VIŠJA STROKOVNA ŠOLA ACADEMIA

MARIBOR

IMPACT OF ARTIFICIAL INTELLIGENCE ON CUSTOMER SATISFACTION AT McDONALD'S IN SLOVENIA

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I am very thankful to my parents for their unconditional love and support during the completion of my diploma thesis. I also thank my mentor and staff of Academia for their help with my thesis and research.

ABSTRACT

Artificial intelligence, known as (AI), is an emerging field that includes the expansion of computer systems that can perform everyday jobs that need knowledge of a human. The Slovenian fast-food industry is gradually integrating digital and AI technologies, although the pace remains more conservative compared to Western European markets. Common digital tools include self-service kiosks, QR-code-based ordering, and digital menu boards, which are becoming standard features in larger franchises. McDonald's is the main worldwide fast-food chain, has incorporated AI-driven tools for example, AI drive-thru systems and AI-powered menu recommendations and self-service kiosks. These AI systems aim to reduce waiting times, increase order accuracy, and offer personalized dining experience, which contributes to higher customer satisfaction levels.

This study explores how these developments translate to the Slovenian context, with particular attention to McDonald's Slovenia. Drawing on customer perspectives and insights from company representatives, the analysis indicates clear benefits where AI solutions are visible, intuitive, and reliably supported by staff. Respondents highlight faster service during peak periods, fewer order errors, smoother queue management, and more relevant offers via digital channels. Customers also value greater control when configuring orders through kiosks or mobile applications, which can reduce friction and perceived effort in the service encounter. At the same time, several cautions emerge. Some guests, especially older people prefer human interaction and may perceive kiosk interfaces as daunting without on-site guidance. The successful implementation of AI in the Slovenian fast-food sector, therefore, depends not only on technological innovation but also on its alignment with local customer expectations and service norms. A hybrid service model that combines digital efficiency with human warmth and support is likely to yield the highest levels of customer satisfaction. This research underscores the importance of adopting AI in a manner that is user-friendly, inclusive, and contextually appropriate. By complementing rather than replacing—human service, AI has the potential to elevate the overall dining experience, positioning fast-food chains like McDonald's as both technologically advanced and customer-centric in the Slovenian market.

Keywords: *Artificial intelligence, McDonald, Customer satisfaction, Technology, Fast food*

POVZETEK

“Vpliv umetne inteligence (AI) na zadovoljstvo strank v restavracijah McDonald's v Sloveniji”

Umetna inteligenca, znana kot (UI), je vzhajajoče področje, ki vključuje širjenje računalniških sistemov, ki lahko opravljajo vsakodnevna opravila, ki zahtevajo človeško znanje. Slovenska industrija hitre prehrane postopoma vključuje digitalne tehnologije in tehnologije umetne inteligence, čeprav tempo ostaja bolj konzervativen v primerjavi z zahodnoevropskimi trgi. Med običajnimi digitalnimi orodji so samopostrežni kioski, naročanje na podlagi QR kod in digitalne menijske table, ki postajajo standardne funkcije v večjih franšizah. McDonald's je vodilna svetovna veriga hitre prehrane, ki je vključila orodja, ki jih poganja UI, na primer sisteme UI drive-thru in priporočila jedilnikov ter samopostrežne kioske, ki jih poganja UI. Ti sistemi UI si prizadevajo skrajšati čakalne dobe, povečati natančnost naročil in ponuditi prilagojeno izkušnjo prehranjevanja, kar prispeva k višji ravni zadovoljstva strank.

Ta študija raziskuje, kako se ta dogajanja prenašajo v slovenski kontekst, s posebnim poudarkom na McDonald' Slovenija. Analiza, ki se opira na mnenja strank in mnenja predstavnikov podjetja, kaže na jasne prednosti, kjer so rešitve umetne inteligence vidne, intuitivne in jih osebje zanesljivo podpira. Anketiranci poudarjajo hitrejšo postrežbo v času prometnih konic, manj napak pri naročilih, bolj gladko upravljanje čakalnih vrst in ustreznejše ponudbe prek digitalnih kanalov. Stranke cenijo tudi večji nadzor pri konfiguriranju naročil prek kioskov ali mobilnih aplikacij, kar lahko zmanjša nesporazume in fizični napor med postrežbo. Hkrati se pojavlja več opozoril. Nekateri gostje, zlasti starejši, imajo raje človeško interakcijo in lahko vmesnike kioskov dojemajo kot zastrašujoče, še posebej, če ni vodenja na kraju samem. Uspešna uvedba umetne inteligence v slovenski sektor hitre prehrane zato ni odvisna le od tehnoloških inovacij, temveč tudi od njene usklajenosti z lokalnimi pričakovanji strank in normami storitev. Hibridni model storitev, ki združuje digitalno učinkovitost s človeško toplino in podporo, bo verjetno prinesel najvišjo raven zadovoljstva strank. Ta raziskava poudarja pomen uvedbe umetne inteligence na način, ki je uporabniku prijazen, vključujoč in vsebinsko primeren. Z dopolnjevanjem in ne nadomeščanjem človeške storitve ima UI potencial, da izboljša celotno izkušnjo prehranjevanja, s čimer verige hitre prehrane, kot je McDonald's, postavi na slovenski trg kot tehnološko napredne in osredotočene na stranke.

Ključne besede: *umetna inteligenca, zadovoljstvo strank, McDonald's, tehnologija, hitra prehrana*

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1 INTRODUCTION

1.1 Description of the Area, Definition of the Problem, and Purpose of the Thesis

In the introduction of this thesis, I will demonstrate the hypotheses I have formulated and provide a brief explanation of each. In the main body of the thesis, I will show the validity of these hypotheses by either confirming or dispelling them by means of statistical methods and/or other sources. Finally, I will conclude by summarising my research findings and my hypothesis.

The incorporation of AI in the fast-food industry has reformed interactions between the delivery of services and customers. AI tools, for instance automated drive-through systems, personalised digital menus, and self-service kiosks, have been adopted by the top fast-food chains, in this case, McDonald’s. The main purpose of these AI tools is to reduce waiting times, improve order accuracy, personalise the dining experience, and enhance operational efficiency. With the increasing use of AI in customer service, it is important to examine how well it improves customer satisfaction within the quick-service restaurant (QSR) industry.

The thesis examines the impact of AI on customer satisfaction within McDonald's, a leading QSR chain. In the initial sections, I will outline McDonald’s operational model and the incorporation of AI tools. Instances of integration include self-service kiosks, AI menu suggestions, and automated drive-thru system. These AI tools were introduced to increase the speed of service, accuracy of orders, and overall customer satisfaction. However, while McDonald's has made significant progress in adopting AI, it remains to be seen whether these technological improvements actually meet customer expectations. QSRs are adopting AI as a response to operational challenges and the increasing demand for a faster, more efficient service. AI-driven innovations aim to reduce waiting times, personalise the dining experience, and streamline processes. Nevertheless, the efficiency of AI in enhancing customer satisfaction remains an area that needs further study. While some customers appreciate the efficiency and convenience provided by AI, others may feel that it lacks a human touch, leading to mixed responses regarding AI adoption in the QSR sector.

In this thesis, I will explore how AI-driven technologies impact customer satisfaction at McDonald's, particularly in areas such as order accuracy, service speed, ease of use, and personalisation. I will collect data through surveys from customers and company representatives to evaluate whether AI has led to an improvement or decline in customer satisfaction.

1.2 Purpose, Objectives, and Basic Claims of the Study

The purpose of this study is to evaluate the impact of AI technologies on customer satisfaction at McDonald's Slovenia, focusing on how AI-driven innovations—such as self-service kiosks, personalised menu recommendations, and automated drive-thru systems—shape customer perceptions of service quality, convenience, and personalisation. By analysing the interplay between technological efficiency and human-centric values, this research seeks to determine whether AI adoption aligns with Slovenian consumers' expectations or introduces challenges that undermine satisfaction.

Whereas AI is generally known for streamlining operations, its effectiveness in meeting customer expectations and preferences remains a matter of debate. Some customers see AI-driven systems as enhancing convenience and efficiency, whereas others may find them impersonal or challenging to navigate. The current research seeks to provide empirical evidence on AI acceptance at McDonald's contribution to a better overall customer experience.

In order to ensure that this research meets its purpose, it is guided by several major objectives. The study aims to measure the impact AI-powered technologies have on customer satisfaction at McDonald's, and how effective menu suggestions are on the customers' spending and likelihood of return visits. It also analyses whether artificial intelligence can assist in enhancing the efficiency of services provided, monitoring the accuracy of orders, and assessing the duration required for delivery. Another area of interest is the straightforward analysis of customer perceptions regarding AI-driven self-service systems with respect to user-friendliness.

Furthermore, the study will identify potential challenges and limitations associated with the adoption of AI in the fast-food sector, particularly concerning customer satisfaction.

The current thesis has key claims. Firstly, AI significantly increases customer satisfaction by improving order accuracy, service speed, and personalisation. Secondly, AI driven self-service ordering systems reduce waiting times and increase efficiency, leading to better customer experiences. Thirdly, customers who use AI-based recommendation systems are more likely to engage in repeat visits and increase spending due to personalised suggestions. Fourthly, ease of use is an important factor of AI adoption in the QSR sector, as customers are likely to embrace AI services if they find the interface user-friendly.

By investigating these claims, this study will provide an evaluation of AI's role in shaping customer experiences at McDonald's and contribute to the wider discourse on technology adoption in QSR chains. The results will offer important insights into how McDonald's and other fast-food chains can

enhance AI-driven strategies to align with customer expectations while maintaining operational efficiency. This study will not only evaluate AI's role in boosting customer satisfaction but also pinpoint areas for refinement, ensuring that AI technologies are both effective and well-received by consumers.

H1: AI-powered technologies improve customer satisfaction at McDonald's.

H2: AI-powered systems reduce customer waiting time.

H3: AI usage improves order accuracy leading to higher customer satisfaction.

1.3 Assumptions and Limitations of the Study

This study has several assumptions that affect both the methodology and how the findings will be interpreted. When conducting surveys or interviews, it is assumed that participants provide accurate and honest answers. The selected sample is also assumed to be representative of McDonald's patrons in Maribor, Slovenia, as customer satisfaction is a subjective experience influenced by personal expectations. Moreover, it is assumed that the AI used at McDonald's in Maribor runs reliably and according to plan, free from major disruptions or external factors that could affect functionality.

Nevertheless, in addition to assumptions, the study also has limitations that should be considered. One significant limitation is its limited geographical focus on Maribor, which may not precisely reflect McDonald's customer experiences throughout Slovenia or the worldwide QSR sector. Differences in customer demographics, cultural beliefs about AI, and service quality among McDonald's restaurants may impact the results. Another constraint pertains to the reliance on self-reported data, which may be affected by biases such as social desirability or potential misinterpretations of survey inquiries. Furthermore, although the investigation centres on the ramifications of AI on customer satisfaction, it does not consider other pertinent variables, such as meal quality, pricing strategies, or promotional activities, all of which influence consumer experiences.

A substantial limitation of this study is financial constraints that affected the research method. Limited funding resulted in a small sample size, which may affect the generalisability of the findings. Financial constraints also hindered the ability to conduct more in-depth field research, use advanced AI analytics technologies, or collect real-time customer behaviour data for a detailed analysis. Moreover, limited resources restricted access to confidential McDonald's

internal data or specific paid industry reports, which could have provided a full picture of AI applications at the corporate level.

The study also faced limitations due to the shortage of secondary data on McDonald's AI-driven initiatives in Slovenia, as most accessible research reports focus on global trends rather than country-specific applications. Additionally, the rapidly evolving nature of AI technology means that continuous updates and improvements could influence customer satisfaction over time, making it difficult to capture a definitive impact.

Despite these limitations, the results of the current study will provide significant insights into the function of AI in increasing customer satisfaction at McDonald's in Maribor. The study aims to explore how AI technologies affect accuracy, service efficiency, personalisation, and overall customer experiences in the QSR industry.

Future research should expand on these results by conducting comparative studies across multiple regions, obtaining extra funding for larger-scale investigations, incorporating longitudinal data, or exploring other factors that influence customer satisfaction in AI-enabled service environments.

1.4 Used Research Methods

This study adopted a quantitative approach to measure the impact of AI on customer satisfaction at McDonald's in Maribor, Slovenia. The primary data were collected through a structured questionnaire distributed to customers who have interacted with AI driven services, for example AI powered drive through system, self-service kiosks, and AI menu recommendations. The questionnaire consists of 12–13 questions using a Likert scale to measure customer perceptions of the impact of AI on service speed, order accuracy, and personalisation. In the second phase, we used a semi-structured interview with a company representative to better understand the survey findings.

2 Artificial Intelligence in the Fast-Food Industry: Context, Application, and Case Study of McDonald's

2.1 Overview of the Fast-food Industry

"A fast-food restaurant is a specific type of restaurant that serves fast food cuisine and has minimal table service. The food served in fast food restaurants is typically part of a "meat-sweet diet," offered from a limited menu, cooked in bulk in advance and kept hot, finished and packaged to order, and usually available for take away, though seating may be provided at the restaurant. Fast food restaurants are typically part of a restaurant chain or franchise operation that provisions standardised ingredients and/or partially prepared foods and supplies to each restaurant through controlled supply channels." (eFeedo, 2025).

Fast food companies are popular worldwide. The industry plays an important role in today's restaurant sector. These companies offer many popular dishes. Fast-food is a hot meal that is cooked quickly or already prepared and served quickly. A lot of fast-food chains have emerged worldwide, such as McDonald's, KFC, Burger King, and others (Figure 1).

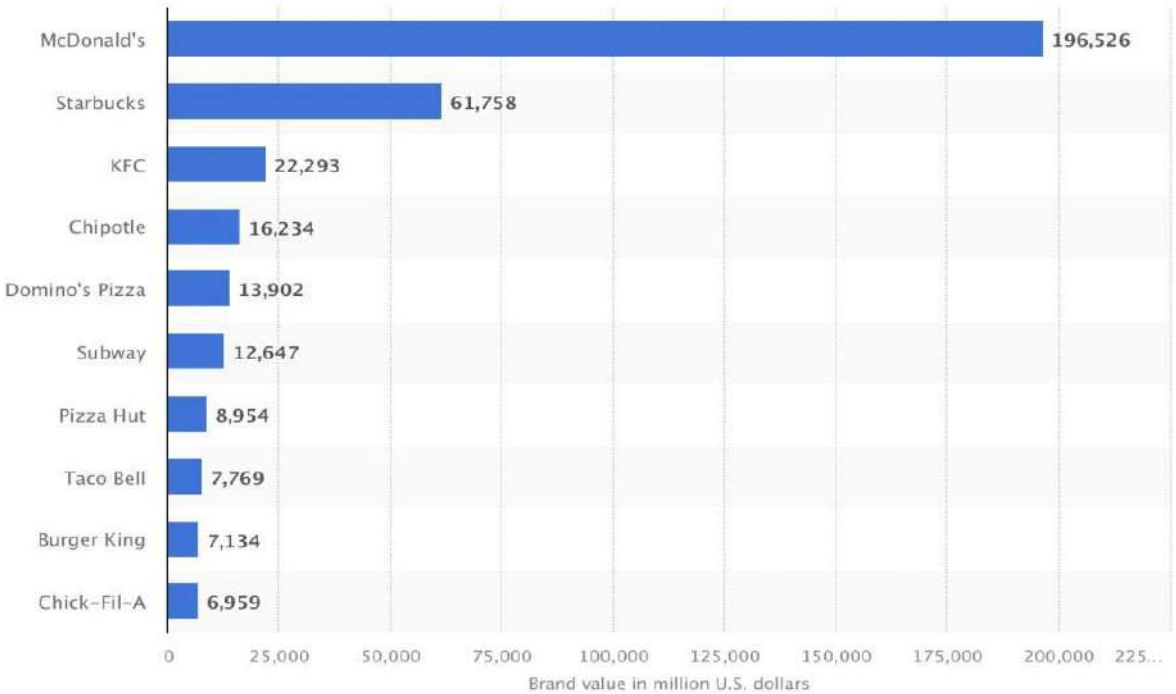

Figure 1: Ten Most Valuable Brands Worldwide (Statista, 2023)

Source: https://www.kantar.com/inspiration/brands/fast-food-brands-among-the-most-resilient-in-2023-kantar-brandz-most-valuable-global-brands-report

2.2 Definition and Scope of AI

AI is an emerging field that includes the expansion of computer systems capable of performing everyday tasks that typically require human knowledge. These include functions such as language understanding, decision-making and problem-solving. AI is closely related to automation, which is defined as the use of technology to carry out tasks without human involvement. The main purpose of automation is to increase efficiency and reduce costs (Brewka, 1996).

AI is a branch of computer science, focused on creating machines that can perform without human intervention. Its main goal is to develop systems that can learn, reason, and adapt through software algorithms—contributing to a vast network of interconnected individuals, corporations, states, and nations for the benefit of all. AI models are therefore crucial for creating automated, intelligent, and resource-efficient systems. These systems have become a major technological development and are expected to shape the future of almost every sector thanks to their increased efficiency, speed, and accuracy.

2.3 AI Usage in Fast-Food Restaurants

Chatbots: A chatbot is a programme that interacts with customers through voice or text input, typically used for customer service or data management. Chatbots in fast-food restaurants facilitate online ordering with just a few clicks, allowing customers to add items to a cart and complete purchases quickly. Some chatbots use natural language processing, while others respond to input keywords by matching them to a database.

There are two types of chatbot:

1. Chatbots that function based on coded rules.

2. Chatbots that function using machine learning.

From a restaurant perspective, chatbots are faster than websites or apps. They can respond and communicate with multiple customers simultaneously and are cost-effective.

Recommendation engines: A recommendation engine analyses customer data to recommend products or services based on pervious interests and behaviour. In QSR settings, this software is integrated into apps to help consumers choose food and provide recommendations based on prior preferences.

Robots: A robot is a machine programmed by a computer to perform a complex series of tasks automatically. Robots may be controlled by an external device, or have built-in control systems. While some robots are designed to resemble humans, most are functional machines designed for specific tasks. Restaurants use AI-driven robots to increase the speed and capacity of food preparation and delivery.

Kiosks: Kiosks allow customers to create their own ordering experience by viewing a menu and selecting exactly what they want. This enhances user autonomy while reducing wait times and labour costs.

Facial and voice recognition: These are biometric tools used in restaurants. Facial recognition can identify repeat customers, enabling personalised experiences and loyalty programmes. Voice recognition software decodes human speech into text. In fast-food settings, voice recognition may also assist with recommendations and order processing.

AI in QSR environments facilitates the collection and analysis of large volumes of operational data. This data is used to manage critical functions such as meal scheduling, staff shift planning, reservation bookings, vendor coordination, inventory tracking, and automated billing. By streamlining these operations, AI helps restaurants reduce waste, optimise supply chains, and improve cost efficiency.

Chatbots, as part of AI-driven customer service, provide automated and personalised assistance, enabling customers to place orders and make payments with minimal effort. These systems typically require no additional app downloads and involve low implementation costs, making them practical and scalable solutions for enhancing customer engagement and loyalty. Additionally, AI-powered digital menu boards simplify real-time updates of menus and prices, ensuring accuracy and responsiveness to market changes.

2.4 Use of AI in McDonald's (Real-World Examples)

The fast-food industry has undergone significant transformation with the adoption of AI. Worldwide top brands, including McDonald's, have adopted AI to improve customer satisfaction and operational efficiency. McDonald's, as the leading worldwide fast-food chain, has incorporated AI-driven tools such as AI drive-thru systems, AI-powered menu recommendations, and self-service kiosks. These AI tools aim to reduce waiting times, provide a personalised dining experience, and improve order accuracy. As demand for fast service

grows, AI tools have become vital for meeting customer expectations (Meuter, 2000).

Self-service kiosks are among McDonald's most visible AI innovations. These digital ordering systems allow customers to personalise their meals, pay electronically, and place orders without interacting with a cashier. While designed to speed up service and reduce errors, customer feedback has been mixed: some appreciate the convenience, while others consider the lack of human interaction is a drawback. Studies show that the success of self-service technologies depends on user-friendliness and their ability to meet customer expectations ((Meuter, 2000).

While self-service kiosks represent a leap in automation, their adoption contrasts sharply with traditional human-operated counters. Historically, McDonald's relied on face-to-face interactions to build rapport and address queries. The shift to kiosks introduces a trade-off: while 72% of users in a 2021 survey praised kiosks for reducing errors, older demographics often report discomfort with navigation and payment methods. This generational divide underscores the need to balance innovation with inclusivity, ensuring AI tools cater to diverse users without alienating those accustomed to human service. Another important AI application at McDonald's is the AI-driven recommendation system for restaurant specials.

AI has also been integrated into McDonald's drive-thru experience. In selected locations, voice recognition technology takes orders to reduce human error. AI can increase accuracy by minimising miscommunication between employees and customers; however, voice recognition is not error-free. Background noise, misinterpreted accents, and incorrect orders may frustrate customers instead of improving the customer experience. Consequently, evaluating AI's effectiveness in this setting is critical to understanding its impact on customer satisfaction. The growing reliance on AI in customer services represents a broader shift toward automation. For instance, AI-powered chatbots reduce waiting times and provide immediate assistance online (Owen, 2022).

Research suggests AI-driven customer interaction can deliver a seamless experience, but its success depends on balancing automation with a human touch. Automation can be beneficial in the fast-food sector, where speed is essential. However, it is also important to consider whether customers feel valued and understood when interacting with AI rather than human agents. Some customers may be concerned about data tracking, raising ethical questions about AI's role in personalisation. McDonald's has invested heavily in artificial intelligence as part of its `Experience of the Future' initiative, aiming to modernise restaurants and improve the customer experience. However, the actual impact on customer satisfaction may vary; some appreciate the convenience, while others may feel AI reduces the human touch that makes a meal memorable.

Understanding these perspectives is crucial to assessing how AI will shape the future of the fast-food sector.

Ease of use of AI-driven systems is equally important. Technologically advanced customers may find self-service kiosks intuitive, whereas others may struggle with the interface. Complicated menus, unclear instructions, or lack of accessibility features can lead to frustration (Collier and Kims, 2012). Ensuring AI-driven ordering systems are user-friendly for all customers is crucial. Understanding ease of use helps improve strategies for integrating AI.

McDonald's AI systems also analyse sales patterns and external factors such as weather and local events to ensure efficient service. While faster service is generally positive, some customers may feel rushed or pressured by the automated systems, which can affect overall satisfaction.

Finally, AI-powered customisation presents opportunities and challenges. By recommending foods customers are likely to enjoy, personalised suggestions can enhance the dining experience, but also raise privacy concerns. Some consumers may be sceptical about the use of their data, while others find AI advice helpful. Retaining customer confidence requires balancing privacy with personalisation.

Pictures of AI use at MacDonald

1 Self-Ordering Kiosk

Figure 2: McDonald's Self Ordering Kiosk (ref: Wall Street Journal, Kevin Hagen)

Source: https://www.wsj.com/articles/mcdonalds-table-service-fast-food-redefined-1479481171

2 *Mobile application*

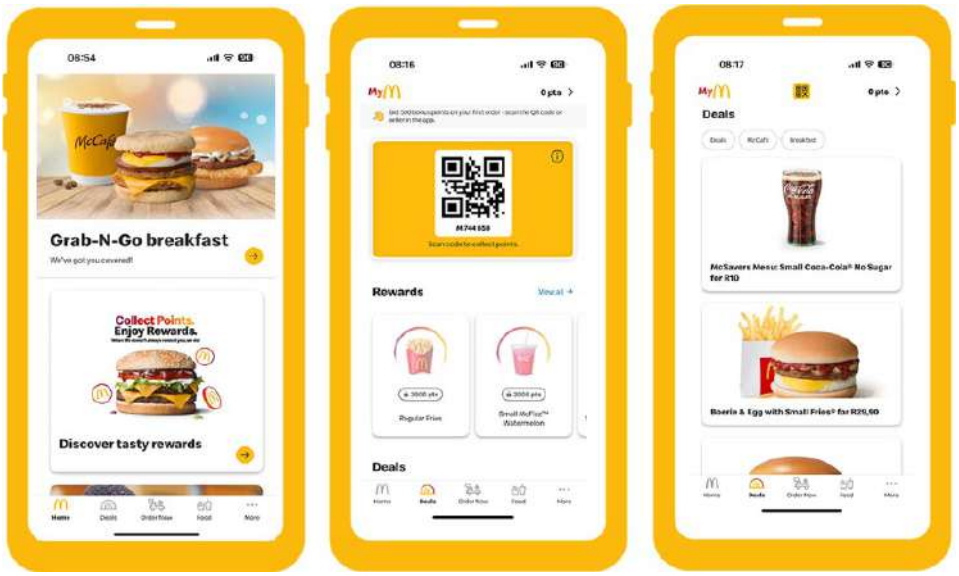

Figure 3: Mobile application of Macdonald

Source: https://www.mcdonalds.co.za/mymrewards

3 *Drive thru*

Figure 4: Mc drive thru

Source: Own source

4 *Robots*

Figure 5: Service Robots

Source: https://www.reddit.com/r/Slovenia/comments/rh31q5/v_meku_ti_po_novem_robot_pripelje_hrano/

2.5 AI Integration in Other Fast-Food Chains (Comparative Look)

Other leading fast-food brands are also using AI; for example, Pizza Hut uses AI to predict demand for different pizza types. The company analyses ordering data along with factors such as weather, weekdays, and seasons to forecast which flavours are likely to be most popular in the future. KFC is actively using AI to improve its services. In partnership with Manthan, KFC centralises data from all aspects of its business, including dynamic demand, inventory management, e-commerce, and customer experience. AI allows KFC to analyse and make decisions in real time, which enables the company to adapt quickly to market changes and improve its customer service. This technology has already been implemented in over 600 KFC restaurants across Canada, helping the company to manage its operations more effectively.

AI personalises offers to customers by analysing their data, using facial recognition, chatbots, and personalised recommendations for events and trips. For example, the world's largest hotel chain, Marriott International, uses AI to offer its guests a mobile app called *Marriott Bonvoy*, which provides them with a personalised meal plan and allows them to order food and beverages

through the app (Batra & Chatterji, 2024). Major hotel chains also use an app called *Hilton Honors* for ordering food and beverages, which uses neural networks to provide personal recommendations (reviewed in the *Journal*).

2.6 Benefits of AI

The fast-food industry has always been known for offering affordable and convenient meals. However, with more companies embracing the deployment of AI technology, operations have reached a new level of efficiency. The QSR industry is now using automation that enables companies to improve customer experience, reduce errors, and increase efficiency. With self-ordering machines and kiosks, customers can enjoy a more personalised experience without waiting in long queues. This not only benefits the customer, but also the retailer. As technology continues to spread, its application in the fast-food sector will also spread to franchise level. Various large QSR chains are already using AI driven technology to expand their business, and this trend is expected to continue.

A study was carried out to assess the impact of AI on consumer demand in fast-food franchises. It proposed the introduction of certain AI-based vending machines into franchises. Through the use of AI, repeat orders can be processed more quickly, and customers can engage with them by modelling live interactions. Furthermore, there are advantages in reducing staff management costs and improving customer service processes. AI tools also help companies to interact further with their customers, also offline and online, by collecting data and identifying the frequency of actions that trigger specific types of service. According to the writers of the document, it is relatively simple to implement such a mechanism in businesses. Research shows that the service will be more personalised and therefore more valuable to the customer. The study concluded that a business model aimed at increasing the profit of QSR chains without lowering the level of service can be developed ((Lin, 2023).

By introducing AI, companies can reduce their staff costs while improving their services and products they offer, thus providing consumers with a better and more diverse experience. Investments in this technology will lead to a more positive outcome for all stakeholders. (Patel, 2023) analysed McDonald's in the context of AI. Findings revealed that most customers have positive feelings while interacting with AI tools, but are disappointed by the reduced human interaction. The study claims that fast-food restaurants should try to find a middle ground between the services they provide and AI technologies. AI can help restaurants improve the

quality of their services; nonetheless it is also important to consider the needs of their customers in genuine dialogue.

The team at Domino's is well known for developing AI techniques:

➢ ***Enhanced Efficiency and Speed***

AI systems help fast-food restaurants streamline their operations, from order processing to food preparation. Automation reduces human error and allows faster service, helping restaurants meet the demands of high-volume traffic, especially during peak hours.

➢ ***Cost Reduction***

By automating repetitive tasks and optimising labour, AI reduces operational costs in fast-food chains. Robots and AI systems require upfront investment, but over time they reduce the need for human labour, which is particularly appealing in an industry where labour costs are a significant expense.

➢ ***Waste Reduction***

According to estimates from the Food and Agriculture Organisation, millions of people go hungry and at least one in nine suffer from undernourishment each year due to approximately one-third of food being wasted annually. Food that has not been consumed is responsible for between 8% and 10% of global greenhouse gas emissions. Economic losses from food losses and waste amount to over $940 billion annually. Reducing waste can be achieved through precise demand forecasting, demand sensing, improved food storage techniques, and supply chain management optimised with AI, particularly for perishable items.

➢ ***Improved Customer Satisfaction***

With AI-driven personalisation, customers receive more relevant offers and recommendations. AI-powered kiosks and voice assistants also reduce waiting times and order errors, leading to an overall improved customer experience, which is critical in the fast-paced world of fast-food.

3 Customer Satisfaction and AI usage

Customer satisfaction has always been a keystone of success in the restaurant industry. A satisfied customer is more likely to return, recommend a business to others, and develop long-term brand loyalty. Traditionally, satisfaction in the QSR sector has been influenced by factors such as service speed, food quality, order accuracy, and overall convenience. In recent years, AI has introduced new ways to improve these aspects, from automating customer interactions to predicting preferences based on past orders. Despite these advancements, it is still not clear whether artificial intelligence is improving customer satisfaction as effectively as intended or whether it is creating new challenges that need to be addressed.

3.1 Dimension of Customer Satisfaction in AI Integration

Customer satisfaction is the decision a consumer makes in relation to their sense of fulfilment regarding choices about the purchase and use of specific products. Satisfaction results when perceived performance meets expectations (Oliver, 1997).

Customer satisfaction is a subjective evaluation of the purchasing experience, mainly influenced by the performance of the product and perceived qualities. Basically, it indicates the extent to which the consumer's expectations of services or products are met. Confirming customer loyalty is important for industries to confirm their success. This includes assessing how consumers are content with their interaction with a particular product or service. By increasing customer satisfaction, businesses can increase sales, profitability, and customer loyalty, ultimately leading to sustainable economic prosperity. Customer satisfaction is a key factor in determining whether businesses succeed in the long term and remain competitive. While AI improves efficiency and customer satisfaction, its integration raises concerns about its impact on employee roles. Automation in self-service kiosks and AI-driven order-taking may reduce the need for human cashiers and service staff (Dixon, Freeman, & Toman, 2009).

One of the factors affecting customer satisfaction is the accuracy of the order. Customers are more likely to have a positive experience when they get exactly what they ordered. AI-based systems such as automated ordering kiosks and voice recognition are designed to minimise human error and increase accuracy. However, errors can still arise from technical faults, misinterpretations, or software limitations. Whether AI really improves the accuracy of orders is crucial to determining its effectiveness in improving rankings.

Another main cause of customer satisfaction within the fast-food sector is the speed of service. AI can help to reduce waiting times by optimising kitchen workflow, anticipating demand, and making ordering more efficient.

These factors can be broken down into specific dimensions to measure customer satisfaction effectively.

- **Order Accuracy:**

The degree to which the AI system accurately processes and delivers the customer's order without errors.

Accurate orders are a critical component of satisfaction, as mistakes can directly affect customer experience (Pizam & Ellis, 1999).

- **Service Speed:**

The time it takes for the AI system to process an order and for the customer to receive their food.

Service speed, especially during peak hours, is one of the primary factors influencing satisfaction in fast-food environments (Ladhari, 2009).

- **Ease of Use:**

How user-friendly and intuitive the AI system is, whether at the kiosk or on mobile apps. This includes how easily customers can navigate menus, place orders, and customise their meals.

Ease of use is a critical factor in the adoption of self-service technologies, with intuitive interfaces leading to higher satisfaction (Meuter, 2000).

- **Overall Experience:**

The overall perception of the AI-assisted service, including elements such as personalisation, convenience, and the ability to customise orders.

Overall satisfaction with self-service technology is often shaped by a combination of perceived benefits such as convenience, efficiency, and control.

3.2 Customer Attitudes Towards AI Usage

Understanding customer attitudes towards the use of AI in hotels and restaurants is the subject of research that is increasingly important in the hospitality sector. Attitudes are long-term, in-

depth assessments of people, objects, and circumstances. Consumers' expectations of the results of using (and interacting with) technologies seem to drive their confidence in smart agents. Therefore, efforts to increase consumer reliance on AI—i.e. consumer acceptance of AI recommendations—must consider these expectations. This makes it essential to segment the customer base and build customer profiles according to their attitudes towards AI (Arachch & Samarasinghe, 2023).

Those who believe that robot-assisted services are suitable tend to have a positive view of and intention to use robots. (Kwinda & Wakelin-Theron, 2024) found that motivated consumer ingenuity can improve customer attitudes towards technology and increase their willingness to engage with robots in restaurants. The use of robotic technology in restaurants has given new visibility to the activities of the restaurant sector. The robots were first introduced by taking orders from the vending machines. A well-known pizza company is using a robot with voice recognition and AI capabilities to take orders from its clients (Erdem, Barakazı, & Şeker, 2023). Moreover, the fact that the pandemic caused by the Covid-19 virus is communicable has led to an increase in the number of robotic services. The recent attention of people to the issue of cleanliness and hygiene has increased owing to dangerous viruses and infectious diseases. People are therefore more confident when interacting with robot vehicles that are not contaminated by diseases or hazardous materials.

Having a positive perception of AI improves not only the user experience, but also the level of enjoyment of technology. Customers who are positive about AI-powered services are more likely to be satisfied with their experience in these facilities. Customer attitudes towards AI-powered services such as check-in and concierge services and overall levels of customer happiness were strongly correlated.

3.3 Ethical and Social Implications of AI

Although the integration of artificial intelligence into the fast-food sector is groundbreaking, it raises important ethical and social concerns that require careful attention. One of the leading issues is data security and privacy, particularly in Slovenia, where strict GDPR rules govern how companies collect and use customer information. McDonald’s Slovenia employs AI to tailor menu suggestions and enhance service efficiency, necessitating the analysis of purchase histories, location information, and consumer behaviour. However, this approach could undermine consumer trust if not handled with transparency. For example, although personalised

promotions can boost customer interaction, they also involve intrusive data monitoring, which may clash with Slovenian consumers' privacy expectations. To address this issue, McDonald's anonymises data and provides clear opt-out mechanisms, yet balancing personalisation with privacy remains an ongoing challenge.

Another serious concern is the impact of AI on employment. AI technologies such as self-service kiosks and AI-driven order systems diminish the requirement for cashiers, possibly relocating entry-level workers. In Slovenia, where employment is culturally valued in small and local businesses, this change could incite public backlash. Nevertheless, research suggests new roles in technical support, data analysis, and customer service will emerge through AI adoption, requiring skills programmes to prepare employees for growing responsibilities. McDonald's Slovenia has announced digital literacy training for employees, ensuring they remain integral to operations despite automation.

Socially, AI also risks distancing demographics resilient to technological change. Customers who are older or who have limited digital literacy may find AI interfaces unclear, which can result in frustration and reduced satisfaction. Additionally, over-dependence on AI could lessen the human touch that nurtures emotional connection in service industries. Since hospitality is deeply rooted in personal interaction, maintaining a balance between AI efficiency and human empathy is crucial in Slovenia.

Eventually, the ethical placement of AI in fast-food centres on transparency, inclusivity, and accountability. By prioritising GDPR compliance, investing in employee reskilling, and designing user-friendly systems that respect cultural norms, McDonald's Slovenia can harness AI's benefits while mitigating its risks. This approach not only safeguards consumer trust but also ensures that technological progress aligns with societal values.

4 McDonalds and the Fast-Food Industry in Slovenia

4.1 McDonald's in Slovenia

McDonald's first entered Slovenia in 1994, becoming one of the first international fast-food chains to establish a presence in the country after the breakup of Yugoslavia (McDonald's, 2022). At present, a total of 25 McDonald's restaurants operate in the Republic of Slovenia: Ljubljana (7), Maribor (5), Celje (2), Kranj, Velenje, Koper, Novo Mesto, Domžale, Ptuj, Nova Gorica, Murska Sobota. Over the years, McDonald's has become a popular brand in Slovenia, offering a familiar fast-food experience while adapting its menu to meet the tastes and preferences of Slovenian consumers.

For instance, McDonald's in Slovenia offers menu items tailored to local tastes, such as the Kremšnita dessert (a traditional Slovenian cream cake) during seasonal promotions. While McDonald's Slovenia offers standard global menu items such as the Big Mac and McChicken, it also adapts to local tastes. For instance, the McCountry sandwich, originally introduced in Croatia, was added to the Slovenian menu and, after a brief removal, reinstated as a regular item in March 2021. The Slovenian menu also includes unique offerings such as the Špinača sir burger (spinach and cheeseburger), catering to regional preferences.

Embracing digital innovation, McDonald's Slovenia has implemented self-service kiosks and a mobile application to enhance the customer experience. The app includes a loyalty programme in which customers earn points for each purchase that can be redeemed for free menu items. For example, collecting 300 points allows a customer to receive a medium fries, while 450 points can be exchanged for a Big Mac.

In line with global sustainability goals, McDonald's Slovenia has undertaken initiatives to reduce environmental impact. The company is transitioning to sustainable packaging materials, aiming for 100% sustainable packaging by 2026. Furthermore, McDonald's Slovenia has partnered with the Slovenia Forest Service in a three-year project focused on environmental restoration, demonstrating a commitment to corporate social responsibility.

4.2 Fast-Food Industry in Slovenia

The QSR industry in Slovenia is an evolving component of the broader hospitality and food sector. If follows global trends, such as increasing consumer demand for digital and mobile ordering platforms and the implementation of AI in service operations.

In Slovenia, the food, beverages, and tobacco manufacturing sector represented 1.46% of value added in GDP in 2010 and 1.65% of total employment (SORS, 2012). According to the value-added contribution to total manufacturing, the food industry is the third largest sector in Slovenia. However, in recent years the importance of the food industry has been declining in all macroeconomic indicators, as in 1998 the food industry contributed about 2.8% of Slovenian GDP and almost 2.5% of total employment.

According to the official standard classification of activities in Slovenia, restaurants fall under the category *Food and beverage service activities*, which, together with accommodation activities, forms the broader category *Accommodation and food service activities*. Food and beverage service activities include three subsectors: restaurants and mobile food service activities; event catering; beverage service activities (see https://www.stat.si). The food and beverage sector is a vital part of the tourism industry, since tourists and visitors must eat, and food is recognised as an indispensable tourism product. Approximately one-third of travel expenditure can be attributed to food consumption (Bélisle, 1983), and this figure may be even higher today. A closer look at the Slovenian food and beverage sector reveals that in 2018, there were 6,597 business entities (5.4 % of all business entities), employing 18,622 employees (3.41% of all employees). The largest and most important part of this sub-sector is restaurants and inns, which represent 55.87% of all business entities in the food and beverage sector (see http://www.ajpes.si).

Slovenia's QSR industry has witnessed consistent growth over the past decade. According to (Statista, 2024), revenue in the restaurant and mobile food service sector is expected to reach approximately USD 1.213 billion by 2025. This growth is driven by urbanisation, increasingly on-the-go lifestyles, and a growing preference for affordable, fast, and accessible food options. Major urban areas such as Ljubljana and Maribor act as economic and cultural hubs, hosting a dense concentration of fast-food establishments that range from global franchises to independent vendors.

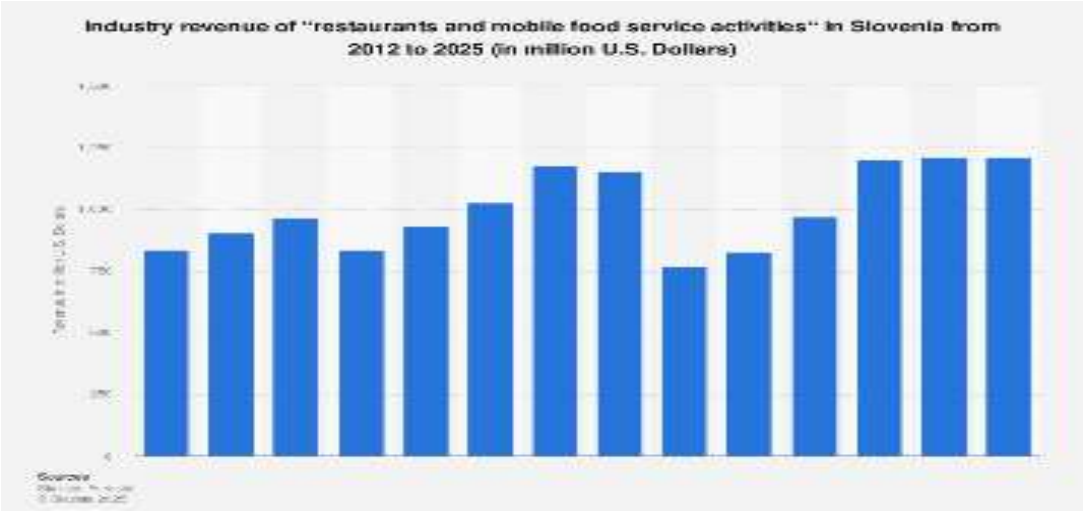

Figure 6: Industry revenue of "restaurants and mobile food service activities" in Slovenia from 2012 to 2025

Source: https://www.statista.com/forecasts/396397/restaurants-and-mobile-food-service-activities-revenue-in-slovenia

Moreover, the online food delivery segment in Slovenia is expanding rapidly. In 2024, the sector was forecasted to generate around USD 21.69 million, with a projected compound annual growth rate (CAGR) of 4.02%, reaching USD 26.42 million by 2029 (Statista, 2024). This surge corresponds with broader digitalisation in consumer behaviour and reflects increasing comfort with mobile apps, online payment systems, and AI-driven food ordering recommendations (Fusté-Forné, 2021).

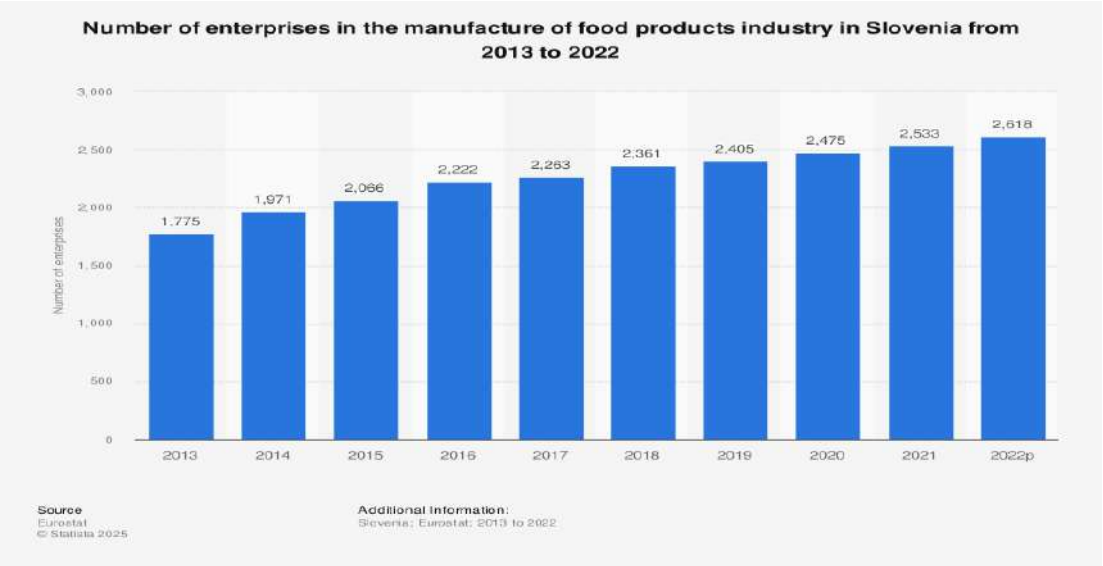

Figure 7: Number of enterprises in the manufacture of food products industry in Slovenia from 2013 to 2022

Source: https://www.statista.com/statistics/354472/number-of-enterprises-in-the-food-products-manufacturing-sector-in-slovenia/

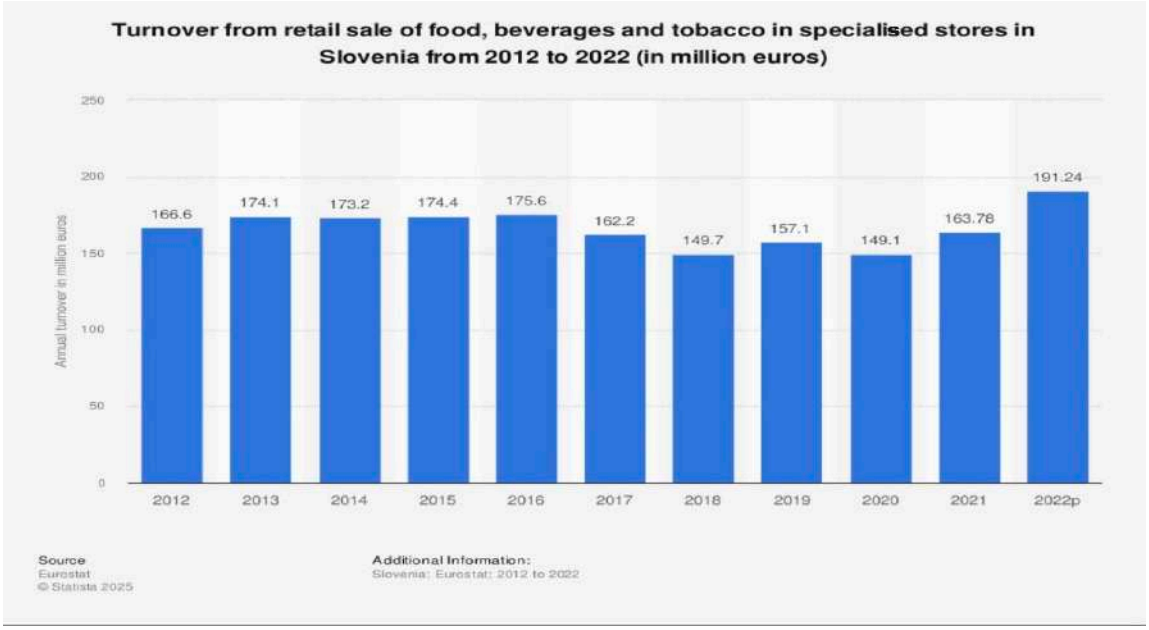

Figure 8: Turnover from retail sale of food, beverages, and tobacco in specialised stores in Slovenia from 2012 to 2022(in million euros)

Source: https://www.statista.com/statistics/531920/slovenia-turnover-food-industry-trade-sector/

Slovenia's fast-food industry has grown consistently over the past decade, with the number of enterprises increasing from about 1,775 in 2013 to an estimated 2,618 in 2022. Industry revenue from restaurants and mobile food-service activities has fluctuated but follows an overall upward trajectory, recently approaching US $1.7 billion. Meanwhile, turnover in specialised food, beverage, and tobacco retail remained relatively stable throughout the 2010s, dipped during 2020's disruption, and rebounded sharply to roughly €191 million in provisional 2022 figures (Statista, 2024).

Several international fast-food chains operate successfully within Slovenia. McDonald's, a key player in the Slovenian market since 1994, operates more than 20 locations across the country, primarily in Ljubljana and Maribor. McDonald's Slovenia has been at the forefront of AI implementation, particularly through the integration of self-service kiosks, AI-assisted drive-thru systems, and mobile ordering platforms that streamline customer interaction and enhance service efficiency.

Alongside multinational brands such as KFC, Subway, and Burger King, local vendors continue to maintain a significant presence by offering traditional Slovenian fast-food items such as burek, čevapčiči, and artisanal sandwiches. This coexistence demonstrates a hybridised fast-food model, where technological innovation and cultural culinary preferences converge

The Slovenian fast-food industry is gradually integrating digital and AI technologies, although the pace remains more conservative compared to Western European markets. Common digital tools include self-service kiosks, QR-code-based ordering, and digital menu boards, which are becoming standard features in larger franchises. AI is also being adopted in areas such as predictive analytics for inventory and staffing, personalised marketing, and voice-activated ordering systems (Grewal, Hulland, Kopalle, & Karahanna , 2019).

Despite the advantages of AI, its implementation requires careful calibration. Slovenian consumers highly value accuracy, speed, and politeness in service delivery, but they also expect a degree of personal interaction that AI systems may not fully replicate. Therefore, the success of AI in this sector will depend on user-friendly, culturally sensitive, and contextually appropriate integration strategies that complement, rather than replace, the human touch.

Figure 9: Fast-food Menu in Slovenia

Source: https://www.alamy.com/fast-food-menu-in-slovenia-image382696331.html

Figure 10: The Best Fast-Food in Piran

Source: https://www.tripadvisor.com/Restaurants-g274876-Piran_Slovenian_Istria_Slovenian_Littoral_Region.html

5 Research Methodology

For the conduct of the study, both quantitative and qualitative techniques were employed to gather and analyse information. Every discipline has its own set of rules and procedures that guide how research is conducted and evaluated. In this study, a survey research method was used to test the association of variables with hypotheses, and the data were subsequently analysed. The survey employed techniques based on quantitative research which uses numerical analysis and allows for straightforward data interpretation. The main aim of quantitative research is to develop and use mathematical models, theories, and hypotheses relevant to the subject of research.

5.1 Target Population

The target population for this study consists of McDonald's customers in Maribor, Slovenia, who have interacted with AI-driven services such as self-service kiosks, AI-powered drive-thru systems, and digital menu recommendations. Participants come from different age groups, backgrounds, and levels of familiarity with AI, providing insights as to how AI affects customer satisfaction. The study included both frequent and occasional McDonald's visitors to capture a diverse range of experiences. Additionally, a company representative from McDonald's Slovenia who works directly with AI systems was interviewed to provide perspective on how these technologies are implemented and their effect on customer experiences.

5.2 Sampling Methods

A convenience sampling method was used to select respondents for the study. In convenience sampling, participants are chosen based on their availability, without a specific recruitment pattern. Respondents were approached in public places, markets, or in the workplace.

5.3 Sample Size

The researcher interviewed 101 McDonald's customers during peak hours at Maribor at the beginning of 2025 to assess AI's impact on satisfaction. The sample included participants of different age groups (18-55 and above). In addition, a company representative from McDonald's Slovenia who works directly with AI systems was interviewed to provide insight into their use and impact on customer experiences. Although limited in scope, this approach provided valid preliminary data on customer interactions with AI ordering systems, while maintaining ethical standards through voluntary participation, anonymity, and compliance with

the General Data Protection Regulation (GDP). The results offer a foundation for future research and acknowledge limitations such as geographical concentration and selection bias inherent in small-scale academic studies.

5.4 Tools for Data Collection

A structured interview guide was prepared, consisting solely of close-ended questions. Data were collected both in person and through questionnaires, with respondents' consent obtained before participation. If a participant did not understand a question, the researcher provided guidance. The researcher ensured politeness through the data collection process.

5.5 Data Analysis

The data analysis was conducted manually using Microsoft Excel to generate basic frequency tables, providing insight into the frequency of specific survey responses. This method allowed for a clear presentation of customer opinions and experiences with AI services at McDonald's Maribor. Additionally, an interview with a company representative was reviewed and summarised to support and contextualise the survey findings. No advanced statistical software or coding techniques were used; interpretation was based on direct observation.

6 RESULTS

This chapter presents the results of the research. The chapter is divided into parts. Firstly, the frequency distribution of respondents and their answers is presented. In the second part, mean and correlation results are presented to support the hypothesis.

Table 1: Percentage Distribution of Respondents Regarding Age

Age group	N	Percent (%)
18–25	16	16.0
26–34	24	24.0
35–44	26	26.0
45–54	20	20.0
55 and above	14	14.0
Total	**100**	**100**

Source (Own Source)

Table 1 shows that most respondents were between the ages of 26–34 and 35–44 (50%) while only 14 percent were 55 and above. The results indicate that most respondents are familiar with AI services and their uses.

Table 2: Percentage Distribution Regarding Respondent Gender

Gender	Frequency	Percent (%)
Male	**64.0**	64.0
Female	36.0	36.0
Total	**100**	**100.0**

(Own Source)

The above table depicts the distribution of respondents regarding gender. The results show that 64 percent of respondents were male.

Table 3: Percentage Distribution of Respondents Regarding Regions

Regions	Frequency	Percent (%)
Podravje	35	35.0
Pomurje	12	12.0
Savinjska	7	7.0
Koroška	6	6.0
Zasavje	4	4.0
Gorenjska	6	6.0
Dolenjska	4	4.0
Osrednjeslovenska	11	11.0
Goriška	3	3.0
Obala in Kras	4	4.0
I'm not from Slovenia	8	8.0
Total	**100**	**100.0**

Source: (Own Source)

Table 3 shows that most of the respondents were from the Podravje and Pomurje region (47%) while only 3 percent were from Goriška. This is logical, given that the questionnaire was conducted in McDonald's Maribor.

Table 4: Frequency Distribution of Respondents Regarding Visits to McDonald's

Visting McDonald's	N	Percent (%)
DAILY	14.0	14.0
2-3 times per week	24.0	24.0
Once a week	32.0	32.0
Once a month	22.0	22.0
Rarely	8.0	8.0
Total	**100.0**	**100.0**

Source: (Own Source)

The above table depicts that the majority of respondents visit McDonald's frequently (once a week – 32%). The results indicate that they are regular customers and often use McDonald's AI services.

Table 5: Frequency Distribution Regarding Type of AI Service Usage

Type of AI services	Frequency	Percent (%)
Self-service kiosk	20	20.0
Mobile app	32	32.0
AI- powered drive-thru	26	26.0
Digital menu recommendation	16	16.0
I do not use	6	6.0
Total	**100**	**100.0**

Source: (Own Source)

Table 5 shows that AI services are used by the respondents. The results indicate that majority of respondents use AI-based services while only 6 percent do not. From this, we can conclude most respondents are aware of AI services and their applications.

Table 6: Percentage Distribution Regarding Satisfaction with Overall Experience

Satisfaction	N	Percent (%)
Neutral	4	4.0
Satisfied	24	24.0
Very Satisfied	72	72.0
Total	**100**	**100.0**

(Own Source)

Table 6 shows that majority of respondents were very satisfied (72%) with their overall experience and AI use at MacDonald, while only 4 percent people were neutral. This suggests that most respondents were happy and satisfied while using AI-assisted services.

Table 7: Percentage Distribution of Respondents Regarding Satisfaction Towards AI-Based Services

Satisfaction with AI uses	Frequency	Percent (%)
Very Unsatisfied	6	6.0
Unsatisfied	2	2.0
Neutral	10	10.0
Satisfied	34	34.0
Very Satisfied	48	48.0
Total	**100**	**100.0**

Source: (Own Source)

The above table demonstrates that 82% of respondents are satisfied and very satisfied with the use of AI services, while only 8 percent were dissatisfied. The reasons for dissatisfaction were not collected, but they may include order inaccuracies or unfamiliarity with AI services.

Table 8: Percentage Distribution of Respondents Regarding Use of AI While Ordering

AI use while placing order	Frequency	Percent (%)
Yes	80	80.0
No	20	20.0
Total	**50**	**100.0**

Source: (Own Source)

Table 8 depicts the distribution of respondents regarding use of AI in placing orders today. The majority of respondents used AI services when placing their orders. From these results, we can say that most customers use AI services to reduce waiting time and speed up services.

Table 9: Frequency Distribution of Respondents Regarding Wait Times for Ordering

Waiting time	Frequency	Percent (%)
1-3 minutes	16	16.0
4-5 minutes	52	52.0
6-10 minutes	18	18.0
More than 10 minutes	14	14.0
Total	**100**	**100.0**

Source: (Own Source)

Table 9 shows the distribution of respondents regarding waiting time while placing and receiving orders. The results indicate that most respondents waited between 4–5 minutes. From this, we can infer that AI helps reduce wait times and contributes to customer satisfaction, although no data on waiting times prior to AI implementation were collected.

Table 10: Frequency Distribution of Respondents Regarding Order Accuracy

Order accuracy	Frequency	Percent (%)
Completely Incorrect	2	2.0
Mostly Incorrect	8	8.0
Neutral	10	10.0
Mostly Accurate	22	22.0
Completely Accurate	58	58.0
Total	**100**	**100.0**

Source: (Own Source)

The above table shows percentage distribution of respondents regarding order accuracy. The majority of respondents received accurate orders (mostly, completely – 80%). These results suggest that AI-based services improve order accuracy, which supports overall customer satisfaction at McDonald's.

Table 11: Frequency Distribution of Respondents Regarding Ease of Use of AI Services

Ease of use in Using AI	Frequency	Percent (%)
Very Difficult	4	4.0
Difficult	14	14.0
Neutral	12	12.0
Easy	34	34.0
Very Easy	36	36.0
Total	**100**	**100.0**

Source: (Own Source)

The above table depicts the distribution of respondents regarding ease of use of AI services. Most respondents found AI services simple and easy to use (easy or very easy – 70%). These results indicate that McDonald's integrated AI services were easy to understand and use.

Table 12: Percentage Distribution of Respondents Regarding Overall Experience with AI Usage for Ordering

Overall experience with AI	N	Percent (%)
Dissatisfied	10	10.0
Neutral	10	10.0
Satisfied	30	30.0
Very Satisfied	50	50.0
Total	**100**	**100.0**

Source: (Own Source)

The above table shows the percentage distribution of respondents regarding overall experience with AI. Most respondents are satisfied with the use of AI services (satisfied or very satisfied – 80%) while 10 percent were dissatisfied. Reasons for dissatisfaction or neutrality (20%) were not collected.

Table 13: Percentage Distribution of Respondents Regarding Use of AI vs Traditional Methods Of Ordering

Use of AI over traditional	N	Percent (%)
Disagree	10	10.0
Neutral	12	12.0
Agree	28	28.0
Strongly Agree	50	50.0
Total	**100**	**100.0**

Source: (Own Source)

The table above shows the percentage distribution of respondents regarding the use of AI over traditional methods of ordering. The majority of respondents (78%) indicated that they would use AI services to order, while only 5 percent said they prefer traditional ordering methods.

Based on an interview with a company representative from McDonald's Slovenia, the following detailed insights offer a comprehensive understanding of how AI technologies influence customer satisfaction and operational practices within the fast-food context in Slovenia.

The representative confirmed that AI has become a key strategy in McDonald's operations to enhance customer satisfaction. Current AI technologies include self-service kiosks, voice-recognition ordering at drive-thrus, and AI-powered digital menu boards that adapt based on time of day, weather, and customer preferences. These systems streamline the ordering process, reduce human error, and offer personalised recommendations, thereby enhancing the overall customer experience. According to the representative, these innovations align with global McDonald's trends but are implemented gradually in Slovenia to ensure compatibility with local customer expectations and behaviours.

One key impact is the reduction in customer waiting time, especially during peak hours. The representative stated that self-service kiosks alone have reduced queue lengths by 15–20% during lunch hours. This reduction is attributed to the parallel processing of customer orders—kiosks handle multiple customers simultaneously, unlike traditional cashier stations. Furthermore, customers can place orders at their own pace, minimising pressure and reducing errors. This also increases satisfaction among both customers and staff, as employees can focus on food preparation and service instead of managing long lines.

Customer feedback has played a critical role in refining these AI tools. Initial feedback from older users highlighted usability challenges such as small text, confusing navigation, or difficulty completing payments. In response, kiosk interfaces were modified with larger fonts, simplified icon layouts, and clearer instructions. Younger customers ‘s feedback focused on speed and digital payment integration, prompting the expansion of mobile payment options, including Apple Pay and local banking apps.

In terms of inclusivity and accessibility, the representative mentioned that AI tools support multiple languages, including Slovenian and English, and staff are trained to assist customers who may struggle with digital interfaces. Additional measures, such as voice-guided instructions and screen-reading features, are being explored to improve accessibility for visually impaired customers. These steps ensure that technological innovation does not exclude any demographic group.

Operationally, AI is also used for backend functions such as inventory forecasting and staff scheduling. Algorithms analyse historical sales data, seasonal trends, and real-time demand to predict inventory needs and recommend staffing levels. This has led to a reduction in food waste by approximately 10% and improved labour cost efficiency. The company representative shared that AI-driven scheduling helps managers match staffing to expected customer flow, improving service during busy periods and reducing costs during slower hours.

The representative emphasised that while AI brings efficiency, the company remains mindful of maintaining the human touch. McDonald’s Slovenia uses a hybrid service model where customers can choose between using digital kiosks or interacting with staff at the counter. This ensures that customers who prefer face-to-face communication, especially older customers or those unfamiliar with technology, still receive personalised service. Balancing digital innovation with traditional customer service is considered essential for maximising satisfaction.

Staff training has evolved to accommodate AI integration. Employees receive training not only in food safety and customer interaction but also in assisting customers with kiosks and troubleshooting common issues. This includes simulations of real customer interactions, education on digital hygiene, and basic understanding of GDPR compliance. According to the representative, this training ensures that staff members are confident and capable of supporting customers, which in turn enhances customer trust in the new technology.

Key performance indicators for evaluating AI success include customer satisfaction scores from feedback forms, order accuracy rates, kiosk usage rates, queue times, and app download

numbers. These indicators are reviewed monthly and used to make iterative improvements in both front-end and back-end systems.

However, challenges remain. The representative acknowledged that AI implementation must comply with GDPR regulations for customer data collection and storage. Technical maintenance issues such as kiosk breakdowns or software glitches, can disrupt service and frustrate customers. Adoption of AI technologies is slower in rural areas where digital literacy is lower and customer resistance to automation is higher. These insights underscore the importance of ongoing adaptation and localised implementation strategies.

Looking ahead, McDonald's Slovenia plans to expand AI capabilities by testing features like multilingual voice-activated ordering, dynamic promotions based on real-time analytics, and further personalisation through customer purchase history while ensuring data privacy. AI-based kitchen management systems are also being piloted to optimise cooking sequences and reduce preparation time. These advancements are expected to enhance operational efficiency and customer satisfaction, but the representative reiterated the importance of doing so without compromising the human element of the dining experience.

In summary, insights from the company representative reinforce the central role of AI improving customer satisfaction, operational efficiency, and personalised service at McDonald's Slovenia. The combination of digital innovation, responsive feedback mechanisms, staff support, and a commitment to inclusivity provides a strong foundation for AI integration in the fast-food industry. However, the successful future of such technologies will depend on their adaptability and ability to remain customer-centric.

7 CONCLUSION

The research findings, based on survey responses from 100 McDonald's customers in Maribor, Slovenia, along with insights from an interview with a company representative, confirm all three proposed hypotheses regarding the impact of AI technologies on customer satisfaction.

Hypothesis 1: AI-powered technologies improve customer satisfaction at McDonald's. This hypothesis is strongly supported by the data. Table 6 shows that 72% of respondents were *very satisfied* with their overall experience, and Table 7 reveals that 82% of respondents were *satisfied or very satisfied* specifically with AI services. Furthermore, Table 12 confirms that 80% of respondents reported satisfaction with their order experience using AI, indicating a consistently high level of customer contentment linked to AI technologies. These results, combined with qualitative insights from the McDonald's representative—who emphasised improvements in speed, order personalisation, and service efficiency—validate the hypothesis that AI significantly enhances customer satisfaction.

Hypothesis 2: AI-powered systems reduce the time customers spend waiting in line. Findings from Table 9 indicate that over half of the respondents (52%) received their orders within 4–5 minutes, which suggests reduced waiting times, especially during peak hours. The company representative further confirmed that AI tools like self-service kiosks have decreased wait times by 15–20% during busy periods. This data validates the hypothesis that AI systems contribute to faster service delivery, which directly impacts customer satisfaction.

Hypothesis 3: AI usage improves order accuracy, leading to higher customer satisfaction. Table 10 supports this hypothesis, with 80% of respondents stating that their orders were either *mostly* or *completely accurate.* This high level of accuracy shows that AI minimises human error in order processing. Combined with the representative's feedback on the role of predictive technologies and smart menu recommendations, this accuracy contributes significantly to customer trust and satisfaction.

Suggestions for the Future

AI tools should continue to be adapted for users with lower digital literacy, including older customers. Adding voice-guided interfaces or screen reading options can make systems more inclusive. On-site digital help or short tutorials can assist first-time users in navigating kiosks and apps, reducing frustration and enhancing satisfaction. Regular collection of user feedback will help improve the design and functionality of AI systems. Future surveys could also explore

reasons for dissatisfaction more directly. AI could be used further to personalise menus and promotions based on customer history or preferences, increasing loyalty and engagement. Continuous tracking of KPIs, such as order accuracy, queue times, and kiosk usage, will help refine AI deployment strategies and maintain service quality.

In conclusion, all three hypotheses were confirmed. AI technologies at McDonald's in Maribor have demonstrably improved customer satisfaction by enhancing order accuracy, reducing wait times, and offering a smoother digital experience. With thoughtful adaptation and continuous improvement, AI can further enrich the fast-food service experience in Slovenia.

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ATTACHMENT

Vprašalnik

Dobrodošli! Vabimo vas k sodelovanju v raziskavi z naslovom Vpliv umetnega Inteligenca o zadovoljstvu strank v McDonald'su.« Prosim, delite svoje iskreno, anonimne povratne informacije o storitvah, ki jih poganja AI - traja približno 5 minut (samo 13 kratka vprašanja), vsi odgovori pa bodo zaupni.

Q1. Koliko si star?

a) 18-25
b) 26-34
c) 25-44
d) 45-54
e) 55 and above

Q2. Katerega spola si

a) Moški
b) Ženska

***Q3. Iz katere slovenske pokrajine prihajate**?*

a) Podravje
b) Pomurje
c) Savinjska
d) Koroška
e) Zasavje
f) Gorenjska
g) Dolenjska
h) Osrednjeslovenska
i) Goriška
j) Notranjska
k) Obala in Kras
l) I'm not from Slovenia

Q4. Kako pogosto obiščete McDonald?

a) dnevno

b) 2-3 krat na teden

c) Enkrat na teden

d) Enkrat na mesec

e) Redko

Q5. Katero vrsto storitve, ki temelji na AI, najpogosteje uporabljate v McDonald'su?

a) Self-service kiosk

b) Mobile app

c) AI-powered drive-thru

d) Digital menu recommendation

e) Ne uporabljam

Q6. Koliko ste danes zadovoljni s svojo splošno izkušnjo v McDonald'su?

a) Zelo nezadovoljen

b) Nezadovoljen

c) Nevtralno

d) Zadovoljen

e) Zelo zadovoljen

Q7. Kako zadovoljni ste s storitvami, ki jih poganja AI (npr. samopostrežni kioski, mobilno naročanje)?

a) Zelo nezadovoljen

b) Nezadovoljen

c) Nevtralno

d) Zadovoljen

e) Zelo zadovoljen

Q8. Ali ste danes za oddajo naročila uporabili storitev, ki temelji na umetni inteligenci (npr. samopostrežni kiosk, mobilna aplikacija)?

a) Ja

b) Ne

Q9. Kako dolgo ste čakali v vrsti, preden ste oddali naročilo?

a) *1-3 minut*

b) *4-5 minut*

c) *6-10 minut*

d) *Vec kot 10 minut*

Q10. Ali je bilo vaše naročilo dostavljeno, kot ste zahtevali

a) *Popolnoma napačno*

b) *Večinoma nepravilno*

c) *Nevtralen/brez mnenja*

d) *Večinoma natančno*

e) *Popolnoma natančno*

Q11. Kako enostavna je bila za vas uporaba storitve AI?

a) *Zelo težko*

b) *težko*

c) *Nevtralen/brez mnenja*

d) *Enostavno*

e) *Zelo Enostavno*

Q12. Kako zadovoljni ste bili s svojo splošno izkušnjo naročanja s sistemom, ki ga poganja AI?

a) *Zelo nezadovoljen*

b) *nezadovoljen*

c) *Nevtralen*

d) *Zadovoljen*

e) *Zelo Zadovoljen*

Q13. Ali bi za oddajo naročila raje uporabljali sistem, ki ga poganja AI, kot tradicionalno blagajno?

a) *Sploh se ne strinjam*

b) *Ne strinjam se*

c) *Nevtralen*

d) *Se strinjam*

e) *Popolnoma se strinjam*

Interview Questionnaire for McDonald's Company Representatives

1. *What was the primary motivation behind integrating AI technologies at McDonald's Slovenia?*
2. *How has customer feedback influenced AI service design or improvement?*
3. *Have you observed improvements in operational metrics (e.g., speed, accuracy)?*
4. *What are the key challenges in implementing AI services in your locations?*
5. *How do you measure customer satisfaction in relation to AI tools?*
6. *What future innovations are planned regarding AI in Slovenian McDonald's outlets?*
7. *What kind of staff training supports AI integration and customer interaction?*
8. *How has AI impacted cost-saving or operational efficiency?*
9. *How are inclusivity and accessibility ensured in AI systems?*
10. *Have you faced any resistance from customers toward AI usage?*
11. *What performance metrics are used to evaluate AI implementation success?*
12. *How does AI contribute to your marketing and personalised customer experience strategies?*