



Navigating the Ethical Maze: Integrating Ethical Imperatives for Digital Resilience

Anil Chandrakumara¹, G.G. Udaya Priyasantha Rathnayake² and Anura De Zoysa³

ABSTRACT

In the rapidly evolving digital age, organisations are increasingly challenged to advance technological innovation while upholding ethical responsibilities. Although digital resilience has become a strategic imperative, its ethical dimensions remain insufficiently explored. This study addresses this critical gap by analysing how and what key ethical imperatives can be systematically integrated into the resilience processes. Grounded in the Cognitive dissonance theory and the principles of Kantian ethics, this paper argues that ethical imperatives are not just an option, but essential enablers of digital resilience. A systematic literature review, guided by the PRISMA framework and a bibliometric analysis of publications from Scopus and Web of Science, was conducted to identify prevailing ethical themes associated with digital resilience and conceptual gaps. This analysis reveals various ethical concerns that are associated with the concepts of organisational values, organisational learning, and psychosocial safety climate, which might be useful as potential ethical imperatives for managing digital resilience processes. Using these findings and the extant literature, the paper introduces a conceptual model and multidimensional framework for embedding ethical reasoning into digital resilience processes. The result offers both theoretical and practical implications, demonstrating how ethical imperatives enhance stakeholder trust, mitigate reputational and systemic risks, and strengthen long-term organisational legitimacy. Overall, this research provides a novel and foundational framework for scholars and practitioners to integrate a systematically generated set of ethical principles and practices into digital resilience processes.

Keywords: digital resilience; ethical imperatives; COVID-19; organisational values; organisational learning; psychosocial safety climate; bibliometric analysis.

¹ Faculty of Business and Law, University of Wollongong, NSW, Australia. anilc@uow.edu.au

² Faculty of Business and Law, University of Wollongong, NSW, Australia. ggupr082@uowmail.edu.au

³ Faculty of Business and Law, University of Wollongong, NSW, Australia. anura@uow.edu.au

1. Introduction

In an era of accelerating digital transformation, organisations face increasing pressure to embrace technological advancements while addressing the ethical challenges that accompany them. (Margherita and Heikkilä, 2021; Röglinger et al., 2022; Benbya et al., 2020). As digital systems become integral to organisational processes, concerns such as data privacy, algorithmic bias, transparency, hiring bias, and accountability have gained prominence in strategic discussions (Golgeci et al., 2025; Shao et al., 2022). The term digital resilience extends beyond recovery by incorporating proactive strategies to anticipate, mitigate, and respond to digital disruptions while ensuring sustained operational functionality and ethical integrity (Mangalaraj et al., 2023). Although digital resilience has become a central focus in navigating disruptions that occurred mainly during and post-COVID-19, its ethical foundations remain insufficiently explored in current literature (Tremblay et al., 2023; Verma and Garg, 2024).

Ethical imperatives simply refer to principles or practices taken to be ethically required of (APA-American Psychological Association). Integrating ethical imperatives into digital resilience strategies has become essential by its definition itself, as cited above, for strengthening operational adaptability, maintaining stakeholder trust, and ensuring long-term organisational legitimacy (Borges, 2019; Kulkarni et al., 2024). While digital resilience strengthens an organisation's ability to navigate disruptions, ethical imperatives ensure that these resilience strategies align with ethical principles, societal values, and regulatory requirements. However, the critical yet under-researched interplay between technological resilience and corporate ethical principles remains an underexplored yet crucial area of research (Pan and Zhang, 2020; Zeiss et al., 2021). Simply, a mechanism through which digital resilience can be ethically enriched remains unclear or inadequately explored. This study aims to contribute to closing this knowledge and practice gap by conceptualising ethics as a foundational layer of resilience through a multidimensional framework that aligns ethical imperatives with digital resilience processes.

To identify informed research issues in the areas concerned, we performed a systematic literature review, guided by the PRISMA framework and a bibliometric analysis of publications from Scopus and Web of Science data bases. Accordingly, the following investigative questions are formulated for this study.

RQ1: What are the key thematic components and attributes of digital resilience as identified in the existing literature?

RQ2: What ethical considerations are discussed concerning digital resilience, and how are they integrated in the existing studies?

RQ3: How do existing scholarly works conceptualise the relationship between ethical imperatives and digital resilience?

RQ4: What conceptual frameworks or strategic approaches have been proposed to embed ethical considerations into organisational digital resilience efforts?

These research questions guide an exploratory investigation into the current state of knowledge regarding ethical digital resilience. By synthesising existing knowledge, the study advances scholarly understanding of ethical digital resilience and provides actionable insights into how business ethics can be aligned with digital transformation strategies. This paper also contributes to emerging conversations in digital ethics, governance, and resilience by proposing that ethical

imperatives are essential mechanisms for strengthening organisational readiness, adaptability, and legitimacy in a digital era. It presents a conceptual model that integrates ethical reasoning into resilience processes. In doing so, this study lays the groundwork for future empirical research and provides actionable insights for scholars and practitioners seeking to build ethical and digitally resilient organisations.

Practically, a conceptually and empirically informed approach is critical for digital technology developers, service providers, and organisational leaders who are responsible for balancing innovation with social responsibility and ethical governance. Organisations that proactively integrate ethical imperatives into digital resilience strategies are better positioned to mitigate reputational and regulatory risks, foster stakeholder trust, and ensure long-term sustainability. Overall, this study contributes to the discourse on responsible digital transformation by offering a conceptual roadmap informed by the current state of scholarship.

2. Theoretical Concepts and Models

Digital Resilience:

Digital resilience has emerged as a paramount concern for organisations aiming to preserve competitive superiority and operational consistency. Conventional resilience models predominantly underscore an organisation's capacity to recuperate from disturbances and adjust to evolving contexts (Luthans, 2002; Kohn et al., 2023a). However, it refers to a process beyond recovery. For example, Mangalaraj et al., (2023) defined digital resilience as a process that extends beyond recovery by incorporating proactive strategies to anticipate, mitigate, and respond to digital disruptions while ensuring sustained operational functionality and ethical integrity.

Broadly, resilience has been explored across various domains, including psychological, social, economic, and environmental (Corner et al., 2017; Korber and McNaughton, 2017). In digital contexts, resilience is sociotechnical, requiring organisations to balance technological robustness, human adaptability, and ethical governance (Herrera and Janczewski, 2013; Park et al., 2015). Scholars have identified two dominant perspectives on digital resilience. The technical perspective emphasises the resilience, security, and fault tolerance of digital infrastructures, conceptualising digital resilience as the capacity of systems to endure cyber threats, technological malfunctions, and disruptions while preserving operational integrity (Boh et al., 2020). In contrast, the organisational perspective emphasises how businesses develop adaptive capabilities, integrate technological solutions, and foster a culture of preparedness to effectively manage digital risks and uncertainties (Grant and Clarke, 2020). From a governance and risk management perspective, digital resilience does not exist in isolation but intersects with broader organisational and societal imperatives. It involves preventative and responsive mechanisms, ensuring organisations can navigate complex and unpredictable digital challenges without compromising ethical responsibilities (Casalino et al., 2019).

The increasing digitalisation of business models has led to a paradigm shift, where digital resilience is no longer a supplementary consideration but a core strategic necessity (Cuel et al., 2022). This significance is particularly evident in three key areas. First, within the domains of cybersecurity and risk management, the escalation of cyberattacks, incidents of data breaches, and occurrences of digital fraud accentuate the imperative for robust information systems that possess the capacity to endure external threats while simultaneously guaranteeing the integrity of data and

adherence to ethical standards (Boh et al., 2020). Second, in terms of operational continuity and business sustainability, as organisations become increasingly reliant on digital infrastructures, they must build resilient architectures that enable them to maintain operations during crises, whether due to system failures, market volatility, or regulatory changes (Grant and Clarke, 2020). Third, in the context of ethical digital transformation, digital resilience encompasses not only technical preparedness but also ethical considerations, ensuring that digital systems are utilised responsibly and in alignment with corporate values (Zeiss et al., 2021).

Integrating Digital resilience with ethics

Despite the growing recognition of digital resilience, its conceptualisation remains fluid and contested (Casalino et al., 2019; Wright, 2016). Some researchers delineate the concept with strict adherence to its technological robustness, whereas others emphasise its sociotechnical and ethical facets (e.g. Appio et al., 2021). For example, in light of the increasing reliance on artificial intelligence, Appio et al., (2021) note that automation, and data-informed decision-making processes, digital resilience must incorporate ethical principles to ensure accountable digital governance. Without ethical guidelines, digital resilience may be reduced to a purely technical endeavour, failing to account for moral and societal obligations (Verma and Garg, 2024).

Ethical considerations in digital resilience involve multiple dimensions. The first is digital rights and data ethics, which ensure transparency, accountability, and fairness in the collection, processing, and use of digital data (Pan et al., 2022). The second is AI and algorithmic governance, which addresses biases in AI models and ensures that automated decision-making aligns with ethical standards (Bélanger and Crossler, 2011; Chan et al., 2022). The third is sustainability and digital responsibility, which promotes digital innovation and provides digital transformation that does not lead to environmental degradation or social inequalities (Appio et al., 2021). Thus, achieving digital resilience requires a balanced integration of technological safeguards, strategic governance, and ethical responsibility (Casalino et al., 2019). These elements are also represented in the below-mentioned ethical frameworks.

Ethical Imperative Frameworks.

Based on the findings of the bibliometric analysis and the scholars who have attempted to draw links between ethical imperatives and digital resilience, we have identified two key theories: the Cognitive dissonance theory and Kantian ethics, for the analysis and discussion of this paper. The extant literature also indicates that these approaches have been adapted in varying degrees in organisational contexts.

Cognitive dissonance theory is referenced in a metaphorical and heuristic sense to illustrate how tensions between ethical values and digital practices may manifest within organisations. While traditionally being a psychological construct that is used to explain individual discomfort when values and actions conflict (Harmon-Jones and Mills, 2019), we use the cognitive dissonance here to conceptually frame the misalignment between a company's publicly stated ethical commitments and its digital behaviours—such as opaque AI practices or inequitable access to digital services. This dissonance, when perceived by employees, customers, or the public, may result in reputational risk and internal disengagement. We do not suggest that organisations themselves

“experience” psychological states; instead, we highlight (in our analysis section) how dissonance manifests through the actions and perceptions of organisational actors and how resolving these tensions through ethical alignment can contribute to enhancing digital legitimacy and stakeholder trust that are core enablers of digital resilience.

Kantian ethics is relevant due to its unique emphasis on universal moral duties and principles-based decision-making, which aligns directly with the normative governance challenges organisations face during digital transformation. Unlike utilitarian or virtue-based ethics, Kantian ethics offers a rule-based framework that emphasises acting according to maxims that could be universally applied, making it particularly relevant for designing transparent, fair, and consistent digital systems such as AI-driven decision platforms. In contexts where algorithmic bias, surveillance, and privacy violations are pressing concerns, Kantian imperatives provide a moral baseline for judging whether organisational digital strategies respect the dignity and autonomy of all stakeholders (Borges, 2019; Ayaz et al., 2025).

The following section details the study approach employed to examine the evolving discourse on digital resilience and its intersection with ethical imperatives.

3. Study Approach and Analyses

This investigation employs an extensive bibliometric and descriptive analysis to examine the scholarly landscape of digital resilience and its intersection with ethical considerations. By applying bibliometric techniques, we aim to delineate the intellectual framework of digital resilience scholarship, document its progression, recognise pivotal thematic advancements, and reveal areas that have not been adequately explored. This data-driven approach objectively assesses how digital resilience has been conceptualised and the extent to which ethical considerations have been integrated into its discourse. A bibliometric analysis is a quantitative method for evaluating bibliographic materials and delineating the research domain, thereby eliminating subjective bias (Zupic and Čater, 2015). It enables the identification of the most impactful works and authors, the progression of frequently used keywords, the most correlated themes, and their consequences in the broader scholarly discourse.

The bibliometric analysis provides a methodical and replicable framework for assessing academic contributions by examining trends in citation behaviours, co-occurring keywords, and the interconnections among thematic components. In contrast to conventional systematic reviews, which may be susceptible to interpretative biases, bibliometric approaches enable a quantitative examination of research trends, thereby illuminating prevailing paradigms and nascent viewpoints (Donthu et al., 2021). This research adheres to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to uphold methodological integrity (Page et al., 2021), thereby ensuring the inclusion of only pertinent and impactful scholarly works in the evaluation.

A fundamental aspect of this investigation is employing network analysis through utilising VOSviewer, which facilitates the graphical representation of thematic interrelations, research clusters, and co-citation networks (Cobo et al., 2011). The VOS (visualisation of similarity) algorithm is employed to map the spatial positioning of research elements, such as citations, where distance indicates the degree of similarity (Van Eck and Waltman, 2010). This method allows us

to identify foundational works, influential authors, and recurring research themes that define the landscape of digital resilience studies. By systematically analysing these networks, we uncover conceptual interdependencies and trace the evolution of digital resilience, with a focus on its ethical dimensions. This analysis highlights prevailing gaps in the literature and provides insights into how ethical imperatives can be more effectively embedded in resilience strategies.

The findings of this study are structured to provide a holistic understanding of digital resilience and its ethical implications. First, we present a bibliometric analysis establishing an overarching view of the research landscape. This is followed by exploring key themes and characteristics that shape digital resilience discourse. To offer a conceptual framework for resilience development, we introduce the TAS Model, which synthesises technological, adaptive, and strategic dimensions. The discussion then shifts to the role of ethical imperatives in shaping resilient digital ecosystems, culminating in an integrative framework that embeds ethical principles within digital resilience strategies.

3.1 Bibliometric Analysis Approach

To thoroughly comprehend digital resilience and its ethical implications, we conducted a bibliometric analysis focusing on scholarly articles published in premier management and information systems journals. This investigation was conducted using R and RStudio, employing the Bibliometrix package, which is widely recognised for its effectiveness in bibliometric research and visual representation. Given their structured citation data and compatibility with Bibliometrix, Scopus and Web of Science were selected as the primary databases, ensuring reliability and consistency in our findings (Caputo and Kargina, 2022; Thangavel and Chandra, 2023). Other databases were excluded due to a lack of the necessary metadata structures for integration into R-based bibliometric investigations.

The analysis was conducted within the Biblioshiny interface, an online extension of Bibliometrix that facilitates the systematic exploration of citation networks, research trends, and thematic developments. Following Ertz and Leblanc-Proulx (2018), we utilised both Scopus and Web of Science, rather than a single database, to enhance the depth, scope, and diversity of our findings. This dual-database approach allowed for a more robust and comprehensive assessment of the academic landscape, aligning with best practices in bibliometric research.

3.2 Data Collection and Analysis

Our initial search using the keywords “digital resilience” AND “ethics” returned no peer-reviewed journal articles, highlighting a gap in existing research on the ethical dimensions of digital resilience. The search retrieved only two book chapters, one conference paper, and one article that examined digital resilience and ethical considerations. However, it lacked these terms in its title, abstract, or keywords, rendering it unsuitable for inclusion.

To obtain a more comprehensive dataset, we refined our search strategy by focusing on “digital resilience” to map its conceptual development and identify any indirect connections to ethical concerns. Additionally, we prioritised abstracts, as they often encapsulate a study’s core themes and methodological focus. This thorough methodology enabled us to gather 108 peer-reviewed research articles, 63 of which were sourced from Scopus and 45 from the Web of Science. Following Van Eck and Waltman (2010), duplicate records were removed, leaving 72 studies for analysis (see Figure I). We then conducted a bibliometric analysis to examine publication trends, citation networks, keyword distributions, research focus areas, and geographical contributions

(Paule-Vianez et al., 2020; Aparicio et al., 2019; Andrić et al., 2023). Using R and RStudio, we analysed 72 studies published in 58 journals across 28 countries, identifying 298 unique author-provided keywords, as detailed in Table I. This approach provided a quantitative, structured insight into the evolution of digital resilience research and its potential intersections with ethical imperatives.

Table I: Descriptive statistics of the articles on digital resilience

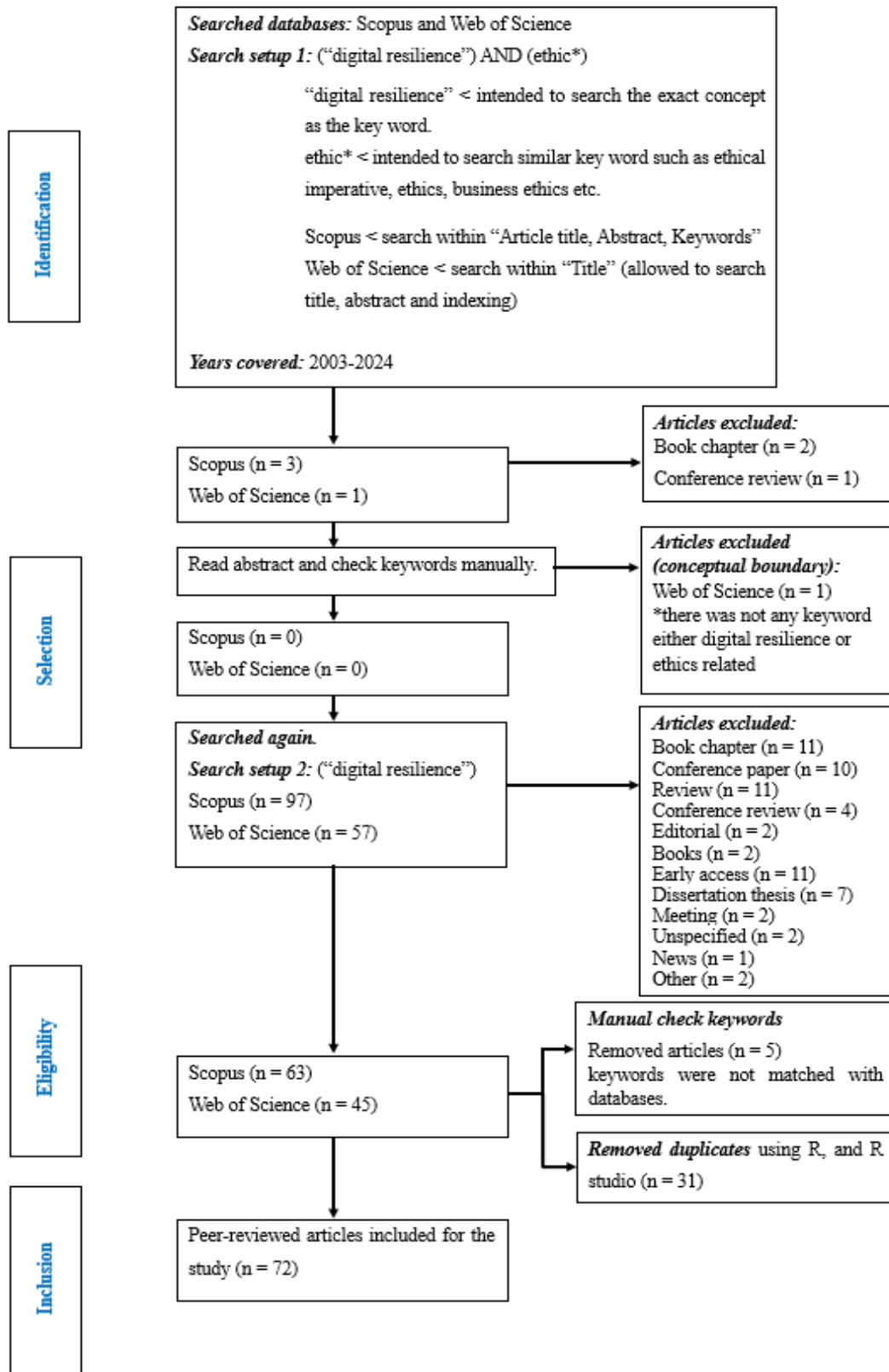
Description	Results
Timespan	2003-2024
Journals	58
Articles	72
Author keywords	298
Authors	254
Countries	28

Source: Authors' construct (2025).

Our database search, spanning 2003 to 2024, revealed a steady increase in digital resilience research, with a notable surge in the last decade. The COVID-19 pandemic significantly accelerated this growth, highlighting the urgency of robust digital systems. According to the Web of Science and Scopus databases, scholarly publications on digital resilience increased from seven articles in 2020 to 11 in 2021, 19 in 2022, 34 in 2023, and 38 in 2024. This notable escalation underscores the pandemic's far-reaching repercussions, underscoring the critical need for robust digital infrastructure, enhanced cybersecurity protocols, and ethical frameworks to address global disruptions (Newman et al., 2021; Dwivedi et al., 2020). Figure I outlines our bibliometric analysis process.

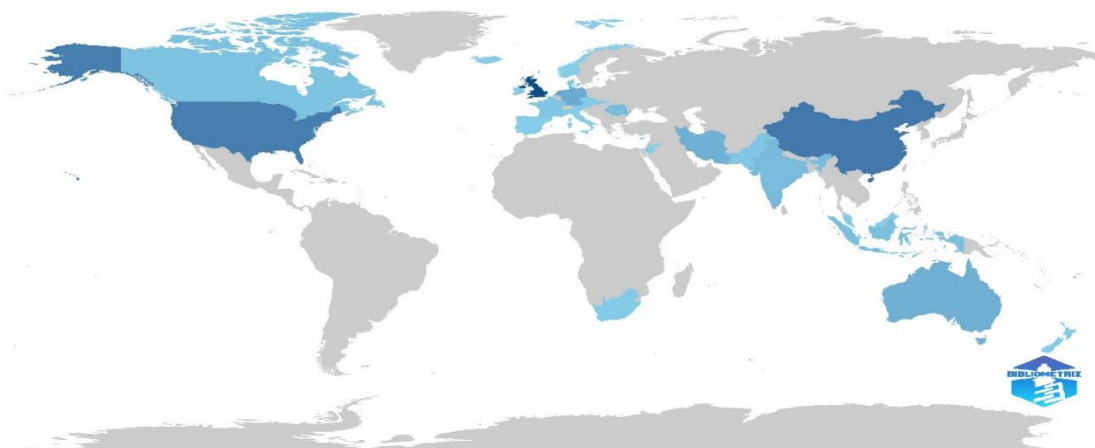
As depicted in Figure II, scholarly investigations of digital resilience have garnered international attention, with the United Kingdom at the forefront, accounting for 56% of the total publications. Additionally, there is an observable increase in scholarly interest from the United States, China, the Netherlands, and Germany, signifying its growing significance across various geographical contexts. This data indicates that digital resilience is an emerging concept for many nations, and the insights from this study are intended to guide organisations in these nations, as well as those beyond, towards a more resilient digital future.

Figure 1: Process of bibliometric analysis



Source: Authors' construct (2025)

Figure II: Journal article production in the world

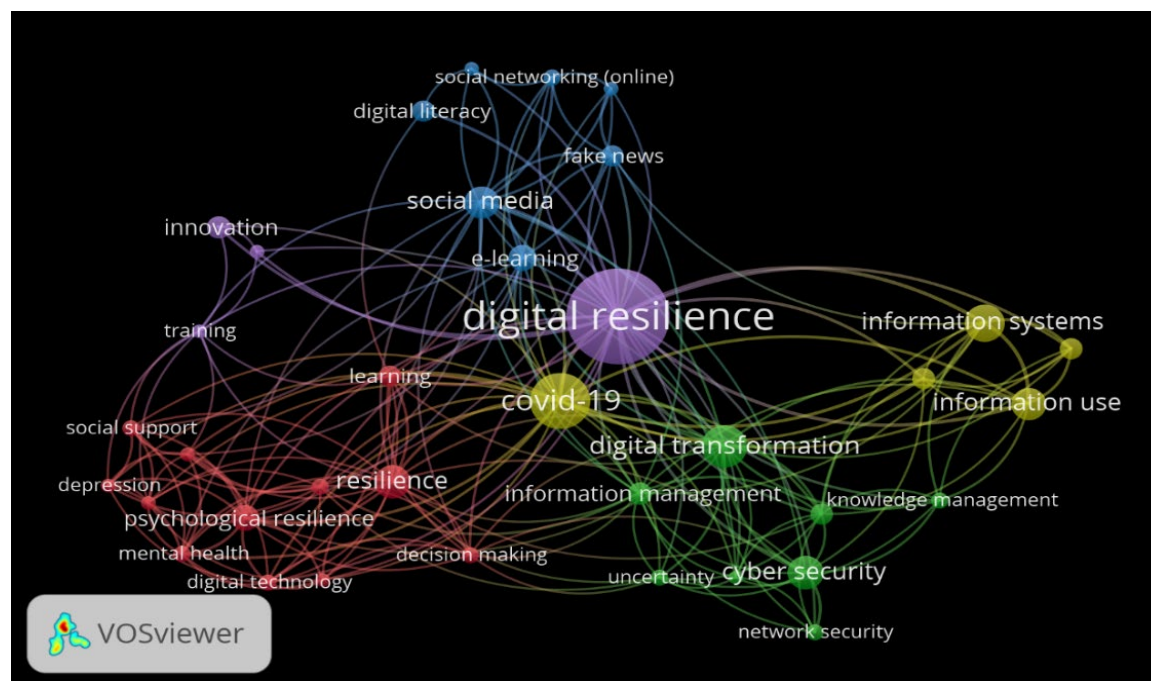


Source: Authors' construct (2025)

The primary goal of conducting bibliometric analysis is to delve into the themes and emerging research patterns within a predefined academic domain (Umar et al., 2022). This entails identifying prevalent terms and examining their connections, necessitating a comprehensive analysis of keyword occurrences. Therefore, once we imported all the details from the 72 selected articles into the bibliometric interface, we examined all the author keywords. This process is significant because it provides a comprehensive explanation of the topic's nuances and themes. Our 72 articles encompassed a range of issues, which we meticulously analysed using VOS Viewer. A total of 298 keywords were identified, from which we created a thematic diagram to illuminate key areas of investigation, along with a word cloud to reveal the most frequently occurring terms related to digital resilience. This analysis helped establish a foundation for integrating digital resilience with ethical imperatives, building a clear rationale for their interconnectedness.

Thematic analysis is crucial in qualitative research, as it identifies patterns and structures complex data (Clarke et al., 2015; Vaismoradi et al., 2016). This study grouped author keywords into clusters and analysed their connections to uncover key themes. We gained insights into contextual relationships by examining word co-occurrence in titles, abstracts, and keywords (Van Eck and Waltman, 2010). To maintain uniformity, we performed a careful refinement of the dataset, aligning the terminology (for example, replacing "COVID-19 pandemic" with "COVID-19"). The most frequently occurring keywords were "COVID-19," "resilience," "social media," "digital transformation," and "cybersecurity," with "COVID-19" emerging as the primary term associated with the pandemic's significant impact on research related to digital resilience. Figure III illustrates the keyword network, highlighting thematic clusters in distinct shades.

Figure III: Thematic map created using VOSviewer



Source: Authors' construct (2025)

Figure IV displays a word cloud that highlights the key concepts related to digital resilience. While the study explores the correlation between digital resilience and ethical imperatives, it was challenging to identify analogous keywords associated with ethical imperatives or related ethics within the pool of 298 keywords across all the selected articles. Nevertheless, this underscores the importance and necessity of integrating ethical imperatives into digital resilience, as several important challenges reflected in the keywords could be addressed by taking an ethical stance.

Figure IV: Keyword cloud



Source: Authors' construct (2025)

3.3 Identifying Themes and Characteristics

Recognising the extensive range of management and information systems (IS) research, characterised by its varied methodological approaches and the absence of an exhaustive review of digital resilience, we undertook a bibliometric analysis to elucidate key themes and theoretical underpinnings. Our principal research inquiry focused on identifying the fundamental elements of digital resilience and exploring potential avenues for redefining the concept. Furthermore, we analysed the theoretical frameworks that support this domain of inquiry.

Our analysis revealed a varied use of theories, with cognitive dissonance theory frequently applied in IS research, while management studies drew from multiple perspectives. To establish a meaningful connection between digital resilience and ethical imperatives, we identified Kant's ethical theory as the most appropriate framework. Consequently, this study integrates cognitive dissonance theory and Kantian ethics to provide a robust conceptual foundation that promotes ethical awareness and reinforces moral responsibility in the context of digital resilience. From the 298 keywords in our dataset, we used VOSviewer to analyse those appearing at least five times, excluding demographic and contextual terms. Table II illustrates that this process identified 37 relevant keywords, which form the basis for thematic exploration.

Table II: Keywords and broader themes

Cluster	Number of keywords	Items	Emerg ed themes (broader aspects)
1	11	adolescents; cognitive behavioral therapy; decision making; depression; digital resilience training; digital technology; mental health; mindfulness; psychological resilience; resilience; social support	Ethical imperatives
2	9	cyberbullying; digital literacy; e-learning; education; fake detection; fake news; learning; social media; social networking	
3	8	cybersecurity; digital technologies; digital transformation; information management; knowledge management; network security; risk management; uncertainty	Digital resilience
4	5	COVID-19; e-commerce; external shocks; information systems; information use	
5	4	artificial intelligence; digital resilience; innovation; training	
	37		

Source: Authors' construct (2025)

Table II indicates that this analytical investigation has identified two overarching themes: Ethical Imperatives and Digital Resilience. In addition, within these two overarching themes, multiple sub-themes were also recognised through the keyword analysis (refer to Table III).

Table III: Prominent themes

Emerg ed themes (broader aspects)	Identified sub-themes within emerg ed themes	Relevant cluster	Relevant items
<i>Ethical imperatives</i>	<i>Psychosocial safety climate</i>	1	cognitive behavioral therapy; depression; mental health; mindfulness; psychological resilience; social support
	<i>Organisational values</i>	2	cyberbullying; social media; social networking (online); fake news
	<i>Organisational learning</i>	2	e-learning; learning; digital literacy; education; fake detection
<i>Digital resilience</i>	<i>Technological advancement</i>	3	cybersecurity; digital technologies; digital transformation; information management; knowledge management; network security
	<i>Agility and adaptability</i>	4	COVID-19; e-commerce; external shocks; information systems; information use
	<i>Stakeholder engagement</i>	5	artificial intelligence; digital resilience; innovation; training

Source: Authors' construct (2025)

As delineated in Table III, the theme of ethical imperative comprises three subordinate themes: psychosocial safety climate, organisational values, and organisational learning. In parallel, the theme of digital resilience encompasses technological advancements, agility, adaptability, and stakeholder engagement. We examined its defining characteristics to enhance the digital resilience framework, scrutinising 23 contemporary empirical studies. This exhaustive inquiry, utilising databases such as Scopus, the Web of Science, and Google Scholar, establishes a solid foundation for our conclusions. Table IV summarises the key characteristics of digital resilience identified in these investigations.

Table IV: Characteristics of digital resilience

#	Citation	Empirical study	Characteristics of digital resilience
1	Bürgel et al. (2023)	Digitalisation and entrepreneurial firms' resilience to pandemic crises: Evidence from COVID-19 and the German Mittelstand.	The organisation's resilience against cyber threats, data intrusions, and other digital disruptions, along with its capacity for recovery.
2	Li et al. (2023)	Digital resilience and firm internationalisation: a study of Chinese listed companies	It looks at the organisational capacity to leverage digital tools and knowledge to tackle tech-induced challenges and build resilience during digital transformation.
3	Kohn et al. (2023b)	Lessons on employees' digital resilience from COVID-19-induced transitions to remote work—a mixed methods study	Ability to create, implement, and use information systems to adjust to significant disturbances.
4	Park et al. (2023)	The Value of centralised IT in building resilience during crises: Evidence from US Higher Education's transition to emergency remote teaching	Allocating, employing, and overseeing IT in a manner that equips organisations with the ability to deliver top-tier services and ensure customer contentment.

5	Boh et al. (2023)	Building digital resilience against major shocks	The skills acquired from using digital technologies to withstand significant setbacks, adjust to disturbances and evolve to a renewed stable condition.
6	Tremblay et al. (2023)	Data is the new protein: How the Commonwealth of Virginia built digital resilience Muscle and Rebounded from Opioid and COVID Shocks	The organisation's adaptive skill in using data, technology, and analytics to foresee, recover from, and adapt to unexpected events.
7	Lee and Hancock (2023)	Developing Digital Resilience: An Educational Intervention Improves Elementary Students' Response to Digital Challenges	Handle digital challenges adaptively. This means having the digital skills to effectively navigate digital contexts, self-efficacy with technology to solve digital problems and stand up for themselves online, being an upstander for peers targeted online, and being willing to seek help from available resources.
8	Sun et al. (2022)	Digital resilience among individuals in school education settings	Moving forward, understanding, knowing, learning, and recovering
9	Schmid et al. (2022)	Digital Resilience in Dealing with Misinformation on social media during COVID-19.	The ability of individuals and communities to recover and rebound.
10	Kurniadi et al. (2022)	Digital Resilience and Academic Skills in College Students	Building individual fragility factors, personal factors, social factors, and digital factors
11	Cuel et al. (2022)	Exploring Digital Resilience Challenges for People and Organisation: An Introduction	Enhancement, Maintenance, and Protection
12	Sharma et al. (2022)	Digital resilience mediates the healthy use of technology	Learning, recovery, and bouncing back process after having adverse digital experiences
13	Tramontano et al. (2021)	Development and validation of the e-Work Self-Efficacy Scale to assess digital competencies in remote working.	A combination of skills (e-skills, trust-building skills, self-care skills, remote social skills, remote emotional skills
14	Schemmer et al. (2021)	Conceptualizing Digital Resilience for AI-based Information Systems	Anticipating, recognising, and defending against threats present in the digital world.
15	Eri et al. (2021)	Digital Resilience in Higher Education in Response to COVID-19 Pandemic: Student Perceptions from Asia and Australia	The ability of learners to overcome technological difficulties and persist with online learning
16	Tim et al. (2021)	Digital resilience: How rural communities leapfrogged into sustainable development	Individuals, organisations and communities can use digital tech to foresee, adapt to, and recover from challenges, while sustainably evolving.
17	Tran et al. (2020)	How digital natives learn and thrive in the digital age: Evidence from an emerging economy.	The level of digital literacy (improving skills to use digital tools and prevent online risks)
18	Abd Aziz and Basir (2020)	Protecting Migrant Workers during COVID-19 Pandemic: Lessons from Malaysia and Thailand	Stay in an "information society."

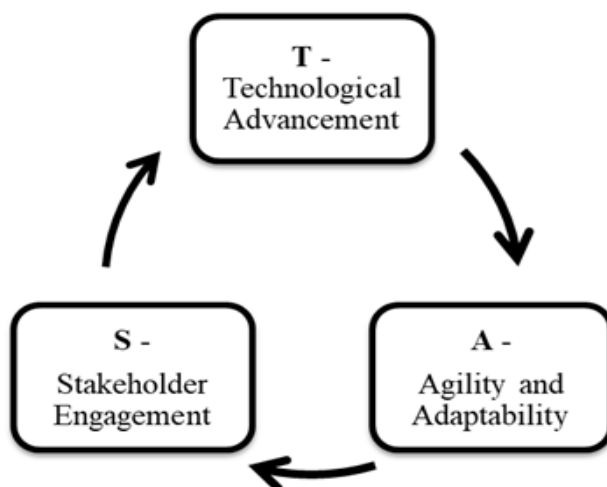
19	Reeves and Crowther (2019)	Teacher feedback on the use of innovative social media simulations to enhance critical thinking in young people on radicalisation, extremism, sexual exploitation, and grooming.	Using critical thinking skills to enhance understanding and learning in digital literacy.
20	UK Council for Internet Safety (2019)	Digital Resilience Framework	Understand, Know, Learn, and Recover
21	Hinduja and Patchin (2017)	Cultivating youth resilience to prevent bullying and cyberbullying victimisation	Understanding stress, reclaiming normal life, and progressing through social and academic competence.
22	Ochieng et al. (2017)	Exploring digital archive system to develop digitally resilient youths in marginalised communities in South Africa	Engage in the digital world, enhance digital skills, behavioural change, and reaction.
23	Hammond and Cooper (2015)	Embracing powerlessness in pursuit of digital resilience: managing cyber-literacy in professional talk	Grasping the nuances of digital media, becoming acquainted with risk management, and advancing through self-empowerment.

Source: Authors' construct (2025)

3.4 Charting the Path to Digital Resilience: The TAS Model

Based on the insights derived from Sections 3.1 and 3.2 and summarising the key characteristics of digital resilience identified in Table IV, this section elucidates the TAS Model (refer to Figure V) as an extensive framework for comprehending and enhancing digital resilience. The TAS Model amalgamates three pivotal dimensions: Technological Advancement (T), Agility and Adaptability (A), and Stakeholder Engagement (S). Collectively, these dimensions ensure that organisations are equipped to proactively mitigate disruptions, withstand external shocks, and achieve sustainable recovery. This tripartite conceptualisation represents a significant contribution to this manuscript, as it provides a systematic methodology for understanding and fostering digital resilience.

Figure V: TAS Model for Digital Resilience



Source: Authors' construct (2025)

The TAS Model transcends traditional resilience paradigms by integrating ethical considerations into resilience-building strategies. This framework underscores that digital resilience should extend beyond technical robustness to encompass ethical accountability, human-centred decision-making, and inclusive digital transformation.

3.4.1 Technological advancement (T) as a mechanism for prevention

Technological advancement plays a critical role in digital resilience by enabling organisations to anticipate, mitigate, and prevent digital disruptions before they occur (Liu et al., 2023; Manupati et al., 2022). As a proactive strategy, prevention reduces the likelihood of disruptions, reinforcing an organisation's ability to withstand digital threats (He et al., 2023; Xie et al., 2022). By allocating resources toward state-of-the-art digital infrastructure, establishing robust cybersecurity frameworks, and implementing artificial intelligence-driven risk mitigation strategies, enterprises can strengthen their digital ecosystems while enhancing their overall resilience.

Digitalisation has also proven essential in managing pandemic-related disruptions by mitigating cyber threats and improving network security (Bürgel et al., 2023). Similarly, internationalisation strategies driven by digital technologies have helped firms strengthen resilience in a globalised business environment (Li et al., 2023). Moreover, technological interventions have been instrumental in countering misinformation during crises, ensuring the integrity and reliability of digital information flows (Schmid et al., 2023).

Beyond crisis management, technology also fosters organisational agility and adaptability. Centralised IT systems can enhance remote communication and coordination during emergency transitions, facilitating seamless operational continuity (Park et al., 2023). Additionally, digital transformations require proficiency in information systems to ensure that organisations effectively integrate technological advancements into their strategic frameworks (Cuel et al., 2022). Tremblay et al. (2023) further emphasise the importance of data-centric approaches in crisis management, reinforcing the need for technological integration in preventive measures and recovery processes. However, balancing innovation with ethical responsibility remains a challenge. The contribution of this study can be used as an approach to manage this issue.

3.4.2 Agility and adaptability as a mechanism for resistance

Agility and adaptability are fundamental to digital resilience, enabling organisations to withstand disruptions by responding swiftly to emerging threats, technological failures, and regulatory changes (Miroshnychenko et al., 2021). In this context, resistance refers to an organisation's ability to minimise immediate damage from disruptions, with stronger resistance reflected in a smaller decline in performance following an event (Ivanov and Dolgui, 2019; Park et al., 2023). These qualities ensure businesses can quickly pivot their strategies, optimise resources, and maintain operational continuity in dynamic environments (Galaitis et al., 2021; Erol et al., 2010).

Agility, conceptualised as an organisation's capacity to swiftly and adaptively address unforeseen adversities, constitutes a vital facilitator of resilience. It allows firms and business leaders to adjust business models, adopt innovative processes, and embrace digital transformations to maintain resilience (Lengnick-Hall and Beck, 2016; McIver et al., 2018). For instance, throughout the COVID-19 pandemic, enterprises swiftly adapted to telecommuting arrangements to guarantee

operational continuity (Bürgel et al., 2023). Similarly, e-commerce has empowered firms to swiftly adapt to shifting consumer demands, market fluctuations, and technological advancements, securing a competitive edge (Liu and Li, 2020; Meilatinova, 2021).

Adaptability complements agility by fostering long-term resilience. Organisations must develop digital competencies to respond to external shocks and evolving customer expectations (Hanelt et al., 2021). Kohn et al. (2023b) emphasise the importance of integrating information systems to facilitate seamless transitions during crises. In contrast, Kurniadi et al. (2022) and Lee and Hancock (2023) emphasise the importance of digital skills training in promoting academic resilience among students. Learning from disruptions, reconfiguring operational strategies, and leveraging digital tools enhance an organisation's and individuals' capacity to manage change effectively (Sharma et al., 2022). However, overcoming resistance to change is a key challenge in fostering digital resilience. Employees and stakeholders may struggle to embrace new technologies, perceiving them as disruptive rather than beneficial (Ochieng et al., 2017). This reluctance is particularly pronounced among underserved communities and individuals unfamiliar with digital advancements (Tim et al., 2021). Addressing this challenge requires strategic communication, comprehensive training, and strong support mechanisms to ensure that employees recognise the benefits of technological integration and innovation (Sun et al., 2022).

Beyond mere technological adaptation, the concepts of agility and adaptability must be intricately woven into the fabric of an organisation's culture. A nurturing psychosocial safety climate fosters an environment where employees are motivated to participate in digital transformation initiatives, disclose cybersecurity vulnerabilities, and engage in responsible innovation (Table V). Moreover, ensuring that workplace digitalisation is congruent with ethical frameworks—such as Kant's second formulation of the Categorical Imperative—underscores the imperative of prioritising employee welfare in conjunction with technological efficiency.

Stakeholder engagement as a mechanism for recovery

Stakeholder engagement is a critical pillar of digital resilience, fostering collaboration, shared responsibility, and collective problem-solving in the face of digital threats (Fitriasari, 2020; McKinley et al., 2021). Engaging stakeholders—including employees, customers, regulators, and technology developers—enhances recovery efforts by ensuring diverse perspectives are considered in digital resilience strategies. This engagement supports key organisational functions such as learning and knowledge creation (Desai, 2018; Mitchell et al., 2022), value creation (Harrison and Wicks, 2013; Freudenreich et al., 2020), strategic planning (Noland and Phillips, 2010; Castelló et al., 2016; Ramus and Vaccaro, 2017), innovation (Bendell and Huvaj, 2020; Alvarez and Sachs, 2023; Veronica et al., 2020) and sustainability (Banerjee and Bonnefous, 2011; Dobelet et al., 2014).

A well-engaged stakeholder network fosters resilience by encouraging adaptability to digital disruptions and proactive participation in recovery efforts (Bourne, 2016). Organisations prioritising open communication and collaboration can better mitigate digital risks and build trust (Cuel et al., 2022). For instance, Boh et al. (2023) emphasise the role of stakeholder involvement in strengthening cybersecurity resilience, while Tremblay et al. (2023) highlight how data-driven engagement supports recovery strategies. In education, stakeholder collaboration has been shown to enhance digital resilience by promoting training and technological adaptability (Lee and

Hancock, 2023). Moreover, stakeholder engagement cultivates a sense of ownership, making employees and other participants more invested in digital resilience initiatives (Wong et al., 2021). Effective engagement strategies encourage innovation, facilitate knowledge-sharing, and ensure that resilience measures are inclusive and sustainable. Tramontano et al. (2021) emphasise the importance of self-efficacy and digital competencies in remote employment, underscoring the critical role of communication and collaboration in addressing digital challenges.

As organisations implement digital resilience strategies, stakeholder involvement becomes essential in overcoming resistance to change (Ochieng et al., 2017). Resistance is particularly prevalent when stakeholders perceive digital transformation as disruptive or misaligned with their capabilities (Tim et al., 2021). Addressing these concerns requires transparent governance structures, comprehensive training, and ethical leadership to facilitate smooth transitions (Sun et al., 2022). Ultimately, digital resilience is an ongoing process that integrates technological advancements, agility, and stakeholder engagement in a continuous cycle. Organisations involving stakeholders in decision-making, risk mitigation, and recovery efforts are better positioned to withstand digital crises while maintaining public trust and ethical accountability (Pappas et al., 2023). This underscores the broader ethical imperative of digital transformation, ensuring that digital ecosystems serve collective interests rather than corporate gain.

Implications of the TAS Model for Ethical Digital Resilience

The TAS Model presents a comprehensive and ethically principled framework for digital resilience. Through the integration of technological advancement, agility and adaptability, and stakeholder engagement into resilience strategies, organisations can:

1. **Develop proactive digital risk mitigation frameworks** incorporating ethical principles in artificial intelligence development, cybersecurity strategies, and organisational governance.
2. **Enhance workforce adaptability** by cultivating a psychosocial safety climate that facilitates ethical digital transitions, thereby diminishing employee resistance to digital transformation.
3. **Strengthen stakeholder trust and regulatory alignment** by implementing inclusive digital governance practices, emphasising ethical artificial intelligence deployment and data transparency.
4. **Ensure Kantian duty-based ethical principles guide digital resilience strategies**, reinforcing the importance of fairness, accountability, and human dignity in corporate digital ecosystems.

By embracing the TAS Model, organisations can transcend reactive digital resilience methodologies and establish future-proof, ethically sustainable digital infrastructures that harmonise technological innovation with human-centred governance.

3.5 Ethical Imperatives in Digital Resilience

Ethical imperatives are central to ensuring digital resilience strategies are effective, responsible, sustainable, and aligned with human values. While much of the resilience discourse centres on technical and structural robustness, ethical resilience integrates *ethical awareness and moral*

responsibility into the design and implementation of digital systems, ensuring that moral considerations are embedded throughout. It ensures organisations uphold human dignity, fairness, and trust in their responses to digital threats (Islam, 2012; Rathnayake, 2021), considering diverse ethical frameworks beyond Kantian deontology. An ethical imperative is a morally obligatory principle that guides individuals or organisations to follow ethical values (Anderson and Smith, 2007). In digital contexts, these imperatives remind us not to overlook the social and human aspects of technological engagement. Harmon-Jones and Mills (2019) explain that cognitive dissonance can occur when actions conflict with values, as illustrated in studies such as Loughnan et al. (2010), where individuals reduce their moral concern for animals to justify eating meat. This dissonance parallels how organisations may justify unethical digital practices unless guided by strong ethical imperatives.

Building upon the principles of Kantian deontology, especially the Categorical Imperative, institutions are perceived as holding moral responsibility and tasked with upholding universal moral standards, regarding individuals as ends in themselves, and engaging in rational ethical administration (Kant, 2015; Herman, 2022). This ethical foundation supports responsible digital transformation by safeguarding autonomy, promoting transparency, and avoiding exploitation, particularly of vulnerable groups (Layode et al., 2024; Temara, 2025). Kant's three formulations offer a comprehensive ethical framework for understanding and implementing digital resilience. The first formulation, universalizability, asserts that actions must be guided by maxims that can be universally applied. In the digital context, this principle supports the development of consistent and equitable cybersecurity policies that can be effectively implemented across diverse environments (Kettemann and Müller, 2025). The second formulation, humanity as an end, demands that individuals be treated as ends in themselves and never merely as means. This underscores the ethical importance of protecting privacy and ensuring informed consent in data governance practices. The third formulation of a moral community posits that ethical norms should be acceptable to all rational agents, advocating for inclusive and cooperative digital ecosystems founded on shared moral principles (Sallos et al., 2024). Together, these formulations underscore the importance of digital resilience strategies grounded in moral responsibility—strategies that respect human dignity, promote fairness, and foster responsible development of technology.

Incorporating these imperatives into digital resilience means recognising that resilience is not solely technical but moral. Resilient systems must protect stakeholder rights, foster trust, and encourage ethical innovation (Böhm et al., 2022). For instance, robotics and AI ethics emphasise the need for design and deployment decisions to reflect moral responsibility (Luxton, 2014). However, applying deontological ethics in fast-evolving digital contexts poses practical challenges. The literature reflects limited discussion on how organisations reconcile Kantian principles with real-world constraints and complexities (Buran and Hayon, 2024; Stahl and Eke, 2024). Adaptive, context-aware approaches, informed by a broader range of ethical perspectives, may be necessary to align ideal ethical standards with operational realities. To address this, our study identifies three core ethical imperatives that underpin digital resilience: (1) Psychosocial Safety Climate – fostering environments where stakeholders feel secure, empowered, and heard (Wong et al., 2021); (2) Organisational Values – embedding integrity, accountability, and justice into digital practices (Freudenreich et al., 2020); (3) Organisational Learning – cultivating continuous reflection and ethical adaptation in response to digital challenges (da Silva Tiago and Mitchell, 2024; Young et al., 2022).

As shown in Tables II and III, although digital resilience has become a growing area of scholarly interest, a significant gap in research specifically addressing its ethical dimensions remains. Our bibliometric analysis underscores this, highlighting the need for frameworks that systematically integrate ethical imperatives into resilience strategies. Ultimately, ethical imperatives are not optional add-ons—they are foundational to ensuring that digital resilience serves the operational continuity and broader interests of individuals, organisations, and society.

3.5.1. Psychosocial safety climate as an ethical imperative

As outlined in Section 3.1, Kantian ethical theory provides a normative framework for digital resilience by emphasising the principles of duty, universalizability, and the inherent value of human dignity. The advent of psychosocial safety climate as a pivotal area of scholarly inquiry underscores the ethical imperative that digital resilience strategies must prioritise the welfare of employees and stakeholders. A robust psychosocial safety climate (PSC) is an ethical obligation for digital resilience, fostering a workplace ethos that emphasises mental health, inclusivity, adaptability, and transparent communication, and aligning with the ethical principles of various frameworks (Becher and Dollard, 2016; Dollard and Bailey, 2021). Defined as organisational policies and practices aimed at protecting employees' psychological health, PSC reflects a firm's ethical responsibility to safeguard the emotional well-being of its workforce during technological disruption and change and should be measured using appropriate and culturally sensitive metrics (Dollard and Bakker, 2010). In line with Lovelock (2019), creating such environments is legally mandated and morally necessary, considering diverse cultural contexts and employing various measurement tools.

Emerging digital environments often bring psychosocial risks—loneliness, anxiety, technostress, and addictive behaviours—mainly due to reduced social interaction, blurred work-life boundaries, and overstimulation (Barnes, 2020; Kim et al., 2022). These stressors can escalate into serious mental health concerns if not addressed. Nevertheless, technological advancements offer prospects for implementing accessible mental health interventions, including digital cognitive behavioural therapy and applications centred on mindfulness (Ioannou and Papazafeiropoulou, 2017; Rostami et al., 2025). Therefore, effective management of psychosocial hazards in digital contexts requires leadership driven by ethical principles and a commitment to decent work environments (Antal et al., 2018; Loh et al., 2018).

From an ethical standpoint, PSC aligns with Kantian duty ethics, where actions are considered morally worthy when motivated by respect for others rather than self-interest (Borges, 2019). The assurance of psychological safety embodies an organisation's moral responsibility to regard employees as intrinsic values, which aligns with Kant's second formulation of the categorical imperative. Moreover, cognitive dissonance theory suggests that a supportive climate, which fosters ethical awareness, helps reconcile internal value-behaviour conflicts, thereby minimising the psychological toll of digital demands (Brown, 2014; Brown et al., 2014; Harmon-Jones and Mills, 2019). Significantly, PSC has been associated with an increase in organisational citizenship behaviours (OCB) and enhanced resilience during crisis management (Law et al., 2011; Loh et al., 2021). When individuals perceive a sense of psychological support within their work environment, they exhibit a greater propensity to report cybersecurity vulnerabilities, engage in principled responses to challenges posed by artificial intelligence, and actively participate in recovery efforts (Hammer et al., 2019; Rathnayake, 2023). Social support, too, serves as a buffer against digital

stressors, reinforcing the importance of collective resilience-building (Fletcher and Sarkar, 2013; Linden et al., 2012).

In digital resilience contexts, managing information uncertainty is crucial (Kumar et al., 2024; Sadeghi et al., 2024). Individuals with psychological resilience—the capacity to regulate emotions and maintain stability during crises—are better equipped to engage with digital systems without compromising their well-being (Prime et al., 2020; George et al., 2022). Therefore, nurturing PSC enhances employee welfare and an organisation's readiness and responsiveness to digital disruptions. In sum, a psychosocial safety climate is both a practical and ethical necessity. It bridges individual well-being and organisational resilience, reinforcing ethical digital governance by valuing employee dignity, voice, and health, while fostering ethical awareness and upholding moral responsibility. Hence, we propose the following:

Proposition 1: *The effectiveness of an organisation's digital resilience strategies is positively associated with its psychosocial safety climate.*

3.5.2 Organisational values as a driver of ethical resilience

Organisational values are central to fostering ethical digital resilience, as they guide behaviour, shape culture, and influence how firms respond to technological challenges. When values such as innovation, adaptability, and ethical responsibility are embedded within an organisation, they promote a culture aligned with resilience and sustainability (Al Aina and Atan, 2020; Malbašić et al., 2015). Strategic alignment between organisational values and digital resilience initiatives enables organisations to manage digital risks while fostering trust, collaboration, and ethical decision-making (Jaakson, 2010; Johnson, 2009; Zeb et al., 2021), addressing potential value conflicts proactively. For instance, addressing online risks such as cyberbullying reinforces ethical norms and safeguards employee well-being, thereby contributing to a healthier digital culture (Gianesini and Brighi, 2015; Hinduja and Patchin, 2017). Similarly, social media can expand access to knowledge and emotional support, improving personal resilience and organisational learning (Abell and Biswas, 2023; Chatterjee et al., 2020). However, the same digital platforms can generate misinformation and ethical dilemmas, underscoring the need for robust value-based governance to guide responsible engagement (Vettriselvan, 2025; Belinski et al., 2020; dos Santos et al., 2019).

Organisational values function not only as strategic tools but also as ethical anchors. Drawing on Kantian ethics, organisations must sustain moral responsibility that respects individual dignity and autonomy—not merely to pursue profit or efficiency (Borges, 2019). Values should guide decision-making by fostering ethical awareness and upholding moral responsibilities towards all stakeholders. From a psychological standpoint, the cognitive dissonance theory elucidates how a discordance between individual and organisational values may result in psychological discomfort, diminished satisfaction, and a lack of engagement (Maertz Jr et al., 2009). Consistency between declared and enacted values fosters integrity and motivation, and a precise mechanism for value implementation, such as a code of conduct or ethics training, is crucial. These values also shape decision-making, resource allocation, and employee expectations (Argandoña, 2003; Edwards and Cable, 2009). When values like fairness, transparency, and stakeholder inclusivity are prioritised, they enhance accountability and support the ethical dimensions of digital transformation (Bourne et al., 2019). By instilling these values, organisations can guide behaviour during crises, strengthen

ethical resilience, and build long-term sustainability. Accordingly, organisational values are aspirational and operationalised through daily practices and strategic decisions. As organisations face increasing digital complexity, organisational values that promote innovation, adaptability, and ethical conduct are reflected through ethical awareness and moral responsibility, empowering employees and stakeholders to act decisively and responsibly. Hence, we propose:

Proposition 2: *Organisational values that prioritise innovation, adaptability, and employee empowerment result in higher levels of digital resilience.*

3.5.3 Organisational learning as an ethical imperative

Organisational learning is essential for building ethical and adaptive digital resilience. It facilitates enterprises in forecasting, reacting to, and recuperating from digital disruptions by promoting an ethos centred on perpetual enhancement, experimentation, and ethical innovation (Akter et al., 2023; Lumpkin and Lichtenstein, 2005). While digital technologies expedite the creation of novel solutions, the organisation's capacity for learning—its proficiency in adapting, reflecting, and applying knowledge—ultimately influences the efficacy with which such technologies are harnessed (Yoo, 2010). Firms that embed learning into their culture gain strategic advantages, especially when navigating complex digital landscapes. For example, during the COVID-19 pandemic, physicians who embraced hybrid service delivery models demonstrated how adaptability and openness to learning foster resilience (Liu et al., 2023; Tran et al., 2020). Similarly, organisational learning enhances digital literacy and supports resilience through flexible modes, such as e-learning, which promote accessibility and knowledge retention even during periods of disruption (Alqahtani and Rajkhan, 2020; Turnbull et al., 2021).

Knowledge—acquired through experience, experimentation, or structured processes—is a key strategic resource. It enables organisations to adapt operations, anticipate digital risks, and integrate solutions more ethically and effectively (Chung et al., 2015; Lord and Ranft, 2000). Practical learning, such as trial-and-error approaches, allows organisations to refine digital strategies through direct engagement with real-world challenges, reinforcing the idea that resilience is iterative and dynamic (Kogan et al., 2017; Marsick and Watkins, 2015). Conversely, drawing on organisational memory and established routines supports stability and consistency in decision-making, particularly when addressing recurring digital threats (Tortorella and Fogliatto, 2014; Wang and Noe, 2010).

From a Kantian ethical perspective, organisations have a moral responsibility to nurture employees' rational capacities, foster autonomy, and support personal and professional growth (Borges, 2019; Formosa, 2017). Facilitating organisational learning, consequently, constitutes not merely a tactical initiative but also a moral responsibility. By treating employees as ends in themselves, firms affirm their dignity and empower them to contribute meaningfully to ethical digital transformation. Learning also helps mitigate ethical risks in AI, cybersecurity, and data governance by ensuring that organisations are equipped to act reflectively and responsibly (Hammond and Cooper, 2015; Boh et al., 2023). Thus, organisations that embed learning into their culture are better prepared to align digital strategies with evolving ethical standards and human values, with ethical awareness and moral responsibility serving as essential elements in this process. This underscores the ethical imperative of understanding to strengthen digital resilience. Accordingly, we propose:

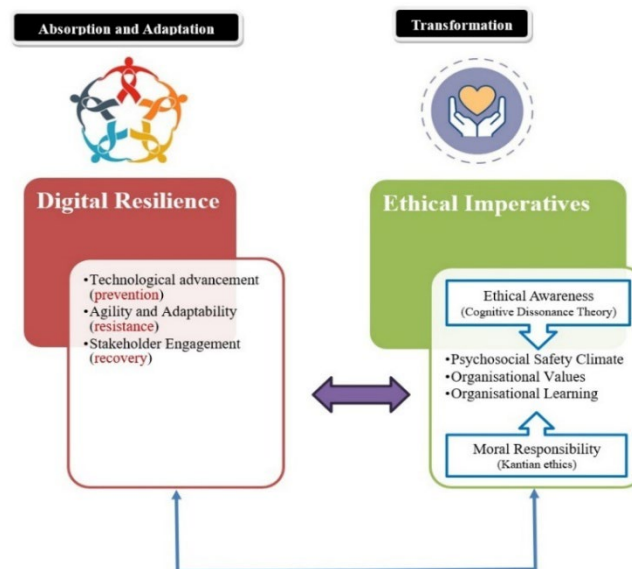
Proposition 3: *Organisational learning strengthens digital resilience by enabling organisations with greater learning agility and a higher capacity for knowledge exchange to effectively anticipate, address, and recover from digital disruptions and threats.*

Therefore, integrating ethical imperatives related to digital resilience can boost the development of an organisational culture and strengthen its business results. The three ethical imperatives identified demonstrate a significant transformation in the process, the organisation, its objectives, and all individuals involved.

3.6 Integrating digital resilience and ethical imperatives

This study contributes to the evolving discourse on digital resilience by arguing for its integration with ethical imperatives as a necessary progression beyond traditional, compliance-driven approaches. While earlier models of digital resilience have prioritised technical robustness, cybersecurity, and recovery planning (Kumar, 2024; Nkomo and Kalisz, 2023) they often overlook the moral responsibilities organisations bear in protecting stakeholder interests, ensuring algorithmic fairness, and maintaining trust. Our analysis of peer-reviewed literature reveals a conceptual gap in addressing this ethical dimension, necessitating a more comprehensive and nuanced approach that considers diverse ethical frameworks and practical implementation challenges. This study advances a conceptual framework (Figure VI) that illustrates the interdependence between ethical imperatives and digital resilience. At the core of this conceptual framework lies the TAS Model—Technological Advancement, Agility and Adaptability, and Stakeholder Engagement—which has been augmented to include Kantian ethical principles, organisational responsibilities, and psychosocial well-being. This integrative approach underscores that digital resilience must mitigate disruptions while upholding ethical awareness and moral responsibility.

Figure VI: Conceptual framework for integrating digital resilience and ethical imperatives



Source: Authors' construct (2025)

Technological advancements in this model extend beyond infrastructure and innovation; they require aligning digital tools, such as AI and data analytics, with universal ethical principles. Technologies should be deployed transparently, respect privacy, and avoid harm, prioritising long-term digital sustainability over short-term efficiency. Agility and adaptability, meanwhile, must be balanced with moral commitments to employees and stakeholders. This includes creating a culture that enables ethical responsiveness, fosters inclusive decision-making, and supports transitions through capacity-building and organisational learning. Stakeholder engagement is considered an imperative for effective governance. Organisations can co-develop ethical standards for AI, cybersecurity, and data protection that are equitable and contextually relevant by involving regulators, consumers, and civil society in shaping digital policies. When informed by ethical imperatives, these elements form a cohesive framework demonstrating how digital resilience strategies lead to more substantial business outcomes, greater stakeholder trust, and more sustainable digital ecosystems. The framework presented in Figure VI synthesises this approach, showing how ethical responsibility and digital adaptability must operate as mutually reinforcing forces. In doing so, the study positions ethical digital resilience not as a supplementary concern but as an organisational imperative in a rapidly evolving technological landscape.

4. Discussion: Ethical Foundations of Digital Resilience

4.1 Advancing the Concept of Digital Resilience through Ethical Integration

This study contributes to the evolving discourse on digital resilience by proposing a conceptual framework that integrates ethical imperatives into existing resilience strategies. While prior research has predominantly focused on technical robustness, cybersecurity readiness, and operational recovery (Boh et al., 2020; Hemmer et al., 2021), these models often overlook the ethical underpinnings necessary for genuinely sustainable digital practices. By embedding ethics—particularly Kantian principles, psychosocial safety, and stakeholder inclusivity—into the structure of digital resilience, this study redefines it as a multidimensional construct rooted in technological and moral accountability. This study applies cognitive dissonance theory to explain how individuals and organisations reconcile conflicting values and behaviours in digital environments, particularly when ethical imperatives conflict with operational needs. Cognitive dissonance theory emphasises the significance of ethical awareness in promoting organisational success (Rothgerber, 2020), as it influences employees’ attitudes, behaviours, and overall workplace dynamics (Hinojosa et al., 2017). Ethical awareness entails the ability to identify ethical dilemmas, grasp their implications, and recognise misalignments between actions and core values, forming a vital first step in addressing and resolving dissonance (MacDougall et al., 2015). This methodological framework enhances the comprehension of how cognitive unease stemming from such dissonance can propel organisations to embrace more robust and ethically congruent digital practices, thereby providing a fresh perspective on behavioural adaptation within digital contexts.

This study, informed by an extensive examination of existing literature and a bibliometric assessment, elucidates the disjointed understanding of digital resilience across various academic fields while simultaneously addressing the conceptual ambiguity associated with its ethical implications. The proposed framework introduces the TAS Model—Technological Advancement, Agility and Adaptability, and Stakeholder Engagement—as a foundation for integrating ethics into

resilience-building efforts. This ethics-informed structure provides a more comprehensive approach to navigating the uncertainties of digital transformation, ensuring that organisations act responsibly and inclusively.

4.2 Kantian Ethics as a Framework for Ethical Digital Resilience

One of the study's most novel contributions is the application of Kantian ethics as a framework for moral responsibility in digital resilience. Kant's Categorical Imperative provides a principled framework for evaluating whether AI systems, digital governance mechanisms, and cybersecurity protocols uphold ethical integrity or merely pursue efficiency and profit (Keles and Bagci, 2023; Dubbink and Smith, 2011). The first formulation—universalizability—requires that digital policies and AI systems be designed to be universally applied (Hahn et al., 2019; Milojev et al., 2014; Suhler and Churchland, 2011; Kant, 2015). For instance, a credit scoring algorithm must ensure fairness and non-discrimination, irrespective of context, rather than adjusting its logic for context-specific gains that may perpetuate inequities. The second formulation—treating humanity as an end—demands that employees and digital users be respected as autonomous moral agents (Kant, 2015; Sensen, 2011; Kant, 2024). Surveillance-based AI systems or opaque decision-making processes prioritising productivity over individual dignity violate this principle. In contrast, a psychosocial safety climate, defined by the empowerment and support of employees, aligns with Kantian ethical principles as it safeguards individual autonomy and fosters overall well-being (Borges, 2019). The third formulation—moral community—supports the creation of participatory and co-governed digital ecosystems (Kant, 2015; Kant, 2024; Johnson and Cureton, 2004). Ethical AI policies and cybersecurity frameworks should be developed collaboratively with stakeholders to reflect shared moral principles rather than imposed unilaterally by corporate interests. This reinforces the legitimacy and social acceptance of digital transformation.

4.3 The Role of Psychosocial Safety Climate in Digital Resilience

Another key insight from this study is the central role of the psychosocial safety climate (PSC) in ethical digital resilience. While traditionally overlooked in resilience literature, PSC is crucial for fostering open communication, ethical awareness, and psychological safety in digital environments (Becher and Dollard, 2016; Dollard et al., 2017; Dollard and Idris, 2017). A positive PSC enables employees to report ethical risks, such as algorithmic bias or cybersecurity vulnerabilities, without fear of retaliation.

As digital systems evolve, so do stressors associated with AI-driven decisions, automation, and data surveillance. These pressures can lead to technostress and ethical dissonance, as employees must comply with digital practices that conflict with their moral values (Ioannou and Papazafeiropoulou, 2017). A robust PSC mitigates this dissonance, allowing individuals to navigate these tensions constructively and contribute to ethical digital decision-making. Furthermore, organisations that cultivate a strong PSC are more likely to institutionalise ethical practices, such as transparent AI policies, ethical training programs, and open forums for discussions on digital governance. These outcomes demonstrate the profound interconnection between workplace well-being, ethical responsibility, and digital resilience.

4.4 Stakeholder Engagement in Ethical Digital Resilience

Stakeholder engagement emerges as a vital factor of ethical digital resilience. Existing digital resilience frameworks often prioritise internal systems and technological preparedness, neglecting the perspectives of critical external actors. This research challenges the parochial perspective by

demonstrating that governance involving multiple stakeholders is essential for establishing legitimacy, trust, and equity within digital decision-making frameworks (Boh et al., 2023; Freudenreich et al., 2020). For consumers, this means being included in discussions about data use, algorithmic transparency, and digital rights. Organisations that enable informed consent, public consultation, and explainable AI mechanisms are more likely to foster durable digital trust. For regulators, stakeholder engagement involves proactive collaboration in co-designing digital standards, especially in rapidly evolving areas such as AI ethics and cybersecurity. Rather than waiting for external compliance mandates, forward-looking organisations should align resilience strategies with evolving regulatory and ethical expectations (Casalino et al., 2019). Employees are not merely policy enforcers but moral agents who must be empowered through ethical leadership, transparent governance, and participatory decision-making structures.

4.5 Theoretical and Practical Contributions

This study makes significant contributions to both theory and practice in several ways. Theoretically, it expands the scope of digital resilience by embedding ethical imperatives—particularly Cognitive dissonance principles and Kantian ethics, psychosocial safety climate, and stakeholder engagement—into the TAS Model. It offers a normative framework to guide ethical digital transformation, filling a critical gap in the literature on behavioural and moral dimensions of resilience. By applying cognitive dissonance theory, the research sheds light on how individuals and organisations navigate conflicting values and behaviours in digital environments, enhancing ethical awareness, especially when ethical principles conflict with operational demands. This approach deepens the understanding of how cognitive discomfort from such dissonance can drive organisations to adopt more resilient and ethically aligned digital practices, offering a novel perspective on behavioural adaptation in digital environments.

Practically, the study provides a roadmap for integrating ethical considerations into corporate digital resilience strategies. This includes establishing guidelines for passing ethical tests before launching software and digitally innovative products, algorithmic audits, AI explainability standards, psychosocial support systems, and collaborative governance platforms. These tools are ethically sound and functionally effective in enhancing digital adaptability, mitigating risk, and fostering long-term stakeholder trust.

4.6 Limitations and Future Scope of the Study

While this study offers a robust conceptual framework, it is limited by its reliance on secondary empirical research data. The proposed framework might be more generic, which may require contextual adaptation for distinct industries or organisational types. Future research should pursue empirical studies, including case-based or mixed-method investigations, to test the operational viability of the TAS Model and its embedded ethical constructs and propositions. Moreover, the reliance on Scopus and Web of Science may engender a publication bias, excluding pertinent contributions from alternative repositories such as Google Scholar or PubMed. Expanding the dataset and including earlier foundational works could enrich the historical and theoretical context of digital resilience research. Nevertheless, understanding how ethical imperatives shape their integration into digital resilience strategies will become increasingly important as these domains evolve.

5. Conclusions

This study redefines digital resilience as a holistic construct that integrates ethical dimensions at every level of digital resilience process. Thus, ethical imperative is not just an option but an essential element of digital resilience endeavours. Moving beyond conventional operational perspectives, it highlights that digital resilience cannot be fully realised without embedding ethical imperatives such as organisational and individual values, organisational learning, psychosocial safety climate, and multi-stakeholder engagement into corporate digital strategies. Organisations must move beyond efficiency-driven approaches to more effective and duty-based ethical principles in digital product innovation and manufacturing, AI governance, cybersecurity, and an integrated decision-making processes to align related business processes with universal agendas of an ethical, socially responsible, and sustainable digital world. Accordingly, a comprehensive and collaborative governance mechanism that goes beyond individual entities of organisations is proposed to make it a more inclusive and accountable process among all stakeholders. Some proposed practical strategic approaches include AI ethics committees, algorithmic fairness audits, establishing guidelines for passing ethical tests before launching software and digitally innovative products, and transparent data privacy policies. Further, fostering a psychosocial safety climate within digital workspaces is vital to ensure that employees are equipped with ethical AI training and feel supported in navigating the moral dilemmas that arise from digital transformation (Lee and Hancock, 2023). Rather than treating digital resilience as a reactive security measure, organisations should incorporate preventative measures such as adopting Kantian ethics, Cognitive dissonance, and stakeholder trust principles to align digital resilience strategies with long-term corporate sustainability. We have introduced the TAS Model in this study to contribute to this end.

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