

ANALYZING THE IMPACT OF DIGITAL TECHNOLOGIES ON ENHANCING SUPPLY CHAIN RESILIENCE IN THE POST-PANDEMIC ERA

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ABSTRACT

The COVID-19 pandemic brought to light the vulnerabilities and disruptions within global supply chains, necessitating a comprehensive reevaluation of supply chain resilience strategies. In response, organizations across industries have increasingly turned to digital technologies, such as block chain, the Internet of Things (IoT), artificial intelligence (AI), and data analytics, to fortify their supply chains and ensure business continuity. The research methodology employs quantitative data collection techniques, utilizing surveys and questionnaires administered to supply chain professionals and managers. The stratified sampling method is applied to ensure representative participant selection. The subsequent data analysis is conducted using PLS (Partial Least Squares) Smart 4 to derive meaningful results. The findings reveal that digital technologies, encompassing, IoT, artificial intelligence, and data analytics, significantly contribute to enhancing supply chain resilience in the post-pandemic era.

Keywords: Internet of Things (IoT), artificial intelligence (AI), data analytics, Supply Chain Resilience.

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1. INTRODUCTION

The COVID-19 pandemic revealed significant vulnerabilities in global supply chains, prompting a critical reevaluation of supply chain resilience [1]. In response, organizations have increasingly turned to digital technologies to bolster their supply chain resilience, adapt to disruptions, and ensure business continuity [2]. This research proposal outlines a study that aims to analyze the impact of digital technologies on enhancing supply chain resilience in the post-pandemic era. Understanding the effectiveness and challenges of these technologies is vital for organizations seeking to build more robust and adaptive supply chains in an ever-changing world. The integration of digital technologies has emerged as a central theme in discussions about supply chain resilience[3]. From the Internet of Things (IoT) and blockchain to artificial intelligence (AI) and big data analytics, digital tools are providing new ways for organizations to monitor, analyze, and optimize their supply chain operations [4]. This integration has the potential to not only improve real-time visibility but also to foster agility and robustness in the face of disruptions. As the post-pandemic business environment continues to evolve, the significance of digital technologies in enhancing supply chain resilience becomes increasingly evident [5]. This study delves into the impact of these technologies, aiming to unravel the strategies and best practices employed to bolster supply chain resilience in an era defined by dynamic challenges and digital transformation. By analyzing the intersection of digital technologies and supply chain resilience, this research seeks to provide valuable insights for organizations striving to navigate the uncertainties of the post-pandemic era successfully. Moreover, the post-pandemic era has accelerated the adoption of remote work and e-commerce, transforming consumer expectations and necessitating agility in supply chain operations. Digital technologies enable businesses to adapt quickly to fluctuating demand, while simultaneously enhancing communication and collaboration across the supply chain ecosystem. The disruptions caused by the COVID-19 pandemic served as a catalyst for organizations to rethink their supply chain strategies fundamentally. The crisis exposed vulnerabilities such as overreliance on single-source suppliers, inadequate visibility into complex supply networks, and insufficient adaptability to sudden shocks. As a consequence, the paradigm of supply chain resilience has shifted from a

desirable attribute to an absolute necessity for organizational survival and sustained success. In this context, digital technologies have emerged as linchpins in the quest for enhanced supply chain resilience. These technologies offer dynamic solutions to challenges posed by global disruptions, providing avenues for real-time visibility, predictive analytics, and agile decision-making. Blockchain, for instance, ensures transparency and traceability, IoT facilitates real-time monitoring, AI enables intelligent automation, and data analytics empowers organizations with actionable insights.

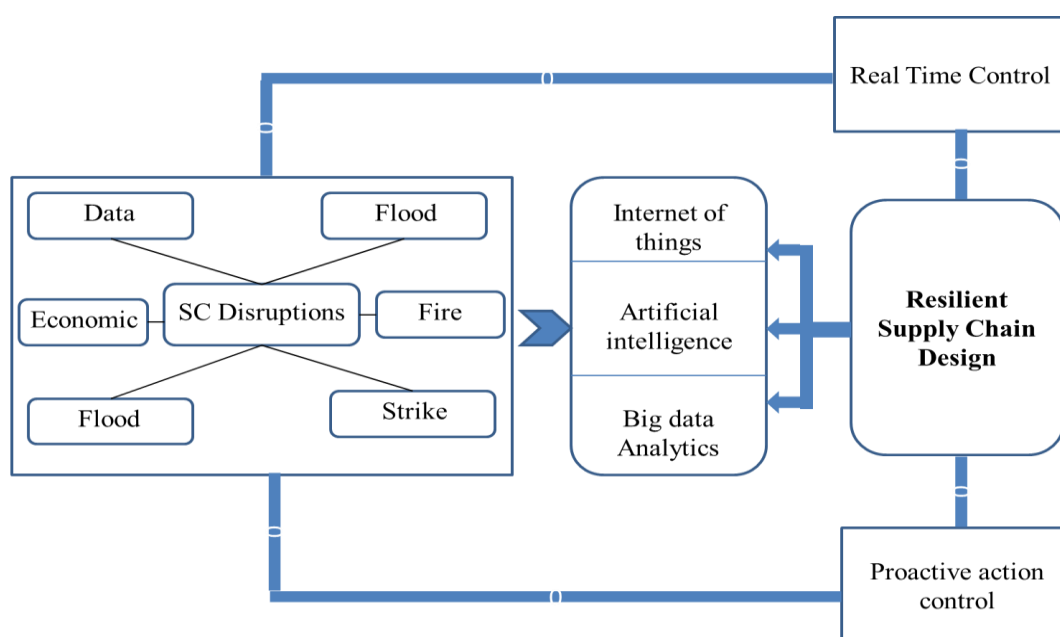


Fig.1. Resilient supply chain design and control

Figure 1 depicts how digital supply chain technologies, specifically IoT, AI, and big data analytics, contribute to the creation of a resilient supply chain design. This design includes the ability to access real-time data and formulate proactive strategies and controls. It showcases how these digital technologies play a critical role in developing supply chains that can adapt to unforeseen challenges and use current data to plan and manage operations effectively. This review aims to provide a comprehensive understanding of the ongoing paradigm shift in supply chain management. By analyzing the impact of digital technologies on supply chain resilience, it explores how these tools are not only mitigating risks but also catalyzing innovation and redefining the way goods and services flow from manufacturers to end-users. The "new normal" in supply chain management is marked by a digital transformation, and this

review seeks to uncover the myriad ways in which these technologies are enabling businesses to not only recover from the disruptions of the past but also to fortify their supply chains against the challenges of the future. As the world adapts to a post-pandemic reality, the role of digital technologies in enhancing supply chain resilience has never been more pivotal, and this exploration aims to illuminate the path forward.

1.1 Pandemic-induced Supply Chain Disruptions

The COVID-19 pandemic, declared a global health emergency, disrupted supply chains on an unparalleled scale. Lockdowns, travel restrictions, and health protocols disrupted manufacturing processes, hindered transportation, and caused widespread uncertainties. Organizations experienced a sudden and drastic shift in demand patterns, with some industries facing surges while others witnessed sharp declines. The traditional, linear supply chain models, optimized for efficiency and cost-effectiveness, proved ill-equipped to handle the complexity and volatility unleashed by the pandemic. The disruptions laid bare the vulnerabilities within global supply chains. Organizations grappled with the lack of visibility into complex and interconnected networks, reliance on single-source suppliers, and limited adaptability to sudden shocks. Inefficiencies in communication and coordination exacerbated the impact of disruptions, leading to production delays, increased costs, and a heightened risk of supply chain breakdowns. In response to the profound disruptions, there has been a paradigm shift in the perception of supply chain resilience from a desirable attribute to a strategic imperative. Resilience, once seen as a secondary consideration to efficiency, is now recognized as a fundamental requirement for organizational survival and sustained success. The ability to anticipate, adapt, and recover from unforeseen disruptions has become central to the strategic agendas of organizations worldwide. A key trend that emerged in response to the challenges posed by the pandemic was the accelerated adoption of digital technologies as resilience enablers. IoT, artificial intelligence, and data analytics emerged as transformative tools with the potential to enhance visibility, agility, and adaptability within supply chains. Organizations increasingly recognized the need to leverage these technologies to not only mitigate risks but also to build more robust and responsive supply chains capable of withstanding future uncertainties. In light of these considerations, this study aims to delve into

the intricate dynamics between digital technologies and supply chain resilience. The backdrop of the COVID-19 pandemic serves as a compelling context, emphasizing the urgency and relevance of understanding how organizations are integrating these technologies to build resilient and adaptive supply chains in the post-pandemic era. By exploring the strategies, challenges, and benefits associated with the adoption of IoT, AI, and data analytics, this research seeks to contribute not only to academic knowledge but also to the practical insights that can guide organizations in navigating the evolving landscape of global supply chain management.

1.2 Research problem

The disruptions caused by the COVID-19 pandemic exposed vulnerabilities in global supply chains, prompting a renewed focus on supply chain resilience, the unprecedented challenges faced by organizations during the pandemic necessitated a renewed emphasis on supply chain resilience—the capacity to anticipate, adapt, and recover from unforeseen disruptions. . In response, many organizations have adopted digital technologies to bolster their supply chain resilience. The core research problem centers on the effectiveness of these digital technologies in enhancing supply chain resilience. Specifically, the study seeks to unravel the impact and contributions of IoT, AI, and data analytics in fortifying supply chains. It delves into the strategies employed by organizations in integrating these technologies, identifies the challenges encountered in the process, and elucidates the benefits derived from their implementation. By focusing on these digital technologies, the research aims to provide nuanced insights into their role as transformative agents in building more robust and adaptable supply chains. Understanding the strategies that underpin their integration, elucidating the challenges faced, and recognizing the benefits accrued form the essential components of addressing the broader research problem. Ultimately, the goal is to equip organizations with actionable knowledge that can inform their decisions and practices, leading to supply chains that are better prepared to withstand and thrive amidst future uncertainties.

1.3 Research Objectives

The primary objectives of this research are as follows:

- To assess the extent to which digital technologies have been integrated into supply chain operations in response to the COVID-19 pandemic.
- To examine the impact of digital technologies, including block chain, IoT, artificial intelligence, and data analytics, on enhancing supply chain resilience.
- To identify the challenges and barriers faced by organizations in the adoption of digital technologies for improving supply chain resilience.
- To determine the key success factors and best practices associated with the implementation of digital technologies in the context of supply chain resilience.

1.4 Research Question

How do digital technologies, including block chain, IoT, artificial intelligence, and data analytics, impact the enhancement of supply chain resilience in the post-pandemic era, and what are the key challenges, success factors, and best practices associated with their adoption?"

1.5 Significance of the study

This research has practical significance for organizations seeking to fortify their supply chains against future disruptions. It also contributes to the academic field of supply chain management and the role of digital technologies in resilience-building efforts.

2. LITERATURE REVIEW

The literature review will provide an in-depth exploration of the existing research on supply chain resilience, with a focus on the role of digital technologies. It will encompass key concepts such as supply chain disruptions, resilience strategies, and the utilization of block-chain, IoT, artificial intelligence, and data analytics to enhance resilience.

2.1 Supply chain Disruption & resilience strategies

The 21st century has witnessed an increasing frequency of supply chain disruptions due to various factors, including natural disasters, pandemics, geopolitical issues, and economic uncertainties. These disruptions have exposed vulnerabilities within global supply chains, leading organizations to place greater emphasis on building resilience as a strategic imperative [2]. The concept of enhancing supply chain resilience has been employed as a

strategy, initially for assessing the continuity of supply chain networks and subsequently for making operational adjustments to reduce their susceptibility to disruptions [6]. Supply chain resilience can lead to improved productivity, reliability, or a decrease in supply chain risks [7]. Strategies aimed at enhancing capacity and diminishing vulnerability and risks within the supply chain are categorized as either proactive or reactive [8]. Examples of such strategies include having backup and inventory capacity, enhancing security, offering economic supply incentives, building supplier relationships, engaging in demand forecasting, and sharing information. Proactive strategies revolve around planning and designing the supply chain network to anticipate unforeseen disruptions, whereas reactive strategies involve the ability to recognize sources and impacts of risks and to adapt to disruption impacts, making agile and efficient recovery possible. Contingency plans must be put into action to stabilize and recover during disruptions, ensuring the continuity of supply and preventing long-term adverse effects [9]. [10] explores the causes of supply chain disruptions, emphasizing the diverse nature of these disruptions. Natural disasters, such as hurricanes and earthquakes, can disrupt transportation and production, while geopolitical tensions and trade disputes can impact the flow of goods. The consequences of disruptions often include production delays, increased costs, and damage to an organization's reputation.[11] provide a comprehensive view of resilience within supply chains. They emphasize that resilience extends beyond risk mitigation and recovery, encompassing the capacity to adapt to change and the ability to thrive amid disruptions. [12] delve into proactive resilience strategies. They argue that organizations should invest in redundancy, diversify suppliers, and optimize their supply chains to anticipate disruptions. [13] define supply chain disruptions as unplanned events that interrupt the normal flow of goods and materials within a supply chain. These disruptions can originate from various sources, including external factors such as natural disasters, economic downturns, and political instability, as well as internal factors like equipment failures and production delays. The severity and duration of disruptions vary, making it imperative for organizations to develop adaptive strategies. [14] emphasizes the profound impact of disruptions on supply chains, highlighting how they can lead to increased costs, decreased customer satisfaction, and long-term damage to a company's reputation. The ripple effect of

disruptions can extend beyond immediate suppliers and customers, affecting the entire supply network. Understanding the potential consequences of disruptions is crucial for organizations in developing effective resilience strategies. To navigate the challenges posed by disruptions, organizations are increasingly recognizing the need to cultivate resilience within their supply chains. A literature review by [12] underscores resilience as a strategic imperative, encompassing the capacity to absorb shocks, adapt to changes, and recover quickly from disruptions. Resilient supply chains are characterized by their ability to maintain functionality and adaptability in the face of adversity. Several frameworks and strategies have been proposed to guide organizations in building resilient supply chains. [15] propose a framework that combines risk management and supply chain design to enhance resilience. Their framework involves proactive risk identification, mitigation strategies, and the development of flexible supply chain designs that can adapt to changing circumstances. Advancements in technology play a pivotal role in enhancing supply chain resilience. [16] discuss the role of digital technologies, including blockchain, artificial intelligence, and the Internet of Things, in mitigating risks and building resilience. These technologies provide real-time visibility, predictive analytics, and automation capabilities, enabling organizations to proactively address disruptions. Collaboration with suppliers, customers, and other stakeholders is another key dimension of resilience. [11] argues for the importance of building collaborative relationships within the supply network to share information, resources, and risks. Collaborative approaches, such as demand-sharing and joint risk management, contribute to a collective resilience that transcends individual organizational boundaries. Redundancy and diversification in supply chain structures are explored by [8] as effective strategies for building resilience. Redundancy involves having backup suppliers or alternative sourcing options, while diversification entails spreading risks across multiple suppliers or geographical regions. These strategies provide organizations with fallback options during disruptions.

2.2 Digital supply chain technologies use

Extensive utilization of Digital Supply Chain (DSC) technologies can facilitate the development of dynamic capabilities (DC) required to enhance organizational performance [4]. DC is recognized as a potent tool and organizational competency that optimizes resources

and capabilities to swiftly adapt to changes in business environments [17] extend DC as a concept within the Resource-Based View theory to elucidate how firms gain a competitive edge in volatile markets marked by dynamic and ever-changing conditions, enabling them to make effective strategic decisions. Moreover, as organizations progress toward digitally transforming their supply chain processes, they encounter challenges related to the adoption of new information technologies (e.g., user resistance) and contend with the rapid pace of digital technology advancements [18]. Furthermore, digital transformations in organizations serve to overcome challenges such as outdated processes and the need for improved efficiency and responsiveness in an increasingly digital and competitive business landscape. This transformation is essential for organizations seeking to align their operations with the dynamic and evolving demands of the modern marketplace, thereby enhancing their ability to thrive and excel in a rapidly changing business environment[19]. [20] emphasize the role of AI and machine learning in supply chain management. These technologies enable predictive analytics, helping organizations make informed decisions regarding demand forecasting, inventory management, and supply chain optimization. AI-driven chatbots and virtual assistants also enhance customer service and engagement. [21] He highlights the power of big data analytics in generating predictive insights. The analysis of vast datasets aids in identifying patterns and trends, offering critical information for making informed decisions. This helps organizations optimize their supply chains, reduce costs, and meet customer demands more effectively. the potential of blockchain technology in supply chains. Blockchain offers a decentralized and tamper-proof ledger, ensuring data transparency and security. It enables end-to-end traceability of products and transactions, which is invaluable in industries where trust and authenticity are paramount, such as food and pharmaceuticals. A study by [22] found that the integration of IoT devices and sensors allows for real-time monitoring of assets and shipments, providing unprecedented visibility into the entire supply chain. The ability to track goods in real-time not only enhances operational efficiency but also facilitates rapid response to disruptions. The work of [23], who argue that digitalization, enabled by technologies like artificial intelligence, leads to streamlined and automated supply chain processes. Digitalization enhances data accuracy, reduces manual errors, and

enables seamless communication between various stakeholders in the supply chain network. Research by [24] emphasizes the role of artificial intelligence and advanced analytics in improving demand forecasting accuracy and optimizing inventory levels. The integration of these technologies enhances the reliability of planning processes, enabling organizations to anticipate and mitigate potential disruptions. A study by [25] emphasizes the synergies between digitalization and real-time tracking, highlighting how digital technologies enable the seamless flow of information across the supply chain. This integration enhances tracking accuracy and efficiency, allowing organizations to respond swiftly to deviations from the planned course. Literature by [26] emphasizes the precision afforded by digital technologies, particularly in the context of real-time tracking. The use of advanced technologies contributes to accurate data capture, reducing discrepancies and improving overall tracking accuracy. A study by [27] emphasizes the role of real-time information in building a responsive and adaptable supply chain. The ability to monitor and adjust in real-time enables organizations to proactively address disruptions, thus contributing to overall resilience. A study by [19] highlights the importance of robust planning processes in mitigating the impact of disruptions. Accurate forecasting and effective planning contribute to a more resilient supply chain that can adapt to unforeseen challenges. Research by [12] emphasizes the transformative impact of digital technologies on building a resilient supply chain. The integration of technologies like blockchain and AI enhances the overall adaptability and responsiveness of the supply chain, contributing to its resilience.

3. METHODOLOGY

This research employs a quantitative survey method to systematically gather and analyze data on the impact of digital technologies on supply chain resilience in the post-pandemic era. The survey method is chosen for its ability to collect structured, numerical data from a large sample, providing statistical insights into the relationships between variables. The population of interest comprises professionals and decision-makers involved in supply chain management across various industries. A stratified sampling approach will be utilized to ensure representation from different sectors. The sample size will be determined based on statistical considerations to ensure a sufficient level of precision.

3.1 Research Framework

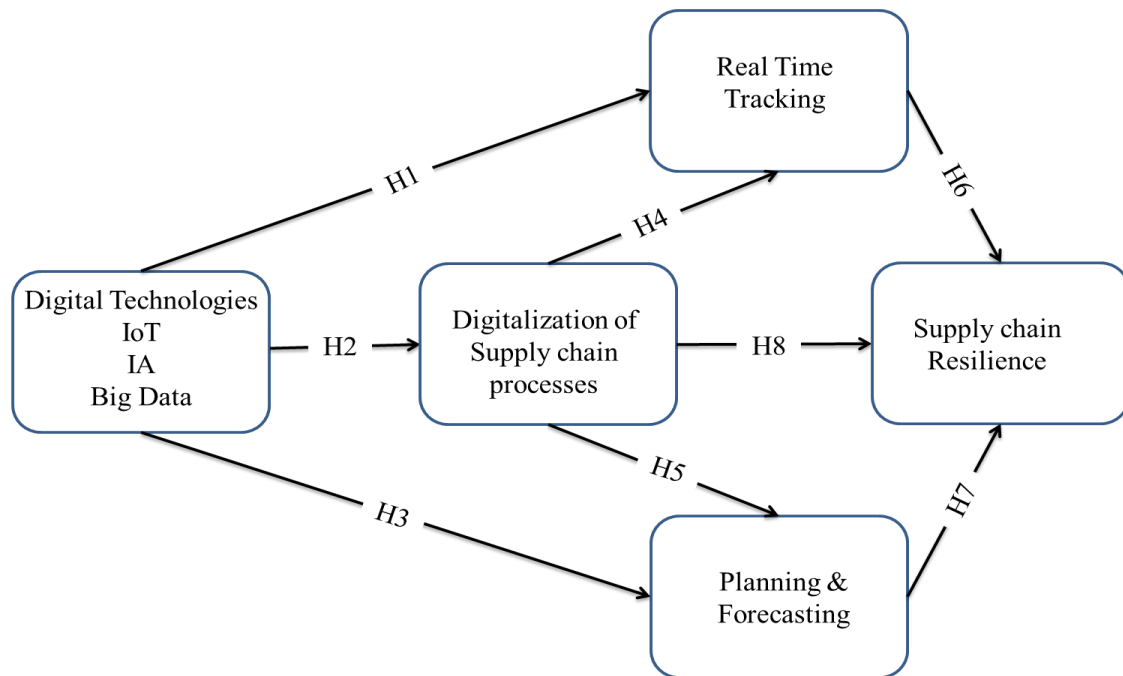


Fig.2. Conceptual framework of the study

3.2 Hypothesis Development

H1: The utilization of digital technologies positively influences real-time tracking capabilities within supply chains.

H2: Digital technologies have a positive impact on the digitalization of supply chain processes.

H3: Digital technologies contribute positively to supply chain planning and forecasting.

H4: The digitalization of supply chain processes positively impacts real-time tracking efficiency.

H5: The digitalization of supply chain processes positively affects real-time tracking accuracy.

H6: Real-time tracking positively contributes to enhanced supply chain resilience.

H7: Planning and forecasting play a positive role in bolstering supply chain resilience.

H8: The digitalization of supply chain processes has a positive impact on overall supply chain resilience.

3.3 Data Collection

The survey instrument will consist of a structured questionnaire designed to capture relevant data points related to the utilization of digital technologies, supply chain resilience strategies, and the perceived impact of these technologies. The questionnaire will include both closed-ended and Likert-scale questions to facilitate quantitative analysis.

3.4 Data Analysis

The data analysis will be conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM). PLS-SEM is a robust statistical method suitable for analyzing complex relationships among variables in a structural model.

3.5 Ethical Considerations

- **Informed Consent:** Informed consent obtained from survey respondents and interview participants. Participants' privacy and anonymity will be preserved.
- **Data Security:** Data will be stored securely and in compliance with data protection regulations.

4. RESULTS & FINDINGS

The research paper explores the demographic characteristics of a sample group, focusing on gender distribution, managerial positions, professional experience, and education levels. Out of a total of 180 questionnaires distributed, 164 were successfully returned.

4.1 Demographic profile

The table provides a summary of demographic characteristics among participants. In terms of gender, the majority were male (78%), while 22% were female. Regarding managerial positions, executives constituted the largest group (50%), followed by officers (16%), managers (13%), and clerks (21%). In terms of experience, the majority had 6 to 10 years (55%), followed by 11 to 15 years (20%), 16 to 20 years (12%), below 5 years (9%), and 21 and above years (4%). Regarding education level, the highest percentage had a bachelor's degree (45%), followed by post-graduates (35%), diploma holders (15%), and those with secondary education (5%).

Table 1. Demographic profile of the respondents

Descriptive Factor	Description	Frequency	Percent	Cumulative Percent
Gender	Male	128	78%	78%
	Female	36	22%	100%
Managerial Position	Manager	22	13%	13%
	officer	26	16%	29%
	Executive	82	50%	79%
	Clerk	34	21%	100%
Experience	Below 5	15	9%	9%
	06 to 10	91	55%	65%
	11 to 15	33	20%	85%
	16 to 20	19	12%	96%
	21 and			
	above	6	4%	100%
Education Level	Secondary	9	5%	5%
	Diploma	24	15%	20%
	Bachelor	73	45%	65%
	Post			
	graduate	58	35%	100%

4.2 Measurement Model and Assessment

The researchers employed Partial Least Square Structural Modeling (PLS-SEM) to analyze the data in this study. Two types of validity assessments, namely convergent validity and discriminant validity, were utilized to evaluate the measurement model. Figure 2 illustrates the research model for this investigation, focusing on the role of digital technologies in attaining supply chain resilience.

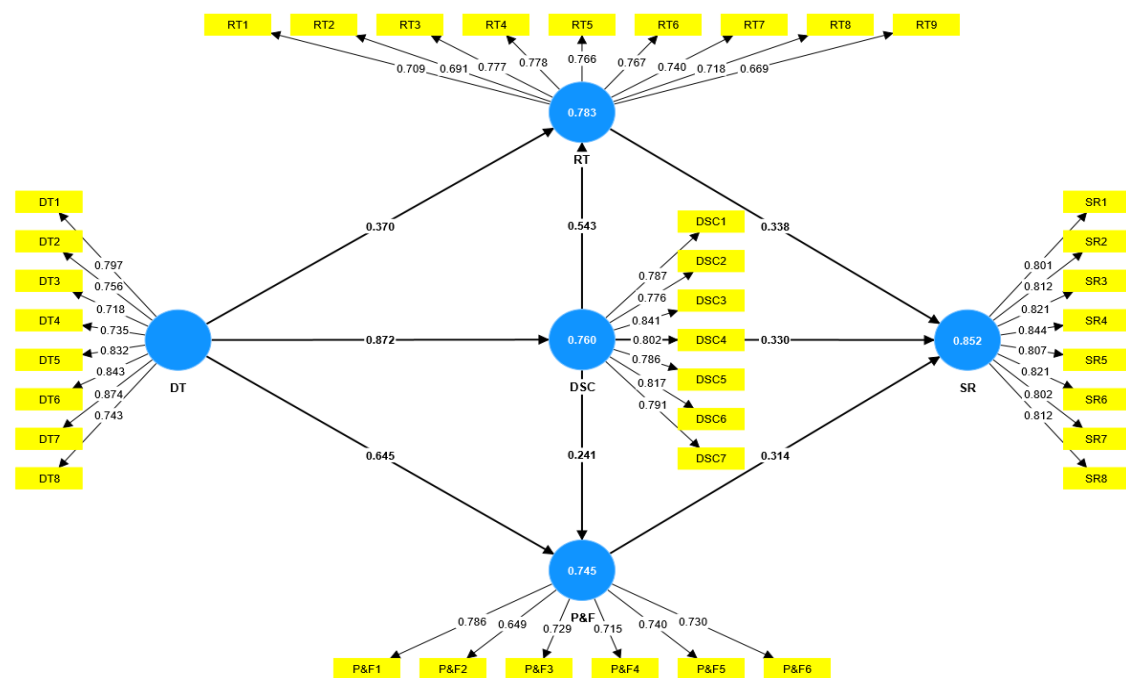


Fig.3. PLS Path Model

4.2.1 Convergent Validity

The table provides information about a measurement model, including the number of items, factor loadings, composite reliability (CR), and average variance extracted (AVE) for different factors. According to [28] the factor loading must be greater than 0.7 for construct validity, composite reliability should be 0.8 and average variance should be higher than 0.5 for acceptable reliability and convergence of the construct so the table depicts that all the values are in acceptable range.

Table 2. Results of Measurement Model Assessment

Construct	Total no of Items	Item	Factor Loading	Composite reliability(CR)	Average Variance (AVE)	Cronbach 's alpha
Digital Supply Chain	7	DSC1	0.787	0.907	0.64	0.906
		DSC2	0.776			
		DSC3	0.841			
		DSC4	0.802			
		DSC5	0.786			

		DSC6	0.817			
		DSC7	0.791			
Digital Technologies	8	DT1	0.797			
		DT2	0.756			
		DT3	0.718			
		DT4	0.735	0.913	0.623	0.912
		DT5	0.832			
		DT6	0.843			
		DT7	0.874			
		DT8	0.743			
Planning & Forecasting	6	P&F1	0.786			
		P&F2	0.649			
		P&F3	0.729	0.824	0.542	0.82
		P&F4	0.715			
		P&F5	0.74			
		P&F6	0.73			
Real Time	9	RT1	0.709			
		RT2	0.691			
		RT3	0.777			
		RT4	0.778			
		RT5	0.766	0.896	0.542	0.894
		RT6	0.767			
		RT7	0.74			
		RT8	0.718			
		RT9	0.669			
Supply Chain Resilience	8	SR1	0.801			
		SR2	0.812	0.928	0.665	0.928
		SR3	0.821			

SR4	0.844
SR5	0.807
SR6	0.821
SR7	0.802
SR8	0.812

4.2.2 Discriminant Validity

Table 3 presents the Hetero-trait Mono-trait (HTMT) ratios for the correlation between constructs in the study, providing insights into discriminant validity. The table shows the correlation coefficients between different constructs. The HTMT ratios between different constructs provide insights into the hetero-trait correlations, assessing the strength of correlations between different constructs. The values generally suggest that the constructs are distinct from each other, indicating good discriminant validity. Researchers often use these ratios to ensure that the measures are more strongly correlated with their own constructs than with other constructs in the model, supporting the idea that each construct is measuring a unique aspect of the phenomenon under study.

Table 3. Hetero trait – Mono trait (HTMT)

	DSC	DT	P&F	RT	SR
DSC					
DT	0.841				
P&F	0.88	0.822			
RT	0.701	0.83	0.701		
SR	0.654	0.761	0.601	0.737	

4.3 Results of Hypothesis

Table 4. Hypothesis Testing

Hypothesis	Path	Std Beta	SE	T values	P values	F Square	Decision
H1	DSC → P&F	0.263	0.257	1.390	0.005	0.108	Supported

H2	DSC→ RT	0.391	0.395	2.756	0.006	0.292	Supported
H3	DSC→ SR	0.458	0.529	0.110	0.001	0.262	Supported
H4	DT → DSC	0.856	0.857	2.107	0.000	0.203	Supported
H5	DT→P&F	0.722	0.73	3.988	0.000	0.273	Supported
H6	DT→ RT	0.601	0.598	4.476	0.000	0.123	Supported
H7	P&F→SR	0.144	0.093	0.072	0.943	0.049	Not Supported
H8	RT→ SR	0.41	0.388	0.118	0.002	0.241	Supported

The results indicate that Digital Supply Chain (Beta=0.458, P=0.001) and Real-Time Tracking (Beta=0.41, P=0.002) significantly contribute to achieving supply chain resilience. On the other hand, Planning & Forecasting (Beta=0.144, P=0.943) does not exhibit a significant impact on supply chain resilience. Additionally, both Digital Supply Chain (Beta=0.391, P=0.006) and Digital Technologies (Beta=0.601, P=0.000) positively influence Real-Time Tracking. Moreover, Digital Technologies (Beta=0.722, P=0.000) and Digital Supply Chain (Beta=0.263, P=0.005) significantly contribute to enhancing planning and forecasting capabilities.

5. CONCLUSION

This research sheds light on the pivotal role those digital technologies, including IoT, artificial intelligence, and data analytics, play in fortifying supply chain resilience in the aftermath of the COVID-19 pandemic. The vulnerabilities exposed by the global crisis prompted a widespread reevaluation of resilience strategies, leading organizations across industries to increasingly turn to innovative technologies for ensuring business continuity. The research findings underscore the substantial contributions of digital technologies, particularly the integration of a digital supply chain and real-time data availability, in bolstering supply chain resilience. However, it is noteworthy that traditional approaches like planning and forecasting exhibit a limited impact in comparison. The implications for management are clear – strategic adoption and integration of digital technologies are imperative for navigating disruptions effectively. Organizations are advised to prioritize

technologies such as IoT, artificial intelligence, and data analytics to build resilience. Recognizing the critical role of these technologies, investments in robust technology infrastructure, ensuring data security, scalability, and interoperability, become essential considerations for organizations aiming to enhance supply chain resilience. As organizations continue to navigate the dynamic landscape of the post-pandemic era, a continuous monitoring and adaptive approach is recommended. Regular assessments of the impact of digital technologies on supply chain resilience will enable timely adjustments to strategies and technologies, ensuring a proactive response to evolving challenges. Ultimately, this research not only contributes valuable insights into the current state of supply chain resilience in the digital era but also provides actionable recommendations for organizations seeking to thrive in an environment characterized by uncertainty and rapid change.

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