International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Artificial Intelligence in Supply Chain Management: Source Assessment Framework

Muneer Basha Shaik

Procurement Planning Manager, National Thermal Power Corporation Limited (NTPC Ltd)

Abstract

The integration of Generative AI into supply chain management holds the promise of transforming traditional practices into dynamic, responsive systems capable of adapting to the complexities and challenges of the modern business environment. By leveraging AI's capabilities, organizations can achieve greater efficiency, resilience, and innovation in their supply chain operations. This comprehensive study highlights how AI transforms supply chain management including risk management, inventory optimization, procurement, logistics, and more. The novelty of this research is that an attempt was made on how a framework of implementing Artificial intelligence in supply management by focussing on source assessment. Many challenges are posed in Implementing a generative AI framework in supply chains like data integration, quality assurance, security, scalability, Interoperability and Human AI collaboration. However, future of generative AI in supply networks is poised to deliver substantial advancements across multiple fronts, driven by improvements in explainability, predictive analytics, integration capabilities, and ethical guidelines. These developments will enable organizations to achieve greater operational efficiency, responsiveness, and sustainability in their supply chain operations.

Keywords: Artificial Intelligence (AI), Generative AI, Supply Chain Management, Procurement, Logistics, Manufacturing, Framework

1.Introduction

Procurement is process of obtaining or purchasing goods or services for business purposes. To maintain companies' production in running condition timely planning and procurement to cater the supply system is needed. To implement procurement process substantial resources of company are required. Procurement managers are provided with specific budget that they can spend on the procurement. One of the factors of operational profits is procurement of materials and services as per planned strategy, thus making procurement process a very critical strategy decision of a company.

Supply chain management (SCM) is the centralized management of the flow of goods and services to and from a company and includes all the processes involved in transforming raw materials and components into final products. The foundation of modern commerce is supply chain management, which handles the challenging aspects of production, delivery, distribution, and procurement. Its importance in guaranteeing cost-effectiveness, customer satisfaction, and operational efficiency cannot be overstated. Nonetheless, the field of supply chain management is always changing as new disruptive technologies replace established methods.

Many new technologies have disrupted the world in past few decades, but Artificial Intelligence (AI) has attracted researchers as well as people excitement due to its huge potential and diversified applications

among various sectors. Artificial Intelligence (AI) is today's most important general-purpose technology [1]. Artificial Intelligence (AI) is a field of computer science that focuses on creating intelligent machines capable of performing tasks that typically require human intelligence. AI systems aim to perceive and understand their environment, reason, and learn from data, and make decisions or achieve specific goals. Generative artificial intelligence (AI) is defined by Anantrasirichai & Bull D [2] as a type of AI system that can produce various types of material, including text, graphics, audio, and synthetic data. As per [3] AI adoption promotes innovation by increasing operational efficiencies.

Large language models (LLMs) such as ChatGPT by OpenAI which has gathered huge popularity is part of Generative AI. This model can produce original content such as code generation, content creation and more. Implementing procurement process with Artificial Intelligence (AI) solution helps not only improve the decisive power, efficiency of the process but also can replace humans to do repetitive nature jobs. In present business scenario, AI can alter operational frameworks to bring out drastic changes in supply chain management. The implementation of AI to be studied and explored by all organisations at one level or the other to see significant performance improvement.

With that in mind, this research aims to explore different aspects of AI in supply chain management, proposes a framework for Generative AI in sourcing assessment of procurement and challenges for its implementation in an organisation is explored in detail.

2.Background

Generative artificial intelligence (AI) is defined by Anantrasirichai & Bull D [2] as a type of AI system that can produce various types of material, including text, graphics, audio, and synthetic data. It does this by analysing and picking up knowledge from real-world data instances. The correlation between patterns, trends and structures are examined to replicate human like intelligence. Chatbots were the first applications of generative AI in the 1960s [4]. The initial point in AI system is taking various types of inputs like a word, picture, video, design, musical notes etc. AI algorithms continuously refresh their content and respond to the given specific instructions. The immense potential that Generative AI presents has not gone unnoticed by leaders, and companies are increasingly adopting solutions in various forms within their supply chains.

Transportation, production, acquisition, marketing, sales, and a host of other aspects are all entwined with supply chain management. Supply chains are the lifeline of global commerce, connecting manufacturers, suppliers, distributors, and consumers. Modern supply chains are intricate networks that span the globe. They involve multiple stakeholders, from raw material suppliers to logistics providers. The pandemic highlighted vulnerabilities in these interconnected systems, disrupting production, transportation, and distribution. Pandemics, natural disasters, and geopolitical events (such as trade wars or sanctions) can severely impact supply chains. Organizations are now focusing on building resilient smart logistics [18] and supply chains that can adapt swiftly to disruptions. Supplier reliability is crucial. Issues like supplier bankruptcy, quality problems, or logistical delays can disrupt the entire chain. Risk management involves identifying potential risks and developing mitigation strategies. Rapid shifts in consumer demand, market trends, and technological advancements require agile supply chains. Demand forecasting and inventory management play pivotal roles in meeting customer needs. Predictive analytics helps optimize inventory levels and reduce waste. Consumers demand environmentally friendly and socially responsible products. Supply chains must consider sustainable practices, fair labour, and ethical sourcing. Effective

collaboration among stakeholders ensures smooth operations. Real-time communication prevents bottlenecks and improves decision-making.

While human intuition and experience are valuable, they do have limitations, especially when dealing with the sheer volume and complexity of supply chain data. Generative AI can indeed be a game-changer in addressing these challenges. AI-based solutions are becoming more widely available, giving companies the means to achieve previously unheard-of levels of performance in supply chain management [6]. Generative AI models can analyse historical data, real-time events, and external factors to predict potential disruptions. By identifying patterns and correlations, they provide early warnings about risks such as supplier delays, transportation bottlenecks, or demand fluctuations. Generative AI allows businesses to simulate various scenarios. For instance, it can model the impact of a natural disaster on specific supply chain nodes, helping companies devise contingency plans. Supply chains involve complex decisions: sourcing, inventory management, transportation routes, etc. Generative AI optimizes these decisions by considering multiple variables simultaneously, leading to cost savings and efficiency gains. During disruptions, supply chains need to adapt swiftly. Generative AI processes real-time data, adjusting procurement, production, and distribution strategies dynamically. Generative AI analyses supplier performance, financial health, and risk factors. It helps businesses choose reliable partners and diversify their supplier base. Accurate demand forecasting is crucial for inventory management. Generative AI models learn from historical data and external signals to improve forecasts. Generative AI enhances communication across supply chain stakeholders. Chatbots powered by AI can provide real-time updates, answer queries, and facilitate collaboration.

In summary, Generative AI augments human decision-making by processing vast amounts of data, providing insights, and enabling proactive measures. Generative AI empowers supply chain professionals with actionable insights, enabling them to navigate disruptions effectively. Its ability to adapt, simulate scenarios, and optimize operations contributes to building resilient supply chains. The integration of Generative AI with existing AI/ML models and IoT sensors significantly enhances supply chain resilience. Generative Artificial Intelligence as a solution-oriented application has uses among various sections of supply chain management.

2.1. Manufacturing, Production and Inventory

The integration of Generative AI with shop floor machinery and equipment marks a significant advancement in predictive maintenance strategies. Generative AI has revolutionized quality control in manufacturing by leveraging IoT-enabled machinery and extensive data sources [17]. By analysing real-time sensor data from equipment and tapping into legacy databases, AI models can provide valuable insights and recommendations to enhance machine process capability and ensure product quality. By harnessing sophisticated computational techniques, AI systems can analyse diverse data sources including sensor readings, historical maintenance records, and equipment performance metrics. Through machine learning algorithms, it can predict when machinery is likely to malfunction, allowing maintenance teams to intervene proactively. This proactive approach minimizes downtime, reduces the risk of costly breakdowns, and optimizes the utilization of maintenance resources. By automating the demand forecasting process with Generative AI, manufacturing teams can free up valuable time and resources to focus on strategic initiatives. Furthermore, by continuously learning from new data, Generative AI models become increasingly accurate over time, further enhancing their predictive capabilities.

Inventory management is the process of ordering, storing, using, and selling a company's inventory. This involves the management of raw materials, components, and final goods, as well as their storage and processing. AI-assisted inventory replenishment is more likely to lead to improved demand forecasting accuracy [7]. supply chain management faces a perpetual challenge in striking the right balance between overstocking and understocking. Generative AI has emerged as a powerful ally in navigating this delicate equilibrium. By analysing historical data, market trends, and demand forecasts, AI-driven strategies can develop optimized plans tailored to just-in-time inventory management. This approach aims to minimize excess inventory while ensuring that sufficient stock is available to meet demand.

2.2 . Forecasting and Planning

Forecasting is the first stage of demand management, a vital supply chain management process. Predictions help balance demand and supply at the customer level and utility planning [8]. Generative AI algorithms continuously learn from new data and refine their predictions over time. This iterative process results in progressively precise forecasts, empowering manufacturers to make well-informed production, inventory management, and resource allocation decisions. Rather than firefighting to address unexpected demand fluctuations, teams can proactively plan and execute business strategies that drive growth and innovation. Generative AI algorithms leverage vast amounts of historical data, market trends, and external factors to generate highly accurate predictions. Deep learning techniques allow these models to recognize patterns and correlations that may elude traditional forecasting methods [5]. Accurate forecasting brings many positive effects and benefits. It will mitigate risks and strengthen the supply chain [9]. Accurate demand forecasting helps manufacturers avoid stockouts or overstock situations, ensuring that products are readily available to meet consumer demand. By maintaining optimal inventory levels, manufacturers can enhance customer satisfaction, build brand loyalty, and strengthen their competitive advantage in the market. During disruptions, AI can create requirement scenarios by proactive identification of risks. This enables companies to plan their production and inventory. This will result in minimum stocks, higher efficiencies and improved savings.

2.3. Sourcing Assessment and purchasing

Sourcing in procurement is defined as a process to find, evaluate, and engage suppliers based on set criteria to achieve cost savings and best value for goods and services to a company. Traditional approach of sourcing assessment in supply chain management can be altered dramatically by integration of Generative AI. Traditional decision support systems (DSS) could only enable decision-making through data modelling and numerical computations. These systems could not integrate qualitative, quantitative, and predictive analysis to deliver decision-making capabilities comparable to those of humans [10]. Generative AI's ability to swiftly process extensive data from many potential suppliers, adapt to dynamic scenarios, and enhance decision-making not like manual analysis. Considering various parameters, such as cost-effectiveness, product quality, reliability, operational efficiency, and sustainability decides favourable suppliers. Leveraging its text generation capabilities, AI provides comprehensive descriptions detailing each supplier's strengths and weaknesses [6].

Generative AI has revolutionized the sourcing and procurement landscape by its ability to handle vast datasets swiftly and comprehensively. With its capacity to process and analyse large volumes of data, generative AI enables organizations to make more informed decisions.

AI can play a pivotal role in enhancing procurement and supplier management right from the outset by generating complex specifications and scopes of work. Traditionally, drafting detailed specifications and scopes of work can be time-consuming and prone to oversight. However, generative AI can streamline this

process by analysing past project data, industry standards, and organizational requirements to generate comprehensive and precise specifications tailored to specific projects.

Generative AI can create various scenarios for supplier selection by considering factors such as cost, quality, reliability, and sustainability. By simulating different procurement scenarios, organizations can evaluate the potential outcomes and make data-driven decisions to optimize supplier selection processes.

Generative AI can significantly support contract management processes by automating various tasks and ensuring compliance with organizational policies and standards. When creating and writing a contract, the AI solution can detect the type and goal of the contract and suggest suitable clauses to add which would be more legally professional at the time of disputes if any [11].

Generative AI by extracting key information from contracts, such as terms, conditions, obligations, and deadlines can facilitate efficient contract review processes. This automation not only saves time but also reduces the risk of human error and oversight. It can assist in identifying risks and misalignments of company policies embedded within contracts. By comparing contract clauses against predefined policies and standards, generative AI can flag potential discrepancies or areas of concern, allowing organizations to address them proactively and mitigate risks. Furthermore, generative AI can streamline the contract drafting process by generating contracts based on the organization's standard terms and conditions. By leveraging machine learning algorithms trained on historical contract data and legal templates, generative AI can produce draft contracts tailored to specific requirements while ensuring consistency and compliance with regulatory requirements.

Additionally, generative AI can enhance contract negotiation processes by providing insights into alternative clauses, terms, and negotiation strategies based on historical data and market trends. This enables organizations to negotiate more favourable terms and achieve mutually beneficial agreements with suppliers and other stakeholders.

2.4 . Risk Management

Supply chain risk analysis seeks to identify the key risks that affect business processes and relationships: relationships with suppliers, relationships with customers, managing relationships with customers [12]. Identifying and mitigating risks in supply chain operations is indeed a major use case for generative AI in logistics. AI generating scenarios is one potential option for strategic predictive planning to mitigate risks [13]. In the realm of risk management, generative AI can be particularly powerful. Generative AI models excel in analysing vast amounts of data from various sources, including external factors such as weather conditions, traffic congestion, transport capacities, and customer preferences, to optimize supply chain processes and enhance decision-making.

By optimizing resource utilization and reducing idle time, generative AI helps organizations lower operating costs and improve asset productivity. generative AI can support risk management by identifying potential bottlenecks, vulnerabilities, and single points of failure in the supply chain network. By conducting scenario analysis and simulation modelling, generative AI enables organizations to proactively identify and mitigate risks, ensuring business continuity and resilience in the face of unforeseen challenges.

2.5. Supply chain Logistics Coordination and Management

Artificial intelligence technology in warehouses helps automate operations such as data collection, demand forecasting, changing orders and redirecting goods in transit [14].

The ability to factor in diverse considerations like cost reduction, service level optimization, and environmental impact underscores its versatility and utility. Additionally, its adaptability

shines through in its capacity to generate contingency plans, crucial for mitigating disruptions such as traffic congestion or adverse weather conditions. This adaptiveness helps ensure smoother operations and enhanced resilience in the face of unforeseen challenges.

Generative AI can create optimized delivery routes by leveraging predictive analytics and machine learning algorithms to forecast potential disruptions and select the most efficient routes based on real-time data. By considering factors such as road conditions, traffic patterns, and delivery priorities, generative AI can minimize transportation costs, reduce delivery times, and improve overall customer satisfaction.

By optimizing factors such as fuel consumption, delivery times, and resource allocation, generative AI can help organizations achieve significant cost savings and operational efficiencies. For example, by identifying the most fuel-efficient routes and optimizing vehicle loads, generative AI can reduce fuel consumption and transportation costs, leading to direct improvements in the bottom line. AI indeed plays a crucial role in optimizing operations and improving management strategies amidst growing complexity in interconnectivity [20].

3.Artificial intelligence supply chain management Framework

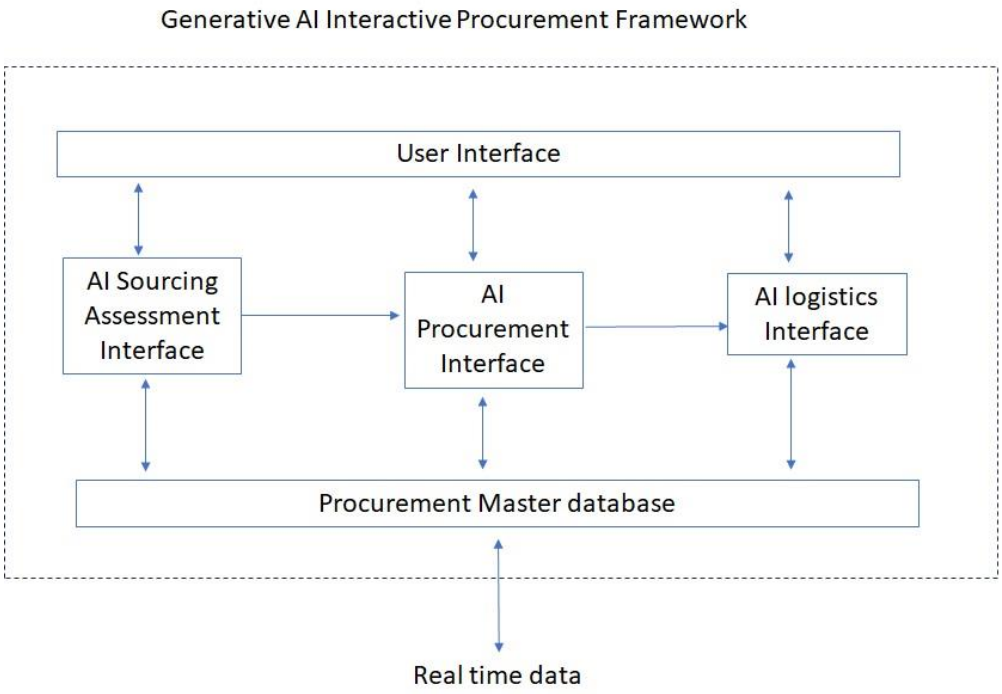

Figure 1: Generative AI Interactive Procurement framework

The Framework model suggested in figure 1 continuously interacts between user interface, sourcing assessment interface, procurement interface and logistics interface. The user initiates procurement requests through the user interface. This could be a web portal, mobile app, or any other platform. Intuitive interfaces and personalized dashboards empower users to initiate and manage procurement processes independently, reducing dependency on IT and administrative support. The instructions can be in the form of texts, voice or any other generative AI communication format. The user can specify their requirements, such as the items they need, quantities, delivery dates, and any other relevant details. The sourcing assessment interface module plays a crucial role in monitoring and evaluating various aspects within the company and has various functions like Inventory Analysis, stock availability, reorder points, and any

discrepancies. By analysing inventory data, it ensures that the company maintains optimal stock levels without overstocking or running out of critical items. A real time communication with master data base generally ERP system in a company is carried out along with user interaction to provide user the status of the existing inventory, stock, requirement, real time data etc. Enterprise Resource Planning (ERP) is a software system that integrates and automates various business processes such as inventory and order management, accounting, human resources, and customer relationship management. ERP systems help businesses to streamline their operations, improve efficiency, and make more informed decisions [15].

The assessment module in figure 2 considers factors like lead time, demand forecasts, and storage costs. Market Trends Evaluation like keeping up with market trends is essential for any business. The assessment module tracks market dynamics, including changes in demand, pricing, and supplier behaviour. It analyses market data from external sources (such as industry reports, competitor performance, and economic indicators) to identify opportunities and risks. Supplier Identification and Evaluation involves searching for potential suppliers who can deliver the required products, materials, or services. It assesses each prospective supplier against specific criteria, including cost, quality, consistency, and other performance metrics. It's essential to consider both existing approved suppliers and new possibilities. Generative AI's ability to swiftly process extensive data from many potential suppliers will be used for finalisation of suppliers. This data will be sent to procurement module.

Understanding market trends is crucial when evaluating suppliers. This is done by gathering information about market dynamics, such as demand shifts, pricing fluctuations, and emerging technologies. Also, it analyses how market trends affect suppliers like if a material becomes scarce due to market trends, evaluate suppliers' ability to provide alternatives, assess their responsiveness to changing market conditions, evaluate the availability of suppliers for a specific material considering both local and global suppliers.

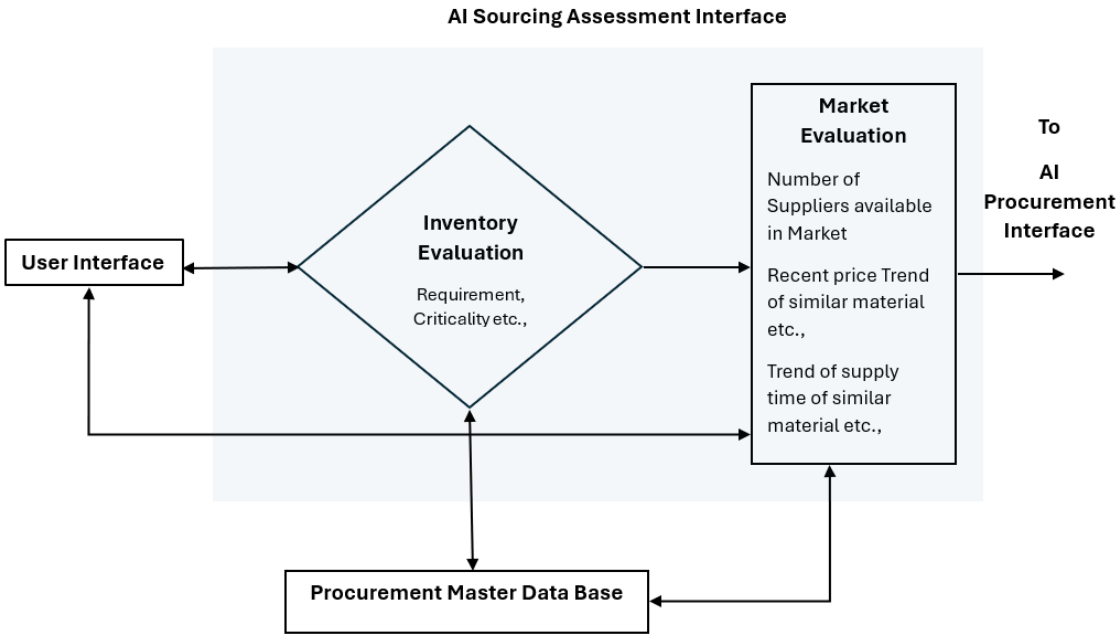

Figure 2: AI Sourcing Assessment Interface

suppliers can mitigate risks like disruptions due to a single supplier's issues. However, too many suppliers can lead to complexity and increased management efforts. As not all supplier evaluations require the same

effort a balancing to be done while analysing the suppliers. The assessment module retrieves information from the company's database. This database contains historical data, supplier details, market research, and other relevant information. The assessment module in figure 2 relies on this data to perform accurate analyses and generate actionable insights.

The role of Procurement interface module is to do requirement Preparation and to implement procurement process smoothly. Specification preparation like clearly defining the requirements and specifications for the materials or services needed for the project. This could include technical specifications, quality standards, quantity needed, and any other relevant details. Once the specifications are prepared, from the list of suppliers received from assessment module, the next step is to identify potential suppliers who can meet those requirements. This could involve researching and evaluating various suppliers based on factors such as price, quality, reliability, past performance, and capability to deliver. After selecting suppliers, it's important to estimate the quantity of materials required for the project based on the specifications and expected demand. This helps in determining the right order size and negotiating prices with suppliers. Understanding the average lead time or supply time from each supplier is crucial for planning the project timeline and ensuring timely delivery of materials. This information helps in scheduling and managing inventory levels effectively. Once suppliers are selected and supply times are known, a delivery schedule can be established to coordinate the receipt of materials according to project timelines. This schedule should consider factors such as production schedules, transportation logistics, and any potential delays. Details such as supplier contact information, billing and shipping addresses, payment terms, warranties, and any other relevant terms and conditions that need to be addressed in the procurement process. Based on this data, a purchase order is generated and sent to the selected supplier. Throughout this process, the procurement module interacts with the master database of company like ERP system. Through Generative AI, drafting emails to suppliers, other communication is carried out to complete the procurement order process smoothly.

Logistics Interface module receives the order details and is responsible for smooth delivery of ordered goods or services to the company. The logistics module coordinates the delivery of goods to the specified location. It considers factors like transportation routes, cargo capacity, fuel consumption, and safety protocols. Like the procurement module, the logistics module continuously interacts with the master database. It retrieves real-time information about schedules, supplier details, inventory levels, historical data, and real-time updates. There is continuous interaction with the master database throughout this process. Both the procurement and logistics modules rely on this database to make informed decisions, track progress, and ensure smooth operations.

4. Challenges for Implementation of Generative AI

Any AI initiative requires problem formulation or use case identification, gathering data, examples or constraints, model training and validation, deployment, and feedback loop [16]. Integrating AI into supply chain management faces several challenges like data integration, quality assurance, security, scalability, Interoperability and Human and AI collaboration.

Supply chains generate vast amounts of data from various sources such as sensors, IoT devices, ERP systems, and more. Integrating this data into a coherent system for AI analysis can be complex. Consolidation and validation for AI applications are difficult tasks because of the volume of data created across supply chain nodes, which frequently reside in multiple systems. Poor quality data can lead to inaccurate predictions and decisions. Data may suffer from issues such as incompleteness, inconsistency,

inaccuracy, and staleness. Cleaning, validating, and maintaining data quality requires significant effort. AI systems in supply chain management often need to work with existing legacy systems and technologies. Ensuring interoperability between AI solutions and these systems is essential for seamless integration and functionality. The use of AI in SCM raises ethical questions, data privacy issues particularly in decision-making processes. Ensuring transparency, fairness, and accountability in AI algorithms becomes crucial to address concerns related to bias and discrimination [19].

CONCLUSION

The adoption of generative AI represents not just a technological advancement but a fundamental shift in how supply chain management is conceptualized and executed. It empowers organizations to operate more efficiently, respond more effectively to market dynamics, and ultimately, drive competitive advantage in the modern trade landscape. Generative AI's capabilities in predictive analytics and dynamic decision-making empower supply chain managers to navigate operational complexities, optimize supplier relationships, and meet fluctuating demand with agility and precision. This technology represents a significant advancement in driving competitive advantage and operational excellence in modern supply chains. By strategically harnessing AI's capabilities while addressing its limitations, organizations can build more resilient, competitive, and adaptable supply chain ecosystems.

REFERENCES

1. Rimma Dzhusupova., Jan Bosch., Helena Holmström Olsson., "Challenges in developing and deploying AI in the engineering, procurement and construction industry", IEEE 46th Annual Computers, Software, and Applications Conference (COMPSAC), June 2022.
2. Anantrasirichai Nantheera,, David Bull., "Artificial intelligence in the creative industries: a review", Springer, July 2021.
3. Abdulaziz Aldoseri., Khalifa Al-Khalifa., Abdelmagid Hamouda., "A Roadmap for Integrating Automation with Process Optimization for AI-powered Digital Transformation", Preprints.org, October 2023.
4. Md. Al-Amin., Mohammad Shazed Ali., Abdus Salam., Arif Khan., Ashraf Ali., Ahsan Ullah., Nur Alam., Shamsul Kabir Chowdhury., "History of generative Artificial Intelligence (AI) chatbots: past, present, and future development", ResearchGate, February 2024.
5. Praveen Pajiar., Vishal Barfiwala., Kavya Ramanathan., "Generative AI in supply chain: Building more resilient supply chains", Alvarez & Marsal., 2024.
6. Aishwarya Shekhar., Dr. Parmanand Prabhat., "Generative AI in Supply Chain Management", IJRITCC, September 2023.
7. Aishwarya Lakshmi S., Keerthana R., Pradeep S., Dr. J. Krithika., "The Use of Artificial Intelligence in Addressing Inventory Management Challenges in Manufacturing Industry", European Economic Letters, 2023.
8. Thi Thuy Hanh Nguyen., "Applications of Artificial Intelligence for Demand Forecasting", Operations and Supply Chain Management 16(4) pp 424 – 434,2023.
9. Shubham Bhadouria., Arvind Jayant., "Development of ANN Models for Demand Forecasting", American Journal of Engineering Research (AJER),2017.

10. Karu Lal., Venkata Koteswara Rao Ballamudi., Upendar Rao Thaduri., "Exploiting the Potential of Artificial Intelligence in Decision Support Systems", ABC Journal of Advanced Research, Volume 7, No 2 ,2018.
11. Anupama C Emmanuel., Mariya Vincent., Siona Unni., Biju Antony., Suranya S. Kumar., "AI Contract: Potentiality of AI Contract to Revolutionize the Legal Field", IJRPR, September 2023.
12. Gerda Zigiene., Egidijus Rybakovas., Rimgailė Vaitkiene., "Challenges in Applying Artificial Intelligence for Supply Chain Risk Management", International Journal of Economics and Business Administration, 2020.
13. Matthew J. Spaniol., Nicholas J. Rowland., "AI-assisted scenario generation for strategic planning, Wiley, January 2023.
14. Sofia Bogomolova., "LAB University of Applied Sciences, Artificial Intelligence and its impact on work in the field of logistics",2023.
15. Surjit Singh Bawa., "How Business can use ERP and AI to become Intelligent Enterprise", International Journal of Innovative Science and Research Technology, 2023.
16. Monika Shrivastav., "Barriers Related to AI Implementation in Supply Chain Management", Journal of Global Information Management, 2022.
17. Santo Wijaya., Lim Hermanto Rudy., Fransisca Debora., Rana Ardila Rahma., Arief Ramadhan., Yusita Attaqwa., "Artificial intelligence and internet of things in manufacturing decision processes", IAES International Journal of Artificial Intelligence (IJ-AI), June 2024.
18. Hasan Balfaqih., "Artificial Intelligence and Smart Logistics Systems in Industry 4.0", International Conference on Industrial Engineering and Operations Management, March 2023.
19. Pranav Pandurang Gaikwad., "Integration of Artificial Intelligence in Supply Chain Management: Challenges And Opportunities.", Migration Letters, 2024.
20. Jasim Al Suwaidi., Ridvan Aydin., Hamad Rashid., "Investigating Barriers and Challenges to Artificial Intelligence (AI) Implementation in Logistic Operations: A Systematic Review of Literature", 5th European International Conference on Industrial Engineering and Operations Management, July 2022.