

Integration of AI-Based Chatbot(ChatGPT) And Supply Chain Management Solution To Enhance Tracking And Queries Response

Manish Verma

Scientist D DMSRDE, DRDO, Kanpur, India

Abstract- From the evolution of big data from various ICT to IOT 4.0, AI-based data set have been valuable in creating efficient supply chain in real-time in various critical tasks and projects of developed nation importance. The transition from manual to intelligent Supply chain management is causing a match between the consumer to products prediction in advance and prediction of futuristic demands even in extraordinary events (COVID-19).

Keywords- AI-based chatbot, ChatGPT, Artificial Intelligence, AI, Chat Bot, SCM, supply chain management

I. INTRODUCTION

The use of chatbots in the supply chain can be traced back to the early 2000s when the first chatbots were being developed and used in customer service. Over the years, chatbots have evolved to include a wider range of applications, including supply chain management.

Supply chain chatbots are designed to automate various tasks and processes within the supply chain, such as tracking shipments, managing inventory, and providing real-time updates to customers and stakeholders. They are equipped with advanced algorithms and machine learning techniques to make decisions and provide recommendations based on large amounts of data.

One of the key advantages of using chatbots in the supply chain is the ability to streamline operations and reduce the time and effort required for manual tasks. They can also provide quick and accurate responses to customer inquiries, improving the customer experience and reducing the workload for supply chain managers.

Overall, the introduction of chatbots in the supply chain has had a significant impact on the efficiency and effectiveness of supply chain operations, leading to improved customer satisfaction, reduced costs, and increased profits for companies.

III. CHATGPT CHATBOT AND ITS FEATURES

ChatGPT is an advanced language model developed by OpenAI. It is a conversational AI-powered chatbot that can understand and generate human-like text. It is trained on a diverse range of texts and can answer questions, provide explanations, and engage in conversation on a wide range of topics.

Here are some of the key features of ChatGPT:

1. Natural language processing (NLP) capabilities: ChatGPT is equipped with advanced NLP algorithms that allow it to understand and respond to text inputs in a human-like manner.
2. Contextual awareness: ChatGPT can maintain context and memory throughout a conversation, allowing it to provide relevant responses and carry on more complex discussions.

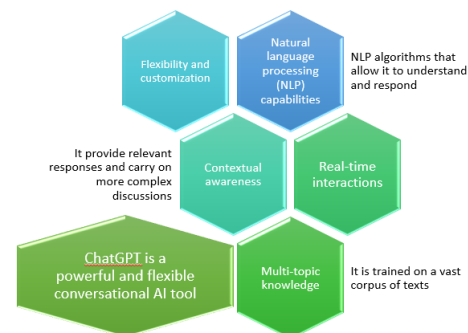


Figure 1: Features of ChatGPT

3. Multi-topic knowledge: ChatGPT has been trained on a vast corpus of texts and has a broad range of knowledge on various topics, from science and technology to history and arts.
4. Flexibility and customization: ChatGPT can be fine-tuned and customized to specific use cases, such as customer service, e-commerce, and supply chain management, by

training it on additional data relevant to the specific domain.

5. Real-time interactions: ChatGPT can handle multiple simultaneous interactions and provide real-time responses to customer inquiries, making it well-suited for use in customer-facing applications.

Overall, ChatGPT is a powerful and flexible conversational AI tool that can revolutionize the way businesses interact with customers and manage their operations.

III. ANALYSIS OF INTEGRATION OF AI-BASED CHATBOT (CHATGPT) AND SUPPLY CHAIN MANAGEMENT SOLUTION

The integration of an AI-based chatbot like ChatGPT with a supply chain management solution can bring many benefits to companies. Here are some of the key advantages:

1. Improved customer experience: ChatGPT can provide real-time updates and answers to customer inquiries, allowing companies to respond to customer needs more quickly and efficiently.
2. Automated supply chain processes: ChatGPT can automate repetitive and time-consuming tasks in the supply chain, such as tracking shipments and managing inventory, freeing up time for supply chain managers to focus on more strategic tasks.
3. Data analysis and decision-making: ChatGPT can analyze vast amounts of data and provide actionable insights and recommendations to supply chain managers, enabling data-driven decision-making.
4. Real-time monitoring and control: ChatGPT can provide real-time updates on supply chain operations and alert managers to potential issues, allowing them to quickly respond and prevent disruptions to the supply chain.
5. Increased transparency and collaboration: ChatGPT can provide a single platform for all stakeholders in the supply chain to access information and collaborate, leading to improved transparency and communication.

Overall, the integration of ChatGPT and a supply chain management solution can lead to a more efficient and effective supply chain, improved customer satisfaction, and increased profitability for companies.

IV. INTEGRATION OF AI-BASED CHATBOT (CHATGPT) AND SUPPLY CHAIN MANAGEMENT SOLUTION TO ENHANCE TRACKING AND QUERIES RESPONSE

The integration of an AI-based chatbot like ChatGPT with a supply chain management solution can significantly enhance the tracking and response to queries in the supply chain. Here's how:

1. Real-time shipment tracking: ChatGPT can provide real-time updates on the status of shipments, including location and the estimated time of arrival. Customers can easily access this information through a chat interface, reducing the need for manual tracking and increasing visibility into the supply chain.
2. Automated inventory management: ChatGPT can automate the process of tracking inventory levels and reordering items when stock is low. This can help prevent stockouts and reduce the need for manual tracking and monitoring of inventory levels.
3. Quick and accurate response to customer queries: ChatGPT can provide quick and accurate responses to customer inquiries, such as tracking information, order status, and product availability. This can significantly improve the customer experience and reduce the workload for supply chain managers.
4. Improved communication and collaboration: ChatGPT can serve as a single platform for all stakeholders in the supply chain to communicate and collaborate, improving transparency and reducing the time and effort required for manual communication and coordination.
5. Overall, the integration of ChatGPT with a supply chain management solution can lead to improved tracking and response to queries, increased efficiency and effectiveness, and improved customer satisfaction.

V. CONCLUSION

In conclusion, the integration of an AI-based chatbot like ChatGPT with a supply chain management solution has the potential to bring numerous benefits to companies. By automating repetitive tasks, providing real-time updates and insights, and improving communication and collaboration, the integration can lead to increased efficiency, improved customer satisfaction, and increased profitability.

The use of advanced algorithms and machine learning techniques in ChatGPT enables it to analyze large amounts of data, make decisions, and provide recommendations to supply chain managers, enabling data-driven decision-making and reducing the time and effort required for manual tasks.

In summary, the integration of ChatGPT with a supply chain management solution can lead to a more efficient, effective, and transparent supply chain, and is an important step toward the digitization and automation of supply chain operations.

VI. ACKNOWLEDGMENT

The author is thankful to Dr. Mayank Dwivedi, Director DMSRDE, Kanpur for permitting this work.

REFERENCES

- [1] Seiler, R., & Wüest, S. (2022). AN ONLINE EXPERIMENT ON THE STEREOTYPE CONTENT MODEL (SCM) AND CHATBOTS–DOES SWAPPING THE PICTURE MAKE A DIFFERENCE?. In 20th International Conference e-Society 2022, Virtual, 12-14 March 2022 (pp. 131-138). IADIS.
- [2] Jackson, C. Nanotechnology for Plant Genetic Engineering.
- [3] Aydın, Ö., & Karaarslan, E. (2022). OpenAI ChatGPT generated literature review: Digital twin in healthcare. Available at SSRN 4308687.
- [4] Thorp, H. H. (2023). ChatGPT is fun, but not an author. *Science*, 379(6630), 313-313.
- [5] Dash, R., McMurtrey, M., Rebman, C., & Kar, U. K. (2019). Application of artificial intelligence in automation of supply chain management. *Journal of Strategic Innovation and Sustainability*, 14(3), 43-53.
- [6] Kousiouris, G., Tsarsitalidis, S., Psomakelis, E., Koloniaris, S., Bardaki, C., Tserpes, K., ... & Anagnostopoulos, D. (2019). A microservice-based framework for integrating IoT management platforms, semantic and AI services for supply chain management. *ICT Express*, 5(2), 141-145.
- [7] Min, H. (2010). Artificial intelligence in supply chain management: theory and applications. *International Journal of Logistics: Research and Applications*, 13(1), 13-39.
- [8] Toorajipour, R., Sohrabpour, V., Nazarpour, A., Oghazi, P., & Fischl, M. (2021). Artificial intelligence in supply chain management: A systematic literature review. *Journal of Business Research*, 122, 502-517.
- [9] Modgil, S., Singh, R. K., & Hannibal, C. (2022). Artificial intelligence for supply chain resilience: learning from Covid-19. *The International Journal of Logistics Management*, 33(4), 1246-1268.
- [10] Fosso Wamba, S., Queiroz, M. M., Guthrie, C., & Braganza, A. (2022). Industry experiences of artificial intelligence (AI): benefits and challenges in operations and supply chain management. *Production Planning & Control*, 33(16), 1493-1497.
- [11] Verma, Manish. "Amalgamation of Blockchain Technology and Knowledge Management System to fetch an enhanced system in Library", in *IJIRT* | Vol. 7, Issue 11, April 2021 (pp.474-477)
- [12] Verma, Manish. "Smart contract model for trust based agriculture using blockchain technology", in *International journal of research and analytical reviews*, Vol. 8 Issue 2, April 2021 (pp. 354-355)
- [13] Verma, Manish. "Modeling Identity Management System Based on Blockchain Technology", in *International Journal of Research Publication and Reviews*, Vol. (2) Issue (4) (2021) (pp. 450-452)
- [14] Bernard, Zoë. "Everything you need to know about Bitcoin, its mysterious origins, and the many alleged identities of its creator." *Business Insider*. Archived from the original on 15 (2018).
- [15] Casino, Fran, Thomas K. Dasaklis, and Constantinos Patsakis. "A systematic literature review of blockchain-based applications: current status, classification and open issues." *Telematics and Informatics* 36 (2019): 55-81.
- [16] Verma, Manish. "Emerging applications of blockchain technology", in *International Research Journal of Modernization in Engineering Technology and Science* Vol. 03, Issue 4, April 2021 (pp.1258-1260)
- [17] Verma, Manish "Credible and Non-Corruptible Supply Chain Management using Blockchain Technology" Published in *International Journal of Trend in Scientific Research and Development (IJTSRD)*, ISSN: 2456-6470, Volume-5 | Issue-3, April 2021, pp.1037-1039
- [18] Verma Manish. "Building predictive model owned and operated by public infrastructure that uses blockchain technology", in *International Journal For Science And Advance Research In Technology* | Vol. 7, Issue 4, April 20
- [19] Bruzzone, A., & Orsoni, A. (2003, March). AI and simulation-based techniques for the assessment of supply chain logistic performance. In *36th Annual Simulation Symposium*, 2003. (pp. 154-164). IEEE.
- [20] Singh, S. P., Rawat, J., Mittal, M., Kumar, I., & Bhatt, C. (2022). Application of AI in SCM or Supply Chain 4.0. *Artificial Intelligence in Industrial Applications:*

Approaches to Solve the Intrinsic Industrial Optimization Problems, 51-66.

- [21] Boute, R. N., & Udenio, M. (2022). AI in logistics and supply chain management. In *Global Logistics and Supply Chain Strategies for the 2020s: Vital Skills for the Next Generation* (pp. 49-65). Cham: Springer International Publishing.
- [22] Zawish, M., Ashraf, N., Ansari, R. I., Davy, S., Qureshi, H. K., Aslam, N., & Hassan, S. A. (2022). Toward On-Device AI and Blockchain for 6G-Enabled Agricultural Supply Chain Management. *IEEE Internet of Things Magazine*, 5(2), 160-166.
- [23] Spanaki, K., Karafili, E., & Despoudi, S. (2021). AI applications of data sharing in agriculture 4.0: A framework for role-based data access control. *International Journal of Information Management*, 59, 102350.