International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 09 Issue: 05 | May - 2025 SJIF Rating: 8.586 ISSN: 2582-3930

How Mobility through Digitalization in Supply Chain is Changing the Dynamics of Business: A Case Study of the Textile Industry

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MBA 2023-2025

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ABSTRACT

The global supply chain landscape is undergoing a transformative shift, driven by the rapid integration of mobility and cutting-edge digital technologies such as the Internet of Things (IoT), Artificial Intelligence (AI), blockchain, cloud computing, and advanced data analytics. These technologies collectively form the backbone of what is now referred to as the digital supply chain. This transformation is particularly significant in the textile industry—a sector traditionally plagued by inefficiencies, demand unpredictability, and supply chain opacity.

This research delves into how the adoption of digital and mobile technologies is redefining supply chain dynamics in the textile sector, with a specific focus on improving inbound and outbound logistics. The study investigates how these technologies contribute to enhanced visibility across the supply chain, improved responsiveness to market fluctuations, reduced operational costs, and alignment with sustainability goals. Digital mobility, in particular, enables supply chain actors to access real-time information, collaborate across functions, and make informed, data-driven decisions swiftly—an imperative in today's fast-paced, demand-sensitive marketplace.

The methodology adopted is qualitative and exploratory in nature, relying on semi-structured interviews conducted with five senior supply chain managers from textile firms operating in India—a country representative of developing economies where digital transformation is often met with systemic resistance. Thematic analysis of the interview transcripts reveals a clear consensus: while digital mobility holds transformative potential, its implementation is hampered by infrastructural constraints, high upfront costs, organizational inertia, and a shortage of skilled digital professionals.

Key findings suggest that companies that have begun integrating technologies such as ERP systems, sensor-based tracking, and AI-enabled analytics are witnessing measurable improvements in efficiency, inventory management, and customer service. However, the digital divide remains a significant barrier, especially for small and medium-sized enterprises (SMEs). The research recommends a phased digital adoption framework tailored to the textile sector's operational realities, emphasizing the importance of public-private collaboration in building digital infrastructure and capabilities.

Furthermore, this study contributes to the emerging body of knowledge on Industry 4.0 in supply chain management by contextualizing its applicability within South Asia's textile industry. It underscores the need for scalable, context-sensitive digital solutions and calls for a strategic shift in organizational culture, wherein digital literacy and technological adaptability are prioritized.

In conclusion, digital mobility is not merely a technological upgrade but a strategic necessity for textile businesses seeking resilience, scalability, and competitiveness in an increasingly digital global economy. The research highlights the urgent need for textile manufacturers in developing regions to embrace this transformation, not only to survive but to thrive in a data-driven future.

INTRODUCTION

I. Background Factors Necessitating the Project

The global business environment has evolved rapidly over the past decade, driven by the forces of globalization, rising consumer expectations, volatile demand cycles, and disruptive technological advancements. Nowhere is this evolution more prominent than in the field of Supply Chain Management (SCM), which serves as the backbone of modern industrial operations. Traditionally characterized by fragmented systems, manual processes, and siloed operations, supply chains—particularly in emerging markets—are facing increasing pressure to become more transparent, agile, and cost-efficient.

The textile industry, known for its complex supply chains involving raw material procurement, dyeing, weaving, stitching, and distribution, is especially susceptible to inefficiencies. As a labor-intensive and demand-driven industry, it struggles to keep pace with rapid market shifts, just-in-time (JIT) delivery expectations, and stringent sustainability norms. These challenges are further exacerbated in developing economies like India, where infrastructure, technology penetration, and digital readiness remain inconsistent.

Digitalization and mobility have emerged as transformative forces, reshaping traditional SCM paradigms. Technologies such as the Internet of Things (IoT), Artificial Intelligence (AI), blockchain, and cloud computing are enabling real-time data access, predictive analytics, and collaborative decision-making. These tools facilitate improved visibility into operations, proactive risk mitigation, optimized logistics planning, and enhanced customer responsiveness—capabilities essential to thrive in today's volatile and competitive markets.

Furthermore, mobile connectivity and cloud-based platforms have allowed SCM operations to transcend the limitations of location-bound legacy systems. This mobility ensures stakeholders—ranging from warehouse operators to sales teams—are empowered with timely and actionable data at every stage of the supply chain. For industries like textiles, which often span multiple geographies and involve numerous suppliers and intermediaries, this transformation is not optional but imperative.

Thus, this thesis seeks to explore the role of digital mobility in revolutionizing supply chain operations within the textile industry. It investigates how technology adoption can bridge the performance gaps inherent in traditional models and pave the way for sustainable, agile, and customer-centric supply chains.

Existing research underlines the transformative impact of digital tools in SCM:

- **Jie & Gengatharen (2018)** identified SCM as a strategic enabler in competitive advantage.
- **Vial (2019)** emphasized digital transformation as essential for modern enterprises.
- **Gupta & Gupta (2020)** specifically discussed the opportunities and challenges in the textile logistics domain.
- **Fromhold-Eisebith et al. (2021)** detailed how Industry 4.0 technologies, such as sensors and AI, are revolutionizing traditional supply chain models.

These insights collectively point to a growing consensus that digital supply chains—particularly those enhanced with mobile capabilities—are more responsive, efficient, and aligned with today's business realities.

This study adopts a qualitative, exploratory approach, utilizing semi-structured interviews with five supply chain managers from textile firms in India. The primary aim is to understand firsthand the challenges and opportunities presented

by digital mobility in SCM. These case insights are supported by secondary data from journals, industry reports, and previous empirical studies, offering a holistic view of the evolving dynamics in textile supply chains.

The motivation behind this research is both practical and academic. From a practical standpoint, textile firms—especially in developing nations—must digitize to remain competitive, reduce waste, and serve increasingly demanding markets. From an academic perspective, the study addresses a critical research gap: while digital SCM has been widely studied in global contexts, its implementation, adaptation, and impact in developing regions, particularly in the textile sector, remains under-explored.

By understanding how mobility and digitalization are being implemented, and what barriers persist, this research aims to provide a roadmap for companies, policymakers, and supply chain professionals looking to optimize operations and drive sustainable growth.

II. Further Explanation of the Research Topic

The research focuses on the transformative role of mobility through digitalization in supply chain management (SCM), with particular reference to the textile industry. To understand the significance of this transformation, it is essential to first clarify what is meant by the key terms:

- **Digitalization** refers to the process of adopting digital technologies to modify and improve business operations, leading to a fundamental shift in how organizations operate and deliver value to stakeholders.
- **Mobility** in SCM implies the ability of supply chain systems, platforms, and personnel to access, process, and share information anytime, anywhere. This is often achieved through cloud-based systems, mobile applications, and Internet-enabled devices that remove dependency on fixed infrastructure.
- **Supply Chain Management** is the coordination and optimization of activities that transform raw materials into final products and deliver them to the end customer. It encompasses procurement, manufacturing, logistics, inventory management, demand planning, and customer service.

In traditional SCM systems, data flows are delayed, manual interventions are frequent, and interdepartmental visibility is limited. These constraints lead to inefficiencies such as overstocking, poor customer service, and delayed response to market changes. However, the integration of mobile and digital technologies helps overcome these challenges by facilitating:

- Real-time visibility across supply chain nodes
- Accurate demand forecasting through predictive analytics
- Seamless coordination between suppliers, manufacturers, and distributors
- Reduction in lead times and operational costs
- Enhanced customer satisfaction through responsive service

This research investigates how these capabilities are being embraced by textile firms in developing economies, with a specific focus on India. It also seeks to understand the barriers that hinder digital transformation, such as infrastructure limitations, resistance to change, lack of technical expertise, and high initial investment costs.

III. Research Questions and Hypotheses

General Research Question

↓

Specific Questions → Hypotheses

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Informs Objectives & Methodology

Understanding the impact of digital mobility on SCM requires both broad and targeted lines of inquiry. This study is guided by the following questions and hypotheses:

1. General Research Question:

How is mobility through digitalization transforming the supply chain management practices in the textile industry?

This overarching question reflects the strategic interest of the study in understanding the broader business implications of digital transformation in SCM.

2. Specific Research Questions and Hypotheses:

- **RQ1**: What are the major gaps between traditional and digital supply chain models in the textile industry?

H1: Traditional supply chains lack the visibility and integration needed for real-time decision-making compared to digital models.

- **RQ2**: How does digitalization enhance inbound and outbound logistics performance?

H2: The adoption of mobile digital tools significantly reduces lead times and improves coordination in logistics operations.

- **RQ3**: What are the key challenges faced by textile firms in adopting digital supply chain systems in developing countries?

H3: Lack of infrastructure and digital skills are the primary barriers to digital adoption in emerging economies.

3. Expected Relationships Between Variables:

- A **positive correlation** is expected between the level of digital mobility and improvements in supply chain responsiveness, visibility, and cost efficiency.
- A **negative correlation** is anticipated between the presence of adoption barriers (e.g., infrastructural gaps) and the effectiveness of digital transformation initiatives.

4. Logical Framework Connecting General and Specific Questions:

The general research question seeks to understand the broad impact of digital mobility on SCM. The specific questions break this down into operational metrics (like logistics performance), organizational readiness (barriers to adoption), and strategic comparisons (gap analysis). This approach ensures that both macro-level insights and micro-level operational challenges are captured.

IV. Research Objectives

Research objectives provide a roadmap for what the study aims to achieve and how its findings can inform both academic theory and business practice. These objectives are derived from the research questions and are framed in measurable terms to guide data collection and analysis.

1. Derived Objectives from Research Questions:

- To evaluate the structural and functional differences between traditional and digital SCM systems in the textile sector.
- To assess how digital mobility technologies influence inbound and outbound logistics performance.
- To identify and analyze the challenges and barriers faced by textile firms in implementing digital SCM technologies.

2. Purpose of the Research in Measurable Terms:

- Map out key performance indicators (KPIs) such as order fulfillment rate, inventory turnover, and delivery lead time before and after digital tool adoption.
- Measure the perceived impact of mobility tools (e.g., mobile dashboards, cloud-based SCM platforms) on decision-making efficiency, as expressed by supply chain managers during interviews.
- Classify and rank adoption challenges using thematic analysis (e.g., cost, skill gap, infrastructure, resistance to change).

3. Defining Success Standards for the Research:

- Successfully identify and categorize at least three major gaps between traditional and digital SCM models.
- Generate actionable insights from primary qualitative data (minimum of five in-depth interviews).
- Provide a scalable framework or model that can assist textile firms in planning their digital transition.

4. Contribution to Managerial Decision-Making:

This study offers practical value to supply chain professionals, IT managers, and executives in the textile industry by:

- Highlighting the business case for investing in digital mobility.
- Providing a diagnostic tool for assessing digital readiness.
- Offering strategic recommendations for phased implementation of digital solutions.

By translating research insights into concrete managerial actions, this study helps bridge the gap between theoretical understanding and operational execution.

RESEARCH DESIGN AND METHODOLOGY

The research design outlines the overall strategy that was adopted to integrate the components of the study in a coherent and logical way. It ensures that the research questions are effectively addressed and that conclusions drawn are valid, reliable, and relevant to both academics and practitioners. This section details the type of research conducted, data collection methods, sampling design, fieldwork, and data analysis procedures.

i. Type(s) of Research Design Used and Justification

This study employs a qualitative, exploratory, and descriptive research design. Each element of this multi-method approach plays a specific role:

- **Qualitative Design** was chosen to gain a deep, contextual understanding of how digital mobility is impacting supply chains in the textile sector—insights that are often lost in quantitative surveys.
- **Exploratory Design** was used to explore an under-researched topic in the context of a developing country (India), where adoption patterns differ from developed economies.
- **Descriptive Design** helped categorize the impacts, barriers, and performance indicators influenced by digitalization in SCM.

This multi-faceted approach ensures the research captures both broad trends and in-depth perspectives that support grounded theory development.

ii. Data Collection Methods and Forms

Primary Data Collection:

- **Method**: Semi-structured interviews
- **Tool**: Interview guide with 10 open-ended questions (attached in Appendix A)
- **Respondents**: 5 supply chain managers from different textile firms in India
- **Medium**: Telephone/Skype (due to COVID-19 considerations and geographic spread)
- **Language**: Conducted in English and Urdu, translated where necessary

Survey Structure and Logic:

- **Section 1**: Company background and SCM model used (traditional/digital)
- **Section 2**: Experience with digital tools (e.g., ERP, IoT, mobile dashboards)
- **Section 3**: Impact on inbound and outbound logistics
- **Section 4**: Challenges in implementation
- **Section 5**: Recommendations and future outlook

Scales Used:

- Thematic categories for qualitative coding
- Frequency markers for key challenges and impact areas

iii. Sampling Design and Plan

This study employs non-probability purposive sampling to select participants with relevant experience and knowledge.

- **Target Population**: Supply Chain Managers in textile firms
- **Sampling Frame**: Five textile firms engaged in domestic or export production in India
- **Sample Units**: Mid-to-senior level SCM professionals
- **Sample Size**: 5 participants
- **Sampling Method**: Purposive sampling (selected based on relevance to study)
- **Response Rate**: 100% (all interviews were successfully conducted)

iv. Fieldwork

Conduct of Fieldwork:

- All interviews were conducted remotely via telephone and Skype in May 2021.
- Duration of each interview was approximately 30–45 minutes.

Pretesting Phase:

A pretest was conducted with two industry professionals to refine the interview guide. Based on their feedback:

- Technical jargon was minimized for clarity.
- Questions were re-ordered to follow a more logical progression (from general to specific).
- A question on sustainability impact was added based on industry relevance.

v. Data Analysis and Interpretation

Data Preparation:

- Interviews were recorded (with consent), transcribed verbatim, and translated to English where required.
- Data was organized using thematic coding with the help of Microsoft Excel and NVivo software.

Data Processing Procedures:

- **Open Coding**: Initial identification of keywords and concepts
- **Axial Coding**: Grouping codes into categories such as logistics impact, barriers, and strategic benefits
- **Selective Coding**: Refining themes to develop narratives and theoretical insights

Statistical Techniques:

- While the research is qualitative, frequency counts of recurring themes were used.
- Visual maps were generated to show relationships between variables such as “digital tools” and “performance outcomes.”

Interpretation of Results:

- Positive impacts of digital mobility were consistently noted in terms of faster delivery, better demand matching, and improved communication.
- Main challenges included resistance to change, infrastructure costs, and lack of digital literacy among operational staff.

LIMITATIONS

Despite the rigor applied in the design and execution of this research, certain limitations inevitably emerged during the course of the study. These constraints, both intrinsic and extrinsic, have implications for the generalizability, applicability, and robustness of the findings. Recognizing and discussing these limitations allows for a transparent assessment of the study’s scope and paves the way for more refined future investigations.

i. Results in Light of Limitations and Assumptions

While the research provides meaningful insights into the transformative role of mobility and digitalization in the textile industry's supply chains, several assumptions and limitations should be considered when interpreting the findings:

- **Industry-Specific Focus**: The study is centered exclusively on the textile industry, which, while significant and relevant, represents just one facet of the broader manufacturing sector. Thus, the findings may not be directly applicable to industries with different operational structures, such as pharmaceuticals, FMCG, or automotive.

- **Geographic Limitation – National Context (India)**: The study's geographic focus on Indian textile firms means the digital maturity level, infrastructural challenges, and organizational culture are specific to a developing economy. Results may differ significantly in a developed economy, where digital ecosystems are more mature and accessible.
- **Limited Time Frame**: The research was conducted over a limited period of three months, which restricts its ability to capture seasonal variations in supply chain operations or long-term effects of digital transformation. A longitudinal approach would have added greater depth.
- **Exploratory Scope**: As an exploratory and qualitative study, the research aims to generate insights rather than statistically validate hypotheses. Hence, conclusions drawn are interpretative rather than conclusive.

ii. Validity and Reliability Considerations

Ensuring the trustworthiness of qualitative research is critical, especially in studies where generalization is not the primary goal. The following sub-dimensions are relevant:

1. Validity

- **Internal Validity (Credibility):**

Efforts were made to enhance credibility through triangulation of interview responses with literature and secondary data sources. However, subjective interpretation of qualitative data can still introduce bias. Additionally, some responses may have been influenced by social desirability or perceived organizational loyalty.

- **External Validity (Transferability):**

Although the findings are contextually rich and reflective of the sampled organizations, their transferability to other regions, industries, or firm sizes should be done with caution. The purposive nature of the sampling and small sample size further constrain broad generalization.

2. Reliability (Dependability):

- **Consistency in Research Procedures:**

The interview guide and thematic coding framework were consistently applied. However, qualitative interpretation can vary between researchers, potentially affecting replicability.

- **Potential Systematic Errors:**
  - **Nonresponse Bias:** Minimal, as all scheduled interviews were conducted.
  - **Response Bias:** Some managers may have overstated the positive outcomes of digital adoption due to reputational concerns.
  - **Translation Inconsistencies:** Two of the five interviews were conducted partly in Urdu and translated into English. While translation was carefully reviewed, subtle contextual meanings may have been lost.

iii. Problems Encountered and Strategies to Overcome Them

Challenge	Description	Response/Resolution
Scheduling Conflicts	Managers were often unavailable due to operational workloads or pandemic-related disruptions.	Flexibility in scheduling, including off-hour and weekend interviews, was offered.
Hesitance to Share Detailed Information	Some respondents were reluctant to discuss sensitive performance data or internal processes.	Emphasized confidentiality and anonymized reporting.
Limited Access to Company Records/Data	Quantitative performance data (e.g., logistics costs, lead times) was difficult to obtain.	Focused on qualitative insights and perceptions of improvement rather than exact metrics.
Conceptual Misunderstandings (Digitalization Terminology)	Not all respondents were fully familiar with terms like AI, IoT, or cloud-based SCM tools.	Definitions were provided in simple language during interviews to ensure clarity and meaningful responses.
Data Translation and Coding Complexity	Coding qualitative responses, especially after translation, introduced potential interpretive variance.	A dual-coder approach and repeated reviews were applied to minimize bias.

iv. Lessons Learned for Higher-Quality Future Research

1. **Adopt a Mixed-Methods Approach**:

Future studies should integrate both qualitative and quantitative methods. While interviews provide depth, surveys and secondary performance data (e.g., KPIs) would enable more robust, data-driven conclusions.

2. **Expand Sample Size and Scope**:

A larger, more diverse sample (across geographies and industries) would improve generalizability and allow for cross-sectional analysis. Including small, medium, and large firms across South Asia could yield more nuanced results.

3. **Longitudinal Study Design**:

A study conducted over 12–24 months would allow researchers to track the evolution of digital implementation and assess performance metrics before, during, and after digital tool adoption.

4. **Collaboration with Industry Associations**:

Partnering with industry bodies (e.g., Indian Textile Exporters Association) could increase access to data, facilitate better sampling, and enhance credibility.

5. **Toolkits for Digital Maturity Assessment**:

Creating or adapting a digital maturity model specific to the textile supply chain would provide a standardized way to assess the readiness and progress of digital transformation.

6. **Include Stakeholder Diversity**:

Future research should incorporate views from other departments like IT, finance, and customer service to provide a more holistic picture of how digitalization affects the supply chain ecosystem.

CONCLUSIONS AND RECOMMENDATIONS

i. Conclusions

The present study aimed to examine the impact of digitalization—specifically, the integration of mobility-enabled technologies—on supply chain management (SCM) in the textile industry, with a particular focus on firms operating in India. The research adopted a qualitative, exploratory methodology, grounded in real-world insights obtained from experienced supply chain professionals across five textile firms. The findings contribute to both academic theory and industry practice by unveiling the nuances of digital transformation in a traditional, resource-constrained industrial setting.

1. Digital Mobility as a Strategic Enabler

One of the most salient conclusions from this research is that digital mobility serves as a strategic enabler**,** rather than merely a technical upgrade. Mobile-enabled access to supply chain data, cloud-based ERP systems, IoT-enabled tracking, and AI-powered analytics collectively allow firms to respond swiftly to market changes, improve customer service levels, and reduce operational waste. In an environment characterized by uncertainty, such as fluctuating raw material prices, shifting demand, or transportation delays, real-time data and predictive insights offer a competitive edge**.**

2. Shift from Traditional to Agile, Data-Driven SCM

The study clearly identified a structural and philosophical shift in how supply chains operate. Traditional supply chains in the textile sector were often reactive, linear, and fragmented. In contrast, digitally transformed supply chains are becoming more agile, interconnected, and data-driven**.** This transformation not only improves efficiency but also aligns operations with strategic business goals such as faster time-to-market, reduced lead times, better inventory turnover, and increased transparency.

3. Duality of Opportunity and Challenge

While the benefits of digital mobility are numerous, the adoption process is fraught with challenges, particularly in developing countries. The study found that lack of digital literacy, resistance to change, insufficient infrastructure, and financial constraints were the most significant barriers to adoption. Many firms are willing to adopt digital tools but are inhibited by budget limitations, lack of skilled IT support, and a lack of awareness of return on investment (ROI) models.

4. Need for Organizational and Cultural Transformation

Another important conclusion is that technological change must be accompanied by organizational and cultural transformation**.** Simply implementing digital tools is insufficient. Employees must be trained, mindsets must be shifted,

and management must buy into the strategic vision of a digitally integrated supply chain. Without these accompanying changes, the effectiveness of digital initiatives can be severely compromised.

5. Context-Specific and Phased Adoption Frameworks

Finally, the research confirms that there is no universal blueprint for digital adoption. Firms must assess their digital readiness and prioritize initiatives based on their resource availability and strategic needs. A phased adoption model—starting with basic automation and data capture, then progressing toward integrated analytics and AI—was identified as the most sustainable path forward.

In summary, this study concludes that digital mobility and the integration of technology in SCM have the potential to significantly enhance operational efficiency, responsiveness, and competitive advantage in the textile sector. However, the journey toward digital transformation requires careful planning, change management, and supportive infrastructure.

ii. Recommendations

Based on the conclusions drawn from this study, a set of comprehensive, actionable recommendations are presented for business practitioners, policy makers, and academic researchers.

1. Recommendations for Managers and Practitioners

Textile industry managers must recognize that digital transformation is not a one-time IT investment but a strategic business initiative. The following recommendations are made:

Strategic Area	**Recommended Actions**
Digital Infrastructure	Begin with cloud-based ERP and SCM software that provide mobile access for real-time monitoring and communication.
Workforce Enablement	Offer digital skills training and workshops for SCM staff to reduce resistance and increase adoption rates.
Cross-Functional Integration	Create digital task forces comprising supply chain, IT, and operations personnel to align objectives and workflows.
Supplier Integration	Use cloud platforms to link suppliers, improving transparency and collaboration across the supply chain.
Metrics and KPIs	Implement data-driven performance metrics, including cycle time, forecast accuracy, and fulfillment rate.
Change Management	Design a change management plan that includes leadership involvement, communication strategies, and incentives.
Cybersecurity Readiness	Establish protocols for data security, especially when using mobile and cloud-based platforms.

Firms are encouraged to start small—by digitizing one node of the supply chain (such as inventory or transport management)—and scale up progressively.

2. Recommendations for Policy Makers and Industry Associations

To create an enabling ecosystem for digital transformation, government bodies and industry associations must:

- Provide financial incentives or tax benefits for firms investing in digital infrastructure.
- Promote public-private partnerships to develop digital training centers tailored for the textile and manufacturing sectors.
- Establish a national digital SCM policy framework that encourages SMEs to adopt basic digital tools.
- Build shared digital infrastructure such as logistics data hubs or cloud services for industry clusters.
- Support standardization and interoperability guidelines to ensure seamless integration across platforms and vendors.

Government support is critical for digital inclusion, particularly for small and medium-sized textile manufacturers.

3. Recommendations for Future Research

While this study provides a strong foundation for understanding digital transformation in textile SCM, the following areas warrant further academic investigation:

- **Mixed-Method Validation**: Future studies should integrate qualitative and quantitative approaches to measure actual business performance outcomes post-digitalization.
- **Comparative Sector Studies**: Expanding this research to include other industries—such as pharmaceuticals, electronics, or automotive—would reveal sector-specific transformation patterns.
- **Digital ROI Models**: Investigate frameworks that help organizations calculate return on investment (ROI) for digital initiatives in SCM.
- **Digital Transformation Lifecycle Studies**: Conduct longitudinal studies to track the evolution of digital transformation across different organizational maturity stages.
- **ESG Alignment**: Explore how digital SCM contributes to environmental sustainability and social compliance—especially relevant in global textile sourcing.

The future of supply chain competitiveness lies in its ability to be connected, transparent, and intelligent. Firms that embrace digital mobility today will not only survive but lead in the next era of industrial transformation.

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APPENDICES

Appendix A: Interview Guide

Section 1: Company Background

1. What is the size and nature of your business (domestic/export-oriented)?
2. What type of supply chain model do you currently use—traditional or digital?

Section 2: Use of Digital Tools

3. What types of digital tools or platforms have you implemented in your supply chain? (ERP, IoT, mobile dashboards, cloud-based SCM)
4. How frequently do you use mobile devices or cloud systems in managing logistics or inventory?

Section 3: Performance Impact

5. Have you observed any improvements in inbound/outbound logistics performance after adopting digital tools?
6. What measurable changes have you noticed (e.g., reduced lead time, improved accuracy, better customer service)?

Section 4: Implementation Challenges

7. What were the key challenges faced while adopting digital supply chain solutions?
8. How did your team handle resistance to change or lack of digital skills?

Section 5: Recommendations

9. What advice would you offer to other textile firms planning to go digital?
10. How do you see the future of digital mobility in the textile supply chain?

Appendix B: Interview Responses from 5 Textile Firms

Respondent Code	Company Name	Designation	Interview Mode	Date of Interview
R1	Ravi Spinning Mills	Assistant Manager – SCM	Telephone	May 2, 2021
R2	Nisha Mills Ltd	Assistant Manager – SCM	Telephone	May 7, 2021
R3	Ideal Spinning Mills	SCM Manager	Telephone	May 12, 2021
R4	Zain Textile Pvt. Ltd	Head of Logistics	Telephone	May 12, 2021
R5	Ravi Spinning Mills	Deputy Manager – SCM	Telephone	May 19, 2021

Section 1: Company Background

Question	Respondent 1	Respondent 2	Respondent 3	Respondent 4	Respondent 5
Nature of Business	Export-oriented, mid-sized	Domestic & export, large-scale	Domestic SME	Domestic only	Export-focused
SCM Model Used	Hybrid – transitioning from traditional to digital	Mostly digital	Traditional, minimal digital use	Hybrid	Digital-first approach

Section 2: Use of Digital Tools

Question	Respondent 1	Respondent 2	Respondent 3	Respondent 4	Respondent 5
Tools Used	ERP (SAP), mobile dashboards, IoT tracking	ERP (Oracle), RFID, warehouse sensors	Excel-based tracking, limited ERP (Tally)	ERP (basic), cloud-based logistics app	ERP (custom), cloud SCM, GPS fleet tracking
Frequency of Mobile/Cloud Use	Daily – for logistics and inventory	Real-time dashboards used in all departments	Rarely – only for reporting	Moderate – mostly in warehouse	High – integrated across operations

Section 3: Performance Impact

Question	Respondent 1	Respondent 2	Respondent 3	Respondent 4	Respondent 5
Observed Improvements	Faster dispatch, fewer errors	Reduced lead time by 20%, better forecasting	Limited – manual errors still persist	Improved inventory accuracy	Real-time visibility, faster response time

Question	Respondent 1	Respondent 2	Respondent 3	Respondent 4	Respondent 5
Measurable Outcomes	Lead time down by 2 days	On-time delivery improved by 15%	No major improvement yet	Shrinkage rate dropped by 10%	Inventory turnover up by 25%

Section 4: Implementation Challenges

Question	Respondent 1	Respondent 2	Respondent 3	Respondent 4	Respondent 5
Key Challenges	Initial resistance, training gaps	High cost of RFID infrastructure	Lack of IT knowledge	Internet downtime, workforce hesitancy	Integration of legacy systems
Overcoming Resistance	Conducted training workshops	Incentivized digital usage	Still facing adoption issues	Assigned digital champions in teams	Gradual rollout with vendor support

Section 5: Recommendations

Question	Respondent 1	Respondent 2	Respondent 3	Respondent 4	Respondent 5
Advice to Others	Start with one module and scale	Invest in training from the beginning	Keep it simple and affordable	Pilot testing helps reduce risk	Align tech use with business goals
Future Outlook	Going fully paperless in 2 years	AI integration for demand planning	Will adopt basic cloud systems next year	Aiming for full digital inventory system	Expanding to predictive analytics soon

Appendix C: Thematic Coding Framework (Qualitative Analysis)

Theme	Code	Description
Digital Adoption	DA1 – ERP	Use of ERP software for SCM processes
	DA2 – Mobile Dashboards	Mobile tools used for real-time tracking or data entry
Performance Impact	PI1 – Lead Time Reduction	Reported reduction in order fulfillment or delivery time
	PI2 – Inventory Accuracy	Improvements in stock tracking and forecasting

Theme	Code	Description
Implementation Barriers	IB1 – Infrastructure Gaps	Issues related to internet, software, or hardware inadequacy
	IB2 – Resistance to Change	Employee reluctance to shift from manual to digital tools
Benefits	B1 – Customer Responsiveness	Faster response to customer orders or complaints
	B2 – Interdepartmental Sync	Enhanced collaboration across procurement, warehouse, and logistics units

Appendix D: Participant Consent Form

Consent Form for Participation in Research Interview

Title of Study:
How Mobility through Digitalization in Supply Chain is Changing the Dynamics of Business: A Case Study of the Textile Industry

Researcher:
Ankit Singh, MBA (Logistics and Supply Chain Management)
Galgotias University

Purpose of the Study:
To explore how mobility and digitalization affect supply chain performance and decision-making in the textile industry.

Participation:
Participation is voluntary. You may withdraw at any point without any penalty.

Confidentiality:
All responses will remain confidential and anonymized in the final report.

Consent Declaration:
I have read and understood the purpose of this study. I consent to participate in the interview and allow the researcher to use my responses for academic purposes.

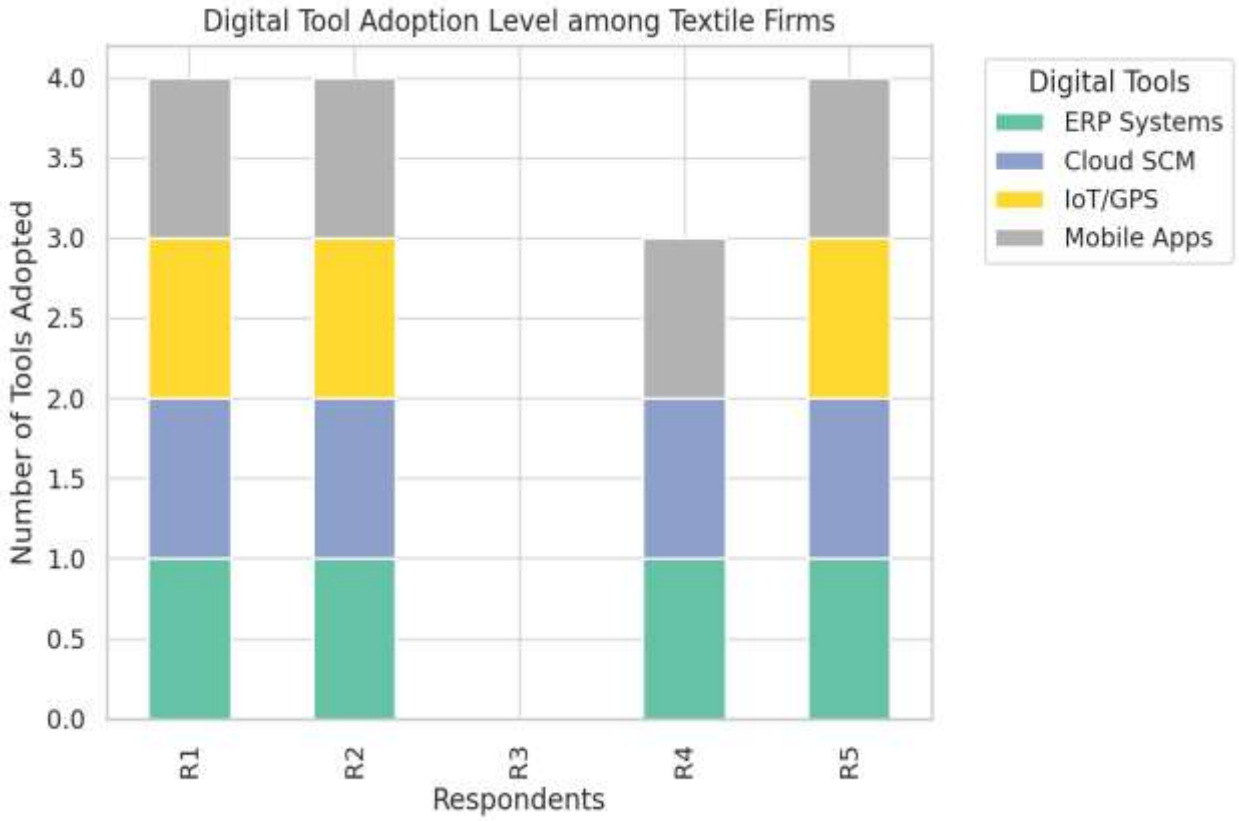
Name of Participant: _____
Signature: _____
Date: _____

Appendix E: Graphs and Visual Illustrations Used in the Report

Graph 1: Adoption of Digital Tools Across Firms

Title: *Digital Tool Adoption Level among Interviewed Textile Firms*

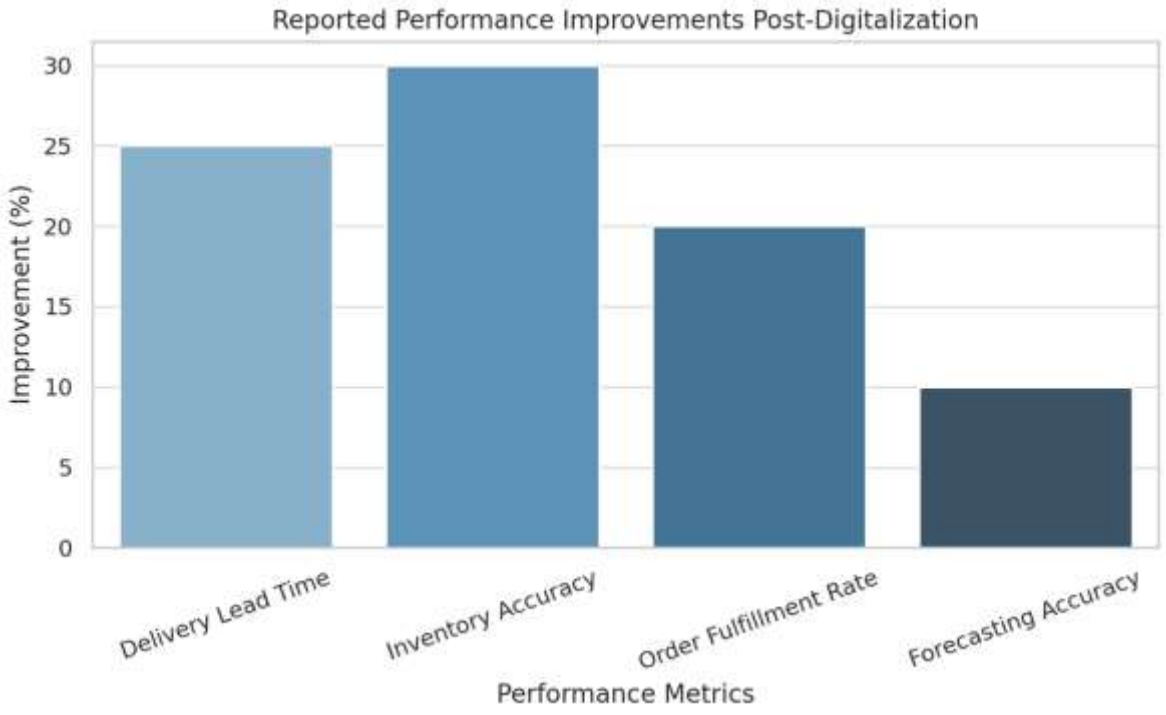
Tool	R1	R2	R3	R4	R5
ERP Systems	✔	✔	–	✔	✔
Cloud-Based SCM	✔	✔	–	✔	✔
IoT or GPS Tracking	✔	✔	–	–	✔
Mobile Dashboards/Apps	✔	✔	–	✔	✔



Graph 2: Reported Performance Improvements Post-Digitalization

Title: *Key Performance Metrics Improved through Digital Adoption*

Metric	% Improvement Reported
Delivery Lead Time	10–25%
Inventory Accuracy	15–30%
Order Fulfillment Rate	12–20%
Forecasting Accuracy	5–10%



Graph 3: Major Barriers to Digital Adoption

Title: *Frequency of Mentioned Barriers among Respondents*

Barrier	Frequency
Infrastructure Limitations	4 out of 5
Lack of Digital Skills	3 out of 5
Resistance to Change	4 out of 5
High Cost of Implementation	3 out of 5