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Deployment of generative artificial intelligence to enhance organisational resilience: empirical evidence from the logistics industry

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ABSTRACT

Grounded in dynamic capability theory, this study investigates how generative artificial intelligence (GenAI) adoption enhances organizational resilience through a qualitative single-case design based on 18 semi-structured interviews conducted within a world-leading logistics company. Our findings provide novel insights into how GenAI supports resilience across the disruption lifecycle. First, we identify nine key dimensions of organizational functioning strengthened by GenAI adoption, including enhanced risk prediction, early warning alerts, real-time movement tracking, performance analytics, and action recommendations during the preparation; the provision of feasible action plans during the response; and continuous monitoring against planned performance through to the recovery. Second, these functional benefits are translated into individual- and organizational-level capabilities. At the individual level, GenAI strengthens sense-making, decision-making capability, and flexibility. At the organizational level, it enhances cross-functional synchronization, proactive preparedness, and resource optimization. The interaction and collective alignment of these multi-level capabilities enable organizations to strengthen their resilience.

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Generative artificial intelligence; organizational resilience; logistics industry; single case study; dynamic capability theory

1. Introduction

Over the last several years, the advent and raid evolution of generative artificial intelligence (GenAI) have transformed how individuals think and perform tasks, while also revolutionising organisational processes through automated and augmented decision-making (Goktas, 2024). With its ability to analyse vast datasets and generate novel insights and content, GenAI has become an integral component of modern strategic planning and operational efficiency (Seifdar & Amiri, 2025). For example, GenAI has been applied in healthcare and life sciences to support drug discovery, clinical documentation, and synthetic data generation; in the finance and banking for fraud detection and scenario modelling; and in the creative industries and marketing for personalisation and brand alignment.

With its remarkable ability to mimic aspects of human intelligence in generating new ideas, solutions, and innovations, GenAI holds significant potential to transform businesses and societies. Empirical evidence suggests that GenAI adoption contributes to multiple dimensions of organisational performance, including innovation, organisational learning, knowledge management, internal and external collaboration, and sustainability (Khan et al., 2025; Liu & Wang, 2024). However, a critical gap remains regarding how GenAI specifically contributes to organisational resilience, particularly when examined through the distinct phases of disruption – preparation, response, recovery, and adaptation. Existing research tends to adopt one of three approaches. First, some studies focus on other disruptive technologies (e.g. blockchain, big data, and cloud computing) and their implications for organisational resilience. For example, Guo et al. (2025) conclude that big data analytics capability enhances both proactive and reactive resilience, moderated by data-driven organisational culture and agribusiness environmental dynamism. While insightful, their study does not specifically address GenAI, nor does it examine resilience across the full disruption lifecycle. Second, others

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examine the impact of artificial intelligence (AI) more broadly, without distinguishing the unique characteristics of GenAI. For example, Wang et al. (2026) report that AI adoption has a significant positive effect on organisational resilience. However, such studies do not differentiate between traditional AI systems and GenAI, whose capabilities (e.g. content generation, scenario simulation, and interactive decision support) may shape resilience processes in distinct ways. Third, a limited number of studies consider GenAI's relationship with resilience but do not analyse it through a disruption lifecycle perspective. As Kumar et al. (2025) note, although GenAI promises a radical transformation for firms, its broader organisational, societal and ethical implications remain insufficiently understood, revealing a significant gap in the literature.

Grounded in dynamic capability theory (DCT), this study aims to explore how GenAI adoption enhances organisational resilience by explicitly considering the preparation, response, recovery, and adaptation phases of disruption. By adopting a lifecycle perspective, we seek to unpack the mechanisms through which GenAI contributes to resilience-building processes. Accordingly, this study addresses the following research questions: (1) what complementary technologies are integrated with GenAI to enhance organisational resilience? and (2) how is organisational resilience strengthened through the adoption of GenAI and its associated technologies across different phases of disruption? To answer these two research questions, we firstly used semi-structured interviews to collect data from a world-leading logistics company that has applied GenAI to support its operations, and then these qualitative data were analysed through grounded theory.

Our findings make several important contributions to the existing literature. First, to the best of our knowledge, this study is among the first to examine how GenAI adoption enhances organisational resilience across the full lifecycle of a disruption. Specifically, during the preparation phase, the integration of GenAI with complementary technologies promotes risk detection, early alerting, action recommendations, as well as real-time movement tracking and performance analytics. In the response phase, GenAI facilitates the development of feasible action plans through decision-trees and enhances communication and coordination across departments. During recovery, GenAI supports systematic cost comparison across alternative scenarios to inform optimal decision-making. Finally, in the adaptation phase, large language models, computer vision systems, and machine learning models are updated based on feedback from frontline workers, enabling continuous learning and improvement. In contrast, existing studies tend to conceptualise organisational resilience as a holistic outcome or focus on the impact of AI more broadly rather than GenAI specifically (e.g. Cimino et al., 2025; Shatila, 2025). By adopting a disruption lifecycle perspective and focusing explicitly on GenAI, our study offers a more processual and technology-specific understanding of resilience-building mechanisms. Second, our findings reveal that GenAI does not operate in isolation but is embedded within a broader technological ecosystem. In particular, GenAI is combined with complementary technologies such as camera systems and Kanban platforms to calculate employees' real-time performance against scheduled plans and to dynamically update operational information. This integrated configuration highlights the socio-technical nature of resilience enhancement and advances understanding of how GenAI is practically deployed within organisational routines.

The remainder of this study is organised as follows. In Section 2, we reviewed existing studies on DCT, GenAI, and organisational resilience to produce research gaps and justify the necessity to conduct this study. In Section 3, we described the research methodology adopted, followed by findings in Section 4. In Section 5, we discussed our contributions. Finally, conclusions are drawn in Section 6.

2. Literature review

In this section, we reviewed existing studies on how GenAI can be used to enhance organisational resilience. Accordingly, we identified several research gaps that open avenues for future research.

2.1. Dynamic capability theory

DCT, developed by Teece et al. (1997), posits that a firm's competitive advantage resides in its distinctive processes, specific assets, and the evolutionary paths it has adopted or inherited. The theory has been widely used to explain how organisations generate sustainable advantage in rapidly changing environments by purposefully integrating, building, and reconfiguring internal and external competencies (Teece, 2007). In this study, we adopt DCT for several reasons. First, although industrial adoption of GenAI is increasing, it

remains uneven, as organisations face significant hurdles such as high implementation costs, data privacy and security concerns, and a lack of skilled personnel (Albishri et al., 2026). Consequently, the successful adoption of GenAI can be viewed as a critical source of competitive advantage that directly contributes to the development of dynamic capabilities, including sensing market disruptions and leveraging advanced data analytics and predictive modelling (Shao et al., 2025). Only firms are able to sense GenAI-related opportunities, seize these opportunities through effective implementation, and reconfigure resources to embed GenAI in its operational routines can fully realise such dynamic capabilities. By examining the relationship between GenAI adoption and organisational resilience, this study is therefore theoretically aligned with the core assumptions of DCT. Second, DCT has been widely applied to examine the impact of AI and GenAI on supply chain and organisational resilience. For example, Le and Behl (2024) integrate DCT with information processing theory to explore the relationship between AI adoption and supply chain resilience (SCRes). Their findings suggest that AI functions as a strategic resource that enhances organisational dynamic capabilities, which in turn contribute to SCRes. Similarly, Cimino et al. (2025) employ DCT to investigate the role of AI adoption in firms' sustainable development, arguing that AI strengthens dynamic capabilities and thereby enables organisations to adapt more effectively to environmental changes. Finally, GenAI is widely recognised as a lower-order technological capability that underpins the development of higher-order capabilities such as organisational resilience (Wamba et al., 2024). Consistent with the above arguments, this research adopts DCT to examine how GenAI adoption contributes to the development of organisational resilience.

2.2. Organisational resilience

Organisational resilience has been widely examined in the existing literature. For example, Pettit et al. (2013) define organisational resilience as an organisation's capacity to survive, adapt, and grow in the face of change and uncertainty. Similarly, Hillmann and Guenther (2021) conceptualise organisational resilience as the ability to maintain core functions and recover rapidly from adverse events by accessing and mobilising necessary resources. Su and Junge (2023) further argue that organisational resilience is a dynamic process encompassing three stages: pre-adversity, adversity, and post-adversity. Although scholars have used diverse terms to describe organisational resilience, such as withstanding, absorbing, repairing, adapting, surviving, and avoiding (Hernes et al., 2025; Kamalahmadi & Parast, 2016), our synthesis of the literature yields several key insights. First, organisational resilience does not occur in isolation; rather, its successful development depends on collective efforts across individual, group, organisational, and network levels. Second, organisational resilience is inherent processual, typically involving stages of preparation, response, recovery, and adaptation. Third, resilience capabilities are activated only when resilience-related resources are effectively mobilised at the organisational level and resilient behaviours are fostered among organisational members.

Scholars have identified a wide range of antecedents that contribute to the development of organisational resilience. At the individual level, Kim et al. (2024) find that dispositional readiness and work meaningfulness are critical, while Adobor (2019) highlights the importance of individual learning orientation, employee trusting disposition, and self-leadership. At the group level, Su and Junge (2023) suggest that efficacy, identify, diversity, and psychological safety are essential for building organisational resilience. However, successful resilience development also depends on effective inter-group and inter-functional coordination (Anwar et al., 2023). At the organisational level, key antecedents include organisational behaviour, resourcefulness, technical capability, and learning and culture (Hepfer & Lawrence, 2022; Pal et al., 2014). Finally, at the network level, antecedents such as external communication, networking, externalised innovation, and globalisation have been shown to enhance organisational resilience (Xie et al., 2022).

In increasingly uncertain environments, digital technologies are widely recognised as important enablers of organisational resilience. Such technologies include but are not limited to big data analytics, Internet of Things, cloud computing, blockchain, and AI. Guan et al. (2023) demonstrate that higher levels of digital technology adoption are associated with stronger organisational resistance to adverse events such as the COVID-19 pandemic. Similarly, Marcucci et al. (2022) argue that the implementation of Industry 4.0 IT-related key technologies positively influences organisational resilience. However, these studies do not specify which

particular technologies are most effective in enhancing organisational resilience. More recently, Lin et al. (2025) show that the adoption of big data analytics positively affects both proactive and reactive organisational resilience, while Carayannis et al. (2025) suggest that AI adoption contributes to organisational resilience by enabling firms to anticipate market disruptions, adapt to evolving business environments, and develop sustainable growth strategies. Nevertheless, these studies do not distinguish among different types of AI technologies. Importantly, Carayannis et al. (2025) identify the role of GenAI in building organisational resilience as a promising avenue for future research.

2.3. The impact of GenAI on organisational resilience

GenAI is a form of AI that differs from traditional AI in that it not only focuses on understanding and interpreting data but also autonomously generates new content, such as text, images, audio, and video (Sharma & Rathore, 2024). The foundation of GenAI heavily relies on advanced machine learning, natural language processing, image processing, and computer vision models (Lv, 2023). These models are trained on vast datasets, enabling them to recognise intricate data patterns and generate content that is coherent and contextually relevant (Pathak & Pallasena, 2025).

Owing to its unique capability to generate entirely new content, GenAI has profound implications for organisations in refining operational processes, driving innovation through real-time learning, and dynamically adapting to complex environments (Boone et al., 2025). Consequently, scholars and practitioners are increasingly rethinking organisational resilience through the adoption of GenAI to better anticipate, respond to, recover from, and adapt to adverse events characterised by growing complexity and uncertainty (Grobe & Sundberg, 2025). For example, Shore et al. (2024) suggest that the adoption of GenAI has a positive effect on entrepreneurial orientation, which in turn significantly enhances entrepreneurial resilience. In the context of economic slowdown, Ali et al. (2025) find that GenAI positively influences entrepreneurial resilience, with hope acting as a mediating mechanism. Both studies focus on entrepreneurial resilience within small and medium-sized enterprises (SMEs). However, SMEs often face constraints in building resilience due to limited resources (e.g. personnel and financial capital). Consequently, SMEs are more likely to rely on consumer-level GenAI applications (e.g. ChatGPT), which limits the extent to which these studies can capture how GenAI is deployed across the full lifecycle of a disruption. Ahmed et al. (2025) provide further empirical evidence on how GenAI can enhance organisational resilience. Their findings show that the use of GenAI through applications, such as chatbots, predictive analytics, and centralised digital platforms, supports knowledge creation and dissemination. Effective knowledge management, in turn, fosters trust, collaboration, operational flexibility, resource optimisation, and faster decision-making, all of which are critical capabilities for building organisational resilience. Finally, Shatila (2025) show that the adoption of GenAI directly enhances organisational resilience, with this effect being significantly amplified through the mediating roles of agility, innovation, and digital leadership. Although organisational resilience is commonly understood as encompassing four stages – preparation, response, recovery, and adaptation – most existing studies treat organisational resilience as a holistic construct, examining GenAI adoption broadly facilitates resilience capabilities without explicitly distinguishing among these stages.

2.4. Research gaps

In the era of digital transformation characterised by heightened uncertainty, understanding how GenAI is utilised to enhance organisational resilience and improve business performance is increasingly critical. Accordingly, we review recent studies examining the interaction between AI and organisational resilience to synthesise existing knowledge and identify research gaps for future investigation. We focus on AI rather than exclusively on GenAI, as GenAI represents a specific subtype of AI; examining the broader AI and organisational resilience literature allows us to extend our understanding of how GenAI may enhance organisational resilience. Table 1 provides an overview of recent studies on AI adoption for organisational resilience. For the purpose of selecting papers, recent studies are defined as peer-reviewed journal articles published within the last five years (2021–2026) that explicitly focus on AI adoption in the context of organisational resilience.

Through our review of recent studies, we identify several important research gaps.

First, existing studies tend to conceptualise organisational resilience as a holistic construct, with limited attention to how the adoption of GenAI contributes to specific resilience stages, namely preparation,

Table 1. Overview of recent studies on AI adoption for organisational resilience.

Author(s) (year)	Research focused	Theory adopted	Industry focused	Theoretical/ Empirical	Country focused
Carayannis et al. (2024)	The adoption of GenAI supports enhanced decision-making, innovation and adaptability, customer relationship management, risk management, cost reduction, and workforce capabilities.	Not specified	Healthcare industry	Empirical	USA
Shore et al. (2024)	The findings suggest that GenAI and entrepreneurial orientation have a significant influence on building entrepreneurial resilience as higher-order and lower-order dynamic capabilities.	DCT	High-tech industry	Empirical	France
Alae and Achraf (2025)	The adoption of AI boosts resilience by optimizing risk management, refining decision-making, and automating critical operations.	Not specified	Not specified	Theoretical	Not specified
Ali et al. (2025)	The adoption of GenAI positively influences entrepreneurial resilience.	DCT	Multi-industries	Empirical	Pakistan
Barone et al. (2025)	The use of AI-driven tools strengthens crisis response, operational efficiency, and employee engagement.	Technology-Organization-Environment framework	Public administration	Empirical	Not specified
Cimino et al. (2025)	The impact of AI adoption on firm's sustainable development	DCT	Manufacturing and service industries	Empirical	Italy
Shatila (2025)	The adoption of AI has both direct and indirect effects on organizational resilience.	DCT	Multi-industries	Empirical	Not specified
Zeriouh and Amara (2025)	The adoption of AI contributes to risk identification, monitoring, assessment, decision support, explainability, and adaptability of organizations.	Not specified	Not specified	Theoretical	Not specified

response, recovery, and adaptation. To the best of our knowledge, this study represents one of the first attempts to explicitly examine the role of GenAI across these distinct stages of organisational resilience.

Second, prior research predominantly focuses on AI adoption in general rather than on GenAI in particular. Given that GenAI emphasises the creation of novel content, whereas traditional AI primarily supports classification, prediction, and recommendation, these two forms of AI may exert fundamentally different influences on organisational resilience. This study addresses this gap by specifically exploring how GenAI can be deployed to enhance organisational resilience.

Third, although existing empirical studies have examined the impact of GenAI on organisational resilience across various industries, such as healthcare and high-technology sectors, limited attention has been paid to the logistics industry, where GenAI adoption is rapidly increasing. This study responds to this gap by collecting empirical data from China's logistics industry.

3. Research methodology

Few studies have examined how the adoption of GenAI influences organisational resilience across the preparation, response, recovery, and adaptation stages, particularly within the logistics industry. This research gap motivates us to adopt an inductive research design by carrying out an exploratory study aimed at theory building through case study research using naturalistic inquiry (Eisenhardt, 1989). By employing this approach, rich insights into the intersection of GenAI and organisational resilience can be generated through interpretive means. Specifically, following the guidance provided by Yin (2013), we adopt a single case study approach, with individual perceptions serving as unit of analysis.

3.1. Case study sample

Yin's (2013) five rationales for single-case design are used to provide a strong justification for this research. The first rationale applies when a case represents a *critical* case for testing a well-formulated theory. The case examined in this study is a Chinese multinational enterprise specialising in e-commerce, logistics, retail, and cloud computing services. As one of the world's largest retailers and e-commerce companies, and ranked among the top AI companies globally, the firm has extensively deployed GenAI across its logistics warehouse and service operations to support decision-making and streamline operational activities. Consequently, this

case meets all the conditions for testing, extending, or potentially challenging DCT in the context of GenAI-enabled organisational resilience. The second rationale for adopting a single-case design applies when the case represents an *extreme* or a *unique* case. Although individual-level adoption of GenAI applications is widespread, few organisations have achieved full, enterprise-wide deployment of GenAI systems. This observation is consistent with our literature review, which reveals that only a limited number of empirical studies examine the impact of GenAI on organisational resilience using data from large enterprises. The case examined in this study has implemented an integrated suite of advanced technologies, including Kanban systems, intelligent cameras and sensors, a supply chain control tower, and automated guided vehicles to enable high intelligent and automated warehouse operations. Such large-scale, integrated GenAI-enabled systems are typically beyond the implementation capabilities of SMEs. As such, this case constitutes an extreme and unique example that is particularly valuable for documentation and in-depth analysis. The third rationale for adopting a single-case design is when the case represents a *representative* or *typical* case, in which the case reflects a typical 'project' or organisation within a broader population (Yin, 2013). Although the focal firm is a global leader in the application of GenAI, it operates within the mainstream logistics industry and undertakes operational projects that are broadly comparable to those of other large logistics operations. As such, the case can be viewed as representative of GenAI-enabled logistics operations within the industry. The fourth rationale for adopting a single-case study design is when the case constitutes a *revelatory case*, which occurs when researchers gain access to observe and analyse a phenomenon that has previously been inaccessible to social science inquiry. Through newly established industry connections, we were granted access to this logistics company and subsequently developed a research project funded by our university focused on examining the impact of GenAI on organisational resilience. The fifth rationale for adopting a single-case study design is when the case represents a *longitudinal case*, involving the study of the same case at two or more points in time. Accordingly, we conducted multiple site visits to the logistics company between 2024 and 2025, during which we carried out interviews with logistics practitioners to investigate how GenAI supports the development of organisational resilience across the preparation, response, recovery, and adaptation stages.

3.2. Empirical data collection

Before conducting empirical data collection in China, we developed an interview guide through a round table discussion with two professors who have extensive expertise in qualitative research methods. The interview guide consists of three sections. The first section serves as an introductory 'ice-broker', aimed at eliciting background information about the interviewees and their organisations, while also exploring their general understanding of GenAI and organisational resilience. The second section focuses on GenAI adoption, examining how it has been implemented within the organisation and how it supports operational activities. The third section includes more specific questions designed to investigate how GenAI contributes to organisational resilience across the preparation, response, recovery, and adaptation stages. To enhance the clarity and relevance of the questions, we conducted three pilot interviews with logistics practitioners. The feedback received was relatively minor and primarily concerned rewording certain questions for clarity, preparing illustrative examples of organisational resilience to facilitate discussion, and incorporating additional probing questions during the interviews to elicit richer insights. The finalised interview guide is presented in Appendix 1.

Initial contact with employees of the company was established through email communication, personal connections, and WeChat groups, resulting in the identification of 35 potential respondents who expressed interest in participating in the project. Subsequently, purposive sampling (Campbell et al., 2020) was employed to select information rich cases capable of providing meaningful insights into the adoption of GenAI for enhancing organisational resilience. Three selection criteria were developed to identify suitable participants. First, participants were required to be directly involved in the use of GenAI, either in addressing operational disruptions or in supporting core logistics activities such as route optimisation, demand forecasting, and inventory management. Second, participants were required to have at least 10 years of working experience in the logistics industry to ensure a high level of professional expertise and contextual understanding. Third, priority was given to frontline employees, group leaders, and middle-level managers with hands-on experience in applying GenAI within their daily

operations, as they are more likely to provide detailed and practice-based insights. Applying these criteria resulted in the final selection of 18 participants for in-depth interviews. There is no universally accepted rule regarding the exact number of interviews required to achieve data saturation in qualitative research. The appropriate sample size largely depends on the research purpose, methodological approach, sample specificity, and the complexity of the phenomenon under investigation. Hennink and Kaiser (2022) suggest that qualitative studies commonly reach data saturation within 9–17 interviews or 4–8 focus group discussions. Given that this study involved 18 interviews with experienced logistics practitioners who shared similar professional backgrounds and direct exposure to GenAI adoption, we are confident that data saturation was achieved, as no new themes emerged during the final interview. Table 2 shows the interviewee's information.

3.3. Data analysis

Data analysis commenced with verbatim transcription of the interview audio recordings to ensure accuracy and completeness. Two early-career researchers who were involved in the data collection in China and possess expertise in qualitative approaches were then asked to read the transcripts multiple times to enhance their familiarity with the data. Prior to open coding, a coding protocol was developed through a series of roundtable discussions between the two researchers to establish shared understanding and ensure analytical consistency. These discussions focused on defining the unit of analysis, clarifying the inclusion criteria for assigning specific codes, and specifying exclusion criteria to avoid ambiguity or overlap. This preparatory process aimed to enhance the transparency, reliability, and rigour of the coding procedure.

During the open coding stage, the primary objective was to explore how GenAI can enhance organisational resilience. Particular attention was paid to how GenAI supports the preparation, response, recovery, and adaptation phases when organisations encounter disruptions. At this stage, the two researchers were encouraged to code as many relevant sentences as possible that described how GenAI contributes to managing or mitigating disruptions, ensuring comprehensive coverage of the data. The open coding process was supported by *NVivo 13* qualitative data analysis software, which facilitated systematic data management, retrieval, and comparison of coded segments (Zhao et al., 2025). Where discrepancies arose regarding whether specific sentences should be coded, or how they should be interpreted, a series of discussions was held between the two coders to reach consensus. At the conclusion of the open coding stage, inter-coder reliability was calculated, resulting in a coefficient of 0.72. According to Landis and Koch (1977), this value indicates substantial agreement between coders, thereby supporting the reliability and consistency of the coding process.

During the axial coding stage, the objective was to develop higher-order analytical themes that could generate deeper insights into the research topic. Open codes with similar meanings were systematically grouped and abstracted into broader categories. These categories were then labelled using established

Table 2. Interviewee's information.

Numbering	Interviewee (department and title)	Position	Years of working experience	Interview date
A	Machine Learning Department	Senior manager	11	August 2024
B	Machine Learning Department	Manager	10	August 2024
C	Warehousing Department	Group leader	15	August 2024
D	Warehousing Department	Frontline operations	10	August 2024
E	Warehousing Department	Warehouse manager	12	August 2024
F	Warehousing Department	Floor supervisor	10	August 2024
G	Control Tower Department	Control tower manager	13	October 2024
H	Control Tower Department	Flow controller	10	October 2024
I	Control Tower Department	Exception management specialist	15	October 2024
J	Control Tower Department	Workflow analyst	10	April 2025
K	Control Tower Department	Chief risk officer	16	April 2025
L	Risk Management Department	Risk data analyst	10	April 2025
M	Risk Management Department	Safety risk supervisor	13	April 2025
N	Risk Management Department	Risk strategy architect	14	April 2025
O	Risk Management Department	Operational risk analyst	16	April 2025
P	Transportation & Distribution Department	Route optimization analyst	12	August 2025
Q	Transportation & Distribution Department	Sorting supervisor	11	August 2025
R	Transportation & Distribution Department	Delivery dispatcher	12	August 2025

constructs drawn from both the organisational resilience literature and DCT. Relevant theoretical and empirical studies informed this process. For example, foundational work by Hillmann and Guenther (2021) guided the conceptualisation of organisational resilience, while more recent empirical research (e.g. Carayannis et al., 2024) helped interpret how GenAI adoption may influence resilience-building processes. At this stage, an iterative approach was adopted, moving back and forth between the empirical data and relevant theoretical frameworks to refine emerging themes. This constant comparison process enabled us to ensure conceptual alignment while preserving sensitivity to the data. The axial coding stage was completed once clear and theoretically grounded links were established between the inductively derived codes and the overarching analytical themes.

During the selective coding stage, the analytical themes were further synthesised into several overarching dimensions to develop a comprehensive understanding of how GenAI adoption can effectively support organisational resilience. This stage focused on integrating the refined themes into a coherent theoretical structure that explains the relationships between GenAI capabilities and resilience processes across the preparation, response, recovery, and adaptation phases. The findings are presented following the data structure approach outlined by King and Horrocks (2010), distinguishing between first-order codes, second-order themes, and aggregate dimensions.

4. Findings

Table 3 presents the findings of this study. We identified nine themes that contribute to understanding how the adoption of GenAI enhances organisational resilience.

During the preparation phase, GenAI adoption supports risk prediction, early alerting, and action recommendations, as well as real-time movement tracking and performance analytics. In the logistics industry, GenAI is integrated with camera systems to monitor frontline workers' movements and calculate their operational efficiency. This enables organisations to detect deviations from planned production schedules before disruptions escalate. As one interviewee explained: *'With hundreds of workers in the warehouse, our camera system records individual movement trajectories to calculate real-time efficiency and monitor for any misalignment with the production schedule'*. Another interviewee highlighted: *'One the GenAI predicts a risk, it issues an alert and triggers a series of pre-emptive actions designed to prepare for that specific threat'*.

During the response phase, GenAI adoption facilitates structured decision-making through decision-tree, strengthens cross-departmental coordination, and supports dynamic parcel allocation via path optimisation algorithms, thereby enhancing organisational agility in addressing disruptions. As one interviewee stated: *'The GenAI generates a decision tree that provides time-specific guidance. For instance, it dictates the next steps if you are at 90% completion, versus a different set of actions if you are at 80%. If an emergency drops progress below 50%, the system triggers a specific recovery plan'*. Another interviewee highlighted how GenAI contributes to organisational response: *'The GenAI provides specific guidance on how to control and analyze each risk node, while reporting the current management status. Furthermore, it quantifies the additional costs incurred by various mitigation measures'*.

During the recovery phase, we found that GenAI adoption contributes to multiple dimensions of organisational resilience. These include continuous monitoring actual performance against planned targets until full recovery is achieved, data-informed task allocation to maximise worker efficiency, and automated cost comparison across alternative scenarios to support optimal decision-making. As one interviewee stated: *'The cameras and dashboards act as relentless real-time trackers. If they detect that you are falling behind, they will immediately alert you to recalibrate your pace and get back on track'*.

During the adaptation phase, GenAI is powered by continuous model updates based on feedback from frontline workers.

5. Discussion: implications, limitations, and future research directions

GenAI offers numerous benefits and innovative applications across a wide range of sectors, including operations and supply chain management, marketing and communications, healthcare, and education and academic research (Huynh, 2024). Although the strategic potential of GenAI is widely acknowledged, the mechanisms through which its adoption translates into organisational resilience remain underexplored (Shatila, 2025). Drawing on insights from 18 semi-structured interviews with practitioners in China's logistics

Table 3. The adoption of GenAI to support organisational resilience.

First-order codes	Second-order themes	Support from interviewees																	Aggregate dimensions
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	
'Once the GenAI predicts a risk, it will notify us, issue an alert, and generate a series of contingency actions'.	Risk prediction, early alerting, and action recommendations	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Preparation
		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
'Our warehouse is also equipped with cameras that track personnel movement, calculate real-time efficiency, and determine if the progress is deviating from the current production plan'.	Real-time movement tracking and performance analytics	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
'GenAI creates a decision tree to guide our actions at every point in time'.	Feasible action plan with decision trees	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Response
		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		✓		✓		✓	✓	✓		✓	✓		✓	✓	✓		✓	✓	✓	
'Run the contingency plan in advance and, based on the GenAI's recommendations, contact other departments to ensure they are prepared'.	Enhanced communication and coordination between different departments	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
'When volumes are high, we use path optimization algorithms to assign more parcels to each courier while ensuring their total working hours remain the same'.	GenAI-enabled dynamic parcel allocation through path optimization	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
'Our system continuously calculates whether the current work efficiency is sufficient to meet the set objectives".	Continuous monitoring against planned performance until recovery	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Recovery
		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
'GenAI dynamically allocates tasks to individuals based on real-data on cameras and the Kanban system to maximize individual working efficiency".	Data-informed task assignment to maximize worker efficiency	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
'GenAI performs cost calculations to determine which scenario provides the best outcome".	Automated cost comparison across scenarios	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
'We seek to continuously refine large language, forecasting, decision-making, and computer vision models to strengthen organizational preparedness and adaptability in the face of future disruptions.'	Updating models based on frontline worker feedback	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Adaptation
		✓	✓	✓	✓	✓		✓	✓		✓		✓		✓	✓	✓	✓	✓	
			✓	✓				✓	✓		✓		✓		✓	✓				

Note: Three ticks (✓✓✓) indicate strong evidence, one tick (✓) indicates weak evidence, and no tick()indicates no evidence.

industry, our study develops a processual understanding of how GenAI adoption contributes to organisational resilience. Specifically, we examine the mechanisms through which GenAI supports the preparation, response, recovery, and adaptation phases of disruptions. By unpacking these mechanisms, our study advances the academic literature by bridging the gap between GenAI adoption and organisational resilience. It also offers important implications for organisations seeking to strengthen resilience through the strategic development of GenAI.

5.1. Theoretical contributions

Theoretical contributions refer to research that provides original insights into a phenomenon by advancing knowledge in ways that are considered useful or valuable for a particular purpose (Corley & Gioia, 2011). Our study responds to this description by proposing that the adoption of GenAI enhances nine key dimensions of organisational functioning and empowers both individuals and organisations through six underlying capability-building mechanisms. These strengthened individual and organisational capabilities, in turn, support the preparation, response, recovery, and adaptation phases of organisational resilience. Figure 1 presents the evaluated theoretical framework, illustrating the mechanisms through which GenAI adoption translates into resilience-building processes.

Our study's first theoretical contribution lies in identifying nine key themes through which GenAI adoption enhances organisational functioning. For example, we find that GenAI adoption strengthens capabilities such as risk detection, early alerting, action recommendations, cross-departmental communication and coordination, real-time employee monitoring through movement tracking, and performance analytics. Existing studies acknowledge the broad benefits of GenAI adoption. For example, Singh et al. (2026) suggest that GenAI contributes to demand forecasting, inventory management, route optimisation, and warehouse automation. Boone et al. (2025) highlight opportunities related to digitalisation and automation, demand and inventory planning, mitigation of geographical risks, sustainability, labour management, and transportation logistics. Similarly, Meafa et al. (2025) argue that GenAI adoption enhances agility, adaptability, restructuration, and reconfiguration capabilities. While these studies provide valuable insights into the general benefits of GenAI adoption, they tend to offer high-level or functional descriptions. Other studies, such as Modgil, Singh, et al. (2022) suggest that AI contributes to transparency, the development of personalised solutions, the minimisation of disruption impacts, and the facilitation of agile procurement strategies. Similarly, Modgil, Gupta, et al. (2022) argue that AI positively influences four perspectives of SCRes:

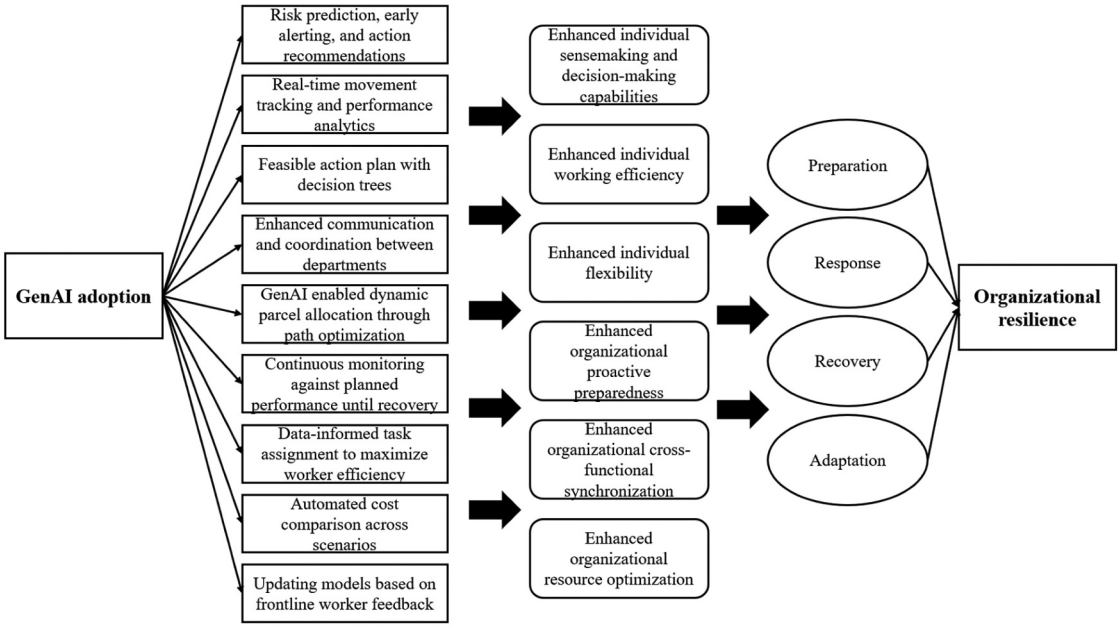

Figure 1. GenAI adoption to enhance organizational resilience.

recognising, analysing, reconfiguring, and activating. However, these studies focus on AI adoption for SCRes rather than on the role of GenAI in organisational resilience. By not clearly distinguishing between AI and GenAI, they provide only a limited understanding of the unique capabilities and implications of GenAI in this context. In contrast, our study advances the literature by systematically unpacking the specific mechanisms through which GenAI adoption enhances organisational functioning and by linking these mechanisms directly to the processual stages of organisational resilience.

Our study's second theoretical contribution lies in explicating how the direct benefits of GenAI adoption translate into individual- and organisational-level capabilities that, in turn, strengthen organisational resilience across the preparation, response, recovery, and adaptation phases. Specifically, our findings indicate that GenAI adoption enhances individuals' sensemaking and decision-making capabilities, working efficiency, and flexibility. At the organisational level, GenAI strengthens proactive preparedness, resource optimisation, and cross-functional synchronisation. This multi-level capability-building mechanism represents a key point of departure from much of the existing literature. Prior studies examining the relationship between AI/GenAI and organisational or SCRes typically identify mediating capabilities at a more aggregate level. For example, Shatila (2025) argues that GenAI adoption influences organisational resilience both directly and indirectly through agility, innovation, and digital leadership. Wu et al. (2026) further differentiate the role of GenAI across the stages of organisational resilience, highlighting its functions in information extraction during the absorption stage, knowledge integration during adaptation, scenario generation during recovery, and decision support during transformation. However, their study is based on a literature review rather than empirical investigation. Similarly, Beta et al. (2025) highlight capabilities such as visibility and real-time monitoring, problem-solving, facilitated communication, predictive analytics, and enhanced decision-making. While these studies identify important mediating constructs, they tend to conceptualise capabilities at a relatively macro level. In contrast, our study adopts a more fine-grained perspective, demonstrating how lower-level, operational benefits generated by GenAI adoption are translated into individual-level and organisational-level capabilities. These layered capability transformations collectively empower organisational resilience. In doing so, our study contributes a multi-level framework that clarifies the micro-to-macro mechanisms through which GenAI adoption supports resilience-building processes.

Finally, our study contributes to DCT by extending its applicability to the logistics industry and reinforcing the three core dynamic capabilities of sensing, seizing, and reconfiguring. For example, GenAI enhances sensing by enabling faster and more accurate risk prediction and early detection of emerging risks. It strengthens seizing by continuously comparing actual and expected performance, thereby supporting more informed and timely decision-making. In addition, GenAI supports reconfiguring by facilitating resource optimisation and cross-functional synchronisation. Collectively, GenAI operates as a cross-cutting digital augmentation layer that enhances organisational agility by improving firms' ability to sense environmental changes, seize emerging opportunities, and reconfigure resources and processes in dynamic environments.

5.2. Managerial implications

Our findings also offer valuable insights for organisational managers seeking to enhance organisational resilience to disruptions through the adoption of GenAI.

First, to effectively adopt GenAI in support of organisational operations particularly in logistics contexts, managers should integrate GenAI with complementary technologies such as camera systems and Kanban platforms. By combining GenAI with real-time employee movement tracking and task management systems, organisations can continuously monitor performance against scheduled targets. This integration enables employees to gain immediate visibility into their assigned tasks and performance expectations, thereby improving clarity, coordination, and operational efficiency.

Second, our study enables organisational managers to better understand the functional benefits of GenAI adoption, how these benefits translate into individual- and organisational-level capabilities, and how such capabilities collectively strengthen the preparation, response, recovery, and adaptation phases of organisational resilience. The evaluated framework (see Figure 1) developed in this study serves as a practical tool for explaining and communicating both the strategical rationale for adopting GenAI and the specific value it can generate. This framework can facilitate knowledge transfer across

different departments within the organisation, as well as among supply chain partners. By clarifying the mechanisms and outcomes associated with GenAI adoption, it can help align stakeholders, reduce resistance to technological change, and motivate coordinated adoption efforts. In doing so, the framework supports broader digital transformation initiatives at both the organisational and supply chain levels.

5.3. Limitations and future research directions

Although this study adopts a rigorous research methodology to investigate how GenAI adoption enhances organisational resilience, it is not without limitations.

First, this study employed widely accepted qualitative techniques, including semi-structured interviews for data collection and grounded theory for data analysis. Through this approach, we provided rich empirical evidence demonstrating the benefits of GenAI adoption, how these benefits translate into individual- and organisational-level capabilities, and how they ultimately contribute to organisational resilience. However, qualitative methods are sometimes criticised for their potential subjectivity and limited generalisability (Kohler et al., 2021). We acknowledge these limitations and recognise that our findings are contextually grounded in the logistics industry. Future research could adopt complementary quantitative approaches to enhance generalisability. For example, survey-based studies could be conducted across different industries or national contexts to validate the identified themes. Subsequently, multi-criteria decision-making techniques such as group-based analytic hierarchy process (Zhao et al., 2024) could be applied to prioritise the validated themes. Such approaches would enable researchers and practitioners to assess which dimensions of GenAI adoption contribute most significantly to organisational resilience and which dimensions exert comparative weaker effects.

Second, this study does not adopt a longitudinal design and therefore does not track organisations over time or across different phases of a disruption to directly observe in real-time of how they prepare for, respond to, recover from, and adapt to disruptions. Instead, our findings are based on participants' retrospective perceptions and experiences of how GenAI adoption contributes to organisational resilience across the preparation, response, recovery, and adaptation stages. Although such perceptual insights are valuable for theory building, they may be subject to recall bias and post-doc rationalisation. Future research could address this limitation by employing a longitudinal design, for example by embedding researchers within organisations that have adopted GenAI. Repeated observations and interviews with the same participants over time would enable scholars to capture dynamic resilience processes more directly and to examine how GenAI-enabled capabilities evolve across successive disruptions.

Third, this study adopted a single-case study approach and justified its rationale by drawing on Yin's (2013) five rationales for single-case research. While this approach allows for in-depth contextual analysis and rich theory development, it has been criticised for concerns related to methodological rigour, potential researcher subjectivity, and limited external validity (Rashid et al., 2019; Saup et al., 2026). To address these limitations, future research could adopt a multi-case study design by examining multiple organisations that have adopted GenAI. Such an approach would enable both within-case and cross-case analyzes, therefore enhancing analytical generalisability and strengthening the robustness and validation of the findings.

Fourth, this study is subject to limitations in generalisability, as it focuses on the logistics industry and derives insights from data collected within a single company. However, three forms of generalisation widely discussed in the literature may help guide future research (Drisko, 2025; Prabhu, 2020). First, generalisation from sample to population suggests that future studies could employ survey methods to test the transferability of our findings (e.g. identified themes) across different industries and countries, thereby enabling cross-industry and cross-national validation. Second, generalisation from concepts to theory refers to the development of inductively derived insights that can be applied deductively. Accordingly, future research could formulate propositions based on our empirical findings and examine them across diverse contexts. Finally, generalisation from case to case highlights the value of comparative analysis; future studies could assess the applicability of our findings in other logistics firms that have implemented GenAI.

6. Conclusion

GenAI has emerged as a transformative technology with profound implications for organisations. Despite its considerable potential, understanding how GenAI adoption enhances organisational resilience across the preparation, response, recovery, and adaptation phases remains limited, revealing a critical gap in the literature. Addressing this gap, and grounded in DCT, we conducted semi-structured interviews within a leading logistics company and analysed the data using a grounded theory. Our findings reveal that GenAI contributes to organisational resilience by strengthening risk prediction and real-time monitoring in the preparation phase, and by enhancing the flexibility of response and recovery through the development of more practical plans based on continuous comparison between actual and expected performance. Our novelty lies in demonstrating that GenAI does not directly enhance organisational resilience; rather, its effects are mediated through improvements in individual level capabilities such as sensemaking, efficiency, and flexibility, as well as organisational level capabilities, including proactive preparedness, cross-functional synchronisation, and resource optimisation. Overall, this study advances knowledge at the intersection of GenAI and organisational resilience by offering a processual and multi-level explanation of how GenAI-enabled capabilities strengthen resilience across the disruption lifecycle. In doing so, it also provides meaningful theoretical insights and practical guidance for firms seeking to strategically adopt GenAI to enhance resilience.

Author contributions

CRediT: **Yue Hou:** Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Resources, Software, Writing – original draft, Writing – review & editing; **Ahmed Zainul Abideen:** Writing – review & editing; **Guoqing Zhao:** Conceptualization, Data curation, Investigation, Methodology, Project administration, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing; **Xiaoning Chen:** Writing – review & editing; **Huilan Chen:** Writing – review & editing; **Sebastian Elgueta:** Writing – review & editing.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Data availability statement

The data used to support the findings of this study are available from the author upon request.

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Appendix 1 Interview guide

1. Introductory questions

(i) Interviewee information
- What is your current designation?
- Can you provide a brief overview of your job within the company operations?
- How many years have you worked for this company?
- How many years of work experience do you have in the same job role in total?

(ii) Company information
- Can you provide a brief overview of the company structure and its operations?
- How many employees work for the company?
- What are the key products or services that your company provides?

2. GenAI technologies adopted and associated technologies
- Have you or your organisation used any GenAI tools? If yes, which ones and for what purposes?
- How about other technologies adopted associated with GenAI?

3. GenAI for organisational resilience

(I) Preparation (e.g. risk assessment, scenario planning, and forecasting)
- How can GenAI support risk identification and scenario analysis?
- Have you used GenAI for demand forecasting or for simulation modelling?
- What are the key benefits and limitations of GenAI in pre-disruption planning?

(II) Response
- How might GenAI tools help in responding to unexpected disruptions?
- Can GenAI generate effective mitigation strategies in real-time?
- Are there any examples of its use in crisis communication or decision support?

(III) Recovery
- In your view, how can GenAI accelerate the recovery of organisational functions?
- Have you seen GenAI being used for re-routing, resource allocation, or restocking post-disruption?
- What data or input is needed for GenAI to be effective in this phase?

(IV) Adaptation
- How can GenAI assist in long-term adaptation, such as rethinking sourcing strategies or network design?
- Does GenAI contribute to organisational learning or post-event analysis?
- What role might GenAI play in building proactive and future-ready organisations?