of cost/value to the firm, efficiency, effectiveness, and the dynamic capabilities of sensing and responding. The themes salient in the literature on resilience featured coping, and the dynamic capability to rebound and recover.

5. DISCUSSION AND IMPLICATIONS

Agility and resilience are two parts of an organization’s adaptive capability (McCann, Selsky, & Lee, 2009). Organizations aspiring to improve their agility are commonly engaged in operations such as downsizing, off-shoring, and outsourcing to become lean, so they can easily reorient themselves to the market needs and environmental changes and respond quickly. As lean organizations are often formed by reducing the buffer to withstand disruptive changes, overly agile organizations and their business ecosystems can become fragile without a strong safety net. Therefore, organizations that are overly agile may not be resilient enough to survive in a turbulent environment. Similarly, resilient

Figure 3. Agility word cloud

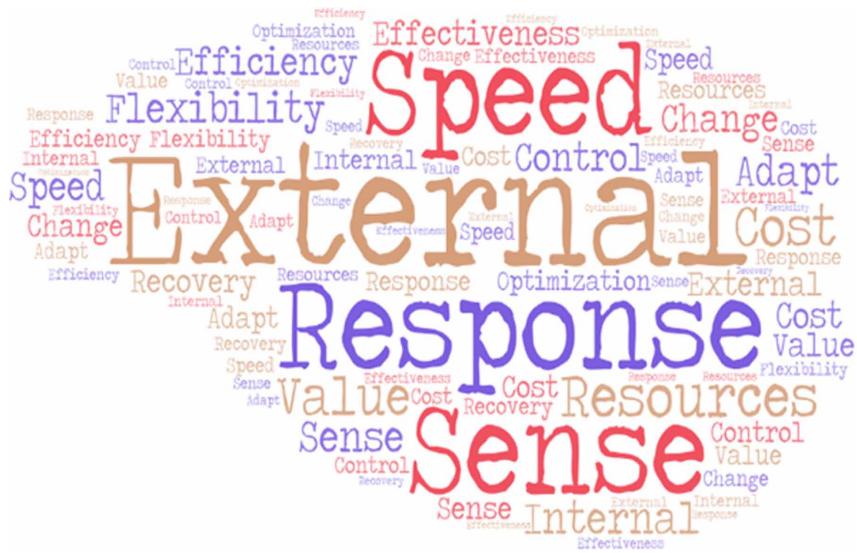


Figure 4. Resilience word cloud

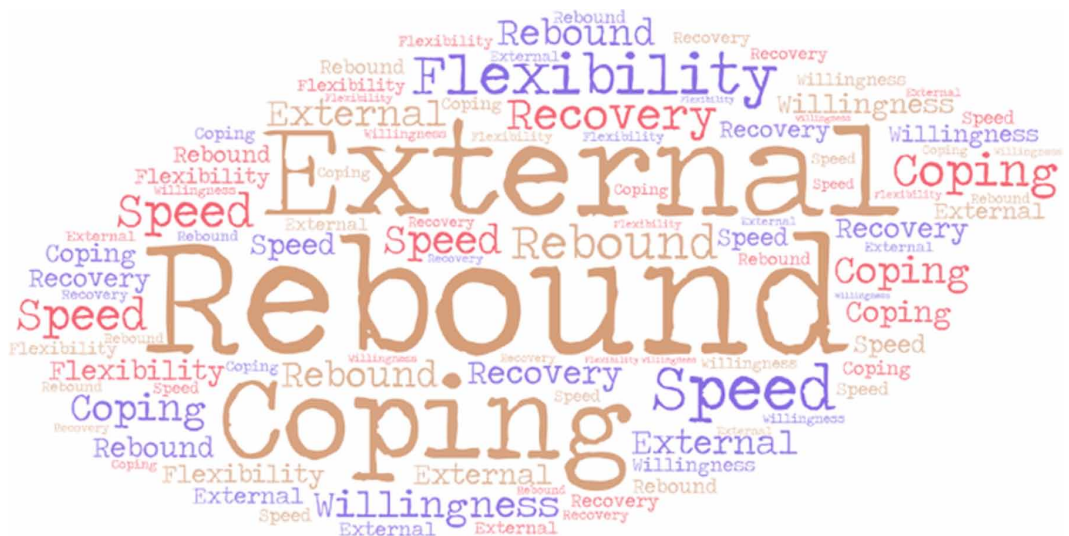


Table 1. Summary of the thematic analysis

Common themes	Unique to Agility	Unique to Resilience
• External focus • Speed • Flexibility	• Cost/ value • Efficiency • Effectiveness • Sense • Response	• Coping • Rebound • Recovery

organizations may not always be agile, especially when they are burdened with unnecessary protection layers for fear of the impact of disruptions (McCann & Selsky, 2012).

The concepts of agility and resilience are widespread in information systems research. While agility has been a long-standing topic in IS, resilience is relatively nascent. Both concepts bear importance in exigencies, such as those brought to the forefront by the COVID-19 pandemic. It is thus important to understand what is meant by being agile and resilient. In this study, we find an overlap between these concepts. However, there also exist facets unique to each. Our thematic analysis uncovers dimensions for agility and resilience that can be further explored, defined, developed, and measured. In a business environment that promotes risk-taking and “failing fast”, the ability to be agile, as well as resilient, is even more important (Cancialosi, 2020).

A similar analysis has been conducted in the field of supply chain management (Gligor et al., 2019). While the conceptualization of agility and resilience in supply chain management research is unique, the impetus to understand the common characteristics of these concepts, and where they diverge, resonates with a similar need in IS literature. Our theoretical contribution is establishing where agility and resilience converge and diverge in the body of literature in Information Systems. For practitioners, especially those involved in strategy setting for organizations, the ability to recognize whether the organization is resilient, agile, or both by observing the key facets we have identified, is important.

5.1 Commonalities Between Agility and Resilience

Our results reveal that both concepts predominantly focus on an external locus, as well as the dynamic capabilities of speed and flexibility. Hence both concepts relate primarily to factors external to a firm, such as the market, technological, or environmental aspects. Both themes also had to do with flexibility, primarily in the processes of the firm, as well as the speed of change. What the notion of speed is related to, however, varied between the themes. For example, research in agility primarily focussed on the speed of response to external pressures, while research in resilience referred to speed in the context of rebounding or recovering from external shocks. Agility is construed as the ability to move quickly and with ease. Resilience is the capacity to recover quickly from difficulties.

5.2 Unique Aspects of Agility

The notion of agility uniquely captures a value proposition to the firm that relates to cost savings, as well as gains in efficiency and effectiveness. Agility also captures the idea of being able to sense and respond to changes based on the sensemaking theory. An organization’s sensing and responding capabilities mediated by decision agility as the bridge between them (Tallon et al., 2019) and enabled by enterprise systems can help facilitate its agility (Trinh-Phuong, Molla, and Peszynski, 2012). It is possible that since agility has been researched for longer, and in more depth, than resilience, these aspects have been developed to a greater extent in literature. The COVID-19 pandemic has prompted researchers to re-examine IS agility to help organizations quickly adapt to unexpected changes. For instance, Betra (2020) identified several critical antecedents of agility, such as risk intelligence, IT flexibility, and employee capability. Janssen and Van Der Voort (2020) studied the complementary relationship between agility and adaptability in developing a governance structure in organizations.

5.3 Unique Aspects of Resilience

The notion of resilience is closely associated with a coping mechanism and the dynamic capabilities of being able to rebound and recover after a stimulus or shock. Thus the notion of resilience is more connected to the a posteriori, rather than a priori, capability of the firm. Recent research on resilience related to IS has gain momentum. For instance, Heek and Ospina (2019) identified “robustness, self-organization, learning” as the foundation attributes and “redundancy, rapidity, scale, equality, diversity, and flexibility” as the enabling attributes of resilience. In their response to COVID-19, Sakurai and Chughtai (2020) raised several important points from the perspective of resilience: (1)

using frugal methods in facilitating resilience transformation, (2) applying bottom-up approaches to analyze local conditions for building resilience, (3) addressing misinformation to mitigate its negative impact to citizens' response to resilience, and (4) developing ethical principles of resilience to guide information system research.

6. LIMITATIONS AND CONCLUSION

This research is a first step in analyzing how the concepts of agility and resilience are treated in IS literature. Being primarily exploratory in nature, there are limitations to the study. We used the AIS Basket of 8 journals as representative of IS research. A more comprehensive study could be conducted with a larger sample of outlets.

While agility has been an object of study in IS research for many decades, resilience is a fairly new topic. Both are gaining strategic importance in a firm's sustainability and growth, especially given the remarkable changes in the landscape that the firm operates in. This includes changes in aspects, such as expectations of customers, regulatory requirements, and environmental challenges, and those that are often beyond the control of a firm such as the pandemic. Correspondingly, the role of information systems has been elevated in a firm's strategic consideration, where IS is now integral to developing and maintaining strategic capabilities, including those such as agility and resilience. These concepts, also recognized in practitioner outlets as important and distinct, are not clearly defined and often obfuscated (e.g., Forbes, 2021).

It is thus important to understand what agility and resilience mean in IS research. Our paper is a first attempt to study IS literature and provide a thematic analysis of facets of each concept. In doing so, we identify aspects that are common to both agility and resilience and those that are unique to each. As a next step, the results of this study can be used for an empirical examination of the two constructs and a validation of how they can be measured in firms. IS researchers and industrial practitioners can benefit from a deeper understanding of agility and resilience.

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APPENDIX

Table 2.

No.	Journal	Year	Author/s	Title
1	European Journal of Information Systems	2009	Cao, Lan; Mohan, Kannan; Xu, Peng; Ramesh, Balasubramaniam	A framework for adapting agile development methodologies
		2006	Börjesson, Anna; Martinsson, Fredrik; Timmerås, Magnus.	Agile improvement practices in software organizations
		2006	Hovorka, Dirk S; Larsen, Kai R	Enabling agile adoption practices through network organizations
		2009	Mcavoy, John; Butler, Tom	The role of project management in ineffective decision making within Agile software development projects
		2006	Fitzgerald, Brian; Hartnett, Gerard; Conboy, Kieran.	Customising agile methods to software practices at Intel Shannon
		2013	Cao, Lan; Mohan, Kannan; Ramesh, Balasubramaniam; Sarkar, Sumantra	Adapting funding processes for agile IT projects: an empirical investigation
		2014	Chen, Yang; Wang, Yi; Nevo, Saggi; Jin, Jiafei; Wang, Luning; et al.	IT capability and organizational performance: the roles of business process agility and environmental factors
		2017	Balasubramaniam Ramesh; Cao, Lan; Kim, Jongwoo; Kannan, Mohan; James, Tabitha L	Conflicts and complements between eastern cultures and agile methods: an empirical investigation
		2016	Cram, W Alec; Newell, Sue	Mindful revolution or mindless trend? Examining agile development as a management fashion
		2014	Huang, Pei-ying; Pan, Shan L; Ouyang, Tao Hua.	Developing information processing capability for operational agility: implications from a Chinese manufacturer
		2009	Sarker, Saonee; Munson, Charles L; Sarker, Suprateek; Chakraborty, Suranjan.	Assessing the relative contribution of the facets of agility to distributed systems development success: an Analytic Hierarchy Process approach
		2009	Port, Daniel; Bui, Tung	Simulating mixed agile and plan-based requirements prioritization strategies: proof-of-concept and practical implications
		2009	Karlsson, Fredrik; Ågerfalk, Pär	Exploring agile values in method configuration
		2009	Abrahamsson, Pekka; Conboy, Kieran; Wang, Xiaofeng	Lots done, more to do': the current state of agile systems development research
		2009	Mcavoy, John; Butler, Tom	The role of project management in ineffective decision making within Agile software development projects
		2006	Lyytinen, Kalle; Rose, Gregory M	Information system development agility as organizational learning
		2006	Marcel van Oosterhout; Waarts, Eric; Jos van Hillegersberg	Change factors requiring agility and implications for IT
		2006	Holmqvist, Magnus; Pessi, Kalevi	Agility through scenario development and continuous implementation: a global aftermarket logistics case
		2006	Overby, Eric; Bharadwaj, Anandhi; Sambamurthy, V	Enterprise agility and the enabling role of information technology
		2006	Fitzgerald, Brian; Hartnett, Gerard; Conboy, Kieran	Customising agile methods to software practices at Intel Shannon
		2006	Mathiassen, Lars; Pries-Heje, Jan	Business agility and diffusion of information technology
		2010	Collins, John; Ketter, Wolfgang; Gini, Maria	Flexible decision support in dynamic inter-organisational networks
		2009	Maruping, Likoebe M; Zhang, Xiaojun; Venkatesh, Viswanath	Role of collective ownership and coding standards in coordinating expertise in software project teams
		2009	Mangalaraj, George; Mahapatra, Radhakanta; Nerur, Sridhar	Acceptance of software process innovations - the case of extreme programming
		2008	Karuppan, Corinne M; Karuppan, Muthu	Resilience of super users' mental models of enterprise-wide systems
		2006	Gogan, Janis L	Commentary on Karl E. Weick's 'The role of imagination in the organizing of knowledge'

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No.	Journal	Year	Author/s	Title
2	Information Systems Journal	2018	Heeks, Richard; Ospina, Angelica V.	Conceptualising the link between information systems and resilience: A developing country field study
		2012	McAvoy, John; Nagle, Tadhg; Sammon, David	Using mindfulness to examine ISD agility
		2020	Venkatesh, Viswanath; Thong, James Y L; Chan, Frank K Y; Hoehle, Hartmut; Spohrer, Kai	How agile software development methods reduce work exhaustion: Insights on role perceptions and organizational skills
		2020	Huber, Thomas L; Winkler, Maike AE; Dibbern, Jens; Brown, Carol V	The use of prototypes to bridge knowledge boundaries in agile software development
		2019	Tan, Felix Ter Chian; Pan, Shan L; Zuo, Meiyun	Realising platform operational agility through information technology-enabled capabilities: A resource-interdependence perspective
		2019	Chan, Calvin ML; Say Yen Teoh; Yeow, Adrian; Pan, Gary	Agility in responding to disruptive digital innovation: Case study of an SME
		2017	Ghobadi, Shahla; Mathiassen, Lars	Risks to Effective Knowledge Sharing in Agile Software Teams: A Model for Assessing and Mitigating Risks
		2016	Ghobadi, Shahla; Mathiassen, Lars	Perceived barriers to effective knowledge sharing in agile software teams
		2012	Wang, Xiaofeng; Conboy, Kieran; Pikkarainen, Minna	Assimilation of agile practices in use
		2012	Persson, John Stouby; Mathiassen, Lars; Aaen, Ivan	Agile distributed software development: enacting control through media and context
		2011	Zheng, Yingqin; Venters, Will; Cornford, Tony	Collective agility, paradox and organizational improvisation: the development of a particle physics grid
		2010	Ramesh, Balasubramaniam; Cao, Lan; Baskerville, Richard	Agile requirements engineering practices and challenges: an empirical study
		2004	Yu, Jianming; Krishnan, Krishna K	A conceptual framework for agent-based agile manufacturing cells
3	Information Systems Research	2009	Berger, Hilary; Beynon-Davies, Paul	The utility of rapid application development in large-scale, complex projects
		2009	Conboy, Kieran	Agility from First Principles: Reconstructing the Concept of Agility in Information Systems Development
		2013	Chakravarty, Anindita; Grewal, Rajdeep; Sambamurthy, V	Information Technology Competencies, Organizational Agility, and Firm Performance: Enabling and Facilitating Roles
		2012	Ramesh, Balasubramaniam; Mohan, Kannan; Cao, Lan	Ambidexterity in Agile Distributed Development: An Empirical Investigation
		2009	Sarker, Saonee; Sarker, Suprateek	Exploring Agility in Distributed Information Systems Development Teams: An Interpretive Study in an Offshoring Context
		2009	Maruping, Likoebe M; Venkatesh, Viswanath; Agarwal, Ritu	A Control Theory Perspective on Agile Methodology Use and Changing User Requirements
		2009	Vidgen, Richard; Wang, Xiaofeng	Coevolving Systems and the Organization of Agile Software Development
		2010	Tanriverdi, Hüseyin; Rai, Arun; Venkatraman, N	Reframing the Dominant Quests of Information Systems Strategy Research for Complex Adaptive Business Systems
		2010	Tiwana, Amrit; Konsynski, Benn	Complementarities Between Organizational IT Architecture and Governance Structure
		2009	Austin, Robert D; Devin, Lee	Weighing the Benefits and Costs of Flexibility in Making Software: Toward a Contingency Theory of the Determinants of Development Process Design

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No.	Journal	Year	Author/s	Title
4	Journal of AIS - Journal of the Association for Information Systems	2013	Goh, Jenson Chong-Leng; Pan, Shan L.; Zuo, Meiyun	Developing the Agile IS Development Practices in Large-Scale IT Projects: The Trust-Mediated Organizational Controls and IT Project Team Capabilities Perspectives
		2017	Park, YoungKi; El Sawy, Omar A; Fiss, Peer C	The Role of Business Intelligence and Communication Technologies in Organizational Agility: A Configurational Approach
		2016	Tripp, John F; Riemenschneider, Cindy; Thatcher, Jason B	Job Satisfaction in Agile Development Teams: Agile Development as Work Redesign
		2014	Richardson, Sandra; Kettinger, William J; Banks, Michael Shane; Quintana, Yuri	IT and Agility in the Social Enterprise: A Case Study of St Jude Children's Research Hospital's "Cure4Kids" IT-Platform for International Outreach
		2012	Nazir, Salman; Pinsonneault, Alain	IT and Firm Agility: An Electronic Integration Perspective
		2007	Fink, Lior; Neumann, Seev	Gaining Agility through IT Personnel Capabilities: The Mediating Role of IT Infrastructure Capabilities
		2018	Xiao, Xuan; Lindberg, Aron; Hansen, Sean; Lyytinen, Kalle	Computing Requirements for Open Source Software: A Distributed Cognitive Approach
		2020	Brocke, Jan Vom; Winter, Robert; Hevner, Alan; Maedche, Alexander	Special Issue Editorial – Accumulation and Evolution of Design Knowledge in Design Science Research: A Journey Through Time and Space
		2019	Hirschheim, Rudy	Against Theory: With Apologies to Feyerabend
		2008	Roussinov, Dmitri; Chau, Michael	Combining Information Seeking Services into a Meta Supply Chain of Facts
5	Journal of Information Technology	2019	Karimi-Alagheband, Forough; Rivard, Suzanne	Information technology outsourcing and architecture dynamic capabilities as enablers of organizational agility
		2002	Breu, Karin; Hemingway, Christopher J; Strathern, Mark; Bridger, David.	Workforce agility: the new employee strategy for the knowledge economy
		2015	Luftman, Jerry; Derksen, Barry; Dwivedi, Rajeev; Santana, Martin; Zadeh, Hossein S; et al.	Influential IT management trends: an international study
		2007	Ignatiadis, Ioannis; Nandhakumar, Joe	The impact of enterprise systems on organizational resilience
		2014	Henfridsson, Ola; Mathiassen, Lars; Svahn, Fredrik	Managing technological change in the digital age: the role of architectural frames
		2010	Viaene, Stijn; De Hertogh, Steven	Enterprise-wide business-IT engagement in an empowered business environment: the case of FedEx Express EMEA
6	Journal of MIS - Journal of Management Information Systems	2017	Baham, Corey; Hirschheim, Rudy; Calderon, Andres A.; Kisekka, Victoria	An Agile Methodology for the Disaster Recovery of Information Systems Under Catastrophic Scenarios
		2012	Roberts, Nicholas; Grover, Varun	Leveraging Information Technology Infrastructure to Facilitate a Firm's Customer Agility and Competitive Activity: An Empirical Investigation
		2012	Brodsky, Alexander; Egge, Nathan E; Wang, X Sean	Supporting Agile Organizations with a Decision Guidance Query Language
		2011	Hong, Weiyin; Thong, James YL; Chasalow, Lewis C; Dhillon, Gurpreet.	User Acceptance of Agile Information Systems: A Model and Empirical Test
		2013	Keith, Mark; Demirkan, Haluk; Goul, Michael.	Service-Oriented Methodology for Systems Development
		2010	Choi, Jae; Nazareth, Derek L; Jain, Hemant K.	Implementing Service-Oriented Architecture in Organizations
		2006	Fruhling, Ann; Gert-Jan De Vreede	Field Experiences with eXtreme Programming: Developing an Emergency Response System
		2004	Bhargava, Hemant K; Sundaresan, Shankar	Computing as Utility: Managing Availability, Commitment, and Pricing Through Contingent Bid Auctions
		2018	Krancher, Oliver; Luther, Pascal; Jost, Marc	Key Affordances of Platform-as-a-Service: Self-Organization and Continuous Feedback

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No.	Journal	Year	Author/s	Title
7	Journal of Strategic Information Systems	2016	Lowry, Paul Benjamin; Wilson, David	Creating agile organizations through IT: The influence of internal IT service perceptions on IT service quality and IT agility
		2020	Lee, Neil Chueh-An; Wang, Eric T.G.; Grover, Varun	IOS drivers of manufacturer-supplier flexibility and manufacturer agility
		2019	Tallon, Paul P.; Queiroz, Magno; Coltman, Tim; Sharmad, Rajeev	Information technology and the search for organizational agility: A systematic review with future research possibilities
		2018	Ravichandran, T.	Exploring the relationships between IT competence, innovation capacity and organizational agility
		2018	Queiroz, Magno; Tallon, Paul P.; Sharma, Rajeev; Coltman, Tim	The role of IT application orchestration capability in improving agility and performance
		2011	Ngai, Eric W. T.; Chau, Dorothy C. K.; Chan, T.L.A.	Information technology, operational, and management competencies for supply chain agility: Findings from case studies
8	MIS Quarterly	2011	Lu, Ying; Ramamurthy, K. (Ram)	Understanding the Link Between Information Technology Capability and Organizational Agility: An Empirical Examination
		2011	Tallon, Paul P; Pinsonneault, Alain	Competing perspectives on the link between strategic information technology alignment and organizational agility: insights from a mediation model
		2010	Lee, Gwanhoo; Xia, Weidong	Toward agile: an integrated analysis of quantitative and qualitative field data on software development agility
		2003	Sambamurthy, V; Bharadwaj, Anandhi; Grover, Varun.	Shaping agility through digital options: Reconceptualizing the role of information technology in contemporary Firms ¹
		2014	Butler, Brian S; Bateman, Patrick J; Gray, Peter H; Diamant, E Ilana	An Attraction-Selection-Attrition Theory of Online Community Size and Resilience
		2015	Park, Insu; Sharman, Raj; Rao, H Raghav	Disaster Experience and Hospital Information Systems: An Examination of Perceived Information Assurance, Risk, Resilience, and HIS Usefulness
9	Pacific Asia Journal of the Association for IS	2010	Hobbs, George; Scheepers, Rens	Agility in Information Systems: Enabling Capabilities for the IT Function
10	Enterprise IS Journal	2010	Wang, J. W.; Gao, F.; Ip, W. H.	Measurement of resilience and its application to enterprise information systems

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