Smart SCM Using AI and Microsoft 365

Pawankumar Sharma[1], Bibhu Dash[2]

School of Computer and Information Science, University of the Cumberlands, Williamsburg, KY USA[1,2]

Abstract: Smart supply chain is a must, not a choice, in the age of Industry 4.0 to meet global demands. This paper attempts to classify how Artificial Intelligence (AI) contributes to smart supply chain organization by systematically reviewing the existing literature. The article focuses on addressing the current research gap of artificial intellect in smart source chain management. Additionally, the research paper tries to identify how AI and Microsoft 365 are used in smart supply chain management to improve their effectiveness. Thus, the paper identifies the existing and possible AI techniques and Microsoft dynamics 365 to facilitate the research and practice of supply chain management. The main areas covered in the study on how AI is used in smart supply chain management include AI in intelligent delivery management, implementation of AI in Facebook, AI in smart retailing, and AI in smart manufacturing. In addition, the research demonstrates how smart supply chain utilizes Microsoft 365 by focusing on Supply Chain Managing and Microsoft Energetic forces 365, the Benefits of Microsoft Energetic forces 365 Supply Chain Management, Why Microsoft 365 Should Be Used in Smart Supply Chain Management, and Features of Microsoft 365 in Smart Supply Chain Management. This research paper offers perceptions via orderly examination and synthesis. Moreover, the research provides recommendations on how an intelligent supply chain can be improved using artificial intelligence.

Keywords: Smart supply chain management (SCM), Machine learning, artificial intelligence (AI), Microsoft 365, Microsoft dynamics 365, manufacturing, smart delivery, and retailing

I. INTRODUCTION

A contemporary SCM comprises the deployment of a digital, collaborative, adaptive, and modular tool that ensures information relevance and visibility to all stakeholders. Smart supply chain management is enhanced by machine automation in the supply chain process using artificial intelligence. A smart supply chain involves self-organizing and self-optimizing. According to Bansal et al. [1], smart source chain management AI helps minimize errors in the competitive modern world. AI and machine studying are established to modify the appearance of the supply chain business by making it smarter [2].

Microsoft 365 is used in supply chain management as a podium to modernize supply chain functions [3]. Microsoft 365 is a subscription provider that gives access to different uses such as Microsoft Word, Microsoft Outlook, and Microsoft excel. Moreover, Microsoft 365 provides access to different productivity services enhanced by the Internet of Things. Therefore, Microsoft 365 comprises the entire list of tools to be used by a company to improve productivity and efficiency [4]. AI plays a key role in smart supply chain management by providing smart delivery and smart retailing. Microsoft 365 helps supply chain management by providing a flawless supply chain, improving the warehouse, and providing quality products on time to meet customers' expectations.

II. LITERATURE REVIEW

The supply chain has existed for decades. But with the evolution of tech, the SCM is becoming innovative and smart with time. Different researchers propose how AI and Microsoft 365 can be used to improve smart supply chain management. Some research suggests that artificial neural networks can be used to predict sales, and a real-time approach and generic algorithm can be used in supply chain organizations. Supply chain administration is a multifaceted idea that consists of various definitions from a production business process perspective, logistics and trade organization [5].

AI in supply chain management plays a vital role in three flows: the financial flow of the cash from suppliers to customers, product flow from supplier to customer, and information from the supplier to the final customer [6]. Microsoft 365 works with AI and reality to improve the reflectiveness of the business across global operations. Research on AI and Microsoft 365 systems has improved over time [7]. Microsoft 365 and AI enable capabilities to learn and understand to adapt to different circumstances in making decisions and exhibiting unique behavior [8]. A combination of machine learning algorithms and supply statistical models enable prediction [9]. AI and Microsoft 365 contribute to innovation and product quality in supply chain management.

TABLE 1. PAST WORK OF SCHOLARS IN SUPPLY CHAIN MANAGEMENT USING AI

Author(s)	Previous Research
(Tuffnell et al., 2019)	Implemented a model for real-time forecasting based on supply chain data [10].
(Brintrup, 2020)	Proposed a framework for intelligent supply chain management using machine learning algorithms [11].
(Toorajipour et al., 2021)	Developed an AI-based approach to optimize the delivery process in supply chain management [12].
(Zhu et al., 2019)	Developed a model for forecasting inventory levels in supply chain management [13].

Recent research in smart supply chain management has made significant progress using AI and machine learning to optimize the delivery process, develop forecasting models, and enhance inventory levels. However, there is still a need to develop more effective strategies for predictive analytics and optimization of the entire supply chain system. Additionally, further research is needed to explore big data analytics in supply chain management and develop more comprehensive and efficient strategies to improve decision-making. There is also a need to focus on the safety and security of supply chain management systems and develop cost-effective solutions to reduce the cost of supply chain operations.

III. METHODOLOGY

This study embraced an evidence-informed orderly literature review method; the research employed five-phase steps, including an experimental search during the first step to gain a bottomless understanding of the works and to formulate a research question. Locating the studies to get the relevant databases, including online libraries and natural science, were explored using search strings to search procedures used to discover individuals' databases [14]: study selection and evaluation targeting the period of the literature for not more than ten years. Only high-quality literature was selected, employing AI in the research. Analysis and synthesis of this paper's articles are broken into constituent parts to understand the relationship and connections between different parts of the study [15]. Reporting the results is presented to target the academic audience, which is shown in discussions, statistics, and tabulations.

IV. AI IN SMART SUPPLY CHAIN ORGANIZATIONS

Machine learning and AI are the components of developing how manufacturers work in the supply chain [16]. The technology used in supply chain management can reorganize the process to improve the effectiveness and care of the companies. AI has helped supply chain managers shift from typical manual processes that many organizations use to modern artificial technology. Traditionally, the supply chain managers spent much time and labor gathering data from various systems and arranging them into one document that makes sense; this was tiresome and with many errors [17]. However, using AI has reduced the work and made it an excellent record. Therefore, AI has contributed to efficiency through data analysis and improving the supply chain for a cost-effective future.

AI has been innovated in various ways in supply chain administration. The technique has been expanded to the business supply chain, which has boosted cost-efficiency in many ways [18]. The execution of AI has completely changed how the supply chain industry functions. The use of autonomous trucks has led to solving the issue of driver restrictions [19]. Strict limits such as the drivers in the US are not allowed to work for more than eleven hours a day without an eight-hour break. The presence of autonomous trucks in the supply chain industry has effectively boosted transportation and cut costs—the benefits of using AI in supply chain administration point towards a cost-efficient and cleaner world.

Computer-based demand planning depends on the sequences of algorithms developed that consume different data sets such as product life cycle information, manufacturing statistics, shipment data, and ordering pattern data for some time to forecast [20]. AI indicates the most favorable combination of data sets and algorithms containing accurate predictions. AI in business enables the company to achieve the most precise projection and identification of customers' demands, thus allowing the manufacturing sector to produce high-quality products at a lower cost of production [21]. Using AI in innovative supply series management helps define the price, design the right channel for communication, promote the

products, and provide an experience to users. These areas make intelligent supply chain management more efficient and competitive (see Fig 1).
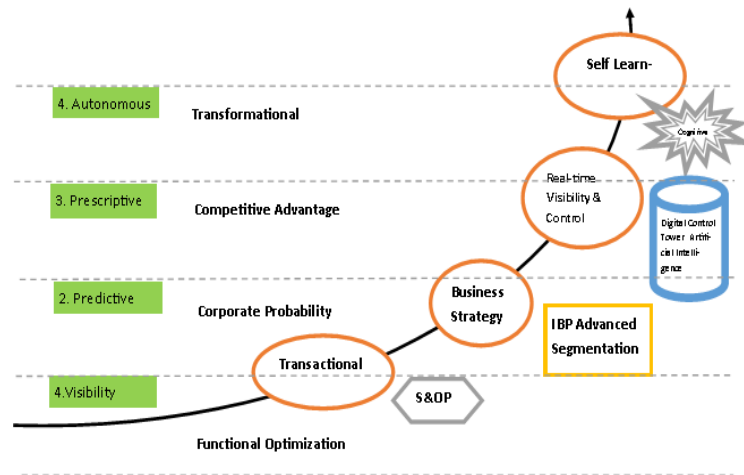

Fig 1. AI application in smart chain management [10]

AI in smart supply chain management has contributed to better optimization of the assets by improving the quality and prevention of downtime for maintenance costs [22]. Technological advances such as using robotics equipment have increased the production of goods. AI in supply chain organizations has enabled the machine to identify the properties of the materials. In the United Kingdom, AI has been used in supermarkets where robots deliver belts to human packers in large quantities. Through artificial intelligence, the staff has been able to identify the disturbances moving through unsupervised learning techniques [23]. Collaborative AI increases productivity by enabling semiconductor chip production procedures. Intelligent supply chain management has determined the improved product through operating conditions and providing the best solution. Some companies are using AI to maintain the electrical grid, such as drones; machine learning helps frequent remote inspection enabling to monitor the assets and keeping them working.

Digital content is a norm, and many businesses use various channels to communicate with their customers. Most organizations are technology-oriented; therefore, their budgets are devoted to digital media, including email marketing, digital advertising, and website operation [24]. Machine learning applications analyze many data concerning the behavior of the customers, for instance, the frequency of the customer and the best days of the week. What catches customers' attention in supply management [25]—using AI platforms able to analyze information such as the demographics and the interest of individuals and later predict an individual's brand; this is achieved through learning. Advertisements using Google, Amazon, and Facebook are using artificial intelligence.

Introducing the flawless price package allows companies such as car rental corporations to establish dynamic pricing; this has helped boost the business, especially those traveling [26]. Perfect price helps identify the demand for a specific car in a particular area, thus ensuring that other vehicle classes are not affected. This system requires minimum supervision of a human. Using an excellent price and tag manager helps the business adjust the product price and provide more information on the related price from the competitor's side.

Intelligent supply chain management can access affluent markets to the companies or individual product categories and brands to gain more visibility. For instance, the wise Athena enables companies to determine the best pricing for their products and provides individuals with trade promotion decisions to achieve their targets [27]. Wise Athena can automatically select specifications, and product data attributes to compute the losses in the sales and revenue of the product if the company is launching a new product; this enables it to define the potential change in the product, the demand for the product when the price changes, and the competition [28]. Wise Athena can update its machine learning system monthly to improve its accuracy and maintain the system in good condition [29]. The role of AI in supply management keeps changing to a better option.

A. AI in intelligent delivery management

The employment of AI in smart chain management is making customers feel more special. It welcomes [30]. AI technologies such as machine learning and computer vision make supply convenient for users. For instance, regular

supermarket management installs cameras or sensors to provide information to an AI application system on what the shopper is likely to pick depending on the previous purchase [31]. The app will direct the shopper via the video screen where to find the ingredients. Athletes, for instance, can have the sports company monitor their workouts, offer advice on improving their performance in the face of adversity, and share relevant data with them via an app.

The AI in smart supply chain management has enabled amazon company to build a retail outlet. It allows customers to pick their favorite items from the shelves and walk out without going to the checkout kiosk to make payments [32]. These technologies depend on computer vision, which tracks customers after swipe and relates them with specific products and shelves. When customers leave the store, amazon debits customers' account for the cost of goods in the bag and later send an email to them with the receipt. Through artificial intelligence, amazon companies have delivered their products using drones to their customers. Amazon has gathered data from drones when they deliver goods to multiple homes, enabling the company to establish a future target for customers {33}. Smart supply chain management has been improved from the transportation sector to the education sector to the healthcare sector through AI [34]. The matters of overcrowding and human jam in supermarkets have been solved using AI since everybody is moving with technology. Supply chain management has been more efficient since customers can get their goods on time and monitor delivery time.

B. AI in smart retailing

AI plays a crucial role in manufacturing and retail business by enabling smarter decisions with real-time and accurate forecasting, thus improving supply management and defining impactful promotion. AI operates more successfully due to improved process optimization and robotics, increasing productivity and minimizing manual labor costs [35]. Modern technology has enabled retailers to maintain the average amount of money by creating personal experiences and growing customers. AI technology allows retailers to examine the situation and predict the future concerning their performance and if there is any need to expand the physical footprint [36]. Retailers have been able to read more from AI in merchandise by providing opportunities to increase assortment efficiency. Retailers use geospatial statistical modeling in the US to minimize and predict their stock. In retailers' warehouses, machine learning algorithms are used to steer many products over a linkage of carrying ties and transport them to humans in time to fill the shopping stacks. Moreover, other robots deliver a load to vans where their drivers are directed by AI applications, which enable the driver to pick the best route depending on the traffic condition and weather (see Fig 2).
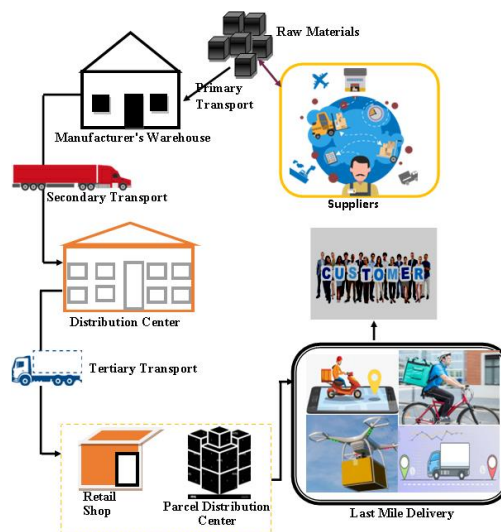

Fig 2. Supply chain management process [14]

AI has transformed the supply chain management sector from virtual assistants to more advanced robotics, which has enabled supply chain management to make fewer errors and boost their services to a higher level [37]. Using AI has increased safety by automating risk activities; using AI in chain management has enabled companies to reduce transportation costs since the artificial machine can detect any danger, preventing significant losses [38]. AI technology, such as virtual, which can link many parts of supply series management, has to increase the rate of transparency on the supplier. Such improvement has helped balance optimizing inventories and supply chains in real time. AI has helped supply chain management around the globe in the value chain and supply chain through exchanging ideas via the internet platforms [39].

Recent research has explored the use of intelligent systems for last-mile delivery in AI retailing. For example, Toorajipour et al. (2021) proposed an AI-based approach to optimize the delivery process in supply chain management [10]. The system utilizes machine learning algorithms to generate a routing plan for the delivery process while also considering dynamic factors such as weather conditions, traffic, and customer preferences. The system can also track the delivery process in real-time and provide feedback on the delivery process's performance. The tracking is accomplished through the use of mobile phones and IoT (Internet of Things) devices, which enable the tracking of packages and the monitoring of delivery personnel. The system can also provide alerts for any anomalies or delays in the delivery process.

C. Challenges

- Apprehensive employees: When AI is introduced into the supply chain, management technology may not be perfect, creating temporary inconveniences. Developing and learning new skills may not be easy for some employees. During the initiation phase of artificial intelligence, the company provides a lot of training and guidance, which is very costly.
- Disconnected system: Fragmented systems in many companies are a significant obstacle when deploying artificial intelligence.
- Large quantity of Data: Many companies have generated massive amounts of data. Before introducing artificial intelligence, data access should minimize to ensure databases are easily accessible. Huge data quantities cannot be used as deciding factors to achieve a successful artificial intelligent project.
- Need for real-time response: These are the technological constraints, and some applications are significantly sensitive to latencies; for example, predictive maintenance applications that can only work auto alarm mechanisms built into the process.

V. SCM USING MICROSOFT 365

A. Supply Chain Management and Microsoft Dynamics 365

Microsoft Underlying forces 365 Smart Supply Chain Managing is a supply chain remedy established to develop trade, production, and supply chain procedures. The treatment enables an organization to maximize its manufacturing, logistics, and distribution activities, making the company more irrepressible to shocks [40]. Other Microsoft dynamics 365 features, in addition to CRM operational and customization, provide extensive control over sales activities, customer satisfaction, and productivity gains. The primary focus of Microsoft Dynamics 365 is to raise the standard of operations and the quality of the final product of an organization. Focusing on the customer's needs from beginning to end creates a transparent supply chain that experiences minimal downtime [33]. The dynamics are vital because they easily link the existing organizational structure and the entire company. Microsoft Dynamics 365 enhances the smartness of supply chain management by improving procurement, logistics, delivery, and cost management. Different smart SCM models are outlined in Fig. 3.
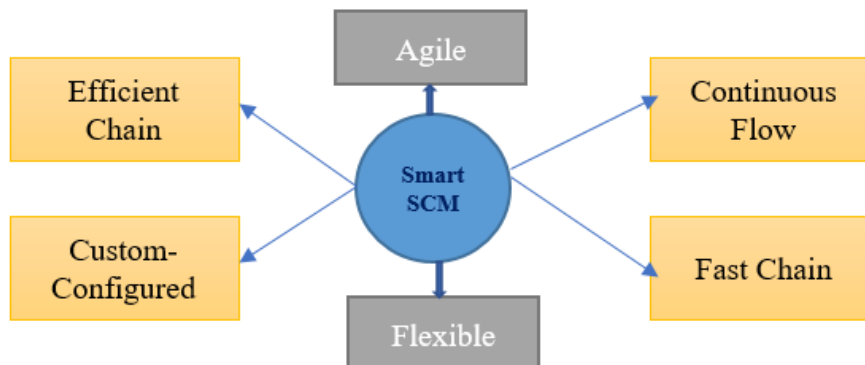

Fig 3. Different models of Smart SCM

B. Benefits of Microsoft Dynamics 365 Supply Chain Management

The Microsoft 365 dynamics help in the implementation of AI to move strategies. Such strategies include demand prediction to ensure the organization supplies what is needed to avoid surplus, resulting in losses. Thus, the organization can easily optimize cash flow by fully meeting its market demand on time. There is no overproduction or underproduction,

which is good for business. The company responds to customer demand effectively and on time [41]. Implementing AI allows an organization to quickly assess its growth in line with the established functions. Another benefit of Microsoft dynamics 365 in smart supply chain management is progressing manufacturing and final product movement by maximizing warehouse procedures, inventory control, and logistics [42]. Thus, the organization can focus on producing what can only be accommodated in the warehouse to ensure every output is stored safely before getting to the final customer.

Through the dynamics, an organization produces products that are consistent with quality. The dynamics, with the help of artificial intelligence, help to detect quality issues quickly. Thus, the technology ensures that all products a company produces meet the expected quality to avoid paying for low-quality products [43]. Moreover, the dynamics confirm that the company complies with all product regulations established by different bodies to provide safe and quality products. Thus, in smart supply chain management, every stage is closely inspected to ensure the product meets all the expectations before proceeding to the next step. Additionally, the dynamics reduce the sales cycle in smart supply chain management; this is enhanced by developing prompt responses ad flow of information by the sales groups via access to customer information. Implementing Microsoft dynamics 365 ensures that customer data is kept safe and accessed by authorized individuals, such as the sales team [44]. The sales team evaluates customer information and replies to them immediately, saving the time which could have been spent interacting with customers on a one-on-one basis.

The dynamics help to automate financial processes in smart supply chain management for effective financial operations. The primary business procedures are automated with the financial processes to increase operator productivity and financial performance [45]. Additionally, Microsoft dynamics 365 provides synchronized and productive work conditions. Such an environment is achieved by amplifying the production of the workforce, processes, and apparatuses by developing operational accuracy employing the Internet of Things, AI, and machine learning. The warehouse is well managed by establishing a management module to effectively oversee the procedures of production, distribution, and retail organization [46]. The management module also handles the transportation processes to ensure products are safely transported from the warehouse to their final destination without any issues. The module also manages quality control by ensuring that every product meets the expected quality. The management module also governs purchasing, sales, and returns for the organization's effectiveness. The dynamics guarantee that all customers are satisfied in the smart supply chain by providing efficient distribution and delivery rates. Thus, AI has quickly improved inbound and outbound logistic procedures for the effective supply chain management.

C. Why Microsoft 365 should be used in Smart Supply Chain Management

Zadeh et al. [47] state that Microsoft 365 provides a seamless supply chain. Smart supply chain management should have a flawless supply chain without any errors. Therefore, Microsoft 365 ensures everything runs in order, from sourcing, procurement, and manufacturing to transportation. Microsoft 365 works closely with AI to improve organizational functions and automate the process to eliminate possible errors. Thus, Microsoft 365 needs to be used to eliminate any faults in supply chain management. Microsoft 365 is used in smart supply chain management to optimize order management. A smart supply chain requires an order to be closely managed from conception until the order is delivered to the customer [48]. Thus, by using Microsoft 365, an organization can easily fulfill all the logistical requirements of its numerous operations using improved order management solutions. An organization can easily avoid delays or inconveniences to its customers. Moreover, the system allows the company and its customers to use their mobile devices to trail the movement of products to improve customer experience.

Microsoft 365 enables organizations to use smart supply chain management to upgrade their warehouse procedures. The system makes the warehouse processes more efficient by improving inventory control, mapping, and management to ensure that all orders are completed accurately without errors [49]. Operations centered on machine learning technologies help the supply chain management set up orders, plan for a set of orders, maximize warehouse space and tools and streamline employee involvement in various parts of the warehouse. Built-in Microsoft Power analytics allows an organization to increase the speed of processing warehouse orders such as inventory, picking, placement, and reservation. The organization becomes more efficient in its supply chain process, attracting and retaining more customers [50]. There are minimal customer returns when Microsoft 365 is used in smart supply chain management because the entire process is closely monitored to avoid any issues. For instance, Microsoft dynamics 365 monitors the whole process to get insights concerning any return by a customer and the reason behind it. Thus, as the organization develops, fewer and fewer customer returns will be experienced.

Microsoft 365 is vital in smart supply chain management for global presence. With the numerous multi-localizations, multi-language, consolidated dashboards, and amalgamated interfaces, an organization can easily overcome the issues associated with global presence [51]. Thus, with Microsoft 365, an organization will be free to supply its products globally

and link with other international businesses. Because the supply chain management team can readily access all data and daily operations via a tailored application for the staff and warehouse chores to minimize any negative effect caused by distance, supply chain management has become simpler using Microsoft 365. Moreover, the management can secure and unify organizational data concerning its suppliers or customers. Microsoft 365 has dynamics that provide a secure system and firewalls using Azure's security approach [52]. The system unifies supply chain data by combining outside sources such as emails, account databases, and marketing.

D. Features of Microsoft 365 in Smart Supply Chain Management

Microsoft 365 provides predictive insights for smart supply chain management's efficient and effective functioning. Microsoft 365 works with AI and the Internet of Things to determine possible machine problems [53]. Moreover, the management can avoid downtime and extra maintenance charges resulting from improved product quality and higher customer satisfaction. The swift vendor and collaborative feature of Microsoft 365 help smart supply chain management to approve orders and demand more quotes (Nicoletti). The management can observe and correct vital information within the organization with restricted access to essential information, such as information about invoices or orders.

Microsoft 365 has effective and efficient transportation management, which makes supply chain management smarter. Microsoft 365 ensures proper control of containers, vehicles, loads, and paths [54]. Therefore, the management can easily abide by their customers' deadlines and comply with specific delivery periods. Microsoft 365 manages costs accurately in smart supply chain organization. Cost management is enhanced by evaluating and accounting for the values of raw constituents and the end products [55]. Supply chain management uses valuation approaches of their choice to manage the costs. Additionally, an organization improves its product costing through the examination of the cost implications of every product.

The asset management feature in Microsoft 365 helps smart supply chain management use the Internet of Things and field service information to improve the effectiveness of assets and equipment by tracking them. Thus, an organization can easily manage and optimize the life of its assets, such as machines, vehicles, and manufacturing equipment [56]. Smart supply chain management uses current intelligent skills such as the Internet of things to plan, forecast, and effectively perform preventive and corrective maintenance of company assets. Organizations use Microsoft 365 to manage complex supply chains efficiently. The system combines all sales and procurement procedures with logistics, inventory control, manufacturing, transportation, and warehouse. Ensuring complete transparency of composite supply chains offers the flexibility to reschedule manufacturing in real-time in harmony with the vigorously changing demand [57]. The application of built-in predictive analytics from Microsoft 365 helps grow the delivery of products and services while enhancing planning.

Microsoft Dynamics allows an organization to optimize production processes. Every production procedure combination and transparency starting from strategizing to material purchasing and logistics, enhancing production developments to be trailed in real-time, from efficient delivery periods to minimizing costs. Smart supply chain management uses the Internet of Things and AI to prevent equipment breakdowns by cutting downtime, enhancing product quality, boosting production volumes, and boosting staff productivity while reducing human error as a production component [58] (see Fig 4). The application of Mixed Reality ensures smart supply chain can execute a production procedure despite the complexity, which can be managed in real-time, promptly redirect manufacturing paths, and substantially minimize the extent of unproductive downtime.
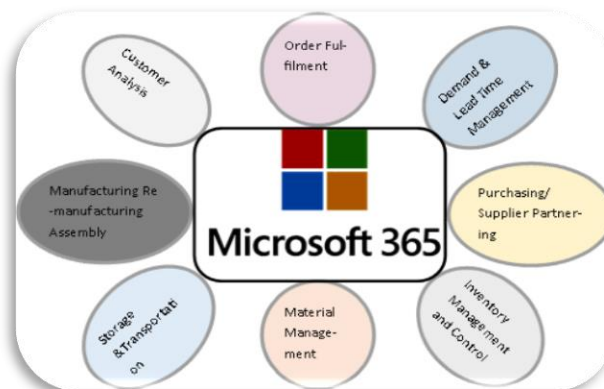

Fig 4. Microsoft 365 smart supply chain management operations

VI. RESULTS

The results from this research indicate that artificial intelligence has been successfully implemented in smart supply chain management with numerous benefits. Specifically, AI has contributed to improved asset optimization, demand planning, pricing, delivery management, and retailing. However, AI has challenges, such as apprehensive employees, disconnected systems, a large quantity of data, and the need for real-time response.

Additionally, this research shows that Microsoft 365 is an important tool for smart supply chain management. It provides a range of features that can help organizations optimize their operations, improve customer satisfaction, automate processes, minimize costs, and optimize production processes. Microsoft 365 helps organizations manage complex supply chains efficiently by combining all sales and procurement processes with logistics, inventory control, manufacturing, transportation, and warehouse. Furthermore, the system enables organizations to use predictive insights and asset management to improve their operations and reduce downtime. Ultimately, Microsoft 365 is essential for organizations to manage their supply chain and improve their operations effectively.

VII. RECOMMENDATIONS

The smart SCM is expanding to meet people's requirements in contemporary infrastructures as smart cities evolve and innovate [48]. Numerous organizations are adopting smart supply chain management globally to improve their efficiency using Microsoft 365. For supply chain management to continue being more effective, it is recommended that Microsoft 365 should develop a highly connected factory by providing smart management where the organization's procedure, people, and tools are optimized using modern technology [55, 59]. Moreover, strategies should be employed to ensure Microsoft 365 creates a comprehensive manufacturing system that is easily manageable and more effective.

VIII. FUTURE RESEARCH

The research gap created by the current research is the need for more focus on the ethical and social implications of AI in supply chain management. There is a need to explore further the potential impact of AI on workers' rights, privacy, and safety in the supply chain. Additionally, further research is needed to understand the potential implications of AI on environmental sustainability in the supply chain and how AI can be used to reduce the environmental impact of supply chain activities. Also, the current research does not address the implementation process of Microsoft 365 in smart supply chain management. As the implementation process can be quite complicated and resource-intensive, further research is needed to analyze how Microsoft 365 can be implemented in smart supply chain management and the associated costs and benefits. Furthermore, researchers can also explore how to integrate Microsoft 365 with existing systems and processes to ensure a smooth transition. Additionally, research can be conducted to examine how organizations can use Microsoft 365 to improve their customer service and the overall customer experience.

IX. CONCLUSION

Many businesses apply AI in significant parts of supply chain management to be relevant and provide a competitive advantage. AI has helped supply chain management reduce a lot of manual activities in assortments, supply chains, and the promotion of products. It's more important to note that global businesses driven by AI are exponentially increasing. Therefore, AI is becoming a manly supply chain management. The research indicates that several AI application techniques have been employed in smart supply chain management. This finding suggests that the most used AI technology is the ANNs. ANNs are used in approximation, optimization, clustering function, prediction, and classification of the content. Intelligent supply chain management corporations rely on digital and physical networks that task together to meet the requirements. Using AI systems supply chain management to transition its operation from reactive to proactive and improve the capabilities

Microsoft 365 in smart supply chain management has played a significant role in making the process more effective. Microsoft dynamic provides a customer-centered system where the supply chain management can easily interact with its customers to respond promptly. Microsoft 365 ensures efficient use and control of assets in supply chain management to prevent unnecessary losses. Using Microsoft 365 in smart supply chain management makes tracking orders and customer demands on time.

ACKNOWLEDGMENT

REFERENCES

[1] Bansal, N., 2020. IoT Applications in the Supply Chain. In *Designing Internet of Things Solutions with Microsoft Azure* (pp. 157-176). Apress, Berkeley, CA.

[2] Dash, R., McMurtrey, M., Rebman, C. and Kar, U.K., 2019. Application of AI in automation of supply chain management. *Journal of Strategic Innovation and Sustainability*, *14*(3), pp.43-53.

[3] Chetthamrongchai, P. and Jermsittiparsert, K., 2019. Modernizing Supply Chain through Cloud Adoption: Role of Cloud-Enabled Supplier Integration in Gaining Competitive Advantage and Sustainability. *International Journal of Supply Chain Management*, *8*(5), pp.708-719.

[4] Chen, W., 2020. Intelligent manufacturing production line data monitoring system for industrial Internet of things. *Computer Communications*, *151*, pp.31-41.

[5] Peppa, V.P. and Moschuris, S.J., 2013. RFID Technology in Supply Chain Management: A Review of the Literature and Prospective Adoption to the Greek Market.

[6] Pulles, N.J., Schiele, H., Veldman, J. and Hüttinger, L., 2016. The impact of customer attractiveness and supplier satisfaction on becoming a preferred customer. *Industrial marketing management*, *54*, pp.129-140.

[7] Liu, L., Daniels, H. and Hofman, W., 2013, July. Business intelligence for improving supply chain risk management. In *International Conference on Enterprise Information Systems* (pp. 190-205). Springer, Cham.

[8] Boström, M., Jönsson, A.M., Lockie, S., Mol, A.P. and Oosterveer, P., 2015. Sustainable and responsible supply chain governance: challenges and opportunities. *Journal of Cleaner Production*, *107*, pp.1-7.

[9] Abbasi, B., Babaei, T., Hosseinifard, Z., Smith-Miles, K. and Dehghani, M., 2020. Predicting solutions of large-scale optimization problems via machine learning: A case study in blood supply chain management. *Computers & Operations Research*, *119*, p.104941.

[10] C. Tuffnell, P. Kral, P. Durana, and T. Krulicky, "Industry 4.0-based manufacturing systems: Smart Production, Sustainable Supply Chain Networks, and real-time process monitoring," Journal of Self-Governance and Management Economics, vol. 7, no. 2, p. 7, 2019.

[11] A. M. Brintrup, "Artificial Intelligence in the supply chain," The Oxford Handbook of Supply Chain Management, pp. 209–236, 2020.

[12] R. Toorajipour, V. Sohrabpour, A. Nazarpour, P. Oghazi, and M. Fischl, "Artificial Intelligence in Supply Chain Management: A systematic literature review," Journal of Business Research, vol. 122, pp. 502–517, 2021.

[13] Y. Zhu, L. Zhou, C. Xie, G.-J. Wang, and T. V. Nguyen, "Forecasting smes' credit risk in supply chain finance with an Enhanced Hybrid Ensemble Machine Learning Approach," International Journal of Production Economics, vol. 211, pp. 22–33, 2019.

[14] Panch, T., Szolovits, P. and Atun, R., 2018. Artificial intelligence, machine learning, and health systems. Journal of global health, 8(2).

[15] Lingam, Y.K., 2018. The role of AI in making accurate stock decisions in the E-commerce industry. Int. J. Adv. Res. Ideas Innov. Technol, 4, pp.2281-2286.

[16] Hello, P. and Hao, Y., 2021. AI in operations management and supply chain management: an exploratory case study. Production Planning & Control, pp.1-18.

[17] Santonino III, M.D., Koursaris, C.M. and Williams, M.J., 2018. Modernizing the supply chain of Airbus by integrating RFID and blockchain processes. International Journal of Aviation, Aeronautics, and Aerospace, 5(4), p.4.

[18] Dash, B., Sharma, P., & Ali, A. (2022). Federated Learning for Privacy-Preserving: A Review of PII Data Analysis in Fintech. International Journal of Software Engineering & Applications, 13(4), 1-13.

[19] Hellingrath, B. and Lechtenberg, S., 2019. Applications of AI in supply chain management and logistics: Focusing onto recognition for supply chain execution. In the Art of Structuring (pp. 283-296). Springer, Cham.

[20] Hofmann, E., Sternberg, H., Chen, H., Pflaum, A. and Prockl, G., 2019. Supply chain management and Industry 4.0: conducting research in the digital age. International Journal of Physical Distribution & Logistics Management.

[21] Wu, L., Yue, X., Jin, A. and Yen, D.C., 2016. Smart supply chain management: a review and implications for future research. The International Journal of Logistics Management.

[22] Boyd, R. and Holton, R.J., 2018. Technology, innovation, employment, and power: Do robotics and AI mean social transformation? Journal of Sociology, 54(3), pp.331-345.

[23] Dauvergne, P., 2020. Is AI greening global supply chains? Exposing the political economy of environmental costs. Review of International Political Economy, pp.1-23.

[24] Jia, Q., Guo, Y., Li, R., Li, Y. and Chen, Y., 2018, June. A conceptual AI application framework in human resource management. In Proceedings of the International Conference on Electronic Business (pp. 106-114).

[25] Klumpp, M. and Ruiner, C., 2018. Regulation for AI and robotics in transportation, logistics, and supply chain management: background and developments. Netw Ind Q, 20(2), pp.3-7.

[26] Li, X., 2020. Reducing channel costs by investing in smart supply chain technologies. Transportation Research Part E: Logistics and Transportation Review, 137, p.101927.

[27] Yuvaraj, S. and Sangeetha, M., 2016, March. Smart supply chain management using the Internet of things (IoT) and low-power wireless communication systems. In 2016 international conference on wireless communications, signal processing, and networking (WiSPNET) (pp. 555-558). IEEE

[28] Soleimani, S., 2018. A Perfect Triangle with Artificial Intelligence, Supply Chain Management, and Financial Technology. Archives of Business Research, 6(11).

[29] Oh, A.S., 2019. Development of a smart supplying, C.H. and Chen, J.Y., 2019. Demand forecasting and financial estimation considering the interactive dynamics of semiconductor supply-chain companies. Computers & Industrial Engineering, 138, p.106104.ly-chain management solution based on logistics standards utilizing AI and the Internet of things. Journal of information and communication convergence engineering, 17(3), pp.198-204.

[30] Hussain, M., Khan, M. and Al-Aomar, R., 2016. A framework for supply chain sustainability in service industry with Confirmatory Factor Analysis. Renewable and Sustainable Energy Reviews, 55, pp.1301-1312.

[31] Silupú, B., Agurto, M., Merino, G., Uchofen, J. and Velázquez-Martínez, J.C., 2020. Adoption of Best Business and Supply Chain Practices and Micro/small Firms' Performance: Evidence from Northern Peru. In Supply chain management and logistics in emerging markets. Emerald Publishing Limited

[32] Sathiya, V., Chinnadurai, M., Ramabalan, S. and Apollonia, A., 2021. Mobile robots and evolutionary optimization algorithms for green supply chain management in a used-car resale company. Environment, Development, and Sustainability, 23(6), pp.9110-9138.

[33] Ansari, M. F., Dash, B., Sharma, P., & Yathiraju, N. (2022). The Impact and Limitations of Artificial Intelligence in Cybersecurity: A Literature Review. International Journal of Advanced Research in Computer and Communication Engineering, 11(9), 81-90.

[34] Irizarry, J., Karan, E.P. and Jalaei, F., 2013. Integrating BIM and GIS to improve the visual monitoring of construction supply chain management. Automation in construction, 31, pp.241-254.

[35] Darmawan, M.A., Putra, M.P.I.F. and Wiguna, B., 2014. Value chain analysis for green productivity improvement in the natural rubber supply chain: a case study. Journal of Cleaner Production, 85, pp.201-211.

[36] Carbonneau, R., Laframboise, K. and Vahidov, R., 2008. Application of machine learning Hoppe, M.T., 2019. Machine learning in supply chain management (Doctoral dissertation).techniques for supply chain demand forecasting. European Journal of Operational Research, 184(3), pp.1140-1154.

[37] Benabdellah, A.C., Benghabrit, A. and Bouhaddou, I., 2016, November. Big data for supply chain management: Opportunities and challenges. In 2016 IEEE/ACS 13th International Conference of Computer Systems and Applications (AICCSA) (pp. 1-6). IEEE.

[38] Wang, C.H. and Chen, J.Y., 2019. Demand forecasting and financial estimation considering the interactive dynamics of semiconductor supply-chain companies. Computers & Industrial Engineering, 138, p.106104.

[39] Quarshie, A.M., Salmi, A. and Leuschner, R., 2016. Sustainability and corporate social responsibility in supply chains: The state of research in supply chain management and business ethics journals. Journal of Purchasing and Supply Management, 22(2), pp.82-97.

[40] Nketiah, S.B., 2017. The impact of customer relationship management capability dimension on organizational performance in the micro, small and medium scale enterprises; the moderating effect of competitive intensity (Doctoral dissertation).

[41] Dash, B., Sharma, P., Ansari, M. F., & Swayamsiddha, S. (2022). A review of ONDC's digital warfare in India taking on the e-commerce giants. International Journal of Engineering & Technology, 11(2), 96-99.

[42] Kaya, S.K., 2020. Industrial Internet of Things: How Industrial Internet of Things Impacts the Supply Chain. In Internet of Things (IoT) Applications for Enterprise Productivity (pp. 134-155). IGI Global

[43] Gupta, H., Kumar, S., Kusi-Sarpong, S., Jabbour, C.J.C. and Agyemang, M., 2020. Enablers to supply chain performance on the basis of digitization technologies. Industrial Management & Data Systems.

[44] Javaid, M., Haleem, A., Singh, R.P. and Suman, R., 2021. Significance of Quality 4.0 towards comprehensive enhancement in manufacturing sector. Sensors International, p.100109.

[45] Greve, D. and Strant, L., 2012. Microsoft office 365: Exchange online implementation and migration. Packt Publishing Ltd.

[46] Mounla, R., 2017. Microsoft Dynamics 365 Extensions Cookbook. Packt Publishing Ltd.

[47] Ding, W., 2013. Study of smart warehouse management system based on the IoT. In Intelligence computation and evolutionary computation (pp. 203-207). Springer, Berlin, Heidelberg.

[48] Dash, B., & Sharma, P. (2022). Role of Artificial Intelligence in Smart Cities for Information Gathering and Dissemination (A Review). Academic Journal of Research and Scientific Publishing| Vol, 4(39).

[49] Ferrantino, M.J. and Koten, E.E., 2019. Understanding Supply Chain 4.0 and its potential impact on global value chains. Global Value Chain Development Report 2019, p.103.

[50] Žunić, E., Delalić, S., Hodžić, K., Beširević, A. and Hindija, H., 2018, November. Smart warehouse management system concept with implementation. In 2018 14th Symposium on Neural Networks and Applications (NEUREL) (pp. 1-5). IEEE.

[51] Ahmad, R., 2018, October. Information and Communication Technology in Industry 4.0. In International Conference on Information Technology and Business (ICITB) (pp. 1-15).

[52] Chang, Y., Iakovou, E. and Shi, W., 2020. Blockchain in global supply chains and cross border trade: a critical synthesis of the state-of-the-art, challenges and opportunities. International Journal of Production Research, 58(7), pp.2082-2099.

[53] Galiveeti, S., Tawalbeh, L.A., Tawalbeh, M. and El-Latif, A.A.A., 2021. Cybersecurity Analysis: Investigating the Data Integrity and Privacy in AWS and Azure Cloud Platforms. In AI and Blockchain for Future Cybersecurity Applications (pp. 329-360). Springer, Cham.

[54] González García, C., Núñez Valdéz, E.R., García Díaz, V., Pelayo García-Bustelo, B.C. and Cueva Lovelle, J.M., 2019. A review of AIin the internet of things. International Journal Of Interactive Multimedia And Artificial Intelligence, 5.

[55] Dash, B., Ansari, M. F., Sharma, P., & Ali, A. (2022). THREATS AND OPPORTUNITIES WITH AI-BASED CYBER SECURITY INTRUSION DETECTION: AReview. International Journal of Software Engineering & Applications, 13(5), 13-21.

[56] Centobelli, P., Cerchione, R. and Ertz, M., 2020. Agile supply chain management: where did it come from, and where will it go in the era of digital transformation? Industrial Marketing Management, 90, pp.324-345.

[57] Rejeb, A., Keogh, J.G. and Treiblmaier, H., 2019. Leveraging the Internet of things and blockchain technology in supply chain management. Future Internet, 11(7), p.161.

[58] Dobroszek, J., 2020. Supply chain and logistics controller–two promising professions for supporting transparency in supply chain management. Supply Chain Management: An International Journal.

[59] Alfares, H.K. and Attia, A.M., 2017. A supply chain model with vendor-managed inventory, consignment, and quality inspection errors. International Journal of Production Research, 55(19), pp.5706-5727.

BIOGRAPHY

Pawankumar Sharma is a Senior Product Manager for Walmart in San Bruno, California. He is currently on his Ph.D.in Information Technology at the University of the Cumberlands, Kentucky. Pawankumar completed his Master of Science in Management Information Systems from the University of Nebraska at Omaha in 2015. He also holds another Master of Science in Information Systems Security from the University of the Cumber lands, Kentucky, and graduated in 2020. His research interests are cyber security, AI, Cloud Computing, Neural Networks, Information Systems, and Big Data Analytics.

Bibbu Dash is a Lead Data Architect in a Fortune 100 financial organization in Madison, WI. He completed his Ph.D. in Information Technology from the University of the Cumberlands, Kentucky. Bibhu has also completed his Master of Engineering in Electronics and Communication Engineering. and MBA from Illinois State University, Normal, IL. Bibhu's research interests include AI, Cloud Computing, Big Data, and Blockchain technologies.