

CAN MACHINES HELP CUSTOMERS? Tudnak a gépek a vásárlóknak segíteni?

Exploring online customers' opinions towards an AI-
driven recommendation system
Az online vásárlók véleménye a mesterséges intelligencia
által vezérelt termék ajánló rendszerek felé

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I. Introduction

„Can machines think?“ is the famous quote from Alan Turing, British mathematician, and logician, who was one of the first scientist to write about the topic of artificial intelligence in his paper „Computing Machinery and Intelligence published in 1950.

In this research the topic of artificial intelligence will be examined and how it could be utilized in ecommerce web shops. Artificial intelligence opened many doors and possibilities and transformed all areas of business significantly. Many AI based solutions are already in use and available to the public or utilized by organizations internally. During this research, artificial intelligence’s application on an ecommerce website in the form of an AI driven recommendation system or Generative AI chatbot was examined. The topic was chosen as today artificial intelligence and digitalization has numerous implications for businesses. Users of AI could see its benefits of shortening processes and generating ideas, however, the implementation of AI on ecommerce storefronts is not yet widespread. However, in this sense AI could provide help to customers, result in increased personalization and enhanced customer journey, thus more satisfied customers.

The aim of the research is to uncover customer’s perception and attitudes towards AI and to discover on what type of website it would bring the highest value and uncover the way it is best to be implemented. The research had two main questions regarding customer’s opinion about AI driven recommendation systems or Generative AI chatbots and whether they would be willing to pay for these services. Furthermore, the second question aims to provide answer to what kind of web shops and how they should implement similar solutions to align with customer’s view. Along with the two focus questions 3 hypotheses were formulated to act as a guidance throughout the research process.

The research will first describe the theoretical background necessary to understand the underlying dynamics, including details about the evolution of ecommerce, the online customer journey, ecommerce digitalization strategies highlighting personalization and the rise of artificial intelligence and its application in ecommerce. Before diving deep into the analysis of the research the methodology will be explained. Here the thesis questions and hypotheses will be elaborated, and the chosen research method (survey and short interviews) will be explained. During the analysis the results from the two research methods will be analysed and detailed, using statistics and charts. Finally, in the last part conclusions will be drawn from the results of

the research and implications, limitations and further research areas will be listed. Lastly, the thesis will be concluded in a short summary about the research, methodology and findings.

II. Theoretical background

II.1. The evolution of E-commerce

Digitalization has significantly transformed the ecommerce environment, bringing an era where businesses leverage digital technologies to make processes more streamlined, enhance customer experiences, and extend their reach. (Okeke, Mbonu and Ndubuisi, 2018) The development of digitalization and e-commerce is a fascinating journey marked by key milestones and technological advancements along the way. E-commerce as a definition means any type of economic activity which is done with the help of electronic connections. In basic terms, electronic commerce or e-business can be described as the exchange or transaction of goods and services via electronic communication. (Tian and Stewart, 2011) (WIGAND, 1997)

II.1.1. The beginning of ecommerce – 1960s-1990s

E-commerce was enabled by the creation of electronic data interchange (EDI) in the 1960s and 1970s when transportation and retail companies wanted to facilitate electronic transactions and attempted to introduce paperless offices. (Benbasat et al., 2003) Later, only in the 1990s with the spread of usage of the Internet, the regular way of commerce was truly revolutionized. The first online transaction happened in 1994 when a Sting CD was sold online. (Fessenden, 2015) This was enabled by the Bulletin Board Systems (BBS) and CompuServe, they introduced the world to primitive online platforms used for information exchange and transactions over phone line. The Boston Computer Exchange the first e-commerce platform and CompuServe an electronic mall with coloured photos of products, established in the early 1980s laid the foundation to today's ecommerce websites. (Takeuchi, 2023)

In the early 1990s, the commercialization of the World Wide Web opened new possibilities for businesses. Amazon, one of the first of many opportunist companies, started as an online bookstore in 1995. (Hall, 2023) Shortly after, eBay, an online auction platform, made its debut. (Britannica, 2019) These platforms laid the foundation for the expansion of online retail, demonstrating the potential of the Internet for buying and selling goods.

II.1.2. The maturation of ecommerce – 2000s

The early 2000s witnessed the maturation of e-commerce as more businesses embraced online selling. The Internet became the universal tool for doing business, by the creation of platforms like Shopify anyone could set up an ecommerce store who desired it. (Gordon, 2022)

Companies invested in developing user-friendly websites, secure payment gateways, and efficient supply chain management systems. Traditional retailers also entered the digital space, recognizing the importance of an online presence to meet evolving consumer expectations. (Tian and Stewart, 2011)

The mid-2000s brought a significant shift with the rise of mobile commerce. In 2000 Google Adwords was introduced to enable companies as a tool for advertising online. (Za and Tricahyadinata, 2017) Smartphones gave power to consumers to shop anytime, anywhere, leading to the integration of mobile apps and responsive websites. Social media platforms, such as Facebook and Instagram, became additional channels for product discovery and sales. (Manohar Singh and Singh, 2018)

Later, omnichannel retail emerged as a way for companies to respond to the evolving consumer journey, blending online and offline experiences. Retailers started to use a wider range of channels to reach their customers and integrated physical and digital platforms, for a cohesive customer experience. (McKinsey, 2021) With more and more shoppers always on the Internet, the importance of online commerce has grown significantly. Through e-commerce companies can provide greater value for their customers in the form of extra services and new major touchpoints with the firm. (Simone and Sabbadin, 2017)

II.2. The online shopping environment

II.2.1. The Modern Customer

With the upheaval of globalization and online shopping the customers of the 21st century evolved a lot. They are highly influenced by new technologies and new customer-centric marketplaces, and they make purchase decisions on their own, when, and however they wish. (Deloitte, 2020) According to Lăzăroiu et al. (2020) today's online customers are influenced by a lot of outside stimuli and ecommerce websites must utilize multiple channels to build trust. They are influenced by online reviews, social media and perceived time and cost saving as well, as they can reach much information about a brand though the Internet immediately. Many advanced technologies are being implemented not only online but in brick-and-mortar stores as well, many people are influenced by social media even in case of offline shopping as well, thus the line between platforms are increasingly blurry. (Pantano and Gandini, 2017) Essential aspects for today's modern customers that influence their decision-making process include trust and security. People prefer platforms, where they know that their data and privacy will be protected and websites that offer secure payment options. (Wongkitrungrueng and Assarut, 2020) Finally, modern online customers desire enhanced engagements from brands. Through

multiple touchpoints companies must engage them, through personalized interactions to create a sustainable long-term relationship with them. (Bilgihan, Kandampully and Zhang, 2016) Consequently, enterprises must keep up with the changing customer needs, making people the driver of innovation in this sense.

II.2.2. Customer's online buying behaviour

Nowadays, the rapid digitalization impacted every aspect of business and everyday life as well. The digital era that is present came with many changes and shifts and it ultimately affected the way customers approach purchasing. E-commerce platforms evolved into the drivers of this change in customer behaviour. According to Forbes, 20.8% of retail purchases are expected to take place online. Furthermore, McKinsey is also emphasizing the importance of e-commerce for all types of businesses, as 30% of customers shifted to e-commerce.

The purchase behaviour of customers is very difficult to understand and is affected by external stimuli and it usually consists of many stages. (Neslin et al, 2006) (Akalamkam and Mitra, 2017) In the past many researchers attempted to draw up the customer decision-making process with all its complexities. Usually, the multi-stage process is divided into 3 subcategories, which can be extended into a 4 or 5 step process. (Lemon and Verhoef, 2016) (Akalamkam and Mitra, 2017) (Li and Chatterjee, 2005) The 5-stage process is broken down into problem recognition (awareness), pre-purchase information search (familiarity), alternative evaluation (consideration), purchase realization (purchase), and post-purchase evaluation (loyalty). (Court, 2009) (Følstad and Kvale, 2018)

To understand how digitalization affects customer behaviour and how personalization can change it further the decision-making process of consumers has to be taken into consideration. Based on Lemon and Verhoef's (2016) paper, which heavily relies on past studies in the field like the works of Philip Kotler (1967) and John Howard and Jagdish Sheth (1969), three stages can be differentiated in the customer's purchase experience. Namely, the three stages are prepurchase, purchase, and post purchase. Based on the study of Neslin et al (2006) the three stages are defined as search, purchase, and after-sales, here the notations are considered from the point of view of a company.

II.2.2.1. Prepurchase

II.2.2.1.1. Purchase Intent

In 2005, Li and Chatterjee developed a model of online purchasing behaviour consisting of four stages, that follow the previously mentioned consumer decision-making stages and Howard and Sheth's theory of consumer choice as well. The four stages are 1, the thought or intent of the

purchase, 2, the consideration stage 3, the evaluation stage, and 4, the purchase decision (either payment of products or cart abandonment). Here, the authors take into consideration the context of online shopping as well.

Two types of behaviour can be differentiated in the case of online shopping, the experimental and the goal-oriented or so-called utilitarian customer. (Wolfinbarger and Gilly, 2001) (Bridges and Florsheim, 2008) Experimental shopping behaviour, hedonistic or “play”, where the customer's actual purchase intent is rather low can be described as more of a hobby and these people love the act of shopping and browsing for an item that can create a very positive mood for them. (Wolfinbarger and Gilly, 2001) (Barnard and Menoe, 2020) The hedonistic motives can be traced back to the individual's emotional need or just the excitement of an interesting and fun shopping experience. (Barnard and Menoe, 2020)

On the other hand, the other characterization type is the so-called goal-oriented, utilitarian, or can be described as “work” where the purchase intent is high. (Li and Chatterjee, 2005) (Wolfinbarger and Gilly, 2001) For these people the goal is the transaction itself and they desire to finish it as soon as possible and without any distraction. Here the customer is viewed as a rational decision-maker that wants to solve its problem with the given purchase and they follow through logical steps. (Barnard and Menoe, 2020) In the research written by Wolfinbarger and Gilly in 2001, according to their online survey on online shoppers, the majority of them planned their online purchases and were looking for a specific product. Only less than one-third of the respondents said that they were just browsing on the Internet before making the purchase decision.

In the article by Bridges and Florsheim (2008), the statement mentioned above is supported. They stated that in the early days of the Internet and e-commerce, with all the information available to customers it fulfilled the utilitarian needs of people. However, at the same time, as people got more and more experienced in online purchases, they started to seek not only the utilitarian and problem-solving value but also look for the hedonistic parts.

E-commerce platforms need to consider fulfilling both utilitarian shopping value with a user-friendly website or convenient interfaces as well as the hedonistic shopping value by adding elements that cater to those needs. (Babin and Attaway, 2000) When companies consider digitalization and personalization strategies, they need to take into consideration these different types of needs and desires of customers. In the case of online shopping, customers lose the

human interaction, the excitement, and the feeling of finding and touching or interacting with a product. (Barnard and Menoe, 2020)

Finally, the purchase intent of customers might change because of external information. According to Li and Chatterjee, this outside information and interactions with the website can change the outcome of purchase intent and might defer the shopping process's trajectory or the whole purchase will be halted. The prospect of free shipping at the checkout might convince consumers to put more things in the basket or too high a shipping cost can even deter people from completing the transaction. (Forbes, 2021) (Li and Chatterjee, 2005)

II.2.2.1.2. Information Search

After discussing the contexts of the purchase intent, the next stage in the customer journey is the prepurchase. This can be regarded as the need recognition stage in the case of another research. Li and Chatterjee in their 4-stage online customer journey break down the prepurchase decision into three different substages: Information search, Consideration, and Evaluation. In the pre-purchase phase, customers recognize a need that is to be fulfilled search for information and products/solutions, and finally consideration stage where customers choose the right product according to their needs. (Lemon and Verheof, 2016)

Information search is critical for companies as this is the first time a customer is interacting with a brand and seeing its marketing-communication strategies. (Court, 2009) Li and Chatterjee distinguish two types of online information searchers, prepurchase searchers and ongoing searchers. Prepurchase searchers are goal-oriented and focus on completing transactions in the end. They may compare products from different sites and use external help. Ongoing searchers may not be ready to complete the process during the search, they focus much more on gathering a lot of information. The study further suggests, however, that they can be persuaded to buy something due to external stimuli, like a very low price. In other research, people with a need for cognition, (a tendency to enjoy hard, complex cognitive searches) search more online and want detailed information. Other customers want to find easily comprehensible graphs and pictures that require less cognitive thinking. (Akalamkam and Mitra, 2017) According to Bieger and Laesser (2004) customers are highly influenced by the perceived costs of acquiring information. When the costs are higher than the perceived benefits (e.g: extensive research, fee) the search for information declines. Furthermore, according to Kotler most purchase decisions are not planned and outside stimuli can increase the probability of purchase. Company communication and engagement strategies can positively impact the customer's decision-making. (Akalamkam and Mitra, 2017) (Li and Chatterjee, 2005) (Kotler, 1974)

II.2.2.1.3. Consideration

The consideration stage is where customers usually consider a company's product or service as a viable option to fulfil their realized needs. (Rayco, 2021) In this phase, customers place the items in the shopping cart or add them to their wish lists. Customers with a clear goal in mind might add fewer products to the cart, and experimental shoppers may go to comparison sites or look at the competition's products as well. (Li and Chatterjee, 2005) According to McKinsey, in online shopping, customers have access to an abundance of product choices and companies must navigate their actions to be in the initial consideration set. Companies should make the process easier and offer information that creates credibility and trustworthiness in customers. (Royce, 2021) A lot of technological and visual features can be utilized to convert customers into buyers and increase the purchase value, e.g.: hyperlinked product recommendations, content filtering, or detailed visual product displays. (Bleier, Harmeling and Palmatier, 2018)

II.2.2.1.4. Evaluation

Finally, some authors described another stage before the final purchase decision, which can be a substage of the consideration phase. In this stage of online shopping, the customers are just before the act of purchasing and in this phase, customers take into consideration word of mouth, past personal or external experiences and customer reviews as well. (Court, 2009) According to Li and Chatterjee at this phase, customers have higher purchase intent making cart abandonment less likely and this stage is the beginning of the checkout. At this stage, customers go through various information processing strategies, and they may return to the information stage that can leave the purchase without completion. However, at this point, not all considered items may be in the shopping cart. Thus, the evaluation stage can also be defined as the phase where customers assess their items within their consideration set, considering their distinctive purchase criteria. (Kukar-Kinney and Close, 2009)

II.2.2.2. Purchase

The act of purchase, the second part of the process after the prepurchase, consists of the customer's interactions with the company, brand image, and environment (in online shopping the checkout process and website) throughout the purchase event. (Lemon and Verheof, 2016) In the case of online shopping, the customers are now committed to purchasing a specific product(s), and as they start typing in all the necessary personal and financial data, a very strong commitment and purchase intent are developed. (Kukar-Kinney and Close, 2009) During the purchase decision in online shopping, the focus is on completing the transaction with the contents of the shopping cart speedily, securely, and with minimal disruptions. This is a system-driven linear process, where not the entertainment but the efficiency is important. Companies

should enable secure handling of customers' private data and enable a swift and secure online purchase to minimize deferral and cart abandonment. (Li and Chaterjee, 2005)

Finally, the main difference between online shopping and offline shopping is the increased control, empowerment, and flexibility of customers which is not true for traditional processes and checkouts. In the e-commerce environment, consumer decisions to purchase a product are influenced by many rational decision-making and external factors. While there is an extensive information available online and it could help consumers make informed, rational choices and reduces impulsive purchases. (Han, 2021) Customers can take control and jump between the stages and complete them in various ways. Customers can directly go to the purchase stage, others can rethink their decisions and go back to the information search, or people can completely stop and abandon the process or even go to the store and buy something there, which they previously chose online. (Kukar-Kinney and Close, 2009) This empowered customer control is today possible thanks to the internet and digitalization.

II.2.2.3. Post-purchase

The third and final stage of the customer journey is post purchase, which is comprised of all the interactions of a customer with the company and its brand after the purchase is completed. (Lemon and Verheof, 2016) The customers are evaluating their purchase and overall experience with the product and the service. If a customer is satisfied with an e-commerce site, a repurchase will likely happen. According to Kumar and Anjaly (2017), the desire for speed and convenience after the act of purchase is to be satisfied. Furthermore, based on this study customers value "exclusive shopping experiences", instead of huge sales and discounts, and random schemes. Customers value website performance and safety of information, as well as a company's fast and effective responses and communication, which lead to increased satisfaction and loyalty. (Shafiee and Bazargan, 2018)

II.3. Personalization and Digital Experience in E-commerce

Nowadays personalization is increasing in importance every year, especially since COVID-19, when online e-commerce sites experienced an unexpected surge in demand. According to McKinsey (2021) around 75% of consumers changed to a new shop, product, or method of purchasing when COVID restriction measures came into effect. Furthermore, they found that 71% of customers now anticipate personalization from companies, and around three-quarters of them get annoyed and dissatisfied when it does not happen.

Personalization is characterized as a dynamic procedure, where an object undergoes alterations for an individual, customer to enhance its value specifically for that given customer. This process can be either user- or firm-driven and the specific object that is changed could be both tangible and intangible. Furthermore, the process of change can happen at any time and can continuously evolve, according to the information that is either given by the individual or collected by the firm. (Nobile & Cantoni, 2022)

According to Salonen and Karjaluoto (2019), personalization is the creation of a process of matching a company's offering and communication to the customer's needs, by understanding the motives behind the purchase. Thus, companies can fulfil an increased range of heterogeneous needs of customers at a low cost and conveniently. (Wind, J & Rangaswamy, A, 2001) Categorized by the nature of information disclosed to customers, personalization can be divided into individual-level personalization, social-level personalization, and situation-based personalization, as outlined by Aksoy et al. (2011)

As is seen there are many different approaches and definitions to what personalization means and entails. According to Kaptein and Parvinen (2015), there are many definitions regarding what personalization means and what it entails within the process. The benefits of applying these personalization strategies are manifold. The effects include influence on the behavior of customers while shopping, heterogeneity and stable effects, and customers increased interest in looking and clicking at personalized content catered to them. (Kaptein and Parvinen, 2015) Furthermore, installing dynamic processes and systems purchase intentions could be increased, thus resulting in increased revenue. (Hauser et al., 2009) According to McKinsey (2021) companies could capture 40% more value from personalization strategies.

II.3.1. Personalization tactics

There are many different personalization tactics that e-commerce sites nowadays are utilizing to engage with customers, cater to their needs more specifically, and increase revenues. The table below summarizes the four main tactics ecommerce companies are using for personalization.

1. Table – Description of different personalization tactics of ecommerce websites

Personalization tactics of ecommerce websites	
Product Recommendation	Among the arsenal of personalization strategies, product recommendations stand out as a powerful tool. Algorithms analyse user behaviour, purchase history, and preferences to suggest relevant products, enticing customers with items that align with their interests. Personalized product recommendations can have a positive effect on revenues and could increase customers' willingness to pay. (Basu, 2021)
Behavioral Tracking and Analysis	E-commerce platforms leverage sophisticated analytics to track user behaviour. By understanding how customers navigate the site, what they search for, and the products they view, businesses gain valuable insights to refine their personalization strategies. Firms can utilize many different methods and platforms to track customers, the most deployed techniques include tracking customer activity across the webpage through Cookies, and customer profiling. (Xinru et al., 2021, pp.171–191)
Dynamic Content for Real-time Engagement	The era of static web content is giving way to dynamic, real-time personalization. Websites adapt their content on the fly based on factors such as user location, device type, and browsing history, ensuring a seamless and relevant experience. According to Eklund's research (2022), into Netflix's dynamic thumbnails, according to customer profiles and previous activity within the application, different thumbnails and movie recommendations were targeted at customers. These changed throughout the research period dynamically.
Personalized Email Campaigns	The inbox has become a personalized storefront with targeted email campaigns. E-commerce businesses send tailored messages, including product recommendations, exclusive offers, and personalized content, fostering a deeper connection with customers. According to Nobile & Cantoni (2022), personalized email campaigns should be executed carefully, keeping a human tone, avoiding too specific information, taking into consideration customer profiles and the customer journey as well. All in all, in their research they concluded that personalized emails can contribute to increased web page visits and can aid the decision-making process of customers.

Source: Own edit based on: (Basu, 2021) (Xinru et al., 2021, pp.171–191) (Eklund, 2022) (Cantoni, 2022)

To be able to deliver these personalization campaigns to customers and achieve the highest results, companies need to possess certain technical enablers that make the process efficient and automatic. These include the collection and creation of customer data across each stage of the online customer journey. Furthermore, machine learning, automation, and AI could facilitate the implementation and success of personalization strategies. (Lebow, 2023) (Chaffey, 2021)

II.4. The rise of Artificial Intelligence

II.4.1. What is artificial intelligence?

The concept of intelligent machines with human like capabilities and behaviours is around since the 1950s. In “Computing Machinery and Intelligence”, Alan Turing deals with the exploration of artificial intelligence by questioning, “Can machines think?” He further challenges the question whether a machine can exhibit human like behaviour through the “imitation game” or so-called Turing Test. An important moment in the history of AI happened 5 years later, in 1955

when The Dartmouth Summer Research Project on Artificial Intelligence was proposed by J. McCarthy, et al. (1955) The ambitious proposal aimed to explore the aspects of as what is known today as AI, including the development of automatic computers, programming of language use and simulation of neuron networks.

In 2022 the market size of artificial intelligence had the value of USD 428 billion and is expected to grow by a CAGR of 21.6% until the end of the decade. (Fortune Business Insights, 2023) Merriam-Webster Dictionary describes AI as the capability of computer systems or algorithms to imitate intelligent human behaviour. Artificial intelligence is the science and engineering of creating machines and computer programs that are intelligent. It can be connected to the utilization of computers to understand human intelligence. (McCarthy, 2004) This aligns with the study of Zawacki-Richter et al. (2019), where more than 100 research paper about AI was examined and the authors described it “as intelligent computer systems or intelligent agents with human features, such as the ability to memorise knowledge, to perceive and manipulate their environment in a similar way as humans, and to understand human natural language.”

II.4.2. Understanding artificial intelligence

Today artificial intelligence is characterized by rapid innovations and major trends and challenges that shape its advancement and utilization in different industries. Within the topic artificial intelligence there are multiple concepts that needs to be understood:

2. Table Definitions of Artificial Intelligence

Concept	Definition	Application	Example
Weak AI Artificial Narrow Intelligence (ANI)	AI systems designed to handle a specific task or set of tasks. They operate under a constrained context or domain, exhibiting intelligence within a limited scope without the full autonomy or understanding a human might have.	Image and speech recognition technologies, chatbots, and autonomous vehicles	Apple's Siri, Amazon's Alexa
Strong AI Artificial General Intelligence (AGI) and Artificial Super Intelligence (ASI)	A theoretical concept of AI that matches or surpasses human intelligence across a broad range of tasks and contexts. It encompasses the ability to understand, learn, and apply knowledge in diverse domains, make plans for the future, adapt to changes, and potentially possess consciousness.	No practical example, only theoretical, scientific exploration into its creation	-

Generative AI	It is a deep-learning model, capable of creating content by learning from extensive data sets, such as texts or images	Statistical data analysis, text and image generation	ChatGPT, BERT, DALL-E
Machine Learning	Technologies utilizing neural networks to analyze large data sets, enabling machines to learn from data. Involves more human intervention and uses simpler neural networks for structured data, limited to supervised learning.	Algorithms, forecasting and analyzing tools	Netflix's recommendation tool, email spam detection
Deep Learning	Technologies utilizing neural networks to analyze large data sets, enabling machines to learn from data. Employs complex neural networks with many layers, allowing for unsupervised learning from unstructured data sets and machine learning at scale-	Image and speech recognition, autonomous vehicles, advanced data analysis and forecasting	Facial recognition technology, ChatGPT, Tesla Autopilot
Natural Language Processing (NLP)	An interdisciplinary field of computer science, Ai and computational linguistics that enable computers to analyze, interpret and understand human language and generate text and speech.	Translation, responding to spoken commands, analyze and summarize large texts, text generation, understanding tone of voice	Google translate, GPS systems, Virtual agents and chatbots, (e.g: Siri and Alexa)
Large Language Models (LLMs)	An application of gen Ai (and a specific type of deep learning model), trained on extensive test data to generate human-like text and perform language-related tasks	Text generation, summarizing large texts and data, Ai assistants, code generation, analysis of tone of voice and sentiment and language translation	Conversational Ai in chatbots and virtual agents (IBM's watsonx Assistant, Google's BARD) OpenAI (ChatGPT-3,4)

Source: Own edit based on: (IBM, 2023) (Walch, 2019) (Zawacki-Richter et al., 2019)

Companies started to see the potential in the utilization of artificial intelligence. According to McKinsey AI adoption in businesses more than doubled in the last 5 years and firms are utilizing it across various fields, especially in service operations and supply chain optimization. (McKinsey & Company, 2022) The application of AI can help businesses increase efficiency and decrease the costs as well. (Cadariu, 2022) According to Enholm et al. (2021), by reviewing the relevant literature about AI and its connection to business value, it was found that AI can increase the efficiency of and transform relevant business processes, generate valuable insights, and positively contribute to a company's operational, financial and sustainability performance as well.

II.4.3. Rising concerns about artificial intelligence

Finally, besides the positive aspects of AI its negative impacts must be mentioned too. According to Marr (2023) the biggest risks associated with artificial intelligence are the lack of transparency, privacy issues, ethical concerns, and security risks. General concern about AI is larger than the excitement when analyzing all major demographic groups. (Tyson and Kikuchi, 2023) The technology of artificial intelligence needs a lot of data to keep its machine-learning algorithms going, the storage, usage and access of these, many times personal information, has raised serious concerns among people. There is a possibility for the AI to collect sensitive information about people (location, preferences, behaviour) and the unauthorized circleing of data could lead to serious problems, such as identity theft or blackmail. (Sher and Benchlouch, 2023) To protect data privacy and mitigate legal issues laws have to regulate the current conditions. In the European Union a comprehensive privacy law, the General Data Protection Regulation (GDPR) was established in 2018. (EDPS, 2018) (CHURCH, 2023) In 2024 the European Union's AI Act will be passed and enter into force. Companies designing or implementing AI will be faced with stricter requirements and also could face high penalties in case of any offence. (Blackman and Vasiliu-Feltes, 2024) In the US. there are several laws protecting people's data for example the Privacy Act of 1974 or the HIPAA protecting people's sensitive health data. (Murray, 2023) A blueprint for the AI Bill of Rights was proposed recently, however there are many state-wide regulations but no nation wide law yet. (NCSL, 2023)

II.5. Artificial intelligence in ecommerce

The expansion and implementation of artificial intelligence-based solutions started in the ecommerce segment as well. It was estimated \$8 billion will be spent on AI in ecommerce by 2024. (BigCommerce, 2021) Ecommerce websites could utilize AI solutions internally, to streamline processes and increase efficiency. Furthermore, companies applying AI driven forecasting systems to their supply chains were able to decrease the number of errors by at least 20%. (Amar et al., 2022) According to McKinsey (2021) companies can increase their logistics efficiencies by implementing AI based supply chain management systems, and those who are already utilizing it could decrease logistics costs by 15%, inventory levels by 35% and improve the service levels by 65%. On the other hand, externally AI could revolutionize the online shopping experience. AI could help companies to personalize the shopping experience of customers based on data, including prior purchases, and browsing history on the web shop. (Sotirov, 2023) According to Accenture (2018) 91% of customers value companies that pay attention to provide relevant recommendations. It was estimated that many enterprises will

adopt AI for ecommerce could see a 25% improvement in customer satisfaction, as well as increased profits from a rise in revenue or a reduction in costs. (Moore, 2019) Lastly, there is a huge potential in AI-powered chatbots and virtual assistants, who could be at the disposal of clients all day long, assist them through the shopping journey. According to Gartner (2023) by next year 80% of customer service and support organizations will apply some type of generative AI. For an ecommerce company the implementation of AI solutions has become essential to keep up with the competitors.

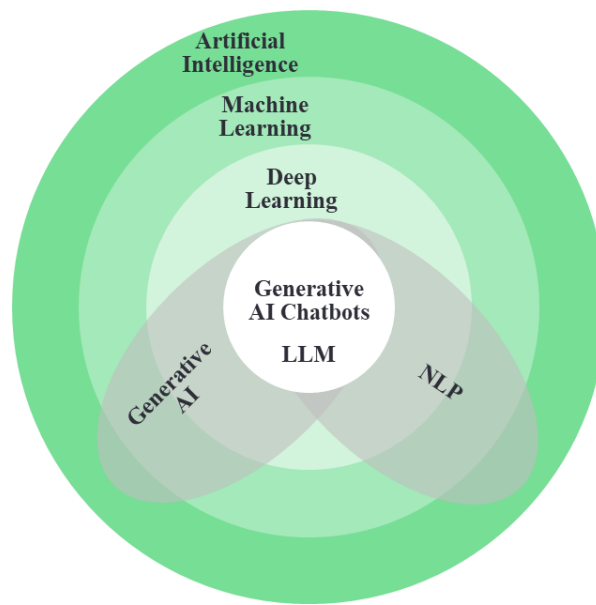
II.5.1. AI-driven recommendation systems

AI-driven recommendation systems are increasingly essential for ecommerce companies to elevate their shopping experiences, through offering personalized product recommendations. These systems are based on advanced algorithms and can analyse major data sets. By implementing such solutions ecommerce platforms could increase their customers' satisfaction and engage through an enhanced digital system. 63% of leaders believe that AI-driven chatbots could provide a hyper-personalized experience to customers. According to IBM (2023b) there is large differences between regular chatbots, advanced chatbots and virtual assistant, though the words are many times interchanged by people.

II.5.2. What are advanced chatbots?

Advanced chatbots or generative AI-powered chatbots are the next generation chatbots that are more than a computer program which are equipped with generative AI capabilities and thus they can offer more complex services, understand language and complex questions. Furthermore, they are able to learn the user's style of speaking and writing and are able to use empathy when appropriate. (IBM, 2023b) Generative AI chatbots can generate large texts and answers written just as a human by building on Natural Language Processing and Large Language Models. Usually, these chatbots are integrated with Deep Learning Models and they are trained on large datasets, thus making it possible to give useful information to many questions. (Haenlein and Kaplan, 2019)

1. Figure –Parts of Generative AI Chatbots



Source: Own edit based on: (IBM, 2023b) (Adamopoulou and Moussiades, 2020)

As the figure shows, these models are incorporating many advanced models thus making them an advanced branch of AI solutions. (Adamopoulou and Moussiades, 2020) (IBM, 2023) With the utilization of Generative AI Chatbots ecommerce companies could significantly enhance the efficiency of customer support by being available 24/7 and reduce response time and internal costs, while also increasing customer satisfaction. (DALE, 2016) According to BCG (2023) 66% of customers that they surveyed were really interested in trying out Generative AI-powered conversational systems. Companies that are already implementing these chatbots in an ecommerce context include: Walmart, Google, and Expedia. (Castillo, 2024) (Lanke, 2024) (NZ Herald, 2023)

III. Methodology

My broader aim with this research is to investigate whether ecommerce websites could realize more conversion, thus sales, on their sites by investing and utilizing new digital solutions. More specifically, I am interested in whether a personalized product recommendation system driven by artificial intelligence would help ecommerce companies to enhance their customer journey and have more satisfied customers. As currently, the research into this field is not extensive. During the research the term AI-driven recommendation systems was used primarily with and additional explanation to participants about the description of Generative AI chatbots. This decision was made to avoid any confusion between simpler chatbots, advanced chatbots fuelled by Generative AI and virtual

assistant in the heads of the participants, as the terms are sometimes misused and interchanged. (IBM, 2023b) It is important to mention that today only a few companies implemented such solutions for better user experiences. For this reason, my research will concentrate on the customers' current opinion about the usage of artificial intelligence in ecommerce and their willingness to use the system.

III.1. Research Question and Hypotheses

To examine the topic mentioned above, I formulated 2 main questions for the research:

“What is customer’s opinion and about AI-driven recommendation systems on an ecommerce website and whether they would pay for such services?”

“On what kind of web shops and how should these systems be best implemented based on customer’s view?”

The questions were formed, to focus on the most important player in the ecommerce setting, the customer. By uncovering their views and opinions about artificial intelligence driven recommendation systems, could give direction whether investments are worth at all, and if yes where and how it should be carried out. It is important to mention that these will be assumptions created from the answers of online shoppers. For this reason, the assumptions cannot stand as recommendations, and it cannot directly decide what kind of effects the utilization of an AI-driven recommendation system will have after implementation. This is the main and greatest limitation of this research.

After the analysis of the theoretical background through relevant research articles and books, 3 hypotheses were formed. These will act as a guide throughout the research. Also, they help to create a more comprehensive view and underlines the main question of the thesis. These are:

Hypothesis 1 (H1): Customers are willing to pay for an AI-driven recommendation system, though the amount they are willing to pay is generally low.

Hypothesis 2 (H2): In sectors where informed decision-making significantly enhances the perceived value of a product (e.g., skincare, technology, luxury goods), customers are more likely to use and pay for an Ai driven recommendation system.

Hypothesis 3 (H3): The willingness to use an AI-driven recommendation system is influenced by the consumers' trust in AI technology and their perception of its effectiveness in understanding personal needs and preferences.

The research method was constructed to be able to answer the main question of the thesis. Furthermore, to uncover the accuracy of the 3 hypotheses.

III.2. Data Collection

In addressing the research objectives of this thesis, primary research was elected as the primary mode of data collection, motivated by the distinct lack of extensive secondary data on the subject. To thoroughly investigate the main question and validate the three posited hypotheses, the study exclusively utilized primary research through two distinct methodologies. Aiming for a holistic view of consumer attitudes, the research combined both quantitative and qualitative insights and a mixed methodology was used, via an online survey, collecting quantitative data, complementing it with detailed qualitative perspectives captured through brief interviews. This dual-method strategy was deliberately chosen to ensure a deep and multifaceted understanding of customer perspectives, thus providing a robust foundation to accurately respond to the research question. By directly engaging with consumers, the primary target demographic of AI-driven recommendation systems, the survey facilitated an in-depth understanding of customer willingness to experiment with and potentially pay for these services.

III.2.1. Online Survey

The online survey's focus was to provide a basis and collect the general perspective of end-users. The survey was disseminated through social media sites and targeted Hungarian people between 18 and 35 years. The time of data collection lasted for 4 weeks, from 2024. February 26 to March 25. The decision to focus on individuals within this age group, encompassing mostly Generation Z and late Millennials, was strategic. This demographic is not only the most active in online shopping but also exhibits a higher propensity for adopting new technologies. (Emarketer, 2023 Forbes, 2022) Through gathering 109 responses, the survey aimed to capture a diverse set of consumer attitudes towards AI-driven consultation programs in e-commerce. Questions were crafted to ascertain the interest levels in such technologies, willingness to pay, preferred e-commerce platforms for their deployment, and any apprehensions consumers might have.

III.2.2. Short Interviews

To complement the online survey and get a more in-depth result short, 30 minutes interviews were organized. The people for the interview were chosen carefully. They all belong to the sample population, meaning they are either Generation Z or Millennials. Furthermore, the individuals are shopping regularly on online ecommerce websites, thus they have relevant

experience with such sites. The questions were open-ended and formulated so that people will have the opportunity to explore the topic and give their most honest opinions. All in all, 6 people were interviewed, from different backgrounds and with different online shopping habits. The table below summarizes the interviewed people:

3. Table – Interview participant's information

Gender	Age	Qualification	Profession
Female	22	High school diploma	Student
Female	29	Medical degree	Self-employed
Male	23	High school diploma	Student
Female	22	High school diploma	Student
Male	24	Bachelor degree	Accountant
Female	26	Master's degree	Physiotherapist

Source: Own edit

IV. Analysis of the results

After the data collection was complete and all the short interviews were finished the analysis of the results started. The answers from the interview respondents were divided into a table and shortened to convey the most important messages. In case, of the survey results, the data was analysed through the creation of tables showcasing the distribution of answers and statistical analysis when appropriate.

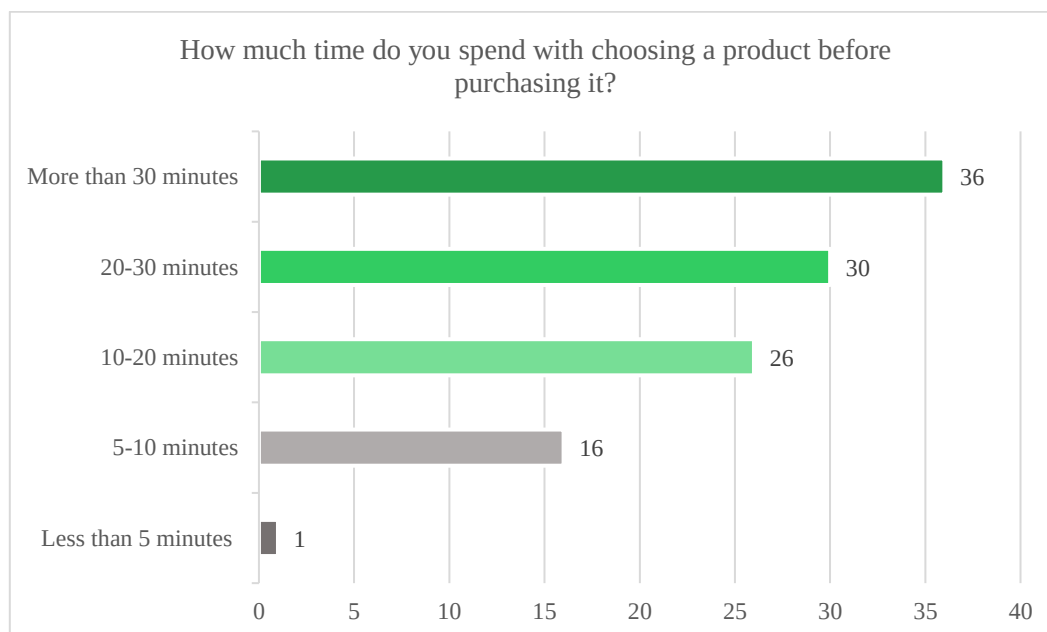
IV.1. Analysis of Ecommerce Customer Behaviour

To develop a full picture about the potential utilization possibility of an AI-driven recommendation system it is essential to first understand the general behaviour of ecommerce customers. In the first part of the survey the questions were formulated accordingly, aiming to discover the frequency, aspects, and value of online shopping among the sampled population.

Results show that Millennials and Gen Z people are using and ordering through ecommerce websites regularly, more than 60% of respondents stated that they purchase something online at least once every month. There are more regular ecommerce users, 13% indicated they get products delivered every week from web shops. In the international context, 34% of all customers order something once a week. (Baluch, 2023) Although, people shop a lot, it is important for them to make an informed decision. When asked, about how much time they

spend on choosing the right products, 36 out of 109 stated they spend more than 30 minutes before sending the order.

4. Table – Analysis of survey 1



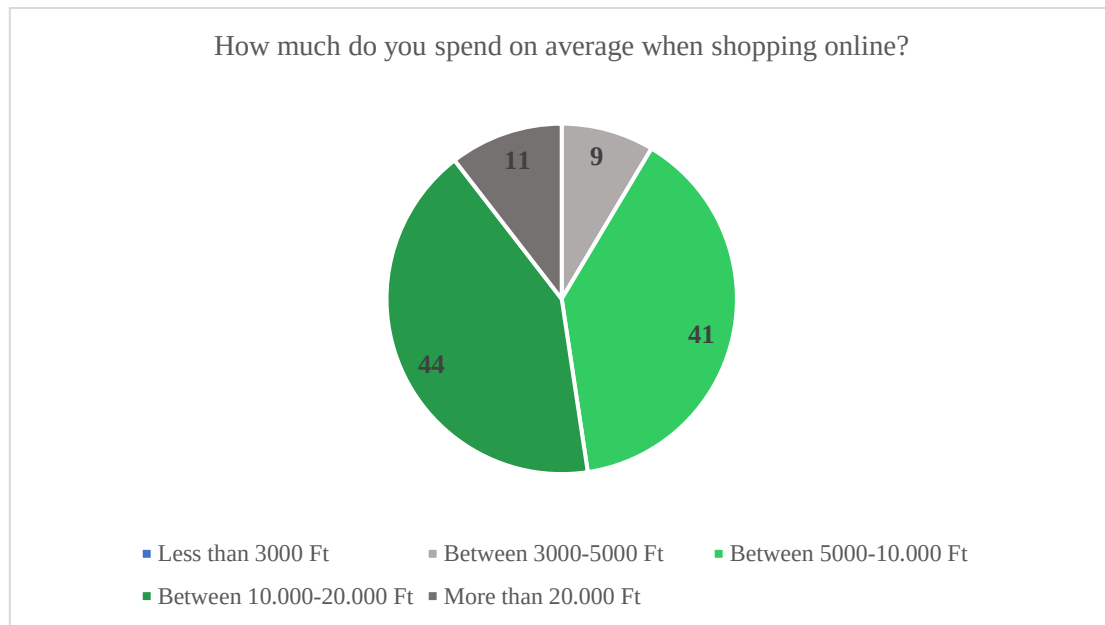
Source: own research and edit

As the chart shows, almost all respondents spend more than 10 minutes to go through with a purchase decision. This can indicate that people are not sure, whether a product will satisfy their needs the fullest and deliver the highest value to them. Consequently, a recommendation system could aid the decision-making process and thus help people make the purchase faster, while also delivering the most suitable products to them.

In connection with this, to better map the relevance of a recommendation system driven by artificial intelligence, people were asked how important it is to them to make an informed decision when purchasing a product online. 41% said it is extremely important to gather the necessary information about a product beforehand, while 46% indicated that they prefer to make some research to make the final decision. None of the respondents answered that they do not care or not care that much about looking into the details of a product. This also supports the possible opportunity of a recommendation system driven by artificial intelligence. Ecommerce websites could facilitate the decision-making and research process by implementing a digital guide that could answer all the questions a customer might have about a product. This way the purchasing process will not be interrupted, and the customer does not have to leave the website to get the necessary information.

Why is it important for today's online customers to investigate a desired product before ordering it from a web shop? In 2021, more than half of customers looked at more than 4 product reviews before making the decision to purchase. (Statista, 2023)

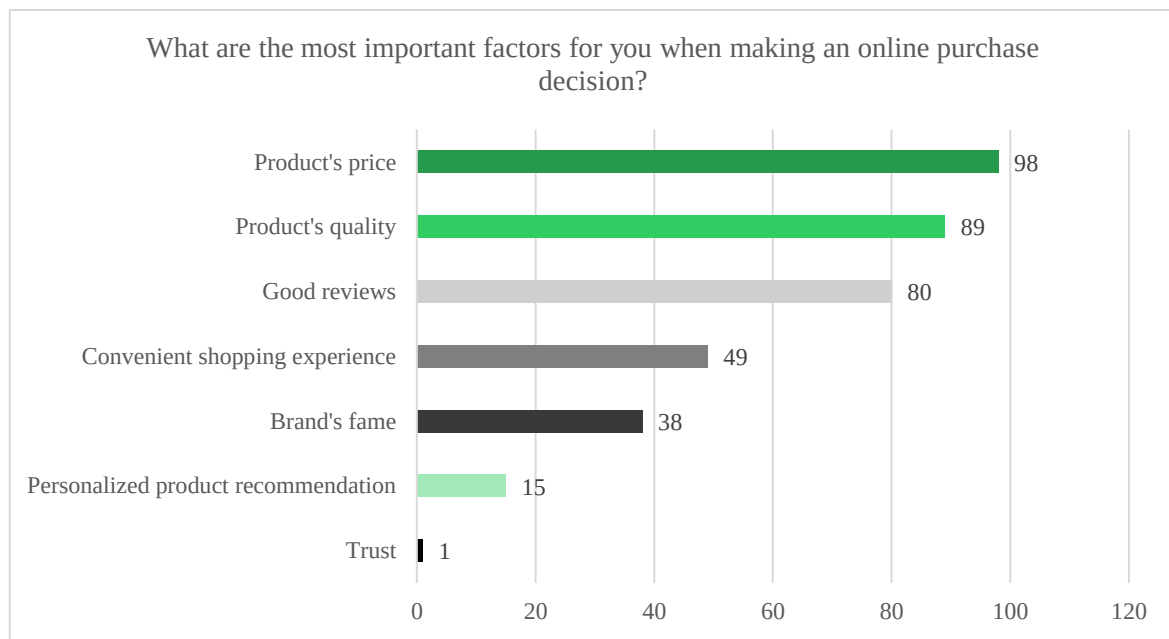
5. Table – Analysis of survey 2



Source: own research and edit

Furthermore, based on 109 answers, many people are spending substantial amount of money on average when ordering online. Half of the respondents spend 10.000 HUF or more averagely on a single order in a web shop. Thus, underlining that people need to make informed decision to create the highest value for their money.

6. Table – Analysis of survey 3



Source: own research and edit

To support this, people were asked to select all the important criteria that they consider during the decision-making before purchasing online. Almost 90% of people asked listed the price as the up-most important factor, second 90 out of 109 respondents indicated the product's quality as a high influencing factor. Pricing is very important as customers can compare prices across platforms, and fair pricing is a factor that increase customer satisfaction. (Hinterhuber, 2004) Furthermore, the perceived quality of the product can influence customer's decision making. (Wells, Valacich and Hess, 2011) The third most important factor is good reviews from other customers. Around 73.4% of the responses pointed out that positive reviews significantly influence them in determining whether a product is worth purchasing. Finally, people indicated convenient and easy online shopping process (45%) and the product/brand's reputation (34.9%) as factors they consider before ordering a product. It is interesting that only 15 people chose personalized product recommendation, as something they would take into account. It seems in contrast with how important it is to people to research the product beforehand. In contrast, according to McKinsey (2021), 71% of customers desire personalized interactions from brands.

Lastly, people were asked about their satisfaction about the current state of personalization and recommendation systems in case of the online web shop they visit the most. On a scale of 1 to 5, 89 people indicated 3 and 4 satisfactions, representing 38.5% and 43.1% of respondents respectively. This means that people are more than satisfied than not, suggesting that people are familiar with the concept. However, today the personalization and recommendation functions

are (forrás), there is still room for companies to improve and implement new solutions supporting the decision-making of customers and thus converting them to actual sales.

IV.2. Online Customer's Opinion about Ai-driven recommendation systems

In the next section of the survey, the focus shifted to map customer's opinion and approach to AI-driven systems and whether they would use it in an online ecommerce context. Furthermore, to extend the reach of a survey and create a more rounded picture about the opportunity of AI-driven recommendation systems, targeted questions were asked during the small interviews as well.

As mentioned earlier 6 short interviews were conducted, with people within the same age range as in case of the survey, meaning between the ages of 20 to 35. During the interviews the respondents were asked how much they know about Ai in general and how much they use it in the day-to-day life. 3 out of 6 stated that they know more than average about Ai, as they studied about it or they are using Ai on a regular basis. One person highlighted increased interest in new solutions and how they will make life easier. People's experience with AI is limited to ChatGPT and some other similar generative Ai solutions, like Quillbot, Copilot, or various chatbots across websites. They are only using it for studies or to generate ideas for writing a document. During the other half of the interviews, people had limited knowledge about AI and they do not use any AI-based solutions regularly. This contrast is reflected by the survey's answers as well. 62.4% of respondents have never used any type of AI-driven systems on an ecommerce website.

Although, as the results show many people are not familiar with using Ai on a regular basis, there is curiosity and willingness from customer side to try new solutions out. During all interviews, a general excitement was shown when asked about the utilization of AI-driven solutions on web shops. "It would a great idea to get personalized help, and to be able to see only those things that interest me. It takes a lot of time to go through hundreds of landing pages to find the perfect product that I need. I see a potential for AI here." – a regular online shopper 22 years old woman. Generally, people stated that AI could be helpful to use on a web shop for personalized product recommendation and to help customers find the products they are interested in faster. During the interviews it was mentioned how it could imitate a real life in store shopping experience, as in the store people can go to the products that they want or find interesting or get help from a shopping assistant.

During the short interviews people were asked whether they would try out an AI based recommendation system if implemented on a web shop and their opinion about how it could engage them to make the decision and purchase something. Only one person indicated that they would not be interested in such new solutions. In the survey, people had similar opinions, but here a slight rejection from customers was measured. 59.7% stated they would more likely than not try out AI-driven recommendation systems. Furthermore, 5 people out of 6 stated during the interviews that a high-quality AI driven recommendation system could engage them and could help them to make the final purchase decision faster, shortening the amount of time they do researching a product. It is important to highlight here that everyone indicated that they like to double check the answers an AI is generating, and it could only give ideas and direction to them. In the survey, people scored the influence AI's recommendations could have on their purchase decision making on average 3.4 on a scale of 1 to 5 and the answers were distributed symmetrically around 3. However, 35 people indicated 4 and 18 people 5 on the scale indicating a slight nudge towards that they believe in the future AI could influence them in during online shopping.

In addition to examining the customer's readiness to adopt AI recommendation system, people's willingness to pay a fee for such services was analysed as well. In the short interviews 3 people indicated that they would be willing to pay a separate fee for the usage of AI based recommendation systems. All three, however, had criteria that must be fulfilled. The accuracy and quality of the recommendation needs to be assessed and reach the same level as the advice of a shopping assistant or a professional. Furthermore, the amount of time that could be saved by finding the needed products faster was another important factor. In case, of the online survey respondents were asked to rank their willingness to pay on a scale of 1 to 5 and then to state how much money they could imagine paying for an AI based recommendation system. The results are in parallel with the interviews. 62 out of 109 people (56.9%) chose the lowest number 1 on the scale, meaning they would not pay extra. The average of the answers was 1.69 and the mode 1, suggesting that respondents generally rated their willingness to pay towards the lower end of the scale. The standard deviation 0.947, indicates moderate variability and that the answers were spread out but not extremely. It is important to note that no one chose the highest end 5 as their answer. Regarding the price people would pay extra for an AI based recommendation system 40.4% of respondents would be willing to pay more than 500 Ft, while the other 59.6% would pay less or nothing at all. Only 11 people stated that they would pay

more than 1000 Ft. Consequently, charging a fee now would be disadvantageous and could deter customers to try out and use the implemented systems.

The results here, are supported by the answers to another question from the survey. As it was mentioned those who said they would pay an extra fee had some specifications to be fulfilled. The question, what kind of factors could increase your willingness to pay for an AI based recommendation service, was posed in the survey. Here, the answers correspond to the answers in the interviews, 57.8% of people says they want a free trial period to be able to test the system and make certain of its quality. Furthermore, people would value positive reviews from other customers about the system, as well as a qualified and proven accuracy of the system. Lastly, they would be more willing to pay if it was connected to some type of discounts for the recommended products, if in the end they decide to purchase it.

7. Table – Statistical analysis of survey questions

Analysis type	How much would you trust in Ai's recommendations compared to a shopping assistant?	How much more are you likely to shop on a website that has an Ai driven recommendation system than on a website that does not have, even if it is subject to fees?	How much more would you trust Ai's recommendations if it were based on your browsing history and shopping behaviour?	How much more would you be likely to use an Ai driven recommendation system if it were based on the knowledge of professionals?
Mode	3	2	2	4
Average	2.82	2.31	2.82	3.67
Standard deviation	0.94	1.08	1.28	1.19
Skewness	-0.11	0.48	0.08	-0.77

Source: own calculation and edit

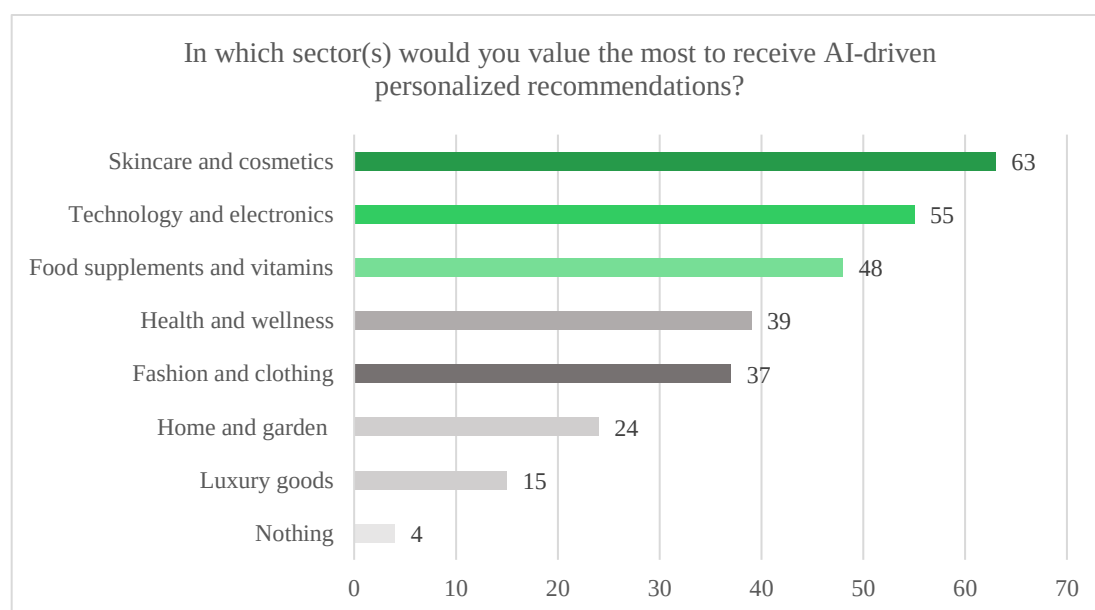
In the survey people were asked to rate their perceptions and attitudes towards AI and e-commerce context. More specifically they were asked to score their trust in AI recommendations vs. a shopping assistant, the likelihood of using an AI system with fees, trust in personalized AI recommendations and their preference for AI recommendations to be based on expert knowledge. Regarding the first question, most people gave a neutral response (3) and their trust in AI recommendations over a shopping assistant is slightly below neutral (2.82), suggesting a cautious and slightly sceptical attitude towards AI. Moving on to the second question the most common answer was 2 and the average 2.3 indicating that respondents are less likely to shop on a website with an AI system if there are some fees associated. However,

in this case the answers were widespread, and a fair number of respondents rated higher than the average indicating diverse opinions and showing some interest in paying for AI. This was reflected during the interviews as people had specifications to be fulfilled to be willing to pay.

The third and fourth questions were posed to uncover how people's trust towards AI recommendations could be increased. People showed scepticism and negativity (2 and 2.817) towards incorporating their previous browsing history and shopping behaviour into the AI recommendation model. However, it is important to note that in case of this question the range of opinions was the broadest as indicated by the highest standard deviation. Furthermore, the small positive skew suggests a longer tail on the higher end of the scale, meaning some respondents show more trust in this case. Finally, by looking at the results from the last question, it can be concluded that people are more likely to use an AI recommendation system if it is based on professionals' knowledge, indicating the most positive scenario. On the other side the large standard deviation indicates considerable variability in answers, but less than in case of the third question. Furthermore, although most people picked the score 4 in this category the moderate negative skew indicates that there are enough lower responses as well to skew the distribution to the left.

All in all, respondents are neutral to moderately sceptical about AI compared to a human assistant, they show reluctance to use AI systems subject to fees. People's trust increases when AI uses their browsing history, but there is a broad range of opinions on this aspect. Finally, there is a lot of scepticism towards AI, but there is a more favourable view when the AI recommendations are based on professional knowledge, rather than purely on algorithmic analysis of user behaviour, despite some variability and skewness in the responses.

8. Table Analysis of survey 4



Source: own research and edit

To uncover where an AI driven recommendation system could have the most opportunity, people were asked at what kind of web shops would it increase the value of a product and could help the most. The three areas where people think an AI driven recommendation system would give the highest value are Skincare and Cosmetics, Technology and Electronics, and Food supplements and Sport. Fashion and Health and Wellness categories also scored high. According to Shopify (2023) the top online shopping categories this year based on expenditure are going to be: 1) Fashion, 2) Electronics, and 3) Food. This supports that there is significant number of customers who are ordering Fashion and Electronic products online, who could possibly use an AI-driven recommendation system. To attain a more detailed picture the same question was asked during the short interviews as well. Here, the common answer across all interviews was that large online retailers, where there are multiple products sold, across product categories and it is hard for customers to navigate through all the pages. One of the respondents highlighted: “It is extremely frustrating when I have an image in my head about what I want, and I must spend hours and multiple searches to find something resembling that. Many times, I give up halfway and end my online shopping.” Besides, this another category was highlighted. Web shops selling specialized products that need very specific knowledge or customer’s need extended information and details to confidently order something. Another interviewee who must procure specific tools for their work mentioned that: “It could help me tremendously to have some type of service where I could ask questions about the products’ specifications, delivery, size, etc. and I do not have to look through hundreds of pages of manuals to find one

decisive information. Such solution could really make my life easier.” Other respondents during the interview also highlighted the same three categories as in the survey, highlighting IT sector the most.

The topic of artificial intelligence can be controversial and could raise many legal and ethical questions. Before the implementation of an AI driven recommendation system the risks associated must be considered. From the customer’s sides it the biggest risk is obviously their concerns related to artificial intelligence, and these must be mitigated. Both in the survey and during the interviews respondents were asked whether they have any concerns. A whopping 67.9% indicated Data security and Privacy as the most burning issue related to artificial intelligence. However, this issue might be mitigated in the near future with the introduction of the AI Act in the European Union, that would regulate the AI sector and increase customer security. Secondly, the accuracy of the systems, indicating people’s general disbelief towards the level of quality and development artificial intelligence today is at. Finally, in the survey people were concerned about the loss of relationships with people and too much reliance on technology, which are general and important concerns, but more ethical questions than problems solvable in a business sense. It was interesting to hear during the interviews that people are not actually concerned with the application of AI in an ecommerce setting. One respondent highlighted that they do not think that their shopping list would be sensitive data and that here in Europe most AI systems are regulated, consequently establishing more trust in people.

V. Conclusions

The research into AI-driven recommendation systems in the ecommerce context has uncovered significant insights into customer behaviour and opinions and the potential enhancements in the customer decision-making process. The survey and the series of short interviews showed that although there is some level of scepticism towards AI recommendations compared to traditional shopping methods, many customers are generally open to use and integrate these technologies into their everyday life. It is important, however, for these customers to be able to collect some tangible benefits, as cost or times saving or more personalized shopping experiences.

Regarding customers’ attitudes and behaviour towards an AI driven recommendation system, respondents showed some caution, but results indicated a general openness towards AI in ecommerce. The results suggested that there is an agreement of opinions that AI driven recommendation systems could significantly enhance the online shopping experience.

Furthermore, the process of browsing and shopping would be more streamlined and faster. Results showed that many respondents saw the AI-driven recommendation systems as a guide or helper, thus contributing to an increased user-friendly website. These results are relevant in today's world where online customer, especially younger demographics like the examined population, Millennials and Gen Z, tend to prefer fast and efficient shopping experiences. Furthermore, these segments are the most likely to accept and use new technologies, thus by taking into consideration the positive results, it suggests a promising market for those websites that are planning on introducing advanced AI features.

On the other hand, however, the collected data indicated a need for trust and security. Customers are concerned with data privacy and security on online platforms, thus posing significant risks and barriers to implementation. There are national and supra national initiatives to regulate artificial intelligence. However, in these cases it is best for companies to build trust directly to customers and ensure their fair and secure storage, usage and distribution of data. In addition to this, from both the survey and the interview results a general lack of knowledge could be detected about the different functions and applications of AI systems. This suggests a need for educational initiatives to make sure that potential users and in this sense, customers could try out and learn about the benefits and operations of these technologies. In an ecommerce context this would mean free trial period for the system or encouraging initiatives to use the system, for example: connected discounts.

Regarding AI's integration into ecommerce websites customers' opinions were quite aligned. In case of ecommerce websites such as skincare, cosmetics, technology and electronics and food supplements the implementation of AI driven recommendation systems was the most appealing to respondents. The sampled population indicated that from their point of view the value AI could deliver would be the highest. Furthermore, from the short interviews the reasoning for these choices was uncovered. Customers would utilize AI driven recommendation system the most either on websites where there is an abundance of different products available or on websites where to choose the right products that would deliver the most value to them would require the help of a professional or shopping assistant or extensive amount of research into finding details about a product. In the first, case people often feel overwhelmed by the wide range of options and hundreds of pages of products and often get lost. Here an AI driven recommendation system could help customers find their desired products faster or shorten the lists of products based on their preferences within just seconds and just by typing in their needs. In the second category, people could get frustrated, while trying to compare products or find

small information about them, they usually know little or nothing about. In this instance, an AI driven recommendation system based on inputs from professionals could shorten the times spend on unnecessary research and could streamline the overall customer journey. These insights indicate a sector-specific opportunity where ai system could be tailored to meet the unique demands of customer needs across different retail categories.

After analysing the empirical findings, the main questions and stated hypotheses should be taken into consideration. The main two focal questions were:

“What is customer’s opinion and about AI-driven recommendation systems on an ecommerce website and whether they would pay for such services?”

“On what kind of web shops and how should these systems be best implemented based on customer’s view?”

Customers opinions towards AI-driven recommendation systems were already summarized and detailed above. From the results of the research, it can be concluded that among the younger generation the positive acceptance of such systems is inevitable. Research participants positive interest outweighs the concerns that were mentioned. Secondly, regarding an extra fee, customers showed reluctance and would expect ecommerce companies to offer these AI solutions as a complementary feature of the website. Regarding the second question, the research showed that websites with a wide range of variety of products as well as websites that require niche or professional knowledge should implement AI-driven recommendation system based on customers’ opinions. Furthermore, there were many conditions mentioned by the respondents that need to be fulfilled before using any AI-driven recommendation systems. These included: data protection and ensuring quality and efficient recommendations. AI based on professionals’ knowledge is appreciated by customer as well.

Hypothesis 1 (H1): It was proved to be true that some customers would pay for these AI-driven solutions, but they are only willing to fork out a small amount.

Hypothesis 2 (H2): It was proved to be true, that in sectors like in skincare and technology, where the selection of the right product is essential, customers expressed interest in the AI-driven systems. However, their willingness to pay in this sense could not be concluded.

Hypothesis 3 (H3): It was also proved to be true as well. For customers it was shown that is important to fulfil some conditions to be able to trust the recommendation of an AI. In most cases it was the high quality an accuracy of generated recommendations.

V.1. Limitations of the research

It is essential to mention the limitations of any research, as it might not be applicable in all cases due to special biases and the scope of the research. The results mentioned previously should not be generalized or validated in any context without a further, more specific analysis of the topic. The main limitation of the thesis is the homogenous demographic profile that was surveyed and interviewed. Although, generally Millennials and Gen Z, the younger individuals are those who possess the highest familiarity with new digital technologies, like AI and they are the most likely to adopt them as well. Thus, this aspect could mean a bias towards a more accepting and tech-savvy perspective. The problem in this context is that the results might not be representative enough to conclude that this the perception and opinion of other generations towards AI in ecommerce too. Furthermore, another limitation includes the nature of the data, meaning that it was collected by one individual and the survey was sent out mostly to people with the same background and lifestyle as the writer of the thesis. The self-reported nature of the research might implicate inaccuracy or bias towards the writers' own preferences and behaviours. Lastly, only customers' opinions were examined throughout, not considering other important influencing factors as ecommerce companies' views, feasibility, or the financial efficiency of the implementation of AI driven recommendation systems into an ecommerce website.

V.2. Implications for future research

The topic presented in this thesis; the application of AI driven recommendation systems is not well-researched yet. The concept of business application of artificial intelligence is still in its infancy. The research presented here concentrated and explored the perspectives and attitudes of young customers only. Hence, future research should incorporate the opinions of a wider and more diverse demographic including people from older age groups and people who are less familiar with technological advancements. This could provide a more comprehensive understanding of the possibilities and risks of the market incorporating a wider array of customer needs and barriers. To be able to explore the evolution of customers' opinions over time, longitudinal studies, following customers and repeated studies could show valuable insights into how people get more used to Ai in ecommerce as technology advances and what other customer expectations are emerging. This research could provide information to synthesize future trends and discover the potential in the wider adoption of AI in the retail sector.

Examining other topics connected to customers' perception towards AI in ecommerce, the impact of educational initiatives that could inform and help customers get acquainted with AI

and its benefits on a web shop could be advantageous as well. This could uncover whether informed customers are more likely to use and rely on AI systems and whether they would have a greater acceptance rate. In addition to this, customers satisfaction levels could be measured and analysed regarding an AI driven recommendation system that was already implemented on an ecommerce website. Lastly, the other side, the companies themselves could be surveyed or interviewed to have a better understanding about their current and future standpoint.

VI. Summary

The thesis explores the utilization and application of artificial intelligence (AI) into ecommerce websites, catering to customers' needs and enhancing the online shopping experience. Specifically, the focus was on the integration of an AI-driven recommendation system or a so-called advanced chatbot to streamline the customer journey. The focal question of the research was customers' perceptions and their willingness to use and perhaps pay for these newly established AI solutions. The methodology combined quantitative and qualitative data from an online survey and qualitative insights collected through short interviews. The sampled population included primarily young people, namely Millennials and Generation Z respondents. They were the target of the research as they are the most frequent users of ecommerce websites, and they are more acceptive towards new technological advancements.

The empirical findings from the research indicated a general openness and positive attitude towards AI-driven recommendation systems. However, it is important to note that people expressed some concerns regarding data protection and privacy and the accuracy of the recommendations the artificial intelligence generates. The results from the survey and the interviews revealed that most of the respondents are not very familiar with AI solutions and except for a few they are not using AI-driven recommendation systems extensively. In addition to this, there is notable interest towards the possible advantages these new technologies could bring when implemented. Mostly, people believe that it could enhance the personalized online shopping experience and efficiency significantly, by reducing the search time and offering products that the customers are interested in. Participants' willingness to pay for such systems remains low, as many people expect these services to become a standard feature on ecommerce websites without having to pay an extra fee.

All in all, the result of the research is quite promising for the future potential opportunities for AI integration in ecommerce. Especially, focusing on the improvement of online customer journey through a new source of personalization and more efficient services. The key is for the

integration of such systems is to be transparent and clear with the benefits and costs associated with AI technologies to be able to capture the acceptance and utilization of a wider audience.

VII. Reference list

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VIII. Appendix

9. Table – Interview Answers

Name	Age	How much do you know about Ai?	How much do you use it on an everyday basis?	How would you imagine Ai on an ecommerce website?	Do you think an Ai solution could engage you to buy something? If yes, how?	Would you use an Ai-driven recommendation system that resembles ChatGPT? (Advanced Chatbots)
A	22	Average	Weekly, for studies and work as a supporting system for generating ideas	For personalized product recommendation and advertisement	Yes, definitely. It happened already that after a couple of days I went back and ordered something just because of a targeted ad.	Yes, I would try out
B	23	Very little	I do not use any Ai intentionally	For personalized product recommendation and to help find the product I need faster	Yes, definitely. It could show me products that I would buy but were not able to find on the site	Probably, I would try out
C	29	Very little, almost nothing	I do not use any Ai intentionally	As a tool to find the exact product I need and get to know its details without having to call customer service or spend hours trying to find the information	For sure. If I could get all the information about a specific product within seconds I would only buy from that shop	Yes, I would use it
D	22	More than average	I use Ai a lot, especially ChatGPT and Quillbot for my studies, I am familiar with DeepL, and other genAis as well	For personalized product recommendation and to offer me options that I might be interested in to imitate the real life shopping experience	Yes, I really like using new technology and I would just buy something just to test the Ai's recommendation	Yes, I would use it
E	24	Average	I use Ai once in a month (ChatGPT), when I need inspiration for something or need to write an official document	I could imagine it for product recommendation or targeted advertising	No, I like to do my own research	No, I do not think so
F	26	Average	Weekly, for studies and work as a supporting system for generating ideas	For personalized product recommendation and to give me ideas and special offers based on my interests	For sure. I would be thrilled just to try out a new solution and get help without spending hours on a website	Yes, would try out

10. Table – Interview Answers

Name	Age	On what kind of webshops could you imagine an Ai-driven recommendation system (Advanced Chatbot) would help you the most?	Would you pay extra for an Ai driven recommendation system (Advanced Chatbot)?	Do you have any concerns?	Do you think it could help you to find the most appropriate products you need and increase the likelihood of purchase and even create loyalty?
A	22	Online retailers (fashion retailers), where there are thousands of products and its hard to navigate through all and specialized websites like computer or IT related, where specialized help is needed	No	Data privacy and the accuracy of recommendations	Yes, if the system could give a very appropriate recommendation based on my description, and I do not have to browse through a lot of pages
B	23	Online retailers (fashion retailers), where there are thousands of products and its hard to navigate through all and specialized websites like computer or IT related, where specialized help is needed	No	Accuracy of recommendation	It could increase the possibility of purchase but not loyalty for me, I am not going to use a webshop because they have a recommendation system, it is more like a nice to have
C	29	On specialized websites selling tools or spare parts, where product details are essential and on large online retail platforms (fashion retailers)	Yes, definitely, if it could shorten the time looking for information	No, I do not have any concerns	Yes, definitely I would order from a webshop more if they can shorten the amount of time spent browsing
D	22	Online retailers (fashion retailers), where there are thousands of products and its hard to navigate through all and in case of products where professional recommendation is needed to buy the most appropriate products (skincare, sport supplements)	Yes, if I am buying specialized products (e.g: skincare)	No, I do not have any concerns	It could increase the possibility of purchase but not loyalty for me, I am not going to use a webshop because they have a recommendation system, it is more like a nice to have
E	24	Probably on specialized IT related websites	No	Data privacy, accuracy of recommendation, Ai is not developed enough	No, I would rather make my own research and would definitely not visit a webshop more
F	26	Online retailers (fashion retailers), where there are thousands of products and its hard to navigate through all and in case of skincare products to find the most appropriate	Yes, if it could provide the same level of help as a shopping assistant/professional would	Accuracy of recommendation	Yes, if the system could give a very appropriate recommendation based on my description, and could act as a shopping guide or assistant