

Impact of Artificial Intelligence in supply chain management



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Submitted to:

Ms. Mahbuba Sultana Lecturer

School of Business & Economics

United International University

Submitted by

Farhat Ramisa Chowdhury

Id: 111 212 052

Major: supply Chain Management

United International University

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School of Business & Economics
United International University

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Ms. Mahbuba Sultana

Lecturer,

School of Business & Economics (SoBE)

United International University (UIU)

Subject: Submission of research report titled “Artificial Intelligence in supply chain Management”

Dear Mam,

With all due respect, I am a student of the BBA department and have prepared this report on the topic “Artificial Intelligence in Supply Chain Management” as per your guidelines within the framework of the course Research Project. Although we are still in the process of learning things, this particular report has provided us with the enlightenment that enables us to understand human nature towards artificial intelligence in its true sense. It is no denying that it has become quite challenging and fascinating for us. Therefore, I would like to extend my sincere gratitude to you for having such a brilliant idea for preparing this report as your teaching prowess enabled us to explore practical aspects of the course.

Thank you.

Sincerely,

Farhat Ramisa Chowdhury

Id: 111 212 052

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I hereby declare that the report of this thesis presented in this title “Artificial Intelligence in supply chain Management” is completely based on my own original effort and it is submitted by me to be considered for academic coursework under the supervision and guidance of my lecturer Ms. Mahbuba Sultana from the School of Business and Economics of the United International University. Moreover, this thesis is not submitted anywhere else in any university for any form of degree or diploma before.

I also declare that all the information sources used in this thesis have been cited and acknowledged in this report.

Furthermore, I hereby certify that this entire thesis has been prepared adhering to ethical guidelines for academic research without indulging in any kind of plagiarism at all.

Farhat Ramisa Chowdhury

Major: Supply Chain Management

School of Business and Economics

United International University

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Thank you.

Scope for Future Study

Abstract

Artificial Intelligence (AI) is a disruptive technology that is changing the way businesses operate and supply chain management procedures are conducted in various businesses. This study aims at reviewing how Artificial Intelligence can affect the supply chain management and organizational performance, especially focusing on the case of Small and Medium-sized Enterprises (SMEs) in Bangladesh. The research examines the present AI adoption rate, its advantages, obstacles, and future prospects in the operations of organizations.

To fulfill the research objectives, a qualitative research approach was used. The primary data were gathered with the help of the semi-structured interview with a Media Executive of MBA Bangladesh (Concern of Asiatic 360), an organization that actively uses AI technologies in its work. The secondary data have been gathered through academic journals, books, research articles, and other pertinent materials on the internet. The Technology Acceptance Model (TAM), Diffusion of Innovation (DOI) Theory and the Resource-Based View (RBV) Theory were used as a guide in the study to justify the factors that lead to the adoption of AI and the performance of organizations.

The results show that AI technologies enhance the level of operational efficiency, quality of decision-making and predictive analytics, audience targeting, optimization of campaigns, and overall organizational performance significantly. The AI-based tools like ChatGPT, Jasper, Canva AI, Adcreative.ai, Buffer, and Publer allow organizations to automate repetitive operations, analyze huge volumes of data, and improve productivity. Other obstacles to the implementation of AI, such as high costs of implementation, insufficiency of technical skills, skills disparity, integration challenges, and data security are also mentioned in the study.

This study finds that Artificial Intelligence can improve supply chain management and increase the competitiveness of SMEs. However, successful implementation requires employee training, better technology, cybersecurity, and effective change management. The findings also provide useful insights and recommendations for improving AI adaptation in Bangladeshi SMEs.

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CHAPTER I: INTRODUCTION

1.1 Background of the study

Artificial Intelligence is rapidly changing industries by improving automation, data analysis, and decision making. In Supply Chain Management, AI helps increase efficiency, improve forecasting accuracy, optimize inventory management, and enhance overall performance. It is commonly used through machine learning for logistics optimization and predictive analytics for better inventory management and demand planning. In the case of large organizations, AI is already becoming a source of competitive advantage, enabling organizations to remain competitive in the ever-more complex and globalized world.

Nevertheless, the utilization of AI in supply chain processes is not as common by Small and Medium-sized Enterprises (SMEs) and especially in developing nations like Bangladesh, even in spite of the promising gains. The Bangladeshi economy depends on SMEs which are the largest contributors of employment and GDP. Nevertheless, these companies usually experience significant impediments in their supply chain operations in terms of adopting AI technologies. SMEs in Bangladesh have difficulties with high implementation costs, technical expertise and sufficient infrastructure to sustain such development unlike large organizations that can afford to invest a lot of money in technology.

SMEs are important in different sectors in Bangladesh including manufacturing, retail and logistics. Nevertheless, they usually work with scarce resources, technologies, and have problems with shortages of skilled labor. Therefore, there is low uptake of AI into their supply chains and hence inefficiencies and poor performance compared to their bigger counterparts. It is even more notable in developing economies where SMEs do not have the capacity and resources to take advantage of AI in improving their supply chain capabilities.

Although in big companies AI implementation into supply chains has already demonstrated tangible returns, SMEs are left out. They have little access to capital, technical knowhow and therefore they cannot assimilate such technologies and become a prey in the competitive business environment. As such, it is critical to know the obstacles to AI adoption among SMEs, and the possible advantages of AI in their supply chain to encourage the broader adoption of AI in SMEs.

This study examines the impact of Artificial Intelligence on supply chain performance in Bangladeshi SMEs. It aims to identify the reason for low AI adoption and explore how AI can improve supply chain efficiency and competitiveness.

1.2 Statement of the Problem

AI is increasingly being used in supply chain management to improve efficiency, forecasting, and decision- making. But there are challenges to AI adoption for many small also moderate-sized enterprises because of cost, lack of expertise and infrastructure. Though making rapid advances globally in supply chain management, research on the use of AI for supply chains in developing countries is limited and finding high relevance to Bangladesh with its abundance of underutilized data. Previous studies focus mostly on large firms and pay less attention to SMEs; Background. Therefore, this study aims to analyze the impact of Artificial Intelligence on supply chain performance, particularly in small and medium-sized businesses, while also identifying the key barriers, such as lack of awareness among people in our country, that influence its implementation in supply chain management.

1.3 Objectives of the Study

The goals of this study are:

- **Identify the current adoption of AI by SMEs in Bangladesh:** What is the current status of how AI is getting integrated with supply chains through SMEs and what is the level of adoption?
- **Summarize the challenges that SMEs face in AI adoption:** Understand how financial, technical and infrastructure constraints are some of the main pain points that SMEs experience when implementing supply chain management solutions using artificial intelligence.
- **A small step forward to have a look at how AI Adoption can help SMEs become more efficient:** Assess how AI can enhance supply chain operations in SMEs, specifically in forecasting, inventory management, and logistics.
- **Make recommendations on making the recommendations:** Provide SMEs technical and non-technology related ways to overcome barriers and adopt AI in their supply chain management processes.

1.4 Scope and Limitations of the Study:

This study focuses on SMEs in Bangladesh, especially in the manufacturing, retail, logistics, and digital marketing sectors, as these industries rely heavily on efficient supply chain operations and play an important role in the country's economy.

This paper is based on qualitative research through interviews with employees of marketing and media buying agency MBA Bangladesh (Concern of Asiatic 360), where AI tools are applied to operation and marketing processes. Responses to the interviews offer tangible perspectives on how AI technologies are deployed in real-world settings among business activities.

Despite this, there are limitations within the study. Firstly, the sample size is too small to generalize in SME sector and it is only based on few interviewees. Second, a few of the respondents may or may not peruse what AI implementations in supply chain management are capable of. Third, the results may generalize poorly to SMEs in other

countries. Given comparable economic developments along with different technological infrastructures or organizational practices among nations, SME distributions might be distinctly different when analyzed within national boundaries.

The insights gained from this interview may not fully reflect AI use in other supply chain-heavy industries like manufacturing, warehousing, retail distribution, transportation and procurement-based industries. Thus, the results are applicable only to the organization sampled, and future research could involve additional firms more involved with supply chain management to obtain a more comprehensive picture of AI use in SCM.

Also the research is heavily found on managerial and operation practices rather than technical development of AI systems.

1.5 Definition of Key Terms

Artificial Intelligence (AI): Computer science responsible for making systems that are capable of performing tasks that normally require human intelligence such as decision-making, problem-solving and learning.

supply chain management (SCM): SCM is the process involved in managing areas such as procurement to purchasing, processing and distribution of goods, services and information from a point which started up till reaching an end-user or consumer.

Small and Medium-sized Enterprises (SMEs): Companies defined by a local law or regulation that specifies the maximum number of employees, general paid-up stock limit and/or minimum annual revenue. Given the fact that SMEs are important to the economy of developing countries.

Technology Adoption: process of integrating new technologies into businesses in order to increase efficiency, productivity and competitiveness

Predictive Analytics: It uses historical data, statistical algorithms and machine learning techniques to identify the likelihood of future outcome and trends.

Machine Learning: Branch of AI that allows system to learn from data and perform better without being explicitly programmed.

1.6 Organization of the Remaining Chapters

The remainder of this report is structured as follows:

- **Chapter II: Literature Review** - This section discusses previous studies pertaining to the adoption of AI technology within Supply Chain Management especially conducting with Small Medium Enterprises (SME). The theoretical underpinnings are represented in section 2.1, which discusses the different aspects of the Technology Acceptance Model (TAM) and Diffusion of Innovation (DOI) theory that supply information regarding the barriers hindering SMEs from embracing AI.
- **CHAPTER III: Research Methods**- This chapter describes the research design, methodology, how sample is selected and a description of questionnaire development, interview and data collection used in this study.
- **Chapter IV: Research Findings and Analysis**– This chapter presents the results of the interviews and analyzes the findings in relation to research objectives. It examines AI adoption patterns, advantages, road blocks and future prospects.
- **Chapter V: Discussion, Conclusion and Recommendations** — This chapter summarizes the findings, draws conclusions based on analysis and provides recommendations for SMEs in their use of AI to overcome challenges they face in adopting such technologies within supply chain operations. It also gives scope for the future research work.

CHAPTER II: REVIEW OF THE LITERATURE

2.1 Relevant Theory

This study is based on key theories of technology adoption and organizational innovation. Theories on technology readiness, diffusion, and process stages that can explain firms (primarily SMEs): AI adoption in supply chain management decisions.

2.1.1 Technology Acceptance Model (TAM)

Technology Acceptance Model is introduced by Davis (1989) characterized how users accept and use new technology. TAM specifies two models that govern the adoption of technology.

Perceived Usefulness:

The degree to which a person believes that using a technology will improve job performance and, by extension, organizational efficiency. Results SMEs are more likely to adopt AI based on their belief that AI can enhance supply chain operations involving:

- Demand forecasting
- Inventory management
- Logistics optimization
- Campaign planning
- Data analysis

And the interview results corroborate this contention, with an interviewee commenting that AI-enhanced campaign performance, audience targeting, reports accuracy and operational efficacy.

Perceived Ease of Use:

Perceived Ease of Use– Refers to the degree to which a person believes that using a particular system would be free from effort or complexity. If employees do not have technical skills or AI systems are difficult to implement, consumers may face barriers due to the cost and accessibility of using Generative AI SMES solution. It turned out that organizations do face some skill gaps and want technical know-how in relation to the available talent pool, which obviously influences AI adoption. For this reason, TAM is directly related to this study as it describes employee perception and usability on AI adoption in SMEs.

2.1.2 Diffusion of Innovation (DOI) Theory

Rogers (2003) Theory of Diffusion of Innovation This theory describes the way in which innovations spread within organizations and societies through time. There are five main determinants of whether or not one adopts an innovation according to DOI theory:

Relative Advantage:

Technologies are adopted by organizations when the rationale behind an innovation is that it offers better operating performance than the systems currently in place. The findings from the interview show AI has improved targeting accuracy, reduced manual work and enhanced overall business performance in organizations.

Compatibility:

In innovation, compatibility refers to how well a new technology fits with existing business processes and organizational culture. the respondent stated that AI is used in campaign planning, reporting, and media buying, showing that it is well integrated into daily operations

Complexity:

This makes advanced technologies more difficult to adopt. In SMEs, limited technical skills and challenges in integrating AI tools increase the perceived complexity of AI adoption. As a result, many SMEs are hesitant to implement AI in their operations.

Trial ability:

Organizations are more likely to adopt a technology if they can test it before full implementation. AI tools such as ChatGPT, canva, and Buffer offer trial or flexible usage, allowing SMEs to adopt them gradually.

Observability:

Organizations are more willing to adopt AI when they experience positive results. Tge interview showed that AI improved targeting and operational efficiency, encouraging its continued use. Therefore, the Diffusion of Innovation (DOI) theory helps explain how SMEs adopt AI and the factors that support or hinder its implementation.

2.1.3 Resource-Based View (RBV) Theory

According to Resource-Based View (RBV) theory, organizations achieve a competitive advantage by using valuable resources and capabilities. AI technologies can become valuable resources that help improve:

- Decision-making
- Operational efficiency
- Data analysis
- Customer targeting
- Forecasting accuracy

However, implementing AI can be difficult for SMEs due to high costs, limited technical infrastructure, and a lack of skilled employees. The interview findings support this, as cost and skill shortages were identified as the main barriers to AI adoption.

2.2 Literature Survey

Artificial Intelligence is becoming an important topic in supply chain management and business operations. Researchers around the world have studied how AI improves operational efficiency, forecasting, logistics, and customer service.

Artificial Intelligence is becoming an important technology in supply chain management by helping businesses analyze large amounts of data, forecast demand, automate routine tasks, and improve operations. AI uses past sales, customer behavior, market trends, and other factors to make more accurate demand forecasts. This helps business plan production, manage inventory and procurement, allocate resources, and reduce uncertainty. For SMEs, AI-based demand forecasting supports faster and better decision-making, even with limited resources.

AI can be used in inventory management to track stock levels, identify items that are moving quickly and slowly, and predict when to reorder products to prevent stockouts or overstocking. For logistics and transportation, AI can be used to optimize routes and deliveries, enhance fleet utilization, manage costs, and analyze traffic patterns, delivery times, fuel consumption, and customer locations. AI can be applied in procurement and supplier management for tasks such as supplier selection, supplier performance evaluation, price comparison, risk assessment, and purchase planning. Consequently, AI can enhance the performance of the supply chain, foster better relationships with suppliers, and boost the overall efficiency of operations for organizations.

As per Chopra and Meindl (2019), supply chain management is the coordination of sourcing, production, transportation and distribution activities. To enhance customer satisfaction while lowering operational costs, effective supply chain systems are imperative. And in recent times, it is the technological developments that render AI as an influencing method to improvise these Supply Chain functions.

Ivanov and Dolgui (2020) stated that AI-based technologies and systems are very efficient in enhancing supply chain resilience, operational performance, agility, productivity or even top-economic-line improvement factors in an enterprise. The study suggests that AI is capable of processing vast amounts of live data, allowing for decisions to be made in a timely manner and more accurately.

Multiple studies have proved how the use of AI leads to improved demand forecasting. Forecasts based on traditional methods often fail because of the uncertainty in the market and changes in buying behavior. Through analyzing historical sales data, customer demand patterns, and any triggering events in the external environment, AI systems can get access to better (more accurate) forecasts. AI cannot only help to reduce overstocking and stock shortages, but research also shows that AI improves inventory management. They automatically monitor inventory levels and suggest methods to replenish stock depending on estimated future demand. AI in logistics and transportation management refers to: AI helps managers efficiently organize delivery processes, cut down fuel expenses, analyze the performance of a delivery company. Analytics powered by AI can help find the best routes for transportation considering balance between traffic conditions, delivery schedules as well as customer location.

While AI has been adopted by large organizations at a faster rate, SMEs have remained relatively slow in their adaption, primarily due to several barriers that must first be overcome before implementation. All the major challenges according to previous studies are:

- High implementation costs
- Lack of technical expertise
- Limited technological infrastructure
- Employee resistance to change
- Data security concerns

The findings of the interview in this study also agree with previous research. Major roadblocks hindering AI implementation, according to the respondent included: skill gaps, cost constraints, data integration issues and security concerns.

Management support was also among the major facets drawn out by researchers for physically adopting AI. Technological innovation and employee training will be more sought after in organizations with supportive leadership. According to the response in this study top management is extremely supportive of AI solutions because it improves campaign performance and operational efficiency.

Another relevant topic raised by previous studies is privacy and security of the data. Because AI systems learn from extensive data on organizations, customers and so forth, it has increased exposure of data leakage (cyber-attacks). The interview results corroborated that organizations were worried about security of client data and third-party platform risks.

Past studies have largely centered on bigger businesses and developed markets. While some studies have been undertaken in developing countries, such as Bangladesh, there has been less research on SMEs. Second, only a limited number of studies use interview-based qualitative research methods to examine employee perspectives on AI adoption. Hence, this research adds to the existing literature focusing on SMEs in Bangladesh and provides an empirical qualitative analysis of practical AI adoption challenges.

Table 2.1 Overview of Prior Literature

Author(s)	Study Focus	Key Findings
Davis (1989)	Technology Acceptance Model (TAM)	Perceived usefulness and ease of use in technology adoption.
Rogers (2003)	Diffusion of Innovation (DOI) Theory	Theory Adoption depends on relative advantage, compatibility and complexity.
Chopra & Meindl (2019)	Supply Chain Management	Technology enhances operational performances, and efficiency.
Ivanov & Dolgui (2020)	AI in Supply Chain Management	AI plays a role on resilience in supply chains, forecasting of customer demands and decision making.
Teece et al. (1997)	Resource-Based View (RBV)	The concept of Resource-Based View (RBV), which states that organizational capabilities lead to competitive advantage.

2.3 Hypothesis Development

The hypotheses proposed by this study are based on the literature review, objectives of research and the data gathered through interviews. These hypotheses are related to the association between artificial intelligence (AI), supply chain performance and the impediments to effective AI adoption in SMEs.

Hypothesis 1 (H1)

***H1:** The positive impact of Artificial Intelligence on supply chain and operational efficiency in SMEs.*

AI is one of the most significant technological tool that enhances organizational performance and operational activities. Earlier Works show that AI systems assist companies in automating jobs that involve repetition, provide valuable analytics to enhance more precise forecasting and inventory management, and enable quick decision-making processes.

In supply chain management, AI systems parse and learn from huge amounts of data to forecast customer demand or better allocate resources, reducing delays and making logistics operations run more smoothly. Not to mention, AI-based tools also enable organizations to cut operational costs and increase productivity. Studies show that enterprises embracing AI technologies deliver better efficiency and competitive advantage than those that stick with conventional systems. Findings from the interviews in this study provide evidence in support of this hypothesis as well. The respondent shared that they use the AI tools for:

- Audience targeting
- Campaign optimization
- Automated reporting
- Budget allocation
- Predictive analytics
- Performance analysis

They also said AI helps reduce manual work and enhances operational efficiency in the organization. Hence, one can reason that AI integration has a positive impact on the supply chain and business performance in SMEs.

Hypothesis 2 (H2):

H2: Financial constraints and a lack of technical knowledge have adverse impacts on the adoption of AI in SMEs.

While there is no shortage of advantages when utilizing AI, SMEs often struggle to implement such technologies due to not having the financial capacity or technical skills. Training software, infrastructure, money for employee education and integration of the AI model ultimately bring more quick to small and medium enterprises who basically lack funds to spend on it.

Moreover, the requirement of advanced technical skills required to effectively operate and manage AI systems is unfamiliarity among most SMEs. Organizations have very limited understanding of AI tools, analysis of data and the way this can be integrated into existing business processes without specific expertise required to complement human intelligence. Extant literature suggests that unmet technical capacity is one of the largest impediments to SME adoption of advanced technologies. Lack of financial resources also limits the ability of SMEs to invest in digital transformation projects.

The findings from interviews provided significant support for this hypothesis. The survey asked respondents to identify which were the biggest obstacles for AI adoption, and here is what they said:

- Skill gaps among employee
- High implementation costs
- Data integration problems
- Lack of expertise
- Resistance to workflow changes

These findings suggest that SMEs experience both financial and technical challenges while adopting these AI technologies. Thus, low technical skills and financial constraints are expected to impede the adoption of AI in SMEs.

CHAPTER III: RESEARCH METHODS

3.1 Research Design

This research is conducted with a qualitative research design to find out the effect of Artificial Intelligence (AI) supply chain in managing Small and Medium-scale Enterprises facilities in Bangladesh. Since the study aimed at learning different experiences, opinions, perceptions, and practical insights associated with the use of AI in organizational tasks; a qualitative approach was chosen.

Since AI adoption in SMEs, specifically within Bangladesh is an emerging academic field this study takes the form of exploratory research. This exploratory approach enables researchers to explore practical experiences and tackle key opportunities and challenges that accompany the use of AI in this area; 91. This research tries to explore incorporating the use of AI by organizations at the time of adoption through data gathering from interviews.

3.2 Sample

The study takes one employee of an advertising agency in Bangladesh (MBA Bangladesh; Concern of Asiatic 360) as its sample. Now, the respondent works in position of Media Executive at Digital Marketing Department and has almost one year working experience.

The individual was chosen as the respondent using purposive sampling because of their involvement in AI initiatives and practical experience with the use of AI technologies at organizational level.

The respondent had sufficient knowledge of AI implementation, organizational practices, and operational challenges, making them a suitable participant for this study. Although the sample size was small, the respondent's practical experience provided valuable qualitative insights relevant to the research.

3.3 Questionnaire Development

A semi-structured interview questionnaire was developed (for the purpose of collecting data). The sixteen questions asked in the interview focused on information around AI usage, organizational approaches, implementation challenges, business implications and future opportunities. There were a few areas this interview seemed focused on:

- Description of the respondent and an overview of the organization
- Knowledge on AI tools
- AI in processes performed by organizations
- Benefits of AI implementation
- Barriers and challenges to adopting an Operational process
- Data security concerns
- Competitive and external market forces
- Support of management, and plans for the future
- Personal beliefs around AI implementations

The research was further supplemented by qualitative data collected through semi structured interviews; the interview questionnaire was designed utilizing: research objectives, literature review and theoretical frameworks such as Technology Acceptance Model (TAM), Diffusion of Innovation (DOI) and Resource-Based View (RBV) Theory. The semi-structured interview format permitted detailed explanation and insights of the respondents by going beyond some pre-defined responses.

3.4 Data Collection

The main source of data was obtained through gathering information from the respondent of MBA Bangladesh based on an interview conducted. It asked open questions to gain practical insights on implementation, benefits, challenges, and organizational experiences about the applications of AI. The secondary data were gathered based on journal articles, books, prior research papers, websites and magazines in the field of Artificial Intelligence and Supply Chain Management. The respondent subject to the interview was given information with respect to the research aim and that confidentiality would be maintained during research.

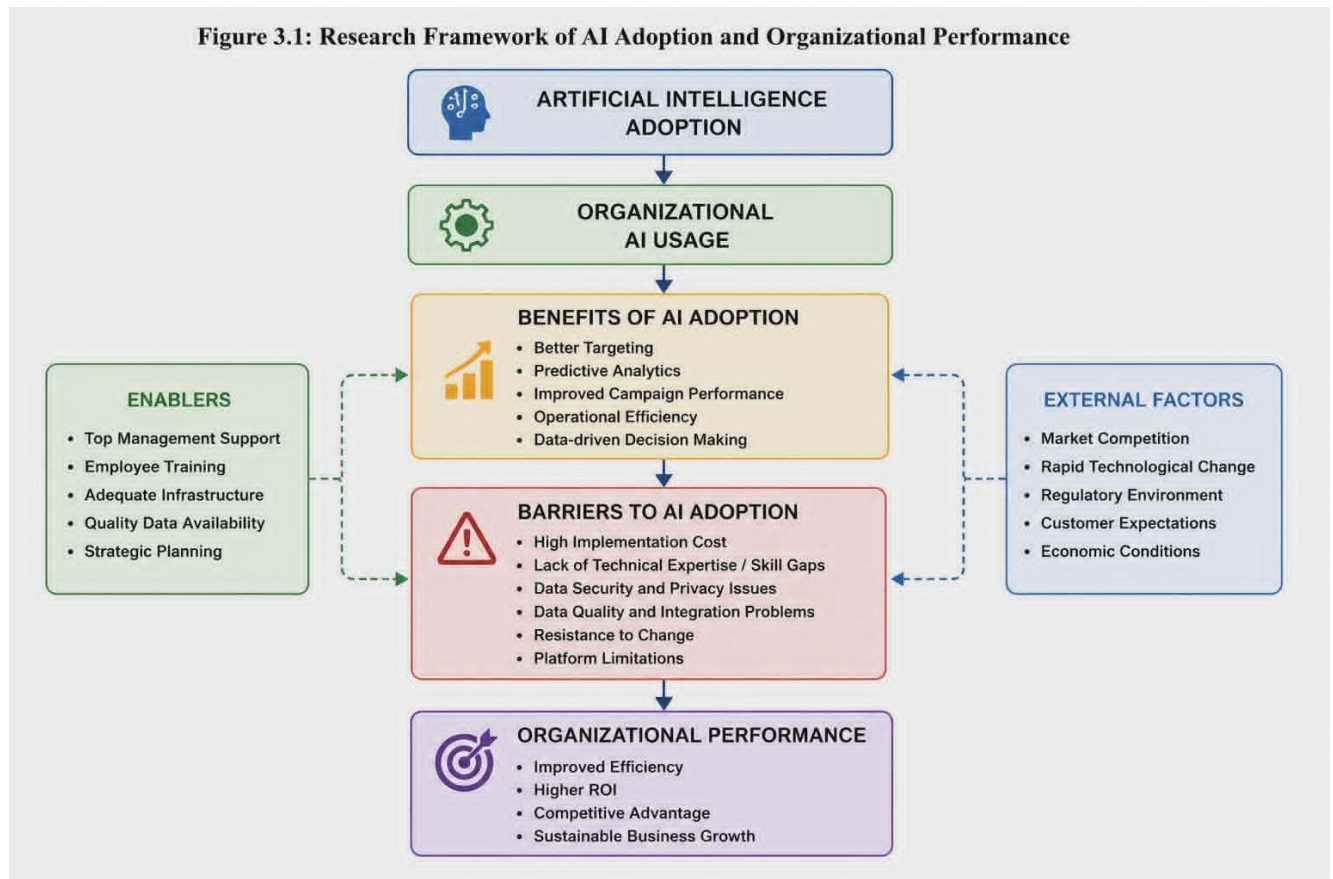
3.5 Data Analysis Plan

The interview data were subsequently analyzed using methods of thematic analysis. The interview results were analyzed based on research objectives and categorized them into various themes. The major themes included:

- Artificial Intelligence — Awareness and Organizational Adoption
- Benefits of AI implementation
- Operational improvements
- Barriers and challenges
- Data security concerns
- Market competition
- Future possibility and administration support

The results were then matched against earlier literature and theoretical frameworks for similar and diverging conclusions. This contributed to the development of significant perceptions concerning how Artificial Intelligence is reshaping organizational performance and supply chain management.

Figure 3.1: Research Framework of AI Adoption and Organizational Performance



The framework explains the relationship between AI adoption and organizational performance. It shows that even though implementing AI may bring operational benefits and efficiency improvements, Multiple barriers affect successful adoption in an organization.

CHAPTER IV: Research Findings and Analysis

4.1 Respondent Profile

The respondent interviewed is now employed at MBA Bangladesh (Concern of Asiatic 360), a marketing and media buying agency in Bangladesh. The respondent works in the Digital Marketing Department as a Media Executive and has a work experience of about one year. As the respondent is actively involved in the use of AI-powered tools and campaign-related tasks, practical information about AI implementation and the organizational practice was gained via the interview.

The organization is in an extremely competitive and technology-driven environment where optimization of campaigns, targeting customers, and tracking of performance are significant to the organization. Thus, AI technologies are becoming part of various operational processes to enhance efficiency and competitiveness.

4.2 Research Findings and analysis

The results of the interview indicate that Artificial Intelligence has turned out to be a more useful technology to organizations, especially in those industries where data analysis and decision-making are of high importance. The respondent noted that AI is among the rapidly expanding areas of technology and offers considerable opportunities to organizations to enhance business performance and operational efficiency.

The respondent listed a number of AI tools being utilized in professional practice such as ChatGPT, Jasper, Canva AI, Adcreative.ai, Buffer, and Publer. These tools facilitate various business processes, including content creation, social media management, campaign planning, customer targeting, and performance analysis. According to the respondent, AI technologies are used by organizations to automate routine operations and minimize the number of manual operations that organizations need to perform in their day-to-day operations.

The analysis showed that the company has an active AI-based approach to create advertisement copies, headlines, audience insights, campaign structures, and budget allocation strategies. Predictive analytics and automated bidding are also done using AI to optimize the performance of campaigns. By analyzing the audience with the help of AI, the organization will be able to track the audience behavior and enhance the advertising strategies on the basis of real-time information.

Thus, despite the fact that the respondent talked primarily about marketing using AI, the results are applicable to SCM as well. Organizations can better understand market demand through customer analysis and audience targeting. Predictive analytics helps improve campaign planning and forecasting, while order entry and distribution management support better inventory control, logistics planning, and overall supply chain coordination.

Another important finding is that AI can improve Return on Investment (ROI). Automated optimization and predictive analytics help organizations make faster and better decisions, improving campaign performance. As a result, AI enhances both operational efficiency and organizational competitiveness.

Another important finding is that AI can improve Return on Investment (ROI). Automated optimization and predictive analytics help organizations make faster and better decisions, improving campaign performance. As a result, AI enhances both operational efficiency and organizational competitiveness.

Despite its benefits, organizations still face several challenges in adopting AI technologies. this finding Supports the research problem, which highlights the barriers preventing SMEs from effectively implementing AI systems.

One of the major challenges identified was data quality and Integration. Organizations collect data from different platforms and systems, making it difficult to create accurate and unified datasets. Poor-quality data can reduce the performance and effectiveness of AI system.

Another major challenge was the lack of technical skills and AI knowledge among employees. Many employees are not familiar with using AI tools or interpreting AI-generated insights. As a result, organizations face difficulties in effectively implementing and using AI systems.

Another major barrier was the high cost of AI implementation. Adopting AI requires investment in software, training, infrastructure and system integration. These costs make it difficult for many SMEs in Bangladesh to adopt AI due to limited financial resources.

An issue of trust and transparency of the clients was also noted in the findings. Clients usually seek elaborate clarifications about how AI systems come up with decisions and recommendations. Since AI systems may work based on complicated algorithms, it can be challenging to clarify the results.

Another critical issue was identified as data security. As media buying agencies are in charge of client-related information and data related to the campaigns, the risks of using third-party tools, data transfers, and human error are also a significant concern. Mishandling of information can pose privacy and security threats.

The respondent also talked about a number of external issues such as evolving platform algorithms, rising advertising rates, privacy policies, and evolving customer habits. Also, the market environment was characterized as being very competitive with the rising technological advancements and rivalry with local and international organizations.

In terms of the opportunities in the future, the respondent said that the business operations are slowly moving away the traditional systems to the AI-driven automation and data intelligence systems. The business practices are likely to be more predictive analytics, smart decision-making systems, and Omni channel performance marketing in the future.

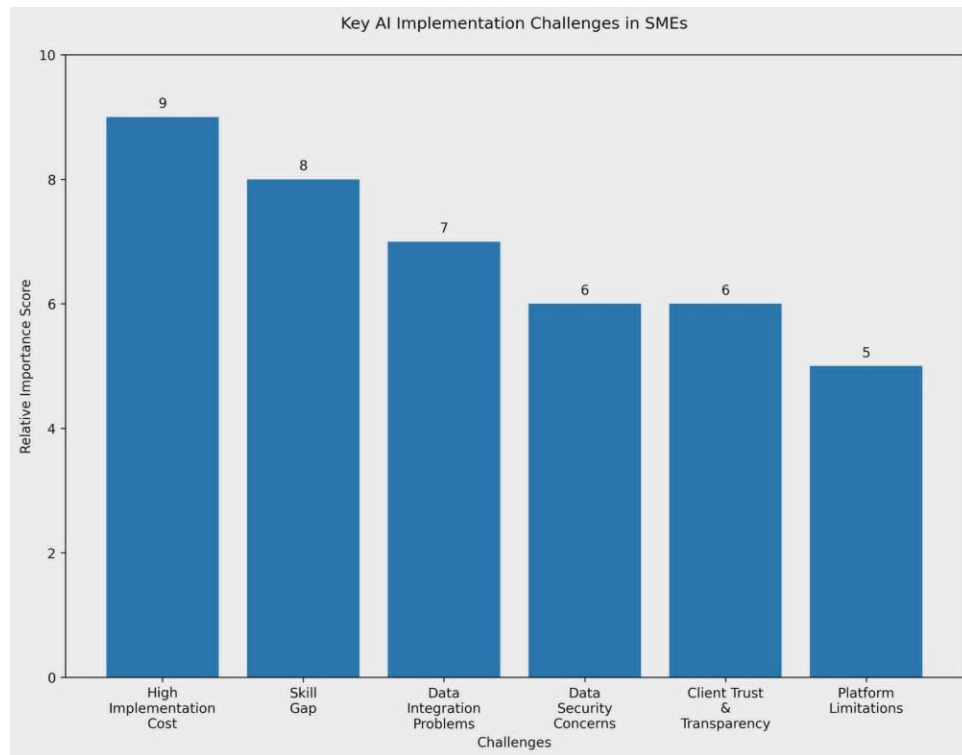
Table 4.1: AI Adoption Results according to the Interview Responses.

Research Dimension	Respondent Findings	Organizational Impact
AI Awareness	AI is regarded as a significant and expanding field of technology that has wide business implementation.	Increased interest in technological innovation.
AI Adoption Level	AI is actively used in different business functions.	Improved operational activities.
AI Tools Usage	ChatGPT, Jasper, Canva AI, Adcreative.ai, Buffer, Publer.	Faster content creation and workflow automation.
Business Benefits	Improved audience targeting, improved campaign optimization, predictive analytics.	Improved campaign effectiveness and ROI.
Implementation Barriers	Expensive, skill gaps, data integration issues.	Slower AI implantation process.
Data Security Concerns	Third-party risks, access control issues, human error.	Increased need for cybersecurity measures.
Future Opportunities	Automation and predictive decision systems based on AI Long-term business competitiveness.	Long-term Business competitiveness.

The table highlights key results of the responses to interview questions on the implementation of AI in the organization.

In general, the results are very much in favor of the hypotheses put forth in this study. Artificial Intelligence has a positive effect on the performance of organizations and their operational efficiency, and the absence of financial resources and technical skills is a serious obstacle on the way to effective implementation.

Figure 4.2: The main AI Implementation Problems Revealed during the Interview.



The figure shows some of the major challenges found during the interviews on the implementation of AI in SMEs. Out of the listed barriers, the cost of implementation scored the highest (9), which means that financial constraints are still a significant impediment to AI adoption. Other major challenges included skill gaps (8) and data integration issues (7). Data security and customer trust each scored 6, while platform limitations scored 5. These findings show that financial support, technical capability, and organizational readiness are essential for successful AI implementation.

CHAPTER V: DISCUSSION

The results of this research reveal that Artificial Intelligence is a significant technological advancement in enhancing organizational performance and operational efficiency in SMEs. The results of the interview showed that AI technologies are already employed in media buying and digital marketing processes to optimize campaigns, target audiences, use predictive analytics, automated bidding, and analyze performance.

The respondent clarified that AI tools like ChatGPT, Jasper, Canva AI, Adcreative.ai, Buffer, and Publer are commonly employed in organizational processes. These tools will help employees to create advertisement content, enhance understanding of the audience, minimize manual labor, and facilitate decision-making processes based on data. The results thus indicate that AI will have a positive impact on operational efficiency and strategic business performance.

The results of the study are in line with earlier literature as mentioned in Chapter II. Previous research indicated that AI technologies enhance the accuracy of the forecasts, the quality of the decisions, targeting the customers, and the productivity of the operations. The same results were discovered in this study as the respondent stated that AI has a huge impact on the effectiveness of campaigns and performance of organizations.

The results are a solid indication of the Technology Acceptance Model (TAM). TAM explains that users tend to embrace technologies which they consider helpful and easy to use. The respondent found AI very helpful as it enhances the performance of the campaign, the efficiency of operations, and productivity. Non-however, the complexity of implementation and technical incompetency makes it less user-friendly to many organizations.

Likewise, the theory of Diffusion of Innovation (DOI) can also be observed in the results since companies slowly implement AI technologies after seeing some improvement in performance and competitive edge. According to the respondent, companies are becoming more reliant on AI-based strategies to stay afloat in the fast-evolving market conditions.

The theory of Resource-Based View (RBV) is also justified since AI technologies generate valuable organizational capabilities, which enhance strategic competitiveness. By adopting AI, companies will be able to enhance their performance, streamline decision-making, and build better operational capacities.

Nevertheless, the results show that organizations are still struggling with a number of implementation challenges, in spite of the positive benefits. The problem statement of the present study highlighted that the barriers to the SMEs in Bangladesh are financial constraints, insufficient technical skills, infrastructure constraints and organizational preparedness challenges. These issues were highly validated by the results of the interview.

High implementation cost was found to be one of the greatest barriers. The adoption of AI involves spending on software applications, training of employees, infrastructure, and system integration. In Bangladesh, a number of SMEs are faced with the challenge of having enough resources to transform towards technology.

The other significant problem was the skills gaps and deficiency of technical skills among employees. Workers usually do not have practical experience of AI systems and data interpretation procedures. Organizations can become ineffective in the use of AI technologies without appropriate training and technical knowledge.

Another issue that the respondent raised was that of data security and privacy. The threats posed by third-party platforms, access control restrictions, and human errors are vulnerabilities since organizations deal with massive volumes of client and campaign-related data. Thus, data protection and cybersecurity continue to be the significant issues of organizations using AI technologies.

External threats such as platform dependency, algorithm changes, and an increase in advertising cost, consumer behavior change, and competition in the market also affect the implementation of AI. To stay competitive, organizations have to keep up with the changing technological environments.

In general, the results indicate that AI offers significant possibilities to enhance the efficiency of organizations and business performance. Nonetheless, effective AI implementation requires the organization to be ready, the employees should be prepared to develop their capabilities, the technology infrastructure, and the support of the management.

5.1 Conclusion

This paper has explored how Artificial Intelligence is affecting the supply chain management and organizational performance, with specific reference to SMEs and media buying organizations in Bangladesh. The results showed that AI technologies have a positive impact on operational activities by automation, predictive analytics, audience targeting, optimizing campaigns, and decision-making based on data. AI tools assist companies to enhance efficiency, decrease repetitive tasks, and aid in planning strategies.

Although the results were achieved in a digital marketing enterprise, the discovered AI capabilities can be applied to larger supply chain operations, including forecasting, planning, and optimization of operations. The paper shows that AI is capable of underpinning not only decision-making processes associated with marketing but also broader supply chain processes such as inventory management, procurement coordination, logistics and resource allocation.

Thus, this study demonstrates that AI can enhance the performance of organizations by assisting in quicker decision-making, enhanced data analysis, and more effective planning. Although the research was done in a digital marketing setting, the findings offer valuable information about how AI would help supply chain management, particularly in SMEs that have to enhance their efficiency by using limited resources.

The research found that there were numerous advantages to AI adoption such as:

- Improved operational efficiency
- Better audience targeting
- Smarter budget allocation
- Faster decision-making
- Enhanced campaign performance
- Increased Return on Investment (ROI)

Nevertheless, a number of barriers to implementation were also observed:

- High implementation cost
- Absence of technical knowledge.
- Employee skill gaps
- Data integration problems
- Platform limitations
- Data security concerns

The results confirm the two hypotheses of the research. Artificial Intelligence is a positive factor in the direction of operational efficiency and organizational performance, whereas financial and technical constraints are a negative factor in the successful implementation of AI in SMEs.

Thus, AI can turn into a valuable strategic asset of companies provided that the companies can overcome the implementation difficulties and invest in technological advancement and enhancement of employees.

5.2 Recommendations

On the basis of the results of the present research, the subsequent recommendations can be made to enhance the effective implementation of Artificial Intelligence in the context of SME in Bangladesh.

Employee Training

The absence of technical expertise among employees is one of the biggest challenges that have been identified in the study. SMEs ought to organize frequent trainings to enhance the knowledge and skills of employees on AI. This will assist employees in better utilization of AI tools and enhance productivity in the organization.

Gradual AI Adoption

Many SMEs cannot afford AI implementation due to high implementation costs. Thus, the implementation of AI technologies should be spread step by step by organizations based on their needs and the resources they have. The implementation can be minimized through a gradual strategy that decreases financial pressure and risks involved.

Better Cybersecurity

One of the major barriers to AI adoption is data security and privacy. SMEs need to strengthen cybersecurity and implement proper data protection measures to protect business and customer information.

Improved Data Management

The success of AI depends on high-quality data. organizations should improve their data collection, storage, and integration systems to ensure accurate and reliable AI insights.

AI Awareness

Resistance to new technology can slow down AI implementation. Management should raise awareness about the benefits of AI and encourage employees to see it as a tool that supports their work rather than replaces them.

Decision Transparency

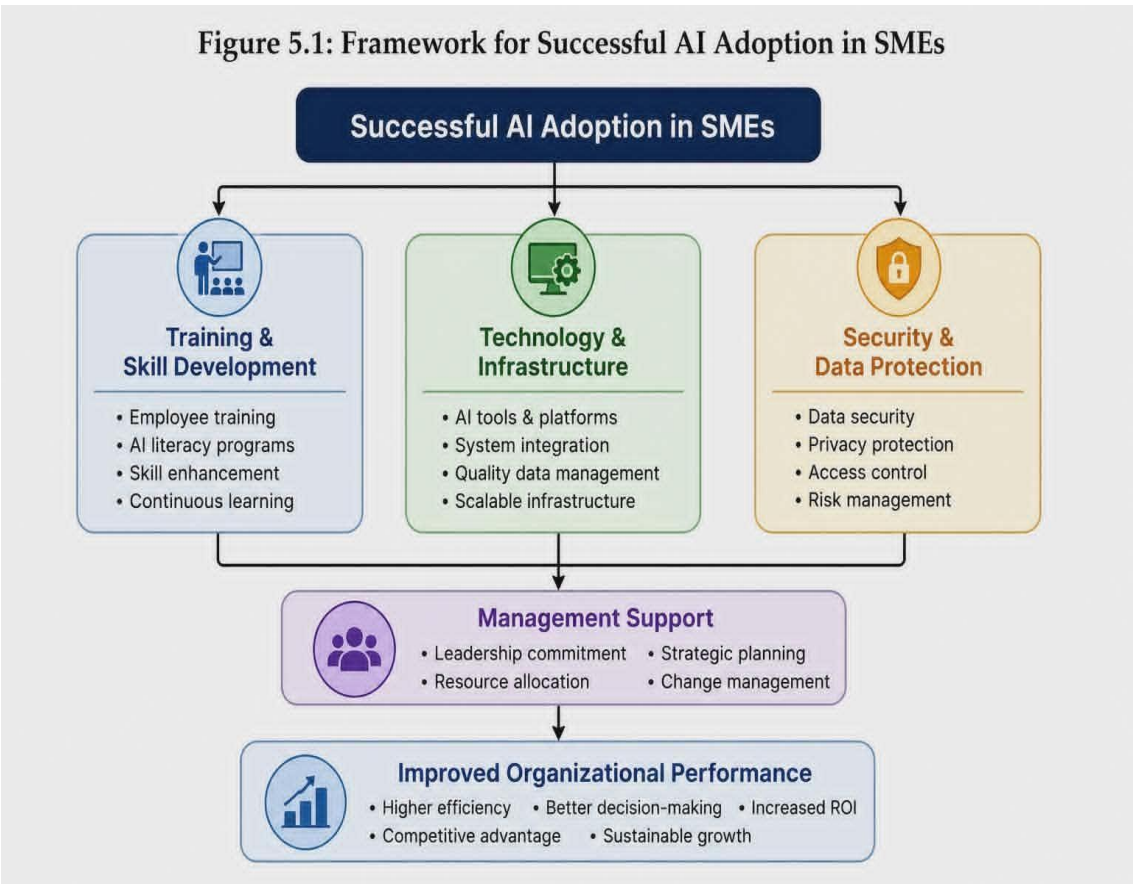
Organizations should be transparent about AI-generated decisions and recommendations. This helps build customer trust, improve accountability, and increase confidence in AI systems.

Government Support

SMEs often face financial and infrastructure limitations. The government should provide incentives, financial support, and technological assistance to help SMEs adopt AI more easily.

These recommendations can assist SMEs to overcome significant obstacles to the adoption of AI and enhance organizational performance, competitiveness, and long-term sustainability.

Figure 5.1: Successful AI Adoption Framework in SMEs.



The figure demonstrates the key considerations that need to be made in order to successfully adopt Artificial Intelligence in SMEs. The readiness of the workforce is enhanced through employee training and skills development, whereas the operational efficiency is facilitated by the technological infrastructure and integration of AI systems. Effective data protection and cybersecurity practices can minimize risks in the organization. Moreover, management support is one of the key areas that promote technological adaptation and enhance the overall performance of an organization.

5.3 Scope for Future Study

This study examined the use of Artificial Intelligence (AI) in Supply Chain Management and its impact on organizational performance, efficiency, and decision-making. Although the findings provide useful insights, the study was limited by its small sample size and qualitative approach. Future research can include larger samples, different industries, and quantitative methods to produce more reliable and generalizable results.

Future research can be directed towards the following:

- ✚ Research about the practice of AI adoption by Small and Medium-Sized Enterprises (SMEs) and the obstacles encountered in the process of adopting advanced technologies.
- ✚ Analysis of the financial and technological limitations restricting the use of AI among SMEs in developing nations.
- ✚ Review of AI potential to enhance inventory control, demand, procurement, and warehouse operations.
- ✚ Evaluation of AI-powered logistics systems and their effectiveness in reducing transportation costs and delivery times.
- ✚ Evaluation of the long-term effects of AI adoption on the supply chain resilience, flexibility, and sustainability.
- ✚ Research on customer satisfaction and service quality enhancement due to AI-based supply chain optimization.
- ✚ Exploration of the contribution of organizational culture, leadership support, and employee preparedness to the effective implementation of AI.
- ✚ Research on workforce change and the skills needed by the employees to successfully work with AI technologies in the supply chain operations.
- ✚ Analysis of ethical issues, data privacy, cybersecurity risks, and governance problems related to AI-powered supply chains.

- ✚ Research on workforce change and the skills needed by the employees to successfully work with AI technologies in the supply chain operations.
- ✚ Analysis of ethical issues, data privacy, cybersecurity risks, and governance problems related to AI-powered supply chains.
- ✚ Comparison of AI adoption among SMEs and big multinational companies in order to determine the variations in implementation processes and results.
- ✚ Research on how AI can be integrated with new technologies like Big Data Analytics, Internet of Things (IoT), Block chain, and Cloud Computing into supply chain networks.
- ✚ Research of the application of AI in improving supply chain risk management, predicting disruptions, and responding to crisis.
- ✚ Discussion of the use of AI in sustainable supply chain management such as waste minimization, energy efficiency, and environmentally friendly logistics operations.
- ✚ Research on AI-assisted supplier selection and supplier relationship management procedures to enhance procurement performance and supply chain cooperation.

The future studies in these fields can give a wider perspective of how Artificial Intelligence can revolutionize supply chain management practices in organizations of various sizes. Specifically, the research on SMEs in more detail can be used to determine viable solutions to barriers to adoption and to reap the most of the benefits of AI technologies. These studies will help in building more efficient, resilient, sustainable, and technology-driven supply chain in the developed and developing economies.

Reference (APA 6th Edition)

1. Baryannis, G., Dani, S., & Antoniou, G. (2019). Predictive analytics and artificial intelligence in supply chain management. *Computers & Industrial Engineering*, 137, 106024.
2. Chopra, S., & Meindl, P. (2019). *Supply chain management: Strategy, planning, and operation* (7th ed.). New York, NY: Pearson Education.
3. Christopher, M. (2016). *Logistics and supply chain management* (5th ed.). Harlow, England: Pearson Education.
4. Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340.
5. Ivanov, D., Dolgui, A., Sokolov, B., Ivanova, M., & Werner, F. (2016). A dynamic model and algorithm for short-term supply chain scheduling in the smart factory Industry 4.0. *International Journal of Production Research*, 54(2), 386–402.
6. Kache, F., & Seuring, S. (2017). Challenges and opportunities of digital information at the intersection of Big Data Analytics and supply chain management. *International Journal of Operations & Production Management*, 37(1), 10–36.
7. Queiroz, M. M., Telles, R., & Bonilla, S. H. (2020). Block chain and supply chain management integration: A systematic review of the literature. *Supply Chain Management: An International Journal*, 25(2), 241–254.
8. Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). New York, NY: Free Press.
9. Sarkis, J. (2021). Supply chain sustainability and artificial intelligence: Current developments and future directions. *International Journal of Production Economics*, 238, 108201.
10. Teixeira, A. R., Ferreira, J. V., & Ramos, A. L. (2025). Intelligent supply chain management: A systematic literature review on artificial intelligence contributions. *Information*, 16(5), 399.

11. Yadav, G., Luthra, S., Huisingh, D., Mangla, S. K., Narkhede, B. E., & Liu, Y. (2020). Development of a lean manufacturing framework to enhance adoption within SMEs. *Journal of Cleaner Production*, 245, 118726.
12. Qu, C., & Kim, E. (2024). Reviewing the roles of AI-integrated technologies in sustainable supply chain management: Research propositions and a framework for future directions. *Sustainability*, 16(14), 6186.
13. Artificial intelligence applications in supply chain management. (2021). *International Journal of Production Economics*, 241, 108250.
14. Artificial intelligence in SME supply chains: A bibliometric and case study analysis. (2026). *Procedia Computer Science*, 277, 2145–2154.
15. Organization for Economic Co-operation and Development (OECD). (2021). *The digital transformation of SMEs*. Paris, France: OECD Publishing.
16. Shekhar, A., Prabhat, P., Yandrapalli, V., Umar, S., Abdul, F., & Wakjira, W. D. (2023). Generative AI in supply chain management. *International Journal on Recent and Innovation Trends in Computing and Communication*, 11(9).
17. Jahin, M. A., Naife, S. A., Saha, A. K., & Mridha, M. F. (2024). AI in supply chain risk assessment: A systematic literature review and bibliometric analysis..2100

Appendix-A

Interview Questions

1. What's the company's name and your current job position?
2. In which department are you working, and for how many years?
3. What do you think about AI and its business implications?
4. How many AI tools do you know?
5. What's the industry your company belongs to?
6. Does your company use AI?
7. What benefits is your company getting from AI?
8. Does every department use AI?
9. How does your company use AI tools?
10. What barriers does your company face in implementing AI?
11. Does your company face data security issues?
12. Does your company face external challenges?
13. What is the market competition like?
14. What are the future scope and plans?
15. Does top management support AI?
16. What is your personal opinion?