


# Chapter 13

## Supply Chains and Artificial Intelligence Chatbots

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### ABSTRACT

*Logistics and supply chain operations are becoming increasingly complex and costly, requiring businesses to streamline their processes in order to remain competitive and profitable. Leveraging chatbots to automate and optimize supply chain operations is becoming an increasingly popular solution for businesses looking to improve their operations. Overall, leveraging chatbots to streamline logistics and supply chain operations can provide businesses with a number of benefits. Chatbots can reduce costs associated with manual labour, automate certain processes, and streamline communication between customers and suppliers. By leveraging chatbots, businesses can improve their operations and stay competitive in the market. This paper attempts to analyse the application of the artificial intelligence chatbots in supply chain management. This study can be used by researchers and practitioners in supply chain management.*

### 1. INTRODUCTION

Artificial intelligence (AI) is playing an increasingly important role in many sectors by providing significant benefits and answers to questions raised now to better prepare for the future (El-Nemr et al., 2020; Gao et al., 2018; Husna et al., 2021; Lebosse et al., 2017). According to Côté and Su (2021), AI has already demonstrated its value in areas such as health, education, transport and mobility, manufacturing and e-commerce. Its usage has seen a remarkable 270% increase over the past four years. The coronavirus pandemic has also accelerated the AI adoption due to the need for remote working, the e-commerce boom and increased automation (Nadia et al., 2021). These transformations, implemented urgently to deal with the crisis, seem to be lasting changes in our lifestyles, this is also demonstrated in the professional context. The question that then arises is, how can businesses use the AI-powered chatbots effectively to improve their supply chains while ensuring chatbots don't completely replace human interactions.

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## 2. AI-powered chatbot technology

According to Grégoire, E. (2020), a chatbot, also known as a conversational agent or conversational robot, is a computer program capable of holding a conversation with a person, generally on the internet. This is a software robot that can communicate with an individual or a consumer through an automated conversation service, using choice trees or having the ability to process natural language.

## 3. Key characteristics of a chatbot

*Communication capacity:* The chatbot is able to communicate with the user to understand and/or accept their requests. It can adapt based on the knowledge it acquires as it communicates with the user and can express emotions to facilitate communication.

*Capacity for action:* The chatbot has the capacity to act proactively and continuously. He can learn, has memory and rationality, which allows him to perform actions based on the information he has acquired.

*Autonomy:* Autonomy is an essential characteristic of a conversational agent. It can operate independently, without requiring direct and continuous user intervention. Depending on the degree of autonomy, a chatbot can perform relatively simple tasks asynchronously.

The AI-powered chatbot technology refers to the use of artificial intelligence (AI) and natural language processing (NLP) to create automated chatbots. AI chatbots are designed to conduct conversations in a natural way with users, understanding and responding to their queries or requests.

These AI chatbots leverage machine learning (ML) techniques and advanced analytics to improve their performance. They are able to understand natural language, interpret user intentions, and provide relevant and precise responses.

In summary, AI-powered chatbots are virtual assistants that use technologies like NLP, ML, and advanced analytics to deliver interactive, personalized conversations with users. (ILOVAN et al., 2022)

## 4. Chatbots in businesses

Innovation has become an essential lever for companies in a competitive market and a complex socio-economic context. The digitalization of services is encouraged, which leads to the emergence of chatbots as technical solutions to improve customer service and the internal transformation of companies (Ren et al., 2016; Taghipour & Frayret, 2010; Taghipour et al., 2009; Taghipour et al., 2023a).

In the world of work, artificial intelligence (AI) is positioning itself as a powerful ally, enabling significant advances in various professions. The emergence of an “augmented” workforce reflects the growing collaboration between humans and intelligent machines (Côté and Su, 2021). This notion of augmentation refers to the combination of the strengths and skills of humans and machines, leading to improved results (Taghipour et al., 2023b; Taghipour et al., 2022a; Taghipour 2020). Businesses are beginning to exploit this reality by using intelligent algorithms, software, and virtual assistants to achieve better results (Taghipour et al., 2022b). For example, in healthcare, AI is used to analyse complex medical data, while in aeronautics, it can predict aircraft maintenance needs in real time.

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