



Exploring the Advantages & Disadvantages of Using Artificial Intelligence in Online Food Delivery Services

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ABSTRACT

The assimilation of Artificial Intelligence (AI) in restaurant industry represents a revolutionary shift. AI has enabled this industry by optimizing the food deliveries to the customers in no time, route optimization by determining the most effective route for each delivery person and for every order as well. AI interacts with the road infrastructure, weather conditions, traffic status and enable the driver to reach his destination in the stipulated time for every order. AI analyses historical data and make predictions for the future by conducting various algorithm based analysis. Artificial Intelligence has also helped the marketers to decide on dynamic pricing structure and keeping their customer alive with them. One of the major task accomplished by AI is usage of Chabot, which has enabled the customers to get personalized solutions of their problems. This paper aims to identify and develop the transformation and revolution, which has been taken place due to the use of AI in shaping consumer behaviour towards online food delivery services by doing an exploratory analysis based on the published literature in Food delivery applications. This paper suggest that AI is not only a medium of getting customer data and promoting sales but also a strong tool to provide customization and develop a future ready ecosystem for restaurant industry. This paper will throw light on the challenges and issues related to Artificial Intelligence (AI) in the restaurant industry.

1. Introduction

The food delivery industry, a crucial part of the hospitality sector, has undergone significant changes with the introduction of Artificial Intelligence (AI). AI has brought about fundamental shifts in how food is ordered, prepared, and delivered to customers. This paper explores the impact of AI on food delivery, looking at how it is changing the way we order, receive, and enjoy our meals. From predicting our favorite dishes to making the entire process more efficient, AI is reshaping the food delivery experience (Deshmukh *et al.* [3]).

AI may raise the current gross value of the Indian market by 15%, or \$957 billion, by 2035, according to an evaluation by a major IT company. In terms of the quantity of start-ups with an AI focus among the G20 countries,

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India ranked third (in 2016). Its value grew at a CAGR of 86% between 2011 and 2016, which is higher than the global average (Vedant [17]).

Artificial intelligence (AI) integration has become a revolutionary force in the quickly changing hospitality sector, with the potential to close long-standing gaps and unleash hidden potential in restaurant industry (Poncin & Walter-Malcurat [11]). The symbiosis of AI and food delivery services marks a paradigm change, providing never-before-seen opportunity to improve customer acquisition, recommendations & personalization and upselling & cross selling, as we stand at the nexus of technology innovation and pedagogical improvement.

Historically, hospitality sector, especially food delivery service models have faced challenges in catering to the diverse needs of the customers in food delivery such as personalized content, suggestions and offers. However, with the advent of AI technologies, a new era unfolds where food delivery service firms can develop the tools that can be dynamically tailored to the unique attributes of each customer. AI enabled strategies also help the food delivery service firms to fill various service gaps between the customer and service provider (Poncin & Walter-Malcurat [11]).

There are several benefits of integrating AI in food delivery applications such as streamlining operations by using predictive analysis, enhance customer experience by AI Chabot and voice assistance, and order processing (S.M. Technology [15]).

It is inevitable that technology will be introduced into many business sectors since it permeates every aspect of our everyday lives. Artificial Intelligence is one of these advances. AI endows robots with the capacity to think like human beings and behave appropriately. Because it replicates human activity and is maybe more effective and efficient at doing the same tasks, this intelligent behaviour may be used to assist replace people. Artificial intelligence has capabilities that no other technology can match, which makes it more and more important for businesses to employ this technology to their advantage. Food delivery apps are one of the businesses that has used this technology into its operations (Gupta *et al.* [5]).

2. Literature Review

The usage of artificial intelligence (AI) and its algorithms is growing exponentially along with the popularity of online meal delivery services. In order to guarantee quicker food delivery and higher customer satisfaction, an increasing number of food delivery businesses are heavily utilizing various AI algorithms. Future developments in technology mean that robotic delivery and voice assistants with natural language processing will undoubtedly play a major role in the online meal delivery market (Kumar *et al.* [9]).

The age of smartphone applications has given rise to a new CRM (Create, Retain, and Manage) channel for modern marketing. A Chatbot is a programme that can converse via voice or text. It is designed to work with messenger for corporate communication and is used in conjunction with AI (Artificial Intelligence) technology. Both consumers and businesses save money and time thanks to it (Shivaratri [13]).

Global food demand is expected to increase from 59 to 98% by 2050 due to population growth. AI has therefore been employed in supply chain management, food sorting, manufacturing improvement, food quality enhancement, and appropriate industrial hygiene to meet this need for food (Mavani *et al.* [10]).

Smart contracts and block chain work together to create systems that require strict documentation verification and transparency. Similar to how the Block chain creates and upholds trust between users, smart contracts function without the involvement of humans or other parties to uphold trust inside the block chain network (Talukder *et al.* [16]).

3. Research Methodology

Exploratory research method has been used in the current study, as the main purpose of the study is to highlight the advantages and challenges of using artificial intelligence (AI) in the online food delivery firms to

influence consumer behaviour. The researchers selected the secondary data from the published journals, e books, and online articles.

4. Research Objectives

The present study has two major objectives:

- The first objective is to highlight the advantages of using Artificial Intelligence (AI) enabled features in food delivery firms.
- The second objective is to identify the challenges and potential risks associated with using AI for food delivery applications.

5. Advantages of Using AI Enabled Features

5.1. Recommendations and Personalization

Instead of just showing the completed menu AI based food delivery services shows the personalized recommendations based on customer's previous order history and shopping behaviour (Deshmukh *et al.* [3]). AI powered food delivery services also provide cross selling and up selling opportunities to the firms to engage their customers and increase the order value from them (S.M. Technology [15]).

5.2. Voice Assistance

Some food delivery firms use voice assistance facility that enable the users to interact the users by using voice commands (Deshmukh *et al.* [3]). This is user friendly as well because the customer can track, modify and inquire about the orders by placing a voice command only (Gaud *et al.* [4]).

5.3. Chatbot Support

Chatbot are accessible 24 * 7 to address customer's enquiries and apprehensions in the real time through writing based chat interfaces. Customers can pursue assistance with numerous tasks, comprising, menu recommendations, and concern resolve (Gaud *et al.* [4]). Chatbot are designed to provide speedy and accurate replies, enhancing the complete customer experience.

5.4. Real Time Order Tracking

Several food delivery firms provide real time order tracking features, permitting customers to trail the development of their order deliveries through an online map (Raibagi *et al.* [12], Singla *et al.* [14]). This facility suggests the customers a projected delivery time, thus reducing ambiguity and enhancing the overall accessibility of the food delivery experience. Customers can visualized the position of their orders and receive updates as the food has been prepared and delivered (Raibagi *et al.* [12]).

5.5. Sentiment Analysis

Sentiment analysis in online food delivery service is about understanding and estimating the customer's feelings about the food delivery based on their reviews and feedback. By using Artificial Intelligence (AI), these firms can analyze what is doing well and where the improvement is needed to enhance customer experience (Singla *et al.* [14]). It helps them to understand which kind of dishes are most liked by them and to address the issues like late delivery or wrong delivery.

5.6. Operational Efficiency

Operational competence is one of the top most priority for food delivery apps, and AI plays a vital role in simplifying various aspects of their operations.

- *Route planning Optimization*: AI based algorithms can estimate the most effective paths for delivery drivers. This assures speedy order delivery while concurrently minimizing fuel expenses and reducing delivery time (Chen & Wang [2]).
- *Estimation of Demand*: Artificial Intelligence (AI) investigates historically placed order data, seasonal trends, and external factors such as weather and holidays to make precise predictions about future demand. This empowers restaurants and delivery services to plan staffing, food preparation, and inventory management more effectively, leading to waste reduction and enhanced resource allocation.
- *Dynamic Pricing*: AI-powered pricing models can modify prices of food items based on peak hour orders (Raibagi *et al.* [12]).

5.7. Inventory Management

Implementation of Artificial Intelligence (AI) in online food delivery services can help to save time and reduce wastages of the food by accurate delivery of output. As this technology uses Machine Language (ML) and Visual Recognition Technique (VRT), it helps in identification of those food items, which are out of stock, damaged, expired and off seasonal items. Through this Inventory Management can be easier to maintain.

5.8. Determine Your Most Valuable Consumers

The customers that deliver the most value determine a company's success. Still, it might be challenging to categories your high-value clients. AI and machine learning technology help business owners overcome that difficulty by providing detailed data about the target clientele, potential clients, and more. Additionally, it helps forecast future customers by analyzing the characteristics and behaviour of existing clients (Vedant [17]).

6. Disadvantages of Using AI Enabled Features

6.1. Cost of Implementing the Technology

Applying Artificial Technology (AI) requires a substantial amount of investment in technological upgradation, skilled work force, and IT enabled infrastructure. Small food delivery firms may find it difficult to validate these costs (Chen & Wang [2]).

6.2. Quality and Quantity of Data

AI depends profoundly on high quality and reliable data. Arranging such kind of Pertinent and adequate data can be a challenging task (Arvindara *et al.* [1], Jain *et al.* [8]). Food delivery firms require a massive amount of organized and factual data based on user likings, restaurant menu, delivery paths etc. to work with AI models with more efficiency and effectiveness.

6.3. Integration with Existing Systems

Integration of AI with prevailing application IT set-up and workflows in a seamless manner can be a tough task. There can be several challenges to make sure that AI systems work well with the system already in the existence and working (Arvindaraj *et al.* [1]). It might leads to problems related to compatibility and interruptions in the IT structure during execution process.

6.4. Loss for Delivery Personnel

Automation with the help of Artificial Intelligence (AI) may effect in terms of loss of services for the delivery personnel. Reskilling programs and intent on tasks that AI cannot make identical can be two possible clarifications (Vedant [17]).

6.5. Privacy of Data

It is critical and difficult to handle customers' information with utmost care. The food delivery firms may face a crucial challenge to handle the data so that they can develop a trust of their customers.

7. Conclusion

We have thoroughly examined artificial intelligence's (AI) function in the food delivery industry in this survey. Our study has covered a range of topics related to AI-driven tactics in this sector. We began by investigating the application of AI to improve the effectiveness of food delivery services. This included looking into how AI may be used to predict demand, optimize delivery routes, and dynamically alter price. The goals of these developments have been to guarantee on-time delivery, minimize waste, and optimize the distribution process. We highlighted the difficulties in using AI in food delivery throughout our survey, including issues with data quantity and quality, interaction with current systems, pricing, and scalability. We have also noted the difficulties and possibilities present in this changing environment.

To conclude, AI is transforming the online food delivery business by refining customers' satisfaction and productivity. It seems that more revolution is in the store for it in near future (Mavani *et al.* [10]). It is authoritative to consider these progressions against their impacts on ethics and people. The businesses need to judiciously investigate the usage of AI as an instrument to bring out the productive changes.

With the accumulative use of online food delivery applications, the use of Artificial Intelligence (AI) and its procedures are also improving its effectiveness and efficiency at an exponential rate. Most of the online food delivery firms are using different AI based programs to ensure accurate and faster delivery, customer satisfaction, inventory management, future planning (IANS [6]). If the challenges of AI in implementation of programs and compatibility with the systems are overcome, the advantages and benefits can be utilized to its fullest.

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