

# The Impact of Intelligent Digital Technologies on Organizational Resilience: Systematic Literature Review (SLR) and Bibliometric Analysis

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## **The Impact of Intelligent Digital Technologies on Organizational Resilience: Systematic Literature Review (SLR) and Bibliometric Analysis**

### **Abstract:**

As organizations face increased uncertainty and disruption, developing organizational resilience has become one of the most critical issues. However, research on the impact of Intelligent Digital Technologies (IDT) (e.g., AI and Business Intelligence, Big Data Analytics) on developing organizational resilience in combination with dynamic capabilities and organizational learning has not been extensively researched. This study synthesizes existing literature addressing how these technologies impact the development of resilience practices. The authors conducted a systematic literature review using major research databases to locate 71 peer-reviewed articles published between 2020 and 2025. The authors used bibliometric analysis with VOSviewer to map thematic structures and citation networks. The findings of this study identify two key themes: (1) Intelligent Technologies create mechanisms for anticipating, adapting, and learning from uncertainty; (2) Digital transformation serves as a strategic resilience driver. The bibliometric mapping revealed four key clusters relating to resilience, risk management, cyber security, decision making, and digital governance. Based on the findings of this study, the authors conclude that when Intelligent Digital Technologies are used in combination with human, cultural, and governance factors, they have a significant positive effect on developing organizational resilience. In addition, future research should provide a framework for integrating technology adoption and managerial competencies to effectively address uncertainty in today's volatile environment.

**Keywords:** Organizational resilience, Artificial intelligence, Business Intelligence, Big Data, Digital transformation.

**Classification JEL:** O33, M15, D83, C38.

**Paper type:** Systematic Literature Review (SLR)

## 1. Introduction

With organizations operating in more volatile and uncertain environments, crises have become a regular part of those environments, influencing the priorities of both the strategic and operational functions of the business. Events such as the Covid-19 pandemic, cyber security breaches, supply chain challenges, and rapid technological advancements have placed all organizations in a position where they will face regular, repeated disturbances that jeopardize their business continuity, performance, and in some instances, survival. Resilience has thus emerged as the core capability that continues to keep organizations competitive and allows them to continue performing their critical functions even during periods of disruption. Resilience is most commonly defined as an organization's capacity to anticipate, respond, and adapt to any internal or external shocks, while also sustaining its fundamental operations (Duchek, 2020). The primary definition of resilience includes an element of reactivity and a capacity to recover following disruption; while it is also a method to systematically anticipate, adapt, and learn from uncertainty and build an organization capable of reaching its Goals and achieving its Vision beyond the recovery stage. In addition to the expanded definition of resilience, IDTs have been developed and enabled the development of intelligent and digital technologies. There are numerous characteristics of IDTs, some of which include advanced analytical capabilities through big data, quickly providing insight into business patterns that allow organizations to adjust based on predicted customer behavior, decisions supported by data or machine learning, etc. According to Chen et al. (2012), Big Data Analytics enable organizations to generate value from vast amounts of unstructured and structured data and lead to improved quality of decisions, as well as quicker responsiveness to change. However, the majority of these articles tend to focus on the results of improved performance and efficiency from big data, without clarifying the specific mechanisms that big data analytics provide to enable anticipatory and absorptive capacities, or the renewal capability associated with those mechanisms. Similarly, Davenport & Ronanki (2018) recognized the role AI plays in enhancing organizations by providing automation, advanced identification capabilities, and intelligent recommendations; however, the authors appear to overstate the significance of AI performance technologies without clearly addressing the prerequisites that must be in place for AI to effectively support resiliency strategies during times of crisis (human experience, governance, ethical alignment). Also, Wamba et al. (2017) concluded that by providing real-time information on performance, data analysis increases the speed and efficiency of how fast companies respond to market opportunity and create value. However, there is little research that looks at the boundary conditions that exist where companies with analytical capabilities can sustain their competitive advantage through enhanced organisational practices and resilience, rather than simply achieving better operational efficiencies. Ivanov and Dolgui (2021) suggested that this problem could be addressed through AI-enabled predictive analytics, which enhance the ability of supply chain networks to respond to disruption events with improved predictive resilience capabilities based on both anomaly detection and disruption forecasting, but at the same time, have demonstrated that much of the existing research is still heavily focused on the supply chain aspect of resilience and operational risk, leaving much less emphasis on the other dimensions of resilience within organisations (such as strategic renewal, corporate governance, and cultural readiness). Likewise, Akter et al. (2016) showed that business intelligence tools are very effective in facilitating organisation's timely decisions during uncertainty by informing managers of what is happening with their business in real-time, but much of this current research assumes that data analytics tools will automatically allow companies to enhance their operational resilience capabilities. In actuality, the ability to enhance operational resilience capabilities is dependent upon the quality of the data available to the organisation, the maturity of their decision-making processes, and the readiness of management for making timely and

informed decisions as well, and therefore, for many organisations, BI remains limited to an organisations' use for monitoring and reporting purposes, rather than supporting the development of proactive resilience capabilities. Consequently, research about Intelligent Digital Technologies (IDTs) remains disunified and contradictory. While several authors argue IDTs are mainly enabling reactive recovery and crisis management, others argue that IDTs also support the proactive anticipation of and strategic transition to resilience but only when employed along with complementary human (including cultural) capabilities (learning, leadership commitment, and governance) (Duchek, 2020). The lack of agreement indicates that there is no integration in existing research regarding how IDTs contribute to resilience or the conditions or means by which IDTs support resilience. At the same time, while various theoretical perspectives, such as the resource-based view (Barney, 1991), dynamic capabilities (Tece, 2007), and organizational learning (Argyris & Schön, 1997), support research on the relationship between IDTs and resilience, each of these perspectives provides only a partial understanding of the relationship; for example, RBV has a strong focus on technology as a strategic resource but does not provide a sufficient explanation of disruption dynamics; dynamic capabilities provide a powerful lens for sensing and transformation, but rarely detail how AI, BI, or analytics specifically contribute to building resilience; and organizational learning helps clarify the processes associated with adaptive capacities (learning) but frequently neglects to address the technology-enabled processes that enhance both learning and decision-making cycles. The ever-expanding body of research into digital technologies (inclusive of digital tools, apps and devices) as well as their impact on resilience has resulted in an overwhelming volume of literature that has emerged since 2020. This literature represents a large pool of information, but remains disjointed and not yet adequately integrated. Thus, a more thorough and comprehensive integration of the existing body of literature is necessary to clarify how IDTs affect an organization's resilience, identify the major and emerging themes from the literature, and highlight the identified gaps in the literature as well as the future direction of study. To accomplish this goal, the current research study seeks to address the following question: **What is the relationship between IDTs (AI, BI, big data analytics) and an organization's resilience capacity, and through what means and under what enabling conditions do these technologies shape that capacity for resilience?** To address this question, this article will utilize a systematic review of existing literature along with a bibliometric analysis of 71 articles published between 2020 and 2025, which will allow for both the mapping of the intellectual structure of the field of IDTs as well as for synthesizing the empirical and theoretical findings within that field. The findings support that IDTs (Integrative Digital Technologies) enhance an organization's resilience through two ways: (1) anticipation and adaptation through predictors, sensors, and speed at which decisions are made, and (2) support for strategic resiliency via transforming the processes, supporting and aligning technologies with an organization's vision and mission.

Furthermore, results emphasize that while technology can help companies become more resilient, the instruments and capabilities required to utilize the technology must also be present before any resulting resilience can be achieved. Following the introduction of the paper, Section 2 provides a theoretical background, a description of the research methodology appears in Section 3; Section 4 contains the results of the bibliometric and systematic literature review; Section 5 discusses the findings; Section 6 outlines implications, limitations, and future research opportunities; and finally, Section 7 concludes with a summary of the work performed.

## **2. Theoretical framework**

### **2.1. Intelligent digital technologies (IDT): foundations, logics of use and organizational implications**

In a world that is constantly evolving, digital transformation is one of the main dynamics of

change that cross organizations regardless of their field of activity. Their expansion is part of a context where the complexity and volatility of environments require more efficient analysis, responsiveness and adaptation capabilities than those of traditional information systems. Among these technologies, artificial intelligence, business intelligence and big data analysis are the most significant levers for the renewal of organizational processes.

Artificial intelligence refers to a set of techniques that allow computer systems to perform tasks associated with human capabilities, such as learning, reasoning, pattern recognition or prediction. (Davenport & Ronanki, 2018) confirm that AI is used in process automation, cognitive analysis of complex data, and intelligent interaction between users and systems. With its advanced analytics capabilities, it helps reduce uncertainty, improve the accuracy of organizational diagnoses, and strengthen preparedness for unexpected events. Its main contribution lies in the ability to anticipate changes in the environment, detect weak signals and simulate various scenarios likely to influence performance.

An information system nowadays cannot function without Business Intelligence (BI) or known as "business intelligence", which is considered an essential element in the information systems of contemporary organizations. It is based on the collection, integration, analysis and visualization of internal data in order to produce useful information for decision-making. (Chen et al., 2012) emphasize that BI helps transform data into a strategic capital to guide managerial action. The work of (Işık et al., 2013) show that its effectiveness is based on the quality of data, integration between systems and the existence of an analytical culture oriented towards the systematic use of information. Business intelligence improves visibility into operations, facilitates early detection of anomalies, and strengthens internal coordination, which is a significant advantage in an environment of speed and uncertainty.

In the same context, Big Data analytics finally represents a major advance in the ability of organizations to exploit massive volumes of data from a variety of sources. (Wamba et al., 2017) explain that Big Data is characterized by its volume, variety, and velocity, and that its exploitation provides an in-depth understanding of internal and external dynamics. When aligned with organizational strategy, advanced analytics can increase innovation capacity, improve risk management, and strengthen overall performance. It provides better visibility into emerging trends, helps detect potential disruptions, and supports decision-making in situations where information needs to be analyzed quickly.

Thus, artificial intelligence, business intelligence and big data analysis are not only technological tools intended to improve operational efficiency. They are strategic resources capable of transforming organizational logics, improving understanding of complex environments and strengthening the capacity for action in unstable contexts. Their role goes beyond the technical dimension to become a central lever for decision-making agility and strategic adaptation.

## **2.2. Organizational resilience: conceptualization, dynamics and dimensions**

Organizational resilience has emerged as a major concept in the management science literature, particularly in response to the uncertainty, repeated crises and technological upheavals that characterize contemporary environments. It refers to an organization's ability to cope with disruptions, to limit their effects, to ensure the survival of its essential activities.

According to (Lengnick-Hall et al., 2011), organizational resilience is based on a set of cognitive, behavioral, and contextual capabilities that allow the organization to have a better and deeper understanding of its environment, to respond flexibly, and to leverage the resources at its disposal to effectively cope with change. Cognitive abilities concern vigilance, analysis and interpretation of environmental signals. Behavioral abilities are reflected in flexibility, a degree of responsiveness and improvisation. On the other hand, for contextual capacities, they

are based on the structure, culture, resources and internal networks that maintain collective action.

The dynamic conceptualization of resilience has been articulated around three interrelated processes by (Duchek, 2020), the first is anticipation, which corresponds to the ability to predict weak signals, identify weaknesses and prepare before the appearance of any change that poses a threat to the normal functioning of the organization. The second process is the reaction process, which shows how the organization responds to crises by mobilizing the necessary resources quickly. The third process is adaptation, which presents post-crisis learning, practice review and organizational transformation from a continuous improvement perspective. The (Duchek, 2020) emphasizes that resilience is a dynamic and evolving capacity that is built over experiences.

In order to enrich the understanding of resilience, three structural components have been identified according to (McManus et al., 2008). Environmental awareness or situational alertness that provides the organization with the ability to perceive the state of the system and the environment in which it operates. Crisis or vulnerability management makes it possible to identify and reduce weaknesses that could increase the effects of a disruption. Finally, adaptive capacity refers to the ability to modify internal processes in order to respond to changes effectively. This work brings an operational dimension to organizational resilience and reveals that it depends on both available resources and internal processes.

Several dimensions are mobilized at the same time by resilience such as knowledge, action and structure, which makes it a multidimensional phenomenon. It is based on an ongoing process in which the organization learns, corrects and improves its practices. Recent literature converges on the idea that resilience is not limited to survival or returning to an initial state, but corresponds to a process of active adaptation to strengthen future performance and increase the ability to manage uncertainty.

### **2.3. Intelligent technologies and strengthening organizational resilience**

Recently, the literature highlights the value of the function of Intelligent digital technologies in building, training and building organizational resilience. This is done through the capacities they offer and which directly reinforce the three essential dimensions of the resilient process: anticipation, reaction and adaptation. Their contribution is based on their ability to provide reliable, rich, accurate and real-time information, to analyze complex data and to maintain decision-making processes in uncertain environments.

From a proactive perspective, intelligent technologies can improve the ability of organizations to identify weak signals and assess emerging risks. Artificial intelligence systems capable of detecting anomalies, predictive models powered by Big Data and analytical dashboards from BI help to strengthen organizational vigilance. (Ivanov & Dolgui, 2021) provide an example of the use of advanced analytical systems in supply chains to simulate different scenarios, allowing for the prediction of disruptions. This ability to anticipate is essential for the reduction of uncertainty and ease of adaptation.

On the response side, Intelligent technologies support rapid decision-making in times of crisis. Business Intelligence, in particular, makes it possible to visualize key process indicators in real time, detect disruptions and coordinate operational responses. According to (Shams et al., 2021), organizations with high-performance analytics systems benefit from a greater ability to adjust their practices and redirect resources during an unforeseen crisis. AI systems can also automate some critical tasks, allowing human teams to focus on strategic decisions.

Intelligent technologies are also involved in post-crisis reconstruction and learning. They make it possible to capitalize on lived experiences, analyze data from disruptions and rethink organizational routines. The advanced analytics offered by Big Data foster a deeper understanding of the causes and implications of crises, which supports the structural and

strategic transformation of the organization. (Wamba et al., 2017) emphasize that organizations that successfully integrate these technologies into their learning processes have a strengthened capacity to innovate and adapt continuously.

Building on the work of (Duchek, 2020; Ivanov & Dolgui, 2021; Shams et al., 2021; Wamba et al., 2020), it is possible to synthesize the role of Intelligent digital technologies in each of the dimensions of organizational resilience. Table 1 presents the main contributions of technologies according to the phases of anticipation, adaptation and learning.

#### **2.4. Theoretical approaches used to analyze the link between Intelligent technologies and resilience**

Several theoretical frameworks help to understand the relationship between Intelligent digital technologies and organizational resilience. These frameworks offer complementary perspectives on the mechanisms through which organizations perceive, interpret, and manage disruptions.

The theory of dynamic capacities, developed by (Teece, 2007), is one of the most widely used foundations in the contemporary literature. It postulates that resilient organizations are those that manage to integrate, renew and reconfigure their resources in response to changes in the environment. Intelligent technologies directly contribute to strengthening these dynamic capabilities by improving the perception of external signals, facilitating decision-making and enabling the continuous transformation of internal processes.

The theory of organizational learning, introduced by (Argyris & Schön, 1997), offers another essential analytical framework. She emphasizes that organizations learn from their experiences, correct mistakes and adapt their practices. Intelligent technologies are a fundamental support for this process, as they allow data to be collected, knowledge formalized and information disseminated through organizational structures. Their role is particularly crucial in the adaptation phase of the resilient process.

The Resource-Based View, proposed by (Barney, 1991) finally provides additional insights. It considers internal resources to be the foundation of competitive advantage. Intelligent digital technologies can, when integrated consistently into strategy, become scarce, valuable and difficult to imitate strategic resources. In this way, they contribute to strengthening organizational resilience by structuring a solid foundation for innovation, flexibility and transformation. The articulation between these different theoretical approaches provides a better understanding of the mechanisms through which organizations use Intelligent technologies to strengthen their ability to cope with uncertainty. It highlights the critical role of information, learning, and continuous transformation in resilient processes.

Table 1 summarizes the main theoretical frameworks used in the literature, as well as their contribution to understanding the link between Intelligent digital technologies and organizational resilience.

**Table 1: Explanatory theories of organizational resilience in a digital context**

Theory / Model	Key Authors	Main concepts	Link to the organizational resilience	Link with the Intelligent Technologies
<b>Dynamic Capabilities</b>	(Teece, 2007)	Adapting, integrating, reconfiguring resources	Explains how organizations build resilient capacities	IDTs (AI, Big Data) strengthen the ability to adapt
<b>Complex adaptive systems</b>	(Dooley, 1997) (Holland, 1992)	Complexity, self-organization, evolution	Resilience is an emerging property of an adaptive system	AI and IoT enable responsiveness in the complex environment
<b>Organizational Learning</b>	(Argyris & Schön, 1997)	Simple teach-in, double loop	Leverages crises to improve resilience	BI and Data Analytics promote structured learning
<b>Resource-Based View (RBV)</b>	(Barney, 1991)	Strategic resources, competitive advantage	Resilience depends on scarce and hard-to-imitate resources	Intelligent technologies are strategic resources
<b>Institutional Theory</b>	(DiMaggio & Powell, 1983)	Coercive, mimetic and normative pressures	Explains why some organizations are adopting resilience strategies	IDTs are often adopted under external pressure
<b>Uncertainty Decision Model</b>	(Simon, 1972)	Limited rationality, decision-making under duress	Effective decisions strengthen the capacity to respond to crises	AI and BI improve decision quality

*Source: By authors*

These theoretical models have made it possible to structure the conceptual framework presented in the next section.

### 2.5. Synthesis and proposed conceptual framework

From the theoretical contributions identified in the literature, it is possible to synthesize the role of Intelligent digital technologies in the different dimensions of organizational resilience. The work of (Argyris & Schön, 1997; Ducheck, 2020; Ivanov & Dolgui, 2021; Shams et al., 2021; Wamba et al., 2020) as shown in Table 2 confirm that technologies such as artificial intelligence, business intelligence and big data analysis intervene differently depending on the logics of anticipation, adaptation and post-crisis learning.

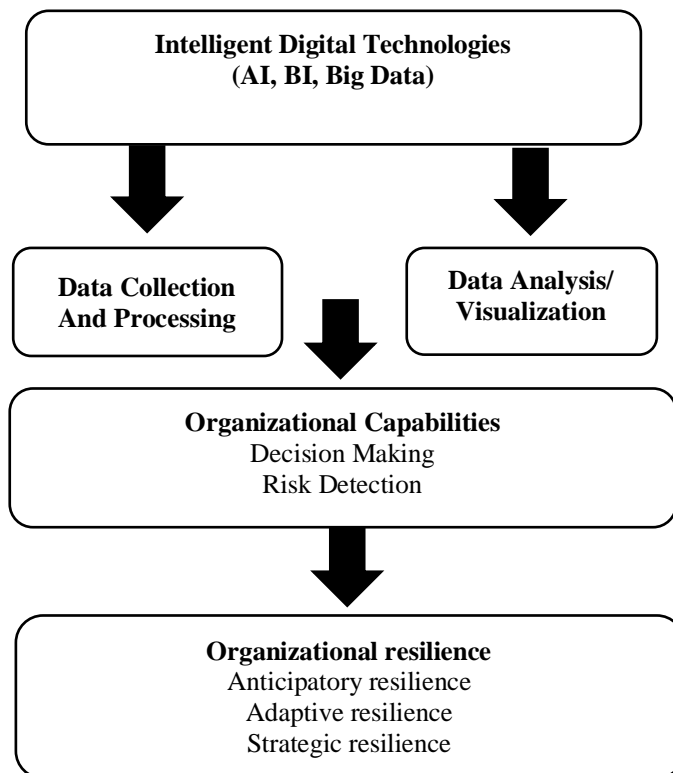
**Table 2: Link between IDT and organizational resilience**

Dimension of resilience	Contribution of Technologies Intelligent digital	Key References
<b>Anticipation</b>	Predictive analysis, scenario simulation, weak signal detection (AI, BDA)	(Wamba et al., 2020) (Ivanov & Dolgui, 2021)
<b>Adaptation</b>	Real-time visualization, fast reallocation, intelligent automation (BI, AI)	(Shams et al., 2021)
<b>Learning</b>	Capitalization on historical data, memory organizational, post-crisis learning (BDA, BI)	(Ducheck, 2020) (Argyris & Schön, 1997)

*Source: By authors*

The integration of the above elements provides a conceptual framework illustrating how Intelligent digital technologies support organizational capabilities and, as a result, strengthen the three forms of resilience: anticipatory, adaptive, and strategic. The conceptual model proposed below (Figure 1) represents the sequential logic linking technologies, analytical and decision-making capabilities, and dimensions of resilience.

**Figure 1: Role of IDTs in building organizational resilience**



*Source: By authors*

Intelligent digital technologies, such as AI, BI, and big data, are strengthening key capabilities like decision-making, risk detection, and organizational agility. These capabilities, which are part of dynamic capabilities, allow the development of anticipatory, adaptive and strategic resilience. The model thus shows that resilience results less from the technology itself than from its integration into the organization's internal capabilities.

### **3. Methodology**

#### **3.1. Review Protocol**

This research utilized PRISMA 2020 to conduct the systematic review and meta-analysis of the academic literature. PRISMA 2020 was used to ensure transparency, replicability, and rigor in all aspects of this research (Haddaway et al., 2022; Page et al., 2021). The use of the PRISMA framework allowed for the identification, screening, and selection of literature to minimize bias and support the establishment of a reliable review methodology (Page et al., 2021).

The findings of this research were generated through the combination of a systematic qualitative review and a complementary bibliometric analysis. Together, these two methods allowed for the synthesis of conceptual and empirical contributions while also identifying the themes, patterns of research and trends that can be associated with the use of intelligent digital technologies for the development of organizational resilience.

By using both the systematic review framework and the bibliometric mapping process, this research creates an unbiased, replicable and robust framework for examining the academic literature that addresses intelligent digital technologies and their contribution to organizational resilience (Rosário & Dias, 2024).

#### **3.2. Search Strategy**

The extensive literature review involved the search of two large databases for respective

academic information: Scopus, Web of Science (WoS). The selection of these two resources was due to the abundance of peer-reviewed articles pertaining to subjects of Management, Information Systems, Innovation and Digital Transformation; along with the high number of times they have been used in systematic literature reviews and bibliometric research. The methodology used to perform the search included the use of specific keyword phrases concerning organizational resilience (e.g. "organizational resilience", "resilient organization") along with Intelligent Digital Technology (e.g. "Artificial Intelligence", "Business Intelligence", "Big Data Analytics", "Machine Learning", "Data Analytics") within the respective databases, using Boolean operators.

Below are provided the precise search terms utilized in conjunction with the listed databases (i.e., Scopus and Web of Science). The respective database searches occurred on January 15, 2025. Searches were conducted across the following fields for all results: title, abstract, author-added keywords. Results were restricted to only peer-reviewed articles published in English between January 1, 2020 and December 31, 2025.

**Scopus and Web of Science research queries (executed on January 15, 2025)**  
**("organizational resilience" OR "resilient organization" ) AND ( "artificial intelligence" OR "business intelligence" OR "big data analytics" OR "machine learning" OR "data analytics" )**

The database yielded a total of 280 records (Scopus: n = 188; WoS: n = 92) that were identified as valid based on the search criteria. Once duplicates were removed through automated filtering (Publication year, Language, Document type, and Subject Area), 164 records remained that were utilized as part of a systematic review process where titles and abstracts were screened for relevance to the topic. Ultimately, 71 studies were included in the final analysis, thereby creating a thorough examination of the impact of IDTs on organizational resilience; this manuscript combines systematic review methods with bibliometric mapping allowing for a rigorous and comprehensive synthesis of how IDTs have contributed to Organizational Resilience.

*Table 3. Structured Phases of the Review Protocol*

Step	PRISMA Phase	Description of Action	Records (n)
1	Identification	Search conducted in Scopus, ScienceDirect, and Web of Science using predefined keywords related to intelligent digital technologies and organizational resilience (Titles, abstracts, keywords; 2020–2025).	280
2	Screening	Removal of duplicates; initial title and abstract screening to exclude unrelated studies.	164
3	Eligibility	Full-text assessment to ensure thematic alignment and methodological relevance.	96
4	Included	Final corpus of studies selected for systematic literature review and bibliometric analysis	71

*Source: By authors based on PRISMA 2020 guidelines (Page et al., 2020)*

### 3.3. Inclusion and exclusion criteria

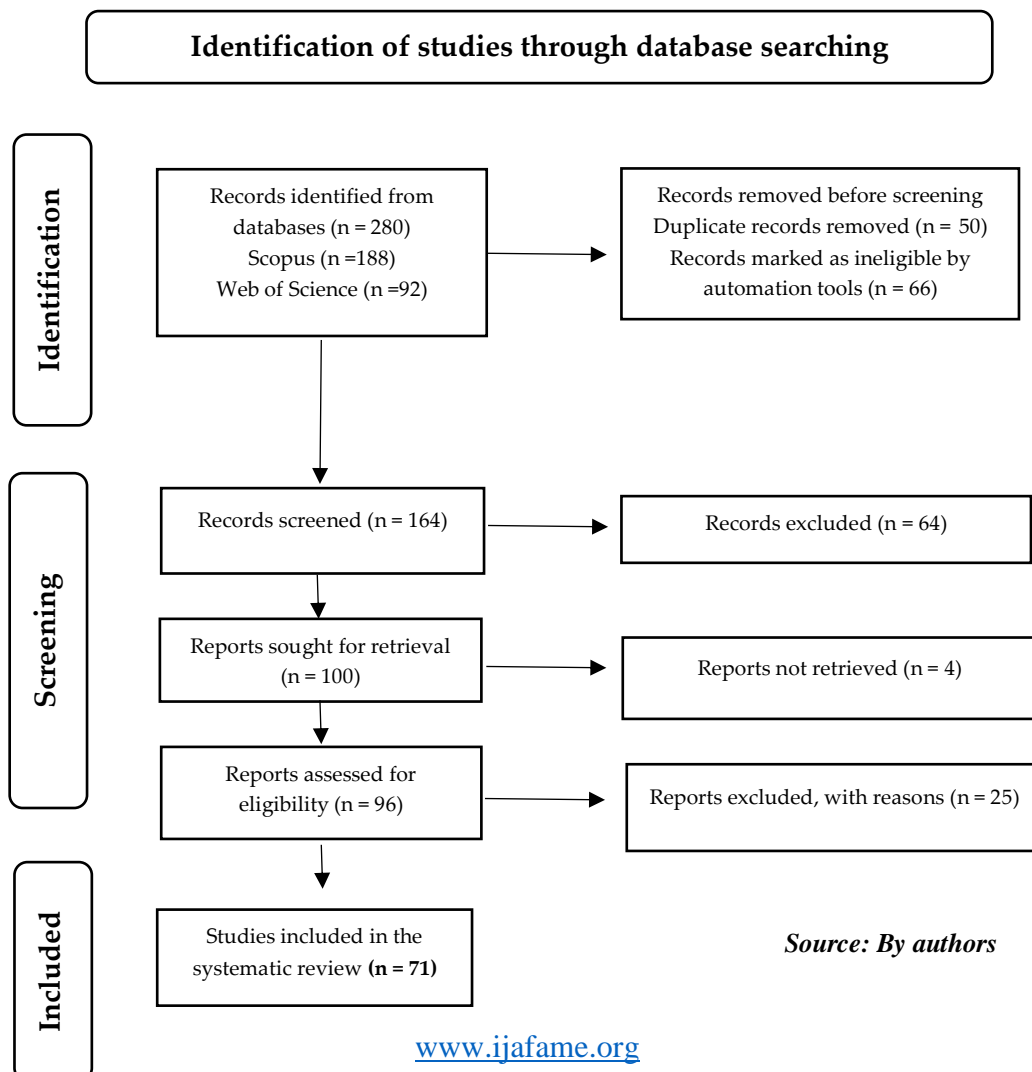
To enhance methodological rigor and maintain relevance across included studies, predefined inclusion/exclusion criteria were defined. In order for a study to be included, it must be: (i) published in a peer-reviewed journal; (ii) published in English; (iii) published between January, 2020 and December, 2025; (iv) listed by Scopus or Web of Science; and (v) review an aspect of the interaction between intelligent digital technology (AI/BDA/BI/Machine Learning/data analytics) in conjunction with developing organizational resilience both at an organizational level and at a management level. The inclusion criteria will also allow for inclusion of studies which provide an empirical basis, framework or systematic approach to the ability to understand how digital technologies can influence decision-making for resilience in transforming organizations.

The exclusion criteria will eliminate those studies which (i) do not specifically define organizational resilience; (ii) do not mention intelligent digital technologies and/or relation to resilience; (iii) are written by authors who do not submit their work with a peer-reviewed journal (e.g. editorial, report, dissertation, conference paper, book, and/or book chapter), (iv) not published in the English language, (v) published outside the selected temporal range, (vi) are duplicate studies across different databases, or (vii) are simply focused on technology and/or engineering aspects with no relevance to management and organization.

### 3.4. Screening Process

To ensure transparency and replicability of this research, the PRISMA 2020 guidelines were followed. A search of databases resulted in total of 280 records (Scopus n=188, WoS n=92). After removing 50 duplicate records there were 230 remaining records. Documents were then filtered using Automated Filters (Document Type, Publication Year 2020-2025, English Language, and Subject Area Relevance) producing a total of 164 Records Eligible for Screening (Scopus n=92, WoS n=72). During Title/Abstract Screening 64 records were excluded based on insufficient relevance to the Topic Area. Therefore, 100 Reports were required to retrieve full text. Four Reports could not be Retrieved therefore 96 Full text Articles were assessed for their Eligibility. After reviewing the Full Text Assessments, 25 Studies were Excluded with Reasons (i.e., Lack of Alignment to the Research Scope; Inadequate Methodology; or Limited Managerial/Organisational Relevance). In conclusion, 71 Studies were Included in the Final Dataset for Systematic Review and Bibliometric Analysis. The entire Screening and Selection Process is Demonstrated by the PRISMA 2020 Flow Diagram (Figure 2).

Figure 2: PRISMA 2020 flow diagram of database search and screening process



### **3.5.Data Analysis: Bibliometric Mapping**

The systematic review identified evidence using a dual analysis. The analysis process consisted of bibliometric analysis using the software VOSviewer (version 1.6.20) to visualize the literature's intellectual structure and how they are related to one another regarding the topics of smart digital tech and business resilience (Akter et al., 2016; Holland, 1992). The keyword co-occurrence method identified the main thematic areas, while citation analysis and co-citation analysis identified important authors, journals, and studies that have laid the foundation for this area of research. This allowed for a quantitative view of the research landscape, providing insight into the conceptual structure and evolution of the discipline.

Each study was examined carefully to discern the research objectives, theoretical foundation, technology employed (AI, Business Intelligence, Big Data Analytics), methodology, and summary of findings. Major themes that emerged as common concepts and characteristics were organized into three distinct categories which roughly encompass how organizations react to and grow from crises: anticipate, adapt and learn. Continuous revisions were made to coding decisions for evolving conceptual consistency through comparative analysis and iterative review of coding. The paired use of bibliometric maps with a thematic synthesis of literature yielded the most thorough view of research related to using intelligent digital technologies to enhance Organizational Resilience. The research streams that dominate the literature, as well as the emerging themes and dearth of research regarding the role of intelligent digital technologies in organizational resilience, were identified.

### **3.6.Methodological Rigor and Study Limitations**

Methodological safeguards were implemented to promote transparency and reliability of the review process. Methodological safeguards were applied throughout the review process (i.e., study selection, data extraction, and thematic coding) using predefined criteria and systematically cross-checked to reduce bias and enhance consistency. The application of PRISMA 2020 guidelines further enhanced methodological rigor by providing a transparent and replicable methodology for documenting inclusion and exclusion decisions at all points of the screening process.

However, despite these benefits to this study, several limitations remain. Specifically, while the review included two of the most prominent academic databases (Scopus and Web of Science), it is possible that there are other notable academic studies related to the reviewed topics in databases not included in this review (i.e., IEEE Xplore and ACM Digital Library). This is especially true for studies that contribute to the interdisciplinary field of artificial intelligence, data governance, cybersecurity, and algorithmic transparency since these studies often appear in more technical or engineering-related journals. Thus, much of the emerging literature in the above-mentioned fields may be missing from this current body of literature.

The review was limited to peer-reviewed English-language publications, which may have excluded high-quality research done in other languages or through grey literature, limiting the breadth of this analysis while ensuring the academic rigor of comparable to other analyses. Finally, bibliometric and thematic analyses are based upon the precise and complete use of metadata from the various databases, including keywords and abstracts, and may miss themes due to differences in indexing practices and keywords assigned by different authors. To address these limitations, future research should take a multi-database approach and be open to multi-lingual sources, and combine bibliometric with other qualitative research methods to widen our understanding of how the relationship between digital intelligent technology and organizational resilience is evolving.

## 4. Results

### 4.1. Overview of the Selected Studies

The last dataset reflects recent literature on the relationship between Intelligent Digital Technology and Organizational Resilience Published between 2020-2025. The data set, composed of these studies published during 2020-2025, encompasses the latest developments in the Relationship between Intelligent Digital Technology (IDT) and Organizational Resilience (OR). These studies were collected from an unprecedented time frame when businesses were both suffering from an increase in Interruption, and digitally transformed at an unprecedented pace, increasing the importance of Resilience as a Strategic Organizational Capability (McManus et al., 2008). These studies are representative of multiple research Areas, including management, information systems, decision sciences, and business analytics, and thus support the cross-disciplinary aspect of Resilience Research through the lens of Technology Enabled Organizations.

A diverse range of intelligent digital technologies is discussed in the studies selected for this research. As noted in the studies, a large majority of the research is focused on artificial intelligence, digital transformation, and data analytics, among many other intelligent digital technologies, including those relating to capability-oriented thoughts on things such as big data analytics capability and dynamic capabilities. A common thread of all of these studies is that they are trying to understand how advanced digital technologies are changing how organizations operate, improving how organizations make decisions and supporting how organizations can adapt their strategy when uncertainty exists. Additionally, as noted in previous studies on organizational resiliency, the majority of the studies included in the research are discussions of technology utilization from a managerial and strategic standpoint rather than being strictly technical (Bhamra et al., 2011). In this dataset, there are three types of research empirical, conceptual, and review-based. Most of the empirical studies included are quantitative in nature, often using survey-based methods, statistical modelling methods and examining how a capability-performance relationship exists. Conceptual and review-based articles summarize the results of previous studies and provide insights into identifying and understanding the relationship between resilience construct, mechanisms and enabling factors.

### 4.2. Visual Bibliometric maps

A Bibliometric Study has been carried out, mapping and quantifying the research intellectual structure for Intelligent Digital Technologies (IDT) related to Organization Resilience. The bibliometric technique provides a structured means to explore the production of science within a specific area, including establishing primary themes or research, identifying various conceptual links between these themes and discovering how they interrelate to create an overall understanding of this evolving area of Knowledge (Garrido-Moreno et al. 2024; Haddaway et al. 2022). Using the bibliographic information of the identified studies from the Final Dataset for this analysis, the Author utilized VOSviewer (Version 1.6.20) to create the bibliometric map.

VOSviewer is a popular piece of Bibliometric Visualization Software that allows the creation and graphical representation of Bibliometric Networks. Using VOSviewer, this article presents three complementary visualizations that help interpret the field of Bibliometrics. The first visualization is a Network Visualization, which shows the most frequently used Author Keywords and how they co-occur and cluster together, thereby revealing the main thematic areas of the literature. Secondly, the Overlay Visualization provides a temporal perspective by providing insight into the average year of publication associated with each Keyword, thus allowing for the identification of Growing vs. Stable Research Topics. Finally, the Density Visualization indicates the concentration of occurrences and Link Strength of each Keyword



In short, the network comprises multiple clusters that are distinctive yet interconnected areas of investigation in the field. Many of the clusters demonstrate a focus on advanced digital technologies and organizational change, while others highlight issues relating to decision-making, strategy, and organizational capabilities. The dense connections between clusters indicate a very high degree of conceptual closeness among the clusters and correspond with previous bibliometric analyses utilizing keyword co-occurrence (Donthu et al. 2021; Zupic & Čater 2015). The most highly-used keywords based on their frequency and total link strength are summarized in Table 4 to aid in the reader's understanding of Figure 3.

*Table 4. Most influential keywords based on occurrence and total link strength*

<b>Keywords</b>	<b>Occurrences</b>	<b>Total Link Strength</b>
<b>Organizational resilience</b>	41	255
<b>Artificial intelligence</b>	38	242
<b>Firm performance</b>	18	136
<b>Decision-making</b>	16	121
<b>Big data analytics capability</b>	15	118
<b>Competitive advantage</b>	14	112
<b>Proactive resilience</b>	12	97
<b>Risk management</b>	11	92
<b>Covid-19 pandemic</b>	10	84
<b>Crisis management</b>	9	76
<b>Information</b>	9	73
<b>Product innovation</b>	8	68
<b>Sustainable development</b>	8	65
<b>SMEs</b>	7	59
<b>Prediction</b>	7	55

*Source: By authors*

While the keyword co-occurrence network illustrated in Figure 3 gives a visual representation of the data, Table 4 contains a quantitative summary of those same data. In particular, Table 4 lists the keywords that had the highest frequency of occurrence, as well as their total link strength thus allowing for easier identification of the most prominent themes and how well they are connected with one another in the literature.

The analysis of keyword co-occurrence showed the most frequently observed keywords and their link strength. The two most frequently occurring and high link strength keywords were "organizational resilience" and "artificial intelligence", both of which are considered to have a central role in the knowledge base of this area. This emphasizes that there is a strong relationship within the research community between "organizational resilience" and intelligent digital technologies, in particular AI-driven methods.

In addition to these two primary keywords, there were other keywords that are commonly associated with organizational performance and strategic decision-making in relation to "organizational resilience". The keywords "firm performance," "decision making" and "competitive advantage" represent a dominant approach in the research community of conceptualizing resilience as a strategic outcome that is the result of technology-driven processes of strategic decision making and organizational performance optimization. The presence of "big data analytics capability" in the leading keywords shows that the understanding of resilience is also frequently examined through the capability of analytics within organizations.

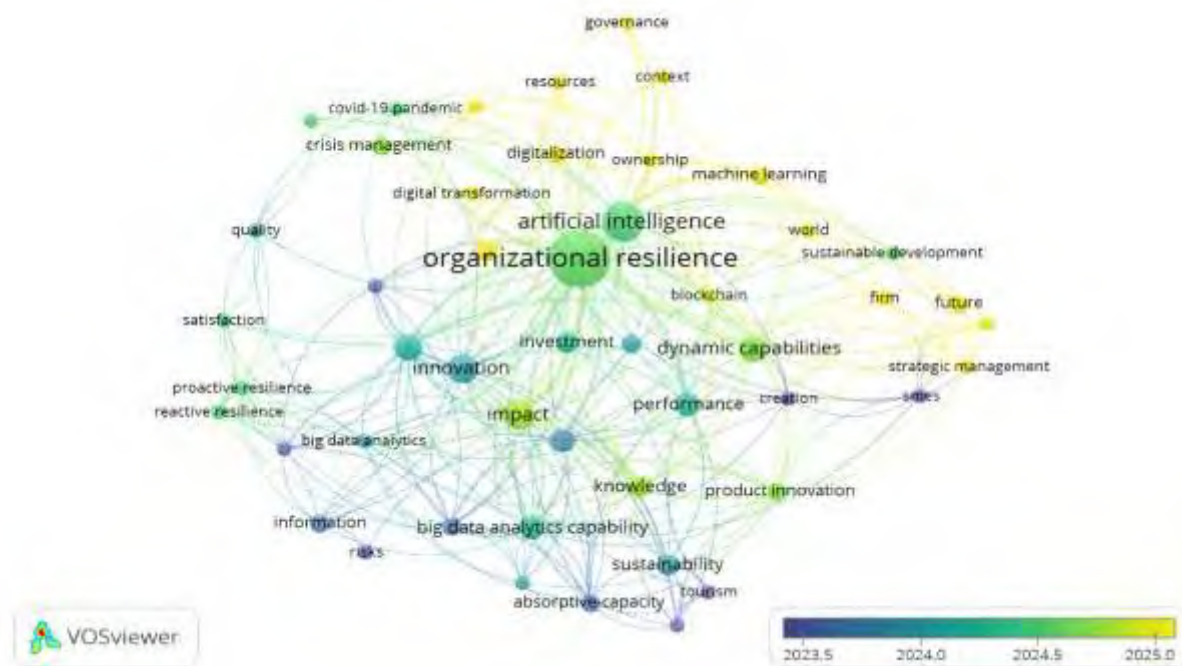
Crisis-related keywords are indicative of the prominence of disruption contexts within the scope of this research area (the covid-19 pandemic, risk management, and crisis management), and many studies are focused on the use of intelligent technologies and governance mechanisms

employed by organizations to respond with resilience during times of crisis by maintaining continuity while managing risk. Additionally, the related terms for “sustainable development” and “SMEs” also indicate an increase in the literature expanding into the fields of sustainability and innovation related to SMEs. The co-occurrence patterns and link strength associated with the identified terms and keyword/domain pairs provide evidence of a multidimensional structure for research where intelligent technologies, organizational capability, and challenges stemming from crises collectively influence an organization's ability to be resilient.

#### 4.4. Temporal Evolution of Keywords

Figure 4 displays an overlay visualization of keyword co-occurrence with VOSviewer. The colors of the nodes indicate the average year of publication of each keyword, highlighting the evolution of keywords in the literature over time.

Figure 4. Overlay visualization of keyword co-occurrence based on average publication year



Source: By authors using VOSViewer

The findings of the co-occurring keyword overlay visual are presented visually in Figure 4 through the use of VOSviewer and detail how key terms for authors have developed over time in the sample being examined. The color coding within the visual represents the average date of each key term. The cooler colors (blue and purple) are representative of those key terms that were published earlier during the study while the warmer colors (green and yellow) indicate those key terms that were published later within the specified time frame. Overlay visuals can help researchers understand how research themes have changed over time and highlight the difference between emerging and established research themes.

The overlay visual shows that there has been a progression of change in terms of the shift in research towards technology-enhanced and capacity-based resilience over the last few years. Previous research themes or key terms have been primarily focused on technology-related and foundational organizational or capability-related constructs such as absorptive capacity, big data analytics capability, information technology, risk, and tourism. This trend toward a focus on technology-related and foundational/key terms signifies an ongoing trend in research towards resiliency mechanisms, organizational learning, and sector-focused research.

In contrast, more recent key terms (indicating warmer tones) have a very strong correlation with intelligent and digital technologies, as well as with strategic transformative efforts related to artificial intelligence, machine learning, digitalization, digital transformation, blockchain, and with broad strategy-related concepts such as future, strategic management and sustainable development. The implication of these more recent terms is that organizational resilience is being increasingly conceptualized by researchers as an outcome of digital innovation, technology-driven capability and ongoing strategic renewal.

The overlay visualization provides an empirical demonstration of the temporal growth within this field of research and clearly indicates a shift towards an increasing consideration of emerging digital technologies and the implementation of strategies that promote sustainability-oriented organizational resilience.

#### **4.5. Keyword Density Visualization**

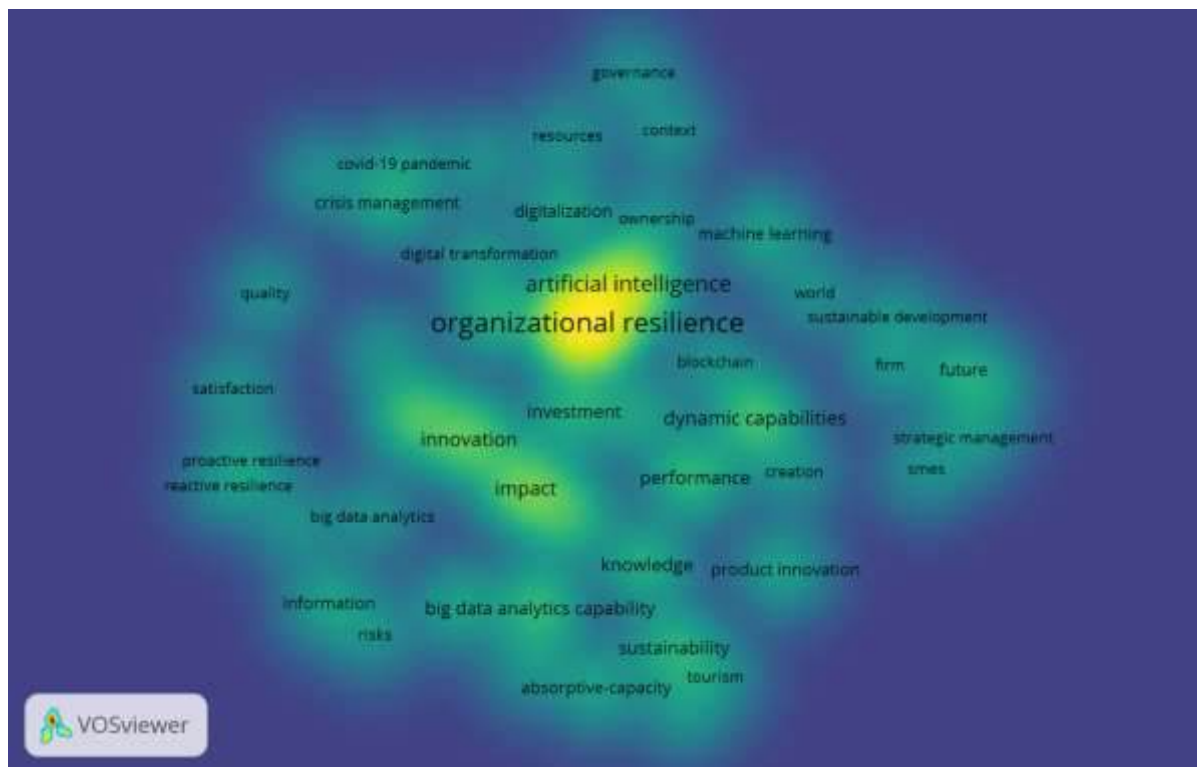
In addition to showing a visual representation of keyword co-occurrence density using the VOSviewer tool, Figure also shows how concentrated author keywords in terms of number of times they occur in the literature.

Figure 5 is an example of a density visualization by VOSviewer which displays a visual representation of how many times each author keyword occurs and how it has been co-occurring with other author keywords in relation to other keywords in the most active author keyword categories of research.

Density visualizations like this allow researchers to see where they can focus their research efforts to identify and build connections between themes. A key part of the density visualization shows the larger pooled thematic effects of the literature around a core theme versus the less well-developed research topic. The density visualization highlights "Organizational Resilience" as a core concept for this part of the literature and it is the main hub of "Organizational Resilience" that links together different themes. The areas surrounding it have a very high density of co-occurring keywords with "Artificial Intelligence". "Artificial Intelligence" is therefore one of the leading Intelligent Digital Technologies linked to Resilience in these studies.

The center of the map is comprised of a number of concepts including those that relate to 'capabilities' and 'innovation' respectively like 'innovation', 'impact', 'dynamic capabilities', 'performance', and 'investment', all of which suggest that organizations tend to think of 'resilience' as the result of organizational capabilities, strategic adaptive behaviors and performance related processes.

**Figure 5. Density visualization of keyword co-occurrence network**



*Source: By authors using VOSViewer*

Also shown in the map are a range of other thematic groupings that while are not as tightly clustered as central, they nevertheless represent a high degree of interest within the context of analytics and knowledge-based concepts like 'big data analytics capability', 'big data analytics', 'knowledge', and 'absorptive capacity', which suggests that literature has been developed around the relationship between analytics-based resources and the creation of learning mechanisms in the creation of resilience within organizations. In contrast, the presence of key words in areas with lower density, such as 'Governance', 'Context', 'Resources', 'Strategic Management', 'SMEs', 'Blockchain', and 'Tourism', suggest that these are less frequently examined within the research community.

The density visualization demonstrates the centrality and conceptual strength of the relationship between organizational resilience and AI, but also illustrates how other complementary themes, namely innovation, capabilities, analytics and strategic adaptation, expand the overall research landscape.

#### **4.6. Thematic Clustering of Keywords**

Here is an explanation of the clusters obtained based on keyword clustering produced through VOSviewer's co-occurrence analysis: Clusters of your keywords represent groups that tend to co-occur together in publications by a group of authors over time; therefore, we can infer that these keywords represent a coherent and interconnected collection of themes in research, or an area of knowledge. Each cluster contains a set of related keywords that can be said to form the foundation of the body of literature pertaining to intelligent digital technologies and the ability of an organisation to remain resilient during times of change. Each keyword's assignment to its respective cluster was accomplished through the VOSviewer application via an automatic clustering algorithm which used the strength of each keyword's co-occurrence connections with other keywords to establish the intellectual structure of this body of literature.

#### 4.6.1. Identification of Thematic Clusters

Using the VOSviewer clustering algorithm (automatically), we created color clusters (green, purple, yellow, etc.) based on keyword co-occurrences with some similar orientation to research and/or other topic areas clustered together.

The clusters (represented by colors) can be viewed visually in the VOSviewer graph. The size of each node in the graph indicates how many times each keyword is mentioned in the literature. For instance, Figure 5 shows that the larger the node, the greater the number of times that keyword appears in the literature, leading to an increase in the number of lines connecting multiple nodes together. This creates what we refer to as a "thematic" cluster or major themes or topic areas of a particular research area. Thus, these clusters also identify multiple areas of research connected to one another.

#### 4.6.2. Descriptive Overview of Keyword Clusters

The keyword co-occurrence analysis identified thematic clusters. To convey the primary focus of each thematic cluster, the keywords and sizes of the clusters are provided in Table 5.

*Table 5. Descriptive overview of thematic clusters based on keyword co-occurrence*

Cluster	Dominant keywords	Size
<b>Cluster 1</b> : Core resilience & intelligent digital technologies	organizational resilience, artificial intelligence, digital transformation, digitalization, machine learning, blockchain	8
<b>Cluster 2</b> : Strategic management & SME context	strategic management, SMEs, firm, future, world	5
<b>Cluster 3</b> : Capabilities-based resilience mechanisms	dynamic capabilities, absorptive capacity, knowledge, performance, product innovation, creation	6
<b>Cluster 4</b> : Data-driven analytics & decision-support	Big data analytics, big data analytics capability, information, decision-making, risks, risk management	6
<b>Cluster 5</b> : Crisis resilience & pandemic management	Covid-19 pandemic, crisis management, proactive resilience, reactive resilience, quality, satisfaction	6
<b>Cluster 6</b> : Governance, resources & organizational context	Governance, resources, context, ownership, investment, capacity, impact	7

*Source: By authors*

#### 4.6.3. Interconnections between Thematic Clusters

The existence of clusters sharing different areas of research supports the assumption that the field is highly integrated, as evident from the extensive network visualization representing all the clusters and their relationships to each other. "Organizational resilience" plays an important role in the network; it is positioned centrally in the network and connects to multiple clusters, including "artificial intelligence," "capability to develop dynamic capabilities," and "capability to use big data analytics." These clusters indicate that research on technological innovation and research on organizational capability often occur simultaneously or are achieved together.

Additionally, a key finding in the research is that resilience (as defined by crisis management) increasingly relies on the use of data-driven technologies, including predictive analysis, to improve crisis management (e.g., anticipation of a crisis, and recovery from a crisis). The presence of governance-related keywords shows that organizational resilience may also be influenced by organizational context (i.e., resource allocation) and organizational structure (i.e., ownership, and management systems).

In conclusion, the modern theoretical structure of a field focused on intelligent digital technology and organizational resilience is complex and coherent, creating strong

interconnected relationships among research themes and providing a strong basis for discussion and future development of the research area.

#### **4.7. Summary of the most Relevant Articles**

Through a systematic review of several studies concerning Intelligent Digital Technologies (IDTs), the elements of these studies have created an overall systematic matrix which synthesizes the contributions of what is referred to as an IDT to an organization's resilience. The findings from the studies reviewed within this systematic review support a single conclusion: IDTs build an organization's resilience, allowing them to design, anticipate, adapt and recover better due to their capacity to develop enhanced decision support tools; risk detection; data-driven learning and flexibility at the operational level.

A number of studies also stress the importance of AI and BDAC as core components of developing organizational resiliency during uncertain periods. In addition, by utilizing such technology, organizations are empowered to develop better predictive capabilities, create an early warning system, and create quicker recovery actions when they are occurring during disasters. Additionally, and as noted throughout the literature at the organizational level, the organizations themselves do not reference technology alone as the explanation for their resilience, but rather through their organizational capabilities such as: an organization's ability to innovate; the development of collaborative relationships (co-innovate) between stakeholders; the use of the organization's knowledge to produce products, services and solutions that meet the needs of their respective customers; and the use of dynamic capabilities to improve their organizational processes.

The research shows that IDT continuously creates new examples of resilience, regardless of industry or context (SMEs, manufacturing, Cybersecurity, Supply Chain, Capital Chain), indicating that the means by which resilience is enhanced are not limited to any one specific industry or sector. In terms of methodology, most empirical research to date has used quantitative techniques as their primary source of empirical data (survey, statistical modelling, SEM, regression modelling), while the other empirical research has a mixed methodology or conceptual approach to assist with understanding the relationship between technology and resilience and performance.

As such, the matrix provides a foundation of evidence to support the primary assumption of this work: that IDTs enabled the creation and maintenance of Organizational Resilience by way of enhancing organizational capability and improving decision-making processes and behaviors. To support this synthesis, Table 6, below, provides a summary of the selected research studies with respect to their objectives, methodology and major findings.

**Table 6. Synthesis of the most significant articles**

Article title	Authors	Sources	Research objective	Methodology	Results and conclusions
Building SMEs' resilience in times of uncertainty: the role of big data analytics capability and co-innovation	(Ciasullo et al., 2022)	Scopus ( <i>Transforming Government: People, Process and Policy</i> )	Enhance SMEs' ability to develop resilience and examine how they can maintain business continuity when faced with a critical event.	Quantitative study using survey data from SMEs; structural equation modelling (SEM).	BDAC significantly improves sensing, adaptation, and recovery capacities. Co-innovation strengthens collaborative resilience. The combined effect fosters stronger resilience in turbulent environments.
Combining Sociocultural Intelligence with Artificial Intelligence to Increase Organizational Cyber Security Provision through Enhanced Resilience	(Trim & Lee, 2022)	Scopus ( <i>Big Data and Cognitive Computing</i> )	Explore how integrating sociocultural intelligence with AI can improve cybersecurity resilience in organizations.	Conceptual and qualitative approach; case illustrations examining cyber behaviors and AI-supported monitoring systems.	Coupling AI with sociocultural intelligence enhances threat detection, reduces human-factor vulnerabilities, and strengthens proactive cyber-resilience strategies.
Unleashing the power of AI in manufacturing: Enhancing resilience and performance through cognitive insights, process automation, and cognitive engagement	(Yu et al., 2024)	Scopus ( <i>International Journal of Production Economics</i> )	Analyze how AI technologies affect resilience and operational performance in manufacturing systems.	Mixed conceptual–empirical approach; case studies coupled with survey/analytical models.	AI improves resilience by enabling predictive insights, autonomous processes, and machine–human cognitive collaboration. Performance, efficiency, and adaptability increase significantly.
Enhancing Organizational Resilience: Sustainable Development Scenarios Incorporating Disaster Impacts and AI Tools	(Maceika et al., 2024)	Web Of Science ( <i>Sustainability, MDPI</i> )	Assess the contribution of AI tools in building organizational resilience within sustainable development and disaster-risk scenarios.	Scenario modelling and simulation; integration of AI-supported decision systems for disaster impact forecasting.	AI improves preparedness, accelerates decision-making, and optimizes resource allocation. Sustainable resilience is strengthened through simulation-based planning and early-warning capabilities.
The key role of innovation and organizational resilience in improving business performance: A mixed-methods approach	(Garrido-Moreno et al., 2024)	Web Of Science ( <i>International Journal of Information Management</i> )	Evaluate how innovation capability and organizational resilience jointly improve business performance.	Mixed-methods: quantitative survey and qualitative interviews to validate mechanisms.	Innovation capability reinforces resilience dimensions (adaptation, flexibility, recovery) leading to improved business performance. Resilience acts as a mediator between innovation and performance.
Research on the impact of AI application on capital chain resilience	(Li, 2023)	Web Of Science ( <i>Engineering Economics</i> )	Investigate how AI applications affect the resilience of capital chains in firms.	Empirical modelling using quantitative financial and operational indicators; regression and resilience index	AI enhances capital chain stability by improving risk detection, liquidity forecasting, and financial decision-making. Firms using AI show higher robustness under market fluctuations.

				construction.	
Principles of Responsible Digital Implementation: Developing Operational Resilience to Reduce Resistance to Digital Innovations	(Cheng et al., n.d.)	Web Of Science ( <i>Organizational Dynamics</i> )	Identify principles of responsible digital transformation that reduce resistance and enhance operational resilience.	Conceptual framework and qualitative insights from organizational cases undergoing digital change.	Responsible digital implementation, transparency, ethics, employee involvement reduces resistance and strengthens resilience. Operational resilience emerges when digital transformation is socially embedded.
Transform to adapt or resilient by design? How organizations can foster resilience through business model transformation	(Grego et al., 2024)	Web Of Science ( <i>Journal of Business Research</i> )	Analyze whether resilience arises from adaptive transformation or from proactive design of resilient business models.	Comparative analysis of multiple case studies; business-model mapping.	Two pathways to resilience exist: (1) transformation-driven adaptation, and (2) resilience-by-design where the business model incorporates flexibility, redundancy, and innovation. Firms combining both achieve superior resilience.

**Source: By authors**

## 5. Discussion

### 5.1. Interpretation of the Main Findings in Light of Prior Studies and Working Propositions

In this study, we examined the relationship between the use of Intelligent Digital Technologies (IDTs), which include Artificial Intelligence (AI), Business Intelligence systems, and Big Data Analytics, and their impact on fostering an organization's ability to be resilient. We found evidence supporting our initial research proposition that IDTs do not provide the direct impact to create organizational resilience, rather IDTs support creating organizational resilience through providing increasing organizational capability development associated with learning, adapting, and anticipating.

The results obtained through our bibliometric analysis substantiate this proposition. Using a keyword co-occurrence and clustering map, the term "organizational resilience" produced the central conceptual grouping of the literature on IDTs with the constant relationship between organizational resilience and AI, Innovative Technology Impact Capabilities, and organizational capability-related constructs including dynamic capabilities, knowledge and big data analytics capability. Therefore, based on the pattern of results obtained through the bibliometric analysis of the literature, we adopt a capability-based view of organizational resilience whereby IDTs are largely viewed as means of enabling transformations within organizations, supporting decision-making, and establishing learning mechanisms, rather than as standalone technologies.

In addition to the above, the network analysis of the literature identified that much of the resilience-related research is documented within a performance-based context (e.g., firm-level performance or overall performance), while IDTs are frequently studied in the context of organizational development and investment, both of which suggest that organizations will increasingly view IDTs, resilient organizational structures and organizations' capabilities as nodes of successful organizational strategy.

The governance and strategic management deal with digitally-driven resilience existence is evident by being described in complementary terms. This reinforces that resilience is a continuing and systemic process and not a fixed state or ending.

### 5.2. Discussion in Light of Previous Studies

The present findings of this study strongly confirm previous theoretical and empirical studies found on artificial intelligence (AI), advanced statistical analysis, and the mechanisms of creating resilient organizations. Past research has shown that both AI and advanced analytics significantly provide organizations with the ability to foresee future threats, to lessen the likelihood of uncertainty being created by disruptive events, and to improve decision making when organizations must react to disruptive events rapidly. The strength of AI and advanced analytics and the positions of their importance in today's bibliometric analysis support this body of previous literature.

In addition to providing confirmation of previous empirical studies, this study is able to offer a more comprehensive understanding of digitally enabled resilience. Numerous historical research studies have perceived intelligent technological applications as isolated technologies; however, the associated co-occurrence network of intelligent technologies developed in this study supports the notion that intelligent technological applications will become increasingly perceived as interdependent elements of an overall ecosystem for building resilient organizations, with the intelligent technology applications connected to both the managerial constructs (e.g., Governance, Strategic Management) and organizational mechanisms (Dynamic Capabilities, Knowledge) as well as organizational outcomes (firm performance, impacts).

As well as the apparent relationship between many crisis-related (COVID-19) themes in the analysis and crisis management, the emerging theme of resilience is increasingly being conceptualized in more structured forms. Resilience has evolved from merely being defined as a term representing the recovery from a disruption to an ongoing capacity for transformation, learning, and innovation over time within an organization.

In addition, the presence of clusters that link resilience to both SMEs, quality, and satisfaction shows that the study of resilience is widening as researchers continue to investigate diverse organizational settings and evaluation criteria. This suggests that researchers are increasingly interested in the results of resilience in relation to both performance metrics and organizational effectiveness markers.

An important finding emerging from this analysis is the identification of theme-related crises (crisis management and Crisis due to the COVID-19 pandemic) structured as nodes within the network; there has been considerable increases in the volume of recent research addressing crises and disruptions and as a result, given all of this new research activity, resilience will be more strongly designed conceptually in regard to problematic or disruptive environments. Therefore, this means that researchers now view resilience as an ongoing capability of organizations that is developed through established practices of transformational leadership, learning, and innovation, rather than simply recovering from an operational perspective.

The clusters observed within the data link resilience to SMEs, quality, and satisfaction; these examples illustrate the increasing diversification of the study of resilience towards different (and growing) organizational contexts and to the growing use of multi-dimensional performance metrics as well as organizational performance indicators to evaluate the success of resilience outcomes in organizations.

### **5.3. Theoretical Implications**

By adding to existing literature and theories, this research also provides insight into the relationship between technology and organizational resilience from the perspective of dynamic capabilities theory (DCT). Based on the central roles that dynamic capabilities and the integration of knowledge, innovation, and artificial intelligence play in the process of identifying, reacting to, and resetting resources and strategies during times of crisis, it is conceptualized that resilience can be defined as an organization's capacity to recognize, act upon, or change the structure of their business's ability to do business during periods of disruption. In this context, digital transformation technologies serve as the main enablers for organizations to develop and implement a systematic and adaptive approach by leveraging predictive insights, real-time monitoring, and data analytics to assess, coordinate, and reallocate resources during disruptive events.

The results also illustrate that, when viewed from a bibliometric perspective, the knowledge-based components of an organization are closely related to the extent to which the organization can digitally enable its resilience. This reiterates that the extent to which an organization can achieve digital resilience is influenced by the manner in which it constructs its systems for gathering, storing, and sharing knowledge as well as its capabilities to adaptively transform and continuously learn.

Lastly, the findings validate the belief that digital innovation technologies can be considered a strategic resource on the basis of the extent to which they are effectively integrated into the overall governance structures, routines, and capabilities of an organization. In summary, the integration of the results from the study into an organization's existing research will result in the understanding of how resilience can be derived from a capability-based pathway consisting of: Digital Innovation Technologies → Capabilities (Innovation, Dynamic Capabilities, Knowledge) → Resilience Outcomes (Impact & Performance).

### **5.4. Managerial Implications**

According to the study's findings, managers who would like to develop organizational resilience through digital technology will find the study useful. The research indicates that the digital investment by an organization must be viewed in terms of a connected resilience strategy and not merely as separate tools (AI, BI, Big Data Analytics). This integrated strategy should include the organizational routines, governance, and overall strategy of the organization.

Second, the link between the performance of the network and the financial metrics provides evidence that organizations should view resilience-driven initiatives as being strategic priorities that bring measurable value. Therefore, organizations should establish measuring systems for resilience with clear links to both the operational and financial metrics, so that digital investments will be recognized as contributing to the performance of the organization.

Third, the identification of "crisis management" and "COVID-19 pandemic" as themes associated with crises and their resulting impacts provides evidence that organizations should create policies that support the creation of digitally supported crisis response systems. By establishing systems based on AI and Business Intelligence and using analytical techniques to improve situational awareness, organizations can more effectively manage crises and coordinate the timely response to risk.

Finally, the demonstrated connection between resilience, innovation, and dynamic capabilities indicates that managers should be fostering an environment that encourages a culture of innovation, and fostering increased cross-functional collaboration, which allows organizations to transform insights gained through the use of digital technologies (AI, BI, Big Data Analytics) into adaptive decisions, continuous learning, and generating long-term resilience.

### **5.5. Research Gaps and Future Research Directions**

Although there is a growing body of literature on Intelligent Digital Technologies (IDT) and Organizational Resilience, this review reveals that there are many pieces of future research needed. First, most of the current literature includes only conceptual or cross-sectional studies, so we do not know how digital technologies affect organizational resilience over time. Future research may contain longitudinal designs that advance research's understanding of the dynamic nature of resilience through the stages of Disruption.

Second, there is a lack of both empirical and quantitative studies that have tested the connections proposed by the conceptual frameworks, so far, in the literature. Future studies could assume the suggested propositions from this review, or build upon them, to empirically identifiable mediating variables related to the role of organizational capabilities; i.e., decision-making quality, analytical sensemaking, and organizational learning within the connection between IDTs and the resilience of organizations.

Another finding of the review is that there is an imbalance in the geographical and contextual distribution of the research conducted to date. Many of the studies are based in developed economies and certain sectors, while emerging economies and context-specific settings are not well covered. Conducting comparative studies across multiple industries and different sizes of organizations in various institutional environments would allow for a more extensive understanding of the interaction between contextual influences and digitally enabled resilience. In addition, there are a number of thematic areas which continue to be relatively fragmented, including digital governance and ethical artificial intelligence, cybersecurity resilience, and human-computer interaction. Future research should use a multi-level and interdisciplinary lens to investigate the interrelationship of the technological, organizational, and human aspects of resilience. A better understanding of how the three types of factors together influence resilience, especially in digitally enabled environments, could result from incorporating insights from the fields of information systems, management and organizational behavior.

## **6. Conclusion**

The purpose of this paper is to provide a comprehensive and quantitative overview of the body of academic work that has analyzed the links between Intelligent Digital Technologies (IDTs) and organizational resilience. Employing the PRISMA 2020 protocol in combination with both bibliometric analysis and thematic analysis, the review illustrates how, within the context of an organization, artificial intelligence, business intelligence and big data analytics can contribute to the ongoing process of building resilience. This paper also confirms that while IDTs may be associated with various elements of resilience, they are not direct determinants of organizational resilience. Rather, IDTs contribute to resilience building through the development of capabilities related to anticipation, adaptation and learning within the organization. By utilizing a capability-based and systemic approach to resourcing research, this paper identifies the mechanisms by which digital technologies allow organizations to prepare for uncertainty, recover from disruption and evolve from their past experiences. The article synthesizes and applies previous literature, but also offers new theoretical material. It integrates concepts from dynamic capabilities, organizational learning, and resource-based theory with a framework intended to demonstrate how organizational processes and governance structures mediate the transformation of technology into resilience outcomes.

As such, the article also demonstrates that creating resilient digital strategies requires an investment in Technology as well as a focus on incorporating IDTs into the decision-making process, learning processes, and strategic processes through management practices.

Finally, while this article presents a comprehensive overview of the area of research, it provides suggestions for future research, particularly related to empirical and longitudinal studies that can validate the relationships identified within the framework. Given that organizations will continue to operate with increased complexity and digital dependency, it is important for both researchers and practitioners to understand how to effectively leverage intelligent technologies for increasing resilience.

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