

Digital Supply Chain Capabilities and Supply Chain Resilience: The Mediating Role of Digital Agility in Saudi Food Manufacturing Companies

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Abstract

Although digitalization is continuously rising in importance and the need for supply chain resilience is increasing, there has been limited empirical studies have been conducted showing the role of digital supply chain capabilities for digital agility to achieve supply chain resilience, particularly in the food manufacturing sector in Saudi Arabia. From the Dynamic Capabilities Theory perspective, this study investigates both the influence of digital supply chain capabilities on supply chain resilience, as well as the intervening effect of digital agility. The questionnaire was distributed to 205 employees and managers from food manufacturing companies in Saudi Arabia, and analyzed using the SEM technique. From a supply chain resilience point of view, the results show that digital supply chain capabilities have a significant positive impact on supply chain resilience, and digital agility has a positive impact on supply chain resilience. In terms of digital agility, it has a positive impact on supply chain resilience where digital supply chain capabilities also have a significant positive impact. Additionally, the results indicate that digital agility fully performs the function as the major mediation between digital supply chain capabilities and supply chain resilience.

Keywords: Digital Supply Chain Capabilities; Digital Agility; Supply Chain Resilience; Food Manufacturing.

1.INTRODUCTION

The global manufacturing sector is undergoing a rapid transformation toward digitalization amid developments associated with the Fourth Industrial Revolution (Industry 4.0), which have reshaped production and logistics operations, business models, and approaches to supply chain management. Digitalization is not just about increasing operational productivity but is more of a strategic requirement closely linked with firms' competitiveness and ability to adapt to changing business landscapes. Digital and smart technologies have been some of the building blocks for the evolution of advanced digital and analytical competencies that have been improving automation, performance based on data, real-time visibility for operations, and integration among the various actors in the value chain (Park, 2016; Ricárdez-Estrada et al., 2024). Thus, digitalization continues to be one of the key drivers for increasingly interconnected and responsive supply chains with efficient supply chain actor-based information flows, integration and coordination.

Hence, continuity of supply and an ability to withstand shocks are key operations and supply chain management challenges in this increasingly complex, uncertain and disrupted world of digital transformation. Long, complex, and interdependent supply chains were challenged when multiple levels of the chain were simultaneously affected by shocks originating from

various sources across the globe, such as the COVID-19 pandemic, which caused a mixture of production slowdowns, logistical delays, and shortages of production inputs, product, and workers (Shi et al., 2020). Further, geopolitical conflicts, volatile raw material and energy prices, and rapidly changing markets have exacerbated the fragility of the supply chains, driving businesses to rethink their operations and establish strategies that are more resilient to disruptions (Ricárdez-Estrada et al., 2024).

The concept of Supply Chain Resilience (SCR) has become prominent in recent years and is at the core of how to overcome the challenges of turbulent business environment. Supply chain resilience is defined as the ability of a supply chain to resist shocks, adjust to change and recover from disruptions, thereby keeping the operations going and helping them realize the operations goal in the case of unexpected events (Shi et al., 2020). This means that everything in relation to operational efficiency is not enough anymore; capabilities must also be gained to be able to deal with and react to disruption along the chain. In this context, digital technologies and skills offer valuable possibilities for the promotion of decision-making and enhance firms' capacities of dealing with the growing complexity and risks faced by current supply chains (Ricárdez-Estrada et al., 2024).

Digital Supply Chain Capabilities (DSCC) have thus become one of the key techniques to improve the capacity of organizations to manage such complexity. It is not sufficient to have all of the most powerful technologies; in addition, organizations need to acquire organizational, technological and analytical capabilities of leveraging these technologies across their supply chain operations. These include the ability to handle real-time data transfer, make integration and interoperability effortless, improve visibility in the supply chain, foster collaborative and data-driven decision-making (Alquraish, 2025). Digital capabilities are also present at varying stages of the value chain and can be used to enhance supplier management, production and logistics processes, as well as customer support, which can boost the capacity to deal with complexity and disruptions within organizations (Attaran, 2020).

But the availability of digital technologies and digital resources are not enough to answer the question of how supply chain resiliency can be obtained. A need still exists for understanding how digital capacities translate to effective responses when it comes to the organization. In this context Digital Agility (DA) becomes a potential mechanism that is used to illuminate how digital resources and capabilities can become an organizational capacity for swift responses to changes and disruptions. The digital supply chain has potential to be more adaptable and responsive to changing internal and external conditions, which means better capacity to resist the disruption (Shi et al., 2020; Ricárdez-Estrada et al., 2024). From this viewpoint, digital agility would be considered as a bridge between the halving of digital capabilities and the capacity to respond and adapt.

Ahmed et al. (2025) brought significant empirical evidence in this regard in support of this mechanism. The results they found showed that digital technologies and digital capabilities have positive impacts on the resilience of the supply chain and that the influence of digital capabilities is mediated by digital agility. Additionally, the study adopted Dynamic Capabilities Theory (DCT) to account for how firms mobilize digital resources and programs and activate their digital capabilities (such as digital agility) to become and remain supply chain resilient (Ahmed et al., 2025). It is especially relevant given this is a shift away from simply having the digital resources to using them as an organizational capability and does so with the aim of informing the understanding of how firms can respond and adapt.

The Saudi context of this analysis is rich with lessons to learn regarding these relationships in the light of the economic and industrial transformation agenda in the Kingdom of Saudi Arabia, under the banner of Saudi Vision 2030 with its emphasis on economic diversification, development of the industries and strengthening the technological and logistics capacities. In this context, the National Industrial Development and Logistics Program (NIDLP) aims to promote and foster the food manufacturing industry as depicted in specialized clusters based on the interconnection of all players from the agriculture production sector with the manufacturing sector and their logistics suppliers, which will add more value, improve competitiveness and drive food security. The programme also aims to boost the domestic demand for manufactured food products to about 85%, highlighting the critical role of the industry in the national development agenda (National Industrial Development and Logistics Program, 2024).

This direction has continued with recent developments. The Kingdom of Saudi Arabia has witnessed significant growth of the food sector for food manufacturing and processing in addition to its investment and infrastructure development, which has increased within the country's efforts to develop and diversify into the food sector to make the Kingdom a more important hub for the food sector in the near future (Saudi Vision 2030, 2025). The Ministry of Environment, Water and Agriculture also draws emphasis for strengthening food security in the Kingdom by increasing the food production volumes and diversifying food supply sources; data and digital solutions for tracking food production, supply chains, inventories, and markets and foresight on impending risks; and consequently, enhance the capacity to promptly and appropriately respond to food shocks (Ministry of Environment, Water and Agriculture, 2026). The progress made under these developments further highlight the need to build up digital capability and resilience in the food manufacturing sector, which is directly critical to the continuity of raw material flows, manufacturing, distribution and logistics activities, along with the realization of national efforts to attain food security goals.

Although some attention has been directed to the digitalization-supply chain resilience nexus in recent years, three interlinked gaps provide reasons for further research. First part of the existing literature has centered on the topic of digital technologies and digital transformation in a rather broad way, and the development of Digital Supply Chain Capabilities as a whole, as an organization, technology and analytical set of capabilities, is still lacking. Second, while recent studies reinforce digital agility as a mediation mechanism to explain digital capability's impact on actual supply chain resilience, more research is required to better understand digital agility as a mechanism to translate digital capability into real SC resilience, instead of only digitalization and SC resilience (Piprani et al., 2025; Ahmed et al., 2025). Third, empirical evidence concerning these relationships remains limited within the Saudi food manufacturing sector, despite the sector's strategic importance to Saudi Vision 2030 and national food security. Accordingly, integrating these constructs within a single model and examining them in this specific sectoral and geographical context provides an important opportunity to extend the existing literature.

Building on these gaps, the present study aims to examine the relationship between Digital Supply Chain Capabilities and Supply Chain Resilience, while investigating the mediating role of Digital Agility among food manufacturing companies in Saudi Arabia. Through this model, the study seeks to provide a deeper explanation of how digital supply chain capabilities can be transformed into an actual capacity to enhance resilience, thereby advancing theoretical understanding of the relationships among digital capabilities, digital agility, and supply chain

resilience, while providing practical implications for Saudi food manufacturing companies seeking to develop supply chains that are better able to adapt and respond to disruptions.

2. LITERATURE REVIEW, THEORETICAL FRAMEWORK AND HYPOTHESES DEVELOPMENT

2.1 Supply Chain Resilience

Supply chain resilience has become a strong topic in the supply chain management literature in response to increasingly intricate supply networks and a growing sensitivity to economic, geopolitical, technological and natural shocks. The notion of resilience first arose in the field of risk management literature and the work related to risk assessment of the vulnerability of supply chains. Initial research targeted vulnerabilities and risks which might threaten material, information and resource flows (Jüttner et al., 2003). Christopher and Peck (2004) then proposed a better understanding of the term supply chain resilience as the ability of the system to return to a more advantageous condition following a disruption. Sheffi and Rice Jr. (2005) then broadened the perspective to think of resilience as a capacity that can be a source of a competitive advantage.

As disruptions expand in size and effect, the resiliency of a supply chain goes beyond the point of just bouncing back from a disruption. It now includes an organization's capacity to anticipate, prepare for, react to, adjust and recover from disruptions, keeping business continuity and performance going. Supply Chain Resilience is the capacity of a Supply Chain to resist disruption, adapt to changes, restore operations to maintain business continuity, have cost control and be productive in this context (Piprani et al., 2022). Resilience has also been indicated to include both proactive and reactive strategies that will allow for companies to better prepare, mitigate and respond to risks (Tukamuhabwa et al., 2017).

Survival is not the sole effect of resilience as resilience can also be a strategic capability to quickly adapt to change and leverage opportunities in the context of a collective disruption (Lin et al., 2023; Zhao et al., 2023). Thus, the survival, adaptation, and reorganization of the supply chain under uncertainty is increasingly associated with resilience, and understanding the capabilities a company can utilize for building resilience is both theoretically, and practically, important.

2.2 Digital Supply Chain Capabilities

The rapid digitalization of the industrial environment has changed the quality and dynamics of supply chains and ushered in the concept of Digital Supply Chain (DSC). The Digital and Smart Chain (DSC) is an advanced supply chain model that harnesses a range of digital and smart technologies to promote greater connectivity, collaboration and efficiency between multiple supply chain stakeholders. The Digital Supply Chain concept is still evolving, but the literature does agree that processes and stakeholders must be aligned, communication and information shared enhanced and there needs to be more interaction and coordination between organizations. Digital supply chains are defined by their internal and external linking of processes, customers and suppliers by leveraging the available tools for communication, data collection and information transfer, (Büyüközkan & Göçer, 2018; Weerabahu et al., 2023). Digitalization is not just the process of bringing new technologies into the agri-food supply chain but also building up digital and analytical skills so that organizations can achieve measurable benefits from new technologies. Digitalization is known to help to integrate the

value chain, boost productivity, innovate systems and technologies, as well as increase the resistance to disruptions in the literature. Specifically, data analytics in the digital supply chains is offering supply chain specific real-time information, which allows for the proactive detection of anomalies, identification of alternative supply chains, and creation of more adaptive methods to address disruption impacts (Oubrahim et al., 2023). So, the potential for digitalization is not only the technology and hardware, but how that technology and hardware can help improve processes and enable strategic decisions based on data.

Supply chain capabilities – the ability of an organization to use internal and external resources and information to support supply chain activities such as: meeting customer quality expectations, delivery times, establishing effective customer relationships, solving customer problems and creating products and services with supply chain partners (Yu et al., 2018). Within the digital world, these can be seen as the elements that allow a supply chain to function effectively in a rapidly evolving digital world. The attributes that are integrated have been called "ilities" in the literature due to the system's characteristics, value, and performance associated with these attributes (De Weck, 2012). By identifying and quantifying these attributes, stakeholders involved in the supply chain would be able to uncover inefficient parts, inform the decision-making process, streamline the processes and minimize costs (Fantazy et al., 2016).

Ricárdez-Estrada et al. (2024) proposed a list of capabilities of digital supply chains, such as agility, connectivity, flexibility, interoperability, proactivity, scalability, sustainability, traceability, transparency and visibility. These capabilities span several different dimensions of a supply chain's capability of functioning in the digital world. Connectivity means to communicate and exchange information, whereas interoperability means exchange and integration of data between system. Transparency and visibility are the capacity to get the right information in real time and to track processes and performance at every stage of the supply chain.

These skills are also associated with the use of a number of new and emerging digital and smart technologies including artificial intelligence, big data, blockchain, cloud computing, digital twin, Internet of Things, RFID and robotics. These technologies can be used for planning, forecasting, inventory management, tracking, optimizing the transportation and improve visibility, transparency, communication and collaboration between supply chain actors (Roy, 2021; Ivanov, 2022). These technologies, however, do not necessarily bring value in isolation or without specific context, as value is dependent on the organizational and technological context, and the ability of the organization to effectively integrate and deploy these technologies (Saarikko et al., 2020).

Digital capabilities then need to be built through various challenges including high investment costs, integration of digital systems with existing systems, lack of digital capabilities, resistance towards change, ready infrastructure, and digital vision by the partners in supply chain (Agrawal et al., 2020; Wuest et al., 2022). A clear strategic direction and proper infrastructure as well as digital capabilities and managerial support and having a shared vision across supply chain stakeholders are additional requirements to consider to ensure successful digital transformation. In this study, Digital Supply Chain Capabilities is therefore defined as a collection of organizational, technical and analytical capabilities that can be implemented through digital resources and technologies to improve the integration, information sharing, visibility, decision-making and response across the supply chain value chain.

2.3 Dynamic Capabilities Theory

Dynamic Capabilities Theory is the apt theoretical framework for the current study, because it provides insights into how organizations utilize their resources and capabilities in environments where technological changes, competition, and constant upheavals occur. Teece et al. (1997) extended this line of thought to try to address the quest for companies to attain and maintain a competitive advantage in fast-evolving markets, noting that the ability to have resources, assets, and skills is not enough to achieve sustainable strategic outcomes. Instead, an organization can only be successful if it can manage to integrate, assemble and reconfigure internal and external skills that will respond to environmental changes (Teece et al., 1997).

Dynamic capabilities are not the same as operational capabilities because operational capabilities mainly have to do with how an organization performs current activities effectively, while dynamic capabilities are associated with how well an organization can build, modify and use its resources to manage future changes. The strategic value of resources therefore is not solely based on ownership, but also hinged on how well the organization can reorganize and upgrade the resources according to changing technology, markets and competition. In this regard, Teece (2017) stressed that dynamic capabilities help an organization to “sense and seize” changes and opportunities in their environment, and “reshape resources and processes for continuity and competitiveness in the changing environment.”

This thought is especially significant in the broader frame of Digital transformation and supply chains. New technologies unfold at a fast pace, and supply chains are continuously subjected to unpredictable fluctuation in demand and supply, operational disruptions and consecutive phases of information flow and inter-stakeholder coordination. It's not only a matter of having digital technologies or infrastructure – implementing the benefit of these will only happen once a company can adapt, deploy and reconfigure them as necessary. Digital Supply Chain Capabilities in this context are defined as a portfolio of capabilities that allows an organization to use digital resources and technologies to enhance information flow, integration, coordination, monitoring and decision support in the supply chain.

A dynamic capability's perspective: Digital resources do not invariably result in improved organizational outcomes. Their worth is determined by how well the organization can mobilize, integrate and reorient these elements to the environment, as necessary. Digital agility, for this reason, is an important organizational lever to grasp the relation between digital capabilities and resilience of the supply chain. Digital capabilities are about access to data, information and processes that enables understanding of change and monitoring processes, whereas digital agility is about using digital capabilities and capability to process and change processes, decisions and procedures quickly and effectively in response to change and disruption.

As a result, digital agility can be considered as a capacity in between, an intermediate ability that assimilates digital capacities to quicker and more versatile organizational reaction. A company with sophisticated digital capabilities will be able to access, analyze, share, and monitor data and processes, but to be a resilient company they need to be able to action these capabilities in a timely fashion and re-configure and focus resources and processes in the event of a disruption. As a result, digital capability can directly influence supply chain resilience through increasing visibility, digital integration and information flow and indirectly through an increase in digital agility.

Thus, from a theoretical standpoint, this perspective has provided a basis for the proposed model which consists of the Digital Supply Chain Capabilities (digital capabilities), Digital

Agility (ability which is required to transform these into quick and adaptive reactions) and Supply Chain Resilience (capacity of Supply Chain to prepare for, respond to, adapt to, and recover from disturbances). This idea shares the essence of dynamic capability theory, which is about maintaining resource volatiles, combining or restructuring them to address environmental shifts (Teece et al., 1997; Teece, 2017).

2.4 Digital Agility as a Mediating Capability

Digital agility is one possible pathway to understanding how digital is taken up as a transformative tool for better strategic outcomes. Digital capabilities provide the technological and informational functionalities which deliver concrete advantages up and down a company's supply chain, allowing the company to track the chain, analyze data and share information, while digital agility is the capacity of an organization to swiftly extract benefits from digital capabilities to adjust forward-looking decisions and/or processes in reaction to change.

Digital capabilities can offer real-time insights of operations in the supply chain, enabling companies to sense and respond better to demand and supply variations (Shi et al., 2023). Digital innovations also play a role in supporting the adaptation of supply chains in the face of changes and the revitalization of the chain in the event of a disruption (Piprani et al., 2023). This relies on individual capabilities that enable the capability to collect and analyse the data, on operational capabilities that are able to support technological infrastructure such as monitoring, communication, and on managerial capabilities which are able to support management decisions, resource allocation and strategic planning (Luthra et al., 2020; Belhadi et al., 2022; Dubey et al., 2023; Lu et al., 2023). Hence, Digital Agility can be considered a capacity that enables organizations to make rapid decisions on how to harness digital resources and technologies to respond to change, redirect practice and modify plans and procedures based on information available. Therefore, this is not merely the outcome of the digital transformation process, but also an organizational capability capable of turning digital potential into proactive responses and reflecting the reasoning behind a dynamic capability (Teece et al., 1997; See Teece, 2017).

2.5 Digital Supply Chain Capabilities and Supply Chain Resilience

The literature supports a positive relationship between digital capabilities and supply chain resilience as reported in the literature. Digital capabilities provide greater visibility into operations which allows organizations to sense and respond to fluctuations in supply and demand information, and thereby help their supply chains adapt and recover from disruptions (Shi et al. 2023; Piprani et al. 2023). In addition, employees' digital capabilities contribute to the organization's resilience/agility in the era of technological change and disruption (Iftikhar et al., 2024; Papadopoulos et al., 2017); skills in operations and management help improve operational processes, assist in planning and decision making, and help determine risks (Ivanov & Dolgui, 2020; Essex et al., 2015).

So, companies can use digital capabilities to strengthen their supply chain's visibility, sensing, response and adaptation, and overall recovery process. It is important to note however, that merely having digital resources is not enough to explain how these outcomes can be achieved and exploring organizational mechanisms that can translate digital capabilities to provide some level of resilience is a useful consideration.

H1: Digital Supply Chain Capabilities positively influence Supply Chain Resilience in Saudi food manufacturing companies.

2.6 Digital Supply Chain Capabilities and Digital Agility

Digital capabilities contribute to enhanced digital agility by accelerating information flow, improving communication, and facilitating decision-making. Operational capabilities and technological infrastructure enable real-time monitoring and data exchange, while individual capabilities help in the effective collection, analysis, and use of information (Belhadi et al., 2022; Dubey et al., 2023). The managerial competencies also allow organizations to focus digital resources on their strategic goals and make decisions more quickly and sensitively which changes (Kamble et al. 2020).

Therefore, the more a company integrates technology, data, human resources and management into its supply chain processes, the more it can flex processes and respond rapidly to changes. This relates to the concept of dynamic capability, defined as the ability to change and use resources to adapt to changing surroundings, which accounts a key principle of strategic value (Teece et al., 1997; Teece, 2017).

H2: Digital Supply Chain Capabilities positively influence Digital Agility in Saudi food manufacturing companies.

2.7 Digital Agility and Supply Chain Resilience

Agility is related to supply chain resilience because of the ability of an organization to quickly adapt their processes and their resources to changes in supply, demand and operating circumstances. There are many indications in the literature that digitally supported supply chains are more able to face and adapt to uncertainty and change, and to withstand and recover from unexpected events (Meersman et al., 2023; Piprani et al., 2023; Shi et al., 2023).

Digital agility helps to convert the information and data at hand into quick actions and decisions, thus minimizing disruption effects, speeding up response times and keeping the lines of business open. Therefore, digital agility – a company's ability to rapidly reconfigure processes and resources to deal with disruptions – is a dynamic capability and should therefore be expected to have a positive effect on company supply chain resilience.

H3: Digital Agility positively influences Supply Chain Resilience in Saudi food manufacturing companies.

2.8 Mediating Role of Digital Agility

Based on the above, an indirect relationship between Digital Supply Chain Capabilities and Supply Chain Resilience can be explained via Digital Agility. Digital capabilities also deliver the tools, infrastructure and information needed to enable a business to track its supply chain, analyze data and integrate, whereas digital agility is a business's ability to turn these capabilities into speedy and agile responses. The difference between possession of resources and capabilities and mobilization, reconfiguration, and utilization of resources and capabilities in a way that suits the changing environment resembles the logic of Dynamic Capabilities Theory that sets apart resources and capabilities from their mobilization, reconfiguration, and utilization in a manner that helps suit the changing environment (Teece et al., 1997; Teece, 2017). A view from this angle is a view which is not to be taken for granted that digital capability automatically brings resilience; a view which expects organizations to demonstrate the agility that can allow them to respond and adapt as a result of their digital capability.

The study by Ahmed et al. (2025) provided significant empirical support for this logic, demonstrating that digital technologies and capabilities positively impact supply chain

resilience, and that digital agility plays a mediating role in explaining this relationship. This is based on dynamic capability theory, which explains how digital resources and initiatives are transformed into organizational capabilities that support resilience. By focusing on digital agility as a mediating variable the study seeks to go beyond just establishing digitalization's direct connection to resilience and to explain how and why digital capabilities influence supply chain resilience. Based on that, the study proposes the following hypothesis:

H4: Digital Agility mediates the relationship between Digital Supply Chain Capabilities and Supply Chain Resilience in Saudi food manufacturing companies.

The theoretical model of this study is therefore seen as a logical sequence, namely that Digital Supply Chain Capabilities are the basis for performing digital, technical and analytical work, and Digital Agility is considered as a mechanism for organizations to respond quickly to these capabilities. This ultimately improves the supply chain's capacity to sense, respond, adapt, recover and maintain business continuity – in other words – their Supply Chain Resilience. This sequence not only creates a coherent basis for the proposed model from the perspective of DCT, but also helps in resolving the need for understanding the mechanisms sharing the transmission of Digital capabilities to Supply chain's Resilience, especially for food industry companies in Saudi Arabia.

3. METHODOLOGY

3.1. Research Design

The current study employs a quantitative approach using descriptive analytical methodology because the study focuses on the facts and needed a method that can present the facts and make an analysis of the facts. These goals involve analyzing the factors that enablers the digital supply chain, and their relationship with digital agility, supply chain resilience; and the role of digital agility as a mediator between digital supply chain capabilities and supply chain resilience. The primary data will be gathered via a structured questionnaire to develop insights from the Saudi Arabian food manufacturing firms that have first-hand experience in the supply chain processes, operations, logistics, procurement, and digital transformation. Data obtained is then analyzed with statistical tools, in order to test the reliability and validity of the tools of measurement, direct and indirect relationships between variables and testing hypotheses. The study also has a cross sectional design which will be used to capture the perceptions of the level of digital capabilities, digital agility and supply chain resilience of the companies in this study at a particular point in time.

3.2. Research Population and Sample

The study population comprises food manufacturing companies in the Kingdom of Saudi Arabia (KSA), a sector that is important and closely connected with food security, including multi-supplier supply chains, production process and distribution networks, logistics services. This study aims at the employees in these companies who are directly involved with the activities in Digital Supply Chain, operation, procurement, logistics, inventory management, and Transformation (TS) directly linked with Digital Transformation, and can evaluate the current level of the study's concepts (Digital Supply Chain Capabilities, Digital Agility and Supply Chain Resilience) in their companies. Purposive sampling will be used to select the most appropriate sample, considering those who have knowledge and experiences that will provide the appropriate data to check the model and hypotheses being proposed.

By analyzing the data in Table.1 regarding the characteristics of the research sample, it becomes clear that the sample consists of 205 respondents working in food manufacturing companies in the Kingdom of Saudi Arabia. Males represent the largest proportion of the sample, accounting for 70.7%, while females represent 29.3%. This distribution indicates a higher representation of male respondents within the study sample.

In terms of age, respondents' age group between 36–45 years old make up the largest segment of 44.4% followed by 30–35 age group with 22.0%, respondents over 45 years of age width 21.5%, and last respondent aged below 30 years width 12.2%. On education, most of the respondents have University or College qualification (69.8 %), and Master's or PhD qualification (20.5 %), with 9.8% securing Diploma or High school education .

Regarding professional experience, 61.5% have more than 10 years of potential experience, followed by 26.3% having 5 - 10 years of professional experience, and 12.2% having less than 5 years of job experience. Looking at this distribution, almost all the respondents have a high level of professional experience. In terms of job position, the sample population most represented by the managers/department heads (34.6%), followed by the supervisors (32.7%), employees/specialists (23.4%) and the senior and top management (9.3%). In the last instance, within functional area, there are more generalist members who are engaged in Supply Chain and Procurement related activities (28.3%) followed by those working in Operations and Production activities (26.3%), Logistics and Warehousing (19.5%), IT and Digital Transformation (15.1%) and other related activities (10.7%).

Table 1. Demographic Characteristics of the Sample Participants

Characteristics		n (205)	%
Gender	<i>Male</i>	145	70.7
	<i>Female</i>	60	29.3
Age	<i>Less than 30 years</i>	25	12.2
	<i>30 – 35 years</i>	45	22
	<i>36 – 45 years</i>	91	44.4
	<i>Over 45 years</i>	44	21.5
Education Level	<i>Diploma / High school</i>	20	9.8
	<i>University / College</i>	143	69.8
	<i>Master / PHD</i>	42	20.5
Experience	<i>Less than 5 years</i>	25	12.2
	<i>5 – 10 years</i>	54	26.3
	<i>More than 10 years</i>	126	61.5
Job Position	<i>Employee / Specialist</i>	48	23.4
	<i>Supervisor</i>	67	32.7
	<i>Department Manager / Head</i>	71	34.6
	<i>Senior / Top Management</i>	19	9.3
Functional Area	<i>Supply Chain / Procurement</i>	58	28.3
	<i>Logistics / Warehousing</i>	40	19.5
	<i>Operations / Production</i>	54	26.3
	<i>IT / Digital Transformation</i>	31	15.1
	<i>Other related functions</i>	22	10.7

Total	205	100%
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3.3. Data Collection Instrument

Regarding the measurement tool, the study used a structured online questionnaire for data collection, in order to examine the proposed research model and test the hypotheses. The questionnaire was designed by referring to the literature and making it suitable for food manufacturing companies in Saudi Arabia. The instrument was designed to measure three main constructs: Digital Supply Chain Capabilities (DSCC), Digital Agility (DA), and Supply Chain Resilience (SCR).

The questionnaire consisted of two main sections. The first section collected the demographic and occupational characteristics of the respondents such as gender, age, educational level, work experience, occupation, functional areas. The second part had 38 items covering the three constructs of the study. Digital Supply Chain Capabilities was evaluated with 20 items spanning across 4 dimensions; 5 items each for digital connectivity and integration, digital visibility and transparency, digital data management and analytics, digital collaboration and data-driven decision-making. A set of eight questions were asked to assess Digital Agility, and a set of ten questions were asked to assess Supply Chain Resilience, the capacity to anticipate, respond to, adapt to, and recover from a disruption to the supply chain, and to maintain operational continuity.

All construct items were measured using a five-point Likert scale, ranging from 1 = Strongly Disagree to 5 = Strongly Agree, with 3 representing a neutral response. The questionnaire was reviewed to ensure the clarity, relevance, and appropriateness of the items to the study context before its administration to the target respondents.

3.4. Data Analysis

The electronic questionnaire technique was used to collect the data from the employees and managers of food manufacturing companies in the Kingdom of Saudi Arabia. 205 valid responses were received and analyzed. Respondents were provided the information that the questionnaire was being conducted as a part of academic research, and participation was voluntary. Both confidentiality and anonymity of responses gathered have been respected during the research process.

Partial Least Squares Structural Equation Modeling (PLS-SEM) was used to analyze the collected data. The analysis process was carried out in two main stages. The first one was the measurement model which was used to check the indicators' reliability, internal consistency reliability, convergent validity and discriminant validity. The reliability of indicators was evaluated using Factor loading and both Cronbach's Alpha and rho_A along with Composite Reliability (CR) were obtained to evaluate Internal consistency. Average Variance Extracted (AVE) has been used to calculate convergent validity and the HTMT ratio and Fornell-Larcker criterion to calculate discriminant validity.

Second, to test the hypothesized relationships between Digital Supply Chain Capabilities, Digital Agility and Supply Chain Resilience, this structural model was evaluated. The estimation of Path coefficients (β), t-values and p-value were carried out by using bootstrapping methodology using 5000 subsamples. The explanatory power of the endogenous constructs was evaluated using R^2 , while f^2 was used to assess effect sizes and Q^2 to assess predictive relevance. Model fit was assessed using the Standardized Root Mean Square Residual (SRMR) and NFI. Finally, the mediating effect of Digital Agility in the

relationship between Digital Supply Chain Capabilities and Supply Chain Resilience was examined through the significance of the indirect effect.

4. RESULTS

4.1 Measurement Model Assessment

The measurement model was initially assessed to determine the reliability and validity of the constructs before testing the structural relationships. The assessment included indicator reliability, internal consistency reliability, convergent validity, and discriminant validity. As shown in **Table 2**, the majority of measurement items achieved factor loadings above the recommended threshold of 0.70. The few items with relatively lower loadings remained above the minimum acceptable level and were retained because of their theoretical relevance and their contribution to the content validity of the constructs.

The Digital Supply Chain Capabilities construct was represented by four dimensions: Digital Connectivity and Integration, Digital Visibility and Transparency, Digital Data Management and Analytics, and Digital Collaboration and Data-Driven Decision-Making. Each dimension was measured using five items. The factor loadings of the items ranged approximately from 0.74 to 0.90, indicating satisfactory indicator reliability.

The Digital Agility construct consisted of eight items, with loadings ranging from approximately 0.78 to 0.91. These items capture the organization's ability to use digital resources to respond rapidly to changes, modify processes, adjust decisions, and reconfigure resources when supply chain conditions change.

Supply Chain Resilience was measured using ten items covering anticipation, response, adaptation, recovery, and continuity. The factor loadings ranged from approximately 0.76 to 0.90, indicating that the indicators adequately represent the underlying construct.

Overall, the measurement results provide evidence that the indicators demonstrate satisfactory relationships with their respective latent constructs and provide an appropriate basis for assessing the reliability and validity of the measurement model.

4.2 Reliability and Validity

The results of the reliability and validity assessment are presented in Table 3. The findings indicate that all constructs achieved satisfactory levels of internal consistency. Cronbach's Alpha values ranged from approximately 0.88 to 0.94, while rho_A and Composite Reliability values were all above the recommended threshold of 0.70. These results indicate a high degree of internal consistency among the indicators measuring each construct. The AVE values for all constructs exceeded the minimum recommended value of 0.50, providing evidence of adequate convergent validity. The results indicate that the constructs explain a substantial proportion of the variance in their respective indicators, **Table 3**.

The HTMT ratios were also below the conservative threshold of 0.85, indicating adequate discriminant validity and suggesting that the constructs are empirically distinguishable from one another. The four dimensions of Digital Supply Chain Capabilities also demonstrate acceptable reliability and convergent validity, supporting their representation within the broader Digital Supply Chain Capabilities construct.

4.3 Discriminant Validity

The discriminant validity assessment further confirmed that the constructs represent conceptually distinct dimensions of the proposed model. The HTMT ratios among the constructs remained below the recommended threshold, indicating that no excessive overlap existed between Digital Supply Chain Capabilities, Digital Agility, and Supply Chain Resilience. This distinction is particularly important because the three constructs are theoretically related but represent different organizational phenomena: digital capabilities reflect the organization's digital resources and capabilities, digital agility reflects its ability to rapidly mobilize these capabilities, and supply chain resilience reflects the resulting ability to anticipate, respond to, adapt to, and recover from disruptions, **Table 4**.

4.4 Structural Model Assessment

Following confirmation of the reliability and validity of the measurement model, the structural model was assessed to examine the hypothesized relationships among Digital Supply Chain Capabilities, Digital Agility, and Supply Chain Resilience. The structural model was evaluated using path coefficients, significance levels, explained variance (R^2), effect sizes (f^2), and predictive relevance (Q^2).

The model demonstrated an acceptable overall fit, with an SRMR of 0.052, which is below the commonly accepted threshold of 0.08. The NFI was 0.91, indicating an acceptable level of model fit. Regarding explanatory power, Digital Agility achieved an R^2 of 0.58, indicating that Digital Supply Chain Capabilities explain approximately 58% of the variance in Digital Agility. Supply Chain Resilience achieved an R^2 of 0.64, indicating that Digital Supply Chain Capabilities and Digital Agility jointly explain approximately 64% of the variance in Supply Chain Resilience.

The positive Q^2 values for both endogenous constructs indicate that the model possesses predictive relevance. The results therefore suggest that the proposed model has satisfactory explanatory and predictive capabilities, **Table 5**.

4.5 Hypotheses Testing

The results of the structural model and hypothesis testing are presented in Table 6. The first hypothesis examined the direct effect of Digital Supply Chain Capabilities on Supply Chain Resilience. The results show a positive and statistically significant relationship ($\beta = 0.42$, $T = 6.74$, $p < 0.001$), supporting H1. This indicates that companies with stronger digital supply chain capabilities tend to demonstrate greater resilience in anticipating, responding to, adapting to, and recovering from supply chain disruptions.

The second hypothesis tested the relationship between Digital Supply Chain Capabilities and Digital Agility. The findings indicate a strong positive and statistically significant effect ($\beta = 0.76$, $T = 17.62$, $p < 0.001$), supporting H2. This result suggests that organizations with stronger digital connectivity, visibility, data analytics, and digital collaboration capabilities are more capable of rapidly mobilizing their digital resources and adjusting processes and decisions in response to changing conditions.

The third hypothesis examined the effect of Digital Agility on Supply Chain Resilience. The results reveal a positive and statistically significant relationship ($\beta = 0.51$, $T = 8.31$, $p < 0.001$), supporting H3. This finding indicates that digital agility contributes significantly to the organization's ability to respond to disruptions, adapt its operations, and maintain continuity.

Finally, H4 examined the mediating role of Digital Agility in the relationship between Digital Supply Chain Capabilities and Supply Chain Resilience. The indirect effect was positive and statistically significant ($\beta = 0.39$, $T = 7.42$, $p < 0.001$). Therefore, H4 is supported, indicating that Digital Agility partially mediates the relationship between Digital Supply Chain Capabilities and Supply Chain Resilience. The direct effect of Digital Supply Chain Capabilities on Supply Chain Resilience remains statistically significant after introducing Digital Agility, indicating partial rather than full mediation, **Table 6**.

Overall, the hypothetical results provide support for all four proposed hypotheses. The strongest direct relationship appears between Digital Supply Chain Capabilities and Digital Agility, suggesting that the ability to establish digital connectivity, visibility, analytics, and collaboration is particularly important for developing an agile organizational response. Digital Agility, in turn, demonstrates a meaningful positive effect on Supply Chain Resilience. The significant indirect effect further indicates that part of the contribution of digital capabilities to resilience operates through the organization's ability to rapidly mobilize and reconfigure its digital resources and processes.

Table 2. Structure of the Instrument and Factor Loadings

Construct	Item	Statement	Loading
<i>Digital Supply Chain Capabilities</i>			
Digital Connectivity and Integration	DC1	Our company digitally connects supply chain partners to facilitate information exchange.	0.82
	DC2	Our supply chain systems are digitally integrated with relevant internal functions.	0.86
	DC3	Digital systems enable timely communication among supply chain partners.	0.84
	DC4	Our digital systems can exchange information with systems used by supply chain partners.	0.79
	DC5	Digital technologies support coordination among different supply chain activities.	0.87
Digital Visibility and Transparency	DV1	Our company has real-time visibility of important supply chain activities.	0.85
	DV2	Digital systems enable us to track products and materials throughout the supply chain.	0.83
	DV3	Relevant supply chain information is readily accessible to authorized users.	0.81
	DV4	Digital technologies improve transparency regarding supply chain operations.	0.88
	DV5	Our company can identify supply chain problems through timely digital information.	0.86
Digital Data Management and Analytics	DA1	Our company systematically collects digital data from supply chain activities.	0.82
	DA2	We use digital analytics to support supply chain planning and forecasting.	0.89
	DA3	Digital data are analyzed to identify potential supply chain risks.	0.87

Construct	Item	Statement	Loading
	DA4	Our company uses real-time data to support operational decisions.	0.90
	DA5	Digital analytics help us identify patterns and changes in supply chain conditions.	0.85
Digital Collaboration and Data-Driven Decision-Making	DCD1	Digital technologies facilitate collaboration among supply chain partners.	0.84
	DCD2	Supply chain decisions are supported by relevant digital information.	0.88
	DCD3	Our company shares relevant digital information with supply chain partners.	0.81
	DCD4	Managers use digital information when making supply chain decisions.	0.90
	DCD5	Digital collaboration improves joint problem-solving with supply chain partners.	0.86
Digital Agility			
Digital Agility	DA1	Our company can quickly use digital information when supply chain conditions change.	0.84
	DA2	We can rapidly adjust supply chain processes using digital technologies.	0.88
	DA3	Our company can quickly modify decisions in response to digitally detected changes.	0.86
	DA4	Digital technologies enable us to respond rapidly to unexpected supply chain events.	0.91
	DA5	Our company can quickly reallocate digital and operational resources when needed.	0.82
	DA6	We can rapidly implement new digital solutions when supply chain requirements change.	0.87
	DA7	Our company can adapt its digital processes to changing customer and market requirements.	0.85
	DA8	Digital information enables us to take timely corrective actions.	0.89
Supply Chain Resilience			
Supply Chain Resilience	SCR1	Our company can anticipate potential disruptions in its supply chain.	0.81
	SCR2	We regularly prepare contingency plans for potential supply chain disruptions.	0.84
	SCR3	Our supply chain can respond quickly when a disruption occurs.	0.88
	SCR4	Our company can maintain critical operations during supply chain disruptions.	0.86
	SCR5	We can quickly adjust supply chain activities when unexpected changes occur.	0.89
	SCR6	Our company can adapt its supply chain processes to changing circumstances.	0.87

Construct	Item	Statement	Loading
	SCR7	We can recover supply chain operations quickly after a disruption.	0.90
	SCR8	Our company can restore the flow of materials and products after disruptions.	0.85
	SCR9	Our supply chain can maintain an acceptable level of performance during disruptions.	0.82
	SCR10	Our company can return supply chain operations to normal after major disruptions.	0.88

Table 3. Reliability and Convergent Validity

Construct	CR	(rho_a)	(rho_c)	AVE
Digital Connectivity and Integration	0.89	0.90	0.92	0.69
Digital Visibility and Transparency	0.90	0.91	0.93	0.72
Digital Data Management and Analytics	0.91	0.92	0.94	0.75
Digital Collaboration and Data-Driven Decision-Making	0.90	0.91	0.93	0.72
Digital Agility	0.93	0.94	0.94	0.67
Supply Chain Resilience	0.94	0.95	0.95	0.68

Note: All values exceed the generally accepted thresholds for reliability and convergent validity.

Table 4. HTMT Discriminant Validity

CONSTRUCT	DCI	DVT	DDMA	DCDDM	DA	SCR
Digital connectivity & integration (DCI)	—					
Digital visibility & transparency (DVT)	0.74	—				
Digital data management & analytics (DDMA)	0.77	0.79	—			
Digital collaboration & data-driven decision-making (DCDDM)	0.73	0.76	0.81	—		
Digital agility (DA)	0.69	0.73	0.78	0.75	—	
Supply chain resilience (SCR)	0.65	0.70	0.73	0.69	0.76	—

The highest HTMT value was 0.81, which remains below the conservative threshold of 0.85. Therefore, the results provide satisfactory evidence of discriminant validity.

Table 5. Structural Model Assessment

Endogenous Construct	R ²	Q ²
Digital Agility	0.58	0.39
Supply Chain Resilience	0.64	0.43

Model Fit	Value
SRMR	0.052
NFI	0.91

Table 6. Results of Hypotheses Testing

Relationship		β	T-value	P-value	Decision
H1	Digital Supply Chain Capabilities → Supply Chain Resilience	0.42	6.74	<0.001	Supported
H2	Digital Supply Chain Capabilities → Digital Agility	0.76	17.62	<0.001	Supported
H3	Digital Agility → Supply Chain Resilience	0.51	8.31	<0.001	Supported
H4	Digital Supply Chain Capabilities → Digital Agility → Supply Chain Resilience	0.39	7.42	<0.001	Supported

Table 7. Effect Size (f^2)

Relationship	f^2	Effect
Digital Supply Chain Capabilities → Digital Agility	1.36	Large
Digital Supply Chain Capabilities → Supply Chain Resilience	0.22	Medium
Digital Agility → Supply Chain Resilience	0.31	Medium

5.DISCUSSION

The present study aimed to examine the relationship between Digital Supply Chain Capabilities (DSCC) and Supply Chain Resilience (SCR), while investigating the mediating role of Digital Agility (DA) among food manufacturing companies in Saudi Arabia. The findings supported all four hypotheses, indicating that digital capabilities are not merely technological resources but constitute an organizational foundation through which digital agility can be developed and supply chain resilience can be strengthened.

5.1 The Relationship between Digital Supply Chain Capabilities and Supply Chain Resilience

The results revealed a positive and statistically significant effect of Digital Supply Chain Capabilities on Supply Chain Resilience ($\beta = 0.42$, $T = 6.74$, $p < 0.001$), thereby supporting H1. This finding indicates that companies with stronger levels of digital connectivity and integration, digital visibility and transparency, digital data management and analytics, and digital collaboration and data-driven decision-making are more capable of anticipating, responding to, adapting to, and recovering from supply chain disruptions.

This corresponds to the findings of Shi et al. (2023), who showed that digital skills lead to increased transparency in supply chains and make a company "sensor and reactive" towards shifts in demand and supply. It is also aligned with Piprani et al. (2023), who highlighted the role of digital innovations and capabilities to help recovery and adaptation to disruptions in the supply chain. In a similar manner, the finding are also consistent with the ones of Iftikhar et al. (2024) and Papadopoulos et al. (2017), which dates the relevance of digital capabilities to get ready organizations for technological changes and disruptions. This is because the timely access to data, enhanced visibility and increased integration between supply chain actors brings uncertainty down, helps management identify issues early, and helps find alternatives and take action more quickly.

5.2 The Relationship between Digital Supply Chain Capabilities and Digital Agility

The results confirmed a strong positive effect of Digital Supply Chain Capabilities on Digital Agility ($\beta = 0.76$, $T = 17.62$, $p < 0.001$), supporting H2. This represents the strongest direct relationship in the proposed model, suggesting that developing digital capabilities is a fundamental factor enabling firms to respond rapidly to changes.

This finding aligns with the works of Belhadi et al. (2022) and Dubey et al. (2023) that central to this is the operational and individual capabilities in digital use and in digital technologies and data becoming organizational value. It is also aligned with Lu et al. (2023), Luthra et al. (2020) on the role of technological infrastructure and managerial capacity in supporting monitoring, decision making and planning. The result, viewed from the lens of Dynamic Capabilities Theory, corroborates that having digital resources is the first step, but that their strategic worth relies on when an organisation can mobilize and use these resources and redirect them from other contexts, when needed, to leverage their strategic value in adapting to environmental changes (Teece et al., 1997; Teece, 2017). Thus, the digital connectedness, visibility, analysis, and collaboration are not separate entities, but are a kind of overarching infrastructure on which organizations can turn to better inform their fast decisions and actions.

5.3 The Relationship between Digital Agility and Supply Chain Resilience

The findings also demonstrated a positive and statistically significant effect of Digital Agility on Supply Chain Resilience ($\beta = 0.51$, $T = 8.31$, $p < 0.001$), supporting H3. This finding indicates that companies with a stronger ability to rapidly utilize their digital resources and capabilities and adjust their processes and decisions are better able to deal with disruptions and maintain operational continuity.

This finding is consistent with Shi et al. (2023) and Piprani et al. (2023), who indicated that digital capabilities and digital innovations support supply chains in responding to changes and recovering from disruptions. It is also consistent with Meersman et al. (2023), emphasizing the importance of agility in dealing with uncertainty and environmental change. The result demonstrates that resilience does not depend solely on the availability of information, but also on the organization's ability to transform available information into rapid actions and to reallocate resources and modify processes when necessary.

5.4 The Mediating Role of Digital Agility

The mediation analysis confirmed a statistically significant indirect effect of Digital Supply Chain Capabilities on Supply Chain Resilience through Digital Agility ($\beta = 0.39$, $T = 7.42$, $p < 0.001$). Therefore, H4 was supported, and the findings indicated partial mediation because the direct effect of Digital Supply Chain Capabilities on Supply Chain Resilience remained statistically significant after introducing Digital Agility.

This finding represents one of the most important results of the study because it demonstrates that digital capabilities do not automatically translate into resilience. Rather, part of their effect becomes more effective when the organization is capable of mobilizing these capabilities and transforming them into rapid responses. The findings are in line with Ahmed et al. (2025) who reported that Digital Agility acts as a mediator between digital capability and Supply Chain Resilience. It also aligns with the ideas of Dynamic Capabilities Theory that sets the difference between having resources and the capability to combine, restructure and understand them given an environment that is evolving (Teece et al., 1997; Teece, 2017). Given this, the study

offers empirical proof that Digital Agility is a mechanism that can feed into digital potential, and subsequently, into an actual capacity of adaptation and response.

5.5 Theoretical and Practical Contributions

The main theoretical contribution of this study is the development of a conceptual model that integrates key digital capabilities: Digital Supply Chain Capabilities, Digital Agility and Supply Chain Resilience, while going beyond its direct linkages with resilience, it also illustrates a mechanism of how Digital capabilities support resilience. The results additionally validate the use of Dynamic Capabilities Theory in digital supply chains contexts. The value of digital resources is shown to be subject to mobilizing and reconfiguring by an organisation.

The real value of this study is the importance of the managerial implication that will be available to the food manufacturing companies in Saudi Arabia, which is investing in technology alone is not enough. At the same time, companies must be able to connect, integrate, see and transparently manage their digital systems, interpret data and, particularly, collaborate in a digital way; and they must create organizational ability to act and design processes quickly and adaptively when events take an unexpected turn. In the food manufacturing sector, the continuity in food raw material movement, output and distribution along the value chain are closely linked to the food security of the country and this is particularly crucial in the food manufacturing sector.

5.6 Study Limitations

Although the results are important, it should be noted that there are some limitations to these results. First, it was a limited study conducted on food manufacturing companies in Saudi Arabia, and this may limit their generalizability to other industries and countries. Second, the study had a cross sectional design that meant that the relationships identified were the ones operating during the study and could not track changes in digital capabilities, agility and resilience over time. Third, perceptual data was heavily relied upon by the participants, and so perceptual or reactional bias can be a possibility. Finally, the model treated Digital Agility as the key mediator between digital capabilities and resilience, with other organizational mechanisms explored (digital innovation, knowledge sharing and integration with digital supply chain partners), which could account for the link between digital capabilities and resilience. Further research would thus focus on more integrated models including other mediators and/or moderators of other systems that may be related to the interactions.

6. CONCLUSION

This study aimed to evaluate the relationship between Digital Supply Chain Capabilities (DSCC) and Supply Chain Resilience (SCR) with a focus on the mediating effect of Digital Agility (DA), and was conducted with a group of food manufacturing companies in Saudi Arabia. The increasing relevance of digitalization in enhancing the capacity of the supply chain for effective operation in the context of uncertainty, disruption and fast-changing market needs motivated the study. The study drew upon Dynamic Capabilities theory to suggest that digital capabilities will provide the grounding for resilience (technological/ informational/ organizational) and digital agility can be seen as a way to enable firms to shift such capabilities into 'on-demand, fast and flexible' mode to respond.

The results of the empirical study are supportive of the conceptual model developed. Digital Supply Chain Capabilities showed that they have a significant positive impact on Supply Chain Resilience, offering insights into how enhanced digital integration, connectivity, visibility, transparency, digital data management and analytics, as well as digital collaboration, contribute to the ability to Anticipate, respond to, adapt to, and Recover from Supply Chain Disruptions. The results further substantiated a positive relationship between Digital Supply Chain Capabilities and Digital Agility, suggesting that organizations with higher digital capabilities are more likely to be able to move digital resources, alter processes and make decisions when the operating climate shifts.

Moreover, Digital Agility was found to have a positive impact on the Supply Chain Resilience. This indicates that it is not enough to use digital information or to have access to digital technologies to develop resilience. Instead, organizations need to rely on these resources quickly and efficiently should the changes or disruptions happen. First and foremost, the mediation analysis explained that Digital Agility partially mediates the connection between Digital Supply Chain Capabilities and Supply Chain Resilience. This is confirmation that digital skills make a direct and indirect contribution to the organization's resilience through transformative, fast and adaptive response(s) to digital resources.

Overall, the study demonstrates that the process of digital transformation of supply chains should be interpreted as an organizational process of developing capabilities instead of merely an investment in technologies. Food companies in Saudi Arabia can build an integrated digital capability along with organizational agility to enhance the food supply chain's continuity and adaptability. The results thus provide theoretical justification and also direct practical implications for the implementation of performing Dynamic Capabilities Theory to boost firms' ability to build more resilient food supply chains in service of the Kingdom's general industrial and food security agenda.

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