

UNIVERSITY OF LJUBLJANA  
SCHOOL OF ECONOMICS AND BUSINESS

MASTER'S THESIS

**THE IMPACTS OF ARTIFICIAL INTELLIGENCE ON  
CONSUMERS' ATTITUDES AND BEHAVIOUR**

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## ABSTRACT

The rapid development of artificial intelligence (AI) has transformed the interaction between consumers and businesses, introducing both opportunities and challenges in understanding consumer behaviour. This master's thesis investigates the influence of AI technologies on consumers' attitudes, decision-making processes, and the development of consumer trust. Through a mixed-methods approach, the research combines a quantitative survey of 125 respondents with two in-depth expert interviews from the fields of marketing and computer vision to provide complementary insights from both consumer and business perspectives. The findings reveal that AI enhances personalisation, efficiency, and customer engagement through tools such as chatbots, recommendation engines, and predictive analytics. However, the results also indicate persistent concerns regarding data privacy, ethical transparency, and the loss of human interaction, which continue to shape consumer trust and acceptance. The study concludes that transparent communication, ethical data management, and regulatory alignment are essential for fostering trust and ensuring the responsible and sustainable integration of AI.

**KEY WORDS:** artificial intelligence, consumer behaviour, consumer attitudes, digital marketing, personalisation, data privacy, ethical AI, consumer trust.

## SUSTAINABLE DEVELOPMENT GOALS



## POVZETEK

Hiter razvoj umetne inteligence (UI) je preoblikoval odnose med potrošniki in podjetji ter odprl nova vprašanja o priložnostih in izzivih razumevanja potrošniškega vedenja. Magistrsko delo raziskuje vpliv tehnologij umetne inteligence na odnos potrošnikov, njihove odločitvene procese ter razvoj zaupanja do digitalnih sistemov. Z uporabo kombinirane raziskovalne metode, ki združuje kvantitativno anketo s 125 udeleženci in dve poglobljeni intervjuji s strokovnjakoma s področij marketinga in računalniškega vida, naloga ponuja vpogled tako iz potrošniške kot poslovne perspektive. Ugotovitve kažejo, da umetna inteligenca izboljšuje personalizacijo, učinkovitost in uporabniško izkušnjo z orodji, kot so klepetalni roboti, priporočilni sistemi in napovedna analitika. Kljub temu rezultati raziskava izpostavlja trajne pomisleke glede zasebnosti podatkov, etične preglednosti in izgube človeškega stika, ki vplivajo na stopnjo zaupanja in sprejemanja tehnologije. Raziskava ugotavlja, da so za odgovorno in trajnostno vključevanje umetne inteligence ključni transparentna komunikacija, etično upravljanje podatkov in usklajenost z zakonodajnimi okvirji.

**KLJUČNE BESEDE:** umetna inteligenca, potrošniško vedenje, odnos potrošnikov, digitalni marketing, personalizacija, zasebnost podatkov, etična umetna inteligenca, zaupanje potrošnikov.

#### **CILJI TRAJNOSTEGA RAZVOJA**



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## LIST OF ABBREVIATIONS

**AI** – (angl. Artificial intelligence); Umetna inteligencja

**EU** – (angl. European Union); Evropska unija

**GDPR** – (angl. General Data Protection Regulation); Splošna uredba o varstvu podatkov

# 1 INTRODUCTION

Artificial intelligence (continuing AI) is a field of engineering focused on creating software and machines that can perform tasks requiring human-like intelligence. It uses advanced methods to mimic aspects of human thinking. The term "artificial" highlights its synthetic origin, distinguishing it from natural human intelligence.

AI is already reshaping many areas of life, especially how people act as consumers and form attitudes. This thesis aims to examine how AI influences consumer behaviour, focusing on its role in reshaping consumer attitudes and decisions. The origins of AI, linked to visionaries like Alan Turing and John McCarthy, set the stage for a future where machines could mimic human cognitive processes. Today, with generative tools like ChatGPT and advanced data analytics, the boundaries between human and machine intelligence are blurring, driving major shifts in consumer attitudes (Anyoha, 2017).

The purpose of this thesis is to understand how AI is influencing consumer behaviours and attitudes in today's digital world. AI has changed how businesses interact with consumers and how consumers perceive and engage with AI-driven products and services. As generative AI tools entered mainstream use in the early 2020s, their adoption accelerated, making it important to examine their implications for consumer behaviour (Timpone & Guidi, 2023).

This thesis references scientific literature, case studies, and original research to examine how AI affects consumer behaviour. It acknowledges the dual nature of AI as both a disruptor and enabler, capable of enhancing customer experiences while also raising ethical and privacy concerns. The complexity of consumer behaviour, shaped by psychological, social, and personal factors, requires an analysis that combines theory and empirical data to explain AI's impact (Biswas & Patra, 2023).

This research takes place in a fast-changing technological environment, where AI is becoming a key factor in how people make decisions. It also considers the tension between personalization and efficiency on one hand and trust, privacy, and ethics on the other. By combining theory with research data, this thesis contributes to ongoing discussions about how AI shapes consumer behaviour.

Finally, this thesis also touches on broader debates about AI in society, including ethics and the future of human-AI coexistence. The findings should be useful for businesses, policymakers, and consumers by outlining the main challenges and opportunities that AI presents in consumer markets.

## **2 USE OF AI IN MARKETING**

Marketing is defined as the activity and the set of institutions and processes involved in creating, communicating, delivering, and exchanging offers that have value for customers, clients, partners and society at large (American Marketing Association, 2017).

AI refers to the ability of machines to copy or simulate human intellectual capabilities. These systems can process information, recognize objects, support decision-making processes, solve complex problems, learn from experience, and detect patterns (Kanade, 2022).

As technology continues to advance, marketing has become more data-driven, automated, and intelligent (Chintalapati & Pandey, 2021). The volume and speed of data now exceed what manual analysis can handle on time, so automation is essential. That is why AI in marketing is a rapidly emerging field that is transforming the way businesses approach marketing strategy. It involves the use of AI, Machine Learning (ML), algorithms, and other advanced technologies to automate and optimize key processes and supports better, data-driven decisions. For example, AI models forecast consumer behaviour and market trends; tools such as Google Analytics apply machine learning to user signals to predict interests. Beyond analytics, AI also automates routine tasks (e.g., scheduling social media posts), personalizes content and recommendations based on browsing history, social media activity, website interactions, and past purchases, and identifies patterns that inform insight-driven decisions in real time. Additionally, AI-powered chatbots provide instant customer service and support across platforms, handling inquiries, resolving issues, and guiding customers through the purchasing process. Their round-the-clock availability improves responsiveness and satisfaction and creates more consistent experiences. AI also increases efficiency in programmatic advertising through the automatization of ad buying and placement. By analysing user data, it targets the right audience at the right time to increase conversions and optimize spending. Platforms such as Google's ad stack use AI to adjust placements in real time, improving impact and return on investment. In today's world, this kind of information is crucial to having a competitive edge, which is the main reason as to why marketing represents one of the most important areas of application for AI. Using the technology means developing effective marketing strategies, targeting specific audiences and creating personalised experiences for customers (Lakshmipriyanka et al., 2023).

### **2.1 AI theory**

The "founding fathers" of AI are Alan Turing, John McCarthy, Marvin Minsky, Allen Newell, and Herbert A. Simon, but it was John McCarthy who first used the term AI in 1956 when he held the first academic conference on the subject, marking the beginning of a new era in technology (Anyoha, 2017). Early work in the 1950s focused on issues such as problem-solving and the use of symbolic methods. In the 1960s, U.S. Department of Defense interest accelerated practical applications; the Defense Advanced Research Projects Agency

(DARPA) supported projects from street mapping in the 1970s to intelligent assistants by 2003, preceding consumer tools such as Siri, Alexa, and Cortana. These foundations paved the way for modern decision-support systems and advanced search technologies. AI's recent growth reflects more data, better algorithms and faster, cheaper computing and storage. Today, AI delivers clear advantages across multiple sectors by boosting innovation and efficiency (SAS, 2023).

At its core, AI combines computer science, mathematics, and cognitive psychology in order to build systems that can act in ways similar to human intelligence. AI refers to the ability of a machine or computer to imitate human intelligence. Key technologies include technologies such as machine learning, natural language processing, and computer vision. Together, they allow machines to understand human language, learn from examples, and make predictions. Essentially, AI systems can sense their surroundings, recognize objects, make decisions, solve complex problems, learn from experiences, and mimic patterns. Even though each of these technologies is evolving independently, when combined with others, along with data, analytics, and automation, it has the potential to transform businesses; from optimizing supply chains to improving customer service in line with organizational goals (Kanade, 2022).

AI is a multidisciplinary field of science, which includes several components, each contributing to the development and enhancement of intelligent systems:

- Machine Learning (ML) is a cornerstone of AI and allows computers to learn from data, making decisions based on patterns and experiences without explicit programming for specific tasks. Simply put, ML is the method through which machines learn from data and automatically improve upon themselves. This ability to learn and adapt is what differentiates AI systems from traditional computer programs (Jordan & Mitchell, 2020).
- Natural Language Processing (NLP) allows machines to process and interpret human languages, facilitating interactions between humans and machines that are natural and intuitive. This component of AI includes technologies such as speech recognition and text analysis, allowing machines to process and understand human languages effectively (Hirschberg & Manning, 2015).
- Another critical component is Computer Vision, which allows machines to interpret and understand the visual world. Through analyzing digital images and videos, computer vision systems can identify and classify objects, contributing to various applications such as autonomous vehicles and facial recognition systems (Zhao et al., 2019).
- Robotics integrates AI for autonomous or semi-autonomous action, from repetitive tasks to adaptive decision-making. These tasks range from simple, repetitive activities to complex decision-making processes that require the robot to learn from its environment and adapt to new situations (Siciliano & Khatib, 2016).
- Expert Systems, designed to use codified knowledge to support the decision-making abilities of human experts, use rule-based systems to analyse information and provide recommendations, decisions, or conclusions in specific domains. These systems are

particularly valuable in fields where expertise is scarce or the decision-making process is complex and requires a deep understanding of the subject matter (Jackson, 1999).

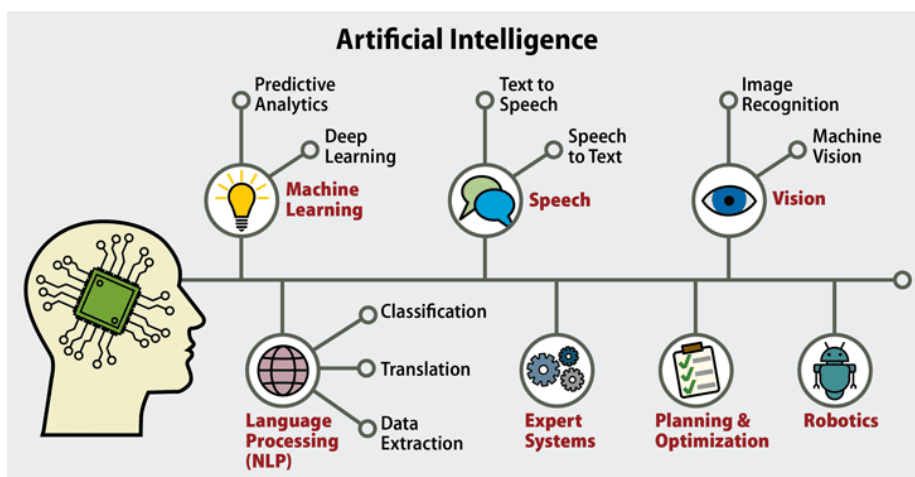
- Planning and Optimization AI components focus on devising techniques that determine action sequences to achieve specific goals. This capability is crucial in fields such as logistics, where efficient planning can significantly affect performance and outcomes (Ghallab et al., 2004).
- Another important aspect is the development of AI-optimized hardware, such as GPUs and custom chips, which significantly accelerates training and inference, enabling more complex and sophisticated AI systems (Hennessy & Patterson, 2019).

Together, these components make it possible for AI systems to perform tasks once thought possible only for humans. These components represent the building blocks of AI systems. Through the integration and advancement of these components, AI continues to evolve, offering promising solutions to complex problems across various domains.

So, how exactly does AI work? Firstly, an AI system takes in information, which can be in the form of speech, text, images and more. It then processes this data using rules and algorithms to interpret, predict and respond to the input. Once the processing is completed, the system produces an outcome, indicating success or failure based on the input data. This result is then analysed, revealed and given feedback. The system uses these assessments to refine the input data, rules, algorithms, and target outcomes. This process repeats until the desired result is achieved (Kanade, 2022).

As shown in figure 1, the components of AI are Machine Learning (ML), Speech, Vision, Language Processing (NLP), Expert Systems, Robotics, Planning and Optimization.

Figure 1: Components of AI



Source: SAS (2023).

## **2.2 AI in digital marketing, personalization and content creation**

With so much data being produced by both people and machines, today's digital world allows for AI to take on a key role in shaping marketing opportunities. The capacity of AI to sift through and interpret enormous datasets much faster than humans allows it to make decisions that would otherwise be difficult, if not even unrealistic to make. This has created new ways of combining human input with AI across advertising, planning, logistics and customer engagement. Central aspects of AI's contribution to digital marketing include stronger user engagement and more efficient lead conversion. Marketing strategies have shifted from broad targeting to more personalised, data-driven approaches. Where teams once focused mainly on media scale and product variety, AI has moved practice toward business intelligence and predictive models that inform strategy and execution. This shift has not only deepened their understanding of the market, sales, and operational dynamics but also enabled the construction of predictive models. These models, grounded in data analysis, offer foresight into strategic planning, marking a significant leap in how marketing initiatives are conceived and executed (Campbell et al., 2020).

AI has transformed marketing from a one-size-fits-all strategy to a data-driven approach that emphasizes personalization, operational efficiency and real-time interactions. It engages consumers with timely, tailored content that creates value for both businesses and clients. Through improved segmentation, marketers can target specific groups with messages matched to their preferences. In advertising, AI is used to optimize ad targeting and placement, ensuring that marketing messages reach the most receptive audiences, improving the return on investment for advertising campaigns. AI algorithms can also analyse the performance of ads in real-time, making quick adjustments to improve effectiveness and efficiency. This enhances the consumer experience, making marketing communications more engaging, relevant and valuable (Shaik, 2023).

AI is widely utilized in marketing communications to personalize messages. Customization of marketing strategies has emerged as a key focus of research due to the importance of digital interactions and data-driven approaches in AI marketing. Analyzing behaviour, preferences and engagement history allows algorithms to tailor communications at the individual level. This improves customer experience and campaign effectiveness. AI also optimizes the timing and channel of messages by detecting patterns in online activity, increasing the chances that content will be noticed and interacted with. It is especially useful for creating personalised marketing content by matching messages with individual consumer interests and needs. Personalization spans email messages, on-site experiences, and content recommendations, helping brands build stronger connections with their audiences (Şenyapar, 2024).

Additionally, AI is reshaping content creation in marketing. AI-powered tools can assist in generating content ideas, crafting interesting headlines, and can even produce clear, brand-consistent copy for product webpages, blog posts, news updates, and reports. This

accelerates production and helps teams keep a steady flow of quality content. This is particularly valuable in today's fast-paced digital environment, where the ability to quickly produce high-quality content can provide a competitive advantage. Computer vision and generative tools support not only text creation, but also the creation of images, videos and infographics. By analyzing trends and performance data, AI can recommend the most engaging types of visual content for specific audience segments and even help with themes, layouts, and colour choices that fit brand guidelines and audience preferences (Şenyapar, 2024).

### **2.3 AI in chatbots**

Advances in natural language processing (NLP) have produced increasingly powerful chatbots and virtual assistants. These systems hold natural conversations, deliver quick answers and raise service quality and engagement. Because they run across channels and operate around the clock, they meet consumer expectations for immediate support. Using NLP and machine learning, chatbots interpret queries, provide accurate responses and handle routine tasks such as answering FAQs, processing simple transactions and booking appointments. With appropriate data, they can also personalise interactions; for example recommending products, offering targeted discounts, or reminding customers about items left in their cart. Beyond service, chatbots support marketing by initiating relevant conversations, sharing content, and highlighting new products or promotions, which can strengthen customer relationships and loyalty. Apart from frontline support, effective chatbots are typically connected to back-office systems (e.g., order management, CRM, ticketing). These links allow them to perform useful actions: checking order status, initiating returns, updating contact details, or scheduling services so the experience moves from “answering” to “resolving”. When an issue exceeds predefined rules or confidence thresholds, the chatbot should hand it off to a human agent with full context, which reduces repetition and improves resolution. Bots should clearly identify themselves, obtain and respect consent, and minimize the personal data they collect. Guardrails for tone, brand voice, and safety should keep answers consistent, while explicit escalation paths protect against over-automation. Multilingual support and accessibility features (e.g., simple language options) broaden reach and improve equity of service. However, limits and risks remain. Chatbots can struggle with ambiguous questions, novel issues, or noisy data; excessive automation can frustrate users who need empathy or discretion. Personalization depends on data quality and responsible use, so privacy and fairness concerns must be addressed. Aligning chatbot scope with these constraints helps ensure reliable, human-centred outcomes (Nichifor et al., 2021).

### **2.4 AI in voice and visual search**

A voice assistant is a virtual assistant powered by AI technology that uses natural language processing algorithms to recognize speech and engage in real-time conversations with the

user. AI-enhanced voice assistants such as Alexa, Siri, and Google Assistant are increasingly replacing search engines as consumers actively use them to search, shop and control smart homes. Technology providers as well as marketers are trying to use voice assistants to engage their existing and prospective consumers to deliver more personalised value propositions and to handle complex search queries, which can help with achieving their business goals. This has led marketers to focus on voice assistant search engine optimization (SEO) in order to enhance the visibility of their brand, products, or services through the algorithms used by these voice search engines (Malodia et al., 2021). Benefits include efficiency, time management, accessibility, inclusion, enhanced personalization, multitasking, and convenience. Consumers use voice assistants not only for searches, but also for tasks such as online shopping, ordering transport, controlling their home automation systems, setting reminders, and media playback (EMB Global, 2023).

AI-powered visual search is changing how businesses and consumers interact with digital content. By leveraging machine learning algorithms and computer vision, AI-powered visual search engines can analyse images to identify objects, patterns, and attributes, effectively surpassing the limitations of text-based queries. This innovation holds substantial implications for both parties. For businesses, it opens new avenues for product discovery, targeted advertising, and customer engagement, allowing companies to offer personalised recommendations and improve the shopping experience (Chow, 2023). For consumers, visual search simplifies the process of finding products and information online, making it more intuitive and efficient. By allowing users to search images instead of words, AI-powered visual search increases access to information, breaking down language barriers and enhancing digital accessibility. This technology not only streamlines the search process but also enriches the online shopping experience, leading to increased customer satisfaction and loyalty (Chaudhury, 2020).

## **2.5 AI in social media**

AI has changed social and influencer marketing by enabling audience targeting, personalization, automation, and better measurement of marketing efforts. Algorithms optimize content delivery by analyzing engagement patterns to select timing and formats that fit each audience segment and by forecasting trends to inform content creation. Personalization tailors posts, ads, and messages to individual preferences, raising engagement and strengthening brand–audience ties (van Esch & Stewart Black, 2021).

AI plays an important role in the measurement and analysis of social media and influencer marketing campaigns. AI-powered analytics provide deeper insight into reach, engagement, conversion, and sentiment, allowing real-time adjustments and better resource allocation while also maximizing the ROI. AI technologies can detect emerging trends and topics on social media platforms so brands can respond quickly. This proactive approach ensures that the brand remains relevant and can effectively engage with audiences on current topics,

consequently enhancing brand visibility and engagement. Overall, integrating AI into social media and influencer strategies not only enhances customer experience but also increases effectiveness and supports more dynamic, responsive campaigns, which all make the campaigns more impactful (Benabdelouahed & Dakouan, 2020).

## **2.6 AI in website testing and reviews**

AI is also changing website quality assurance (QA). By embedding AI into the testing workflow, businesses can significantly improve the efficiency, accuracy, and scope of their testing processes. AI-driven testing tools can automate the creation, execution, and maintenance of test cases, often in plain language ("natural language") that is accessible to non-technical stakeholders (Islam et al., 2023). These tools, such as Testsigma, offer a platform to test web, mobile, and desktop applications, as well as APIs, integrating smoothly with Continuous Integration/Continuous Deployment (CI/CD) pipelines to support rapid release cycles. The algorithms analyse user interactions, website behaviour, and performance metrics to identify potential issues such as broken links, layout inconsistencies, and responsiveness across different devices. This approach not only speeds up the testing process but also ensures a higher quality product by catching errors that could potentially degrade the user experience (Islam et al., 2023). Additionally, AI-powered visual testing platforms such as Katalon Studio and Applifools automatically detect and manage changes in the user interface (UI), helping to identify bugs that could affect user experience but might be overlooked by traditional testing methods, which accelerates testing and improves product quality (Thiam, 2024).

AI also supports website review analysis. AI-powered sentiment analysis tools can scan user reviews, extracting insights into user satisfaction, usability issues, and areas for improvement. This allows businesses to gather valuable customer feedback and prioritize website enhancements based on user needs. Personalizing how reviews are presented can make information more relevant for different user groups (Kumar et al., 2016).

For businesses, benefits include faster release cycles, more reliable and efficient QA processes, improved website quality, and reduced development costs. Consumers, on the other hand, can benefit from improved performance and usability, which means websites are more reliable, user-friendly, and optimized for performance. AI-powered review analysis can also guide consumers towards websites that best suit their needs and preferences, promoting informed decision-making. However, it is important to acknowledge that AI in website testing and reviews is still an evolving field. Challenges remain in areas such as data bias and the interpretability of model outputs, which is why human expertise remains irreplaceable in tasks requiring creativity, judgment, and ethical considerations (Lima et al., 2020).

## **2.7 AI in analytics and user experience**

Predictive analytics, another aspect of AI, helps businesses anticipate needs and trends so they can align communications and act proactively. Marketers use past data to forecast future behaviour and market dynamics, improving decisions and adapting their strategies for maximum impact. Real-time, AI-driven analytics also enable rapid optimization so campaigns stay responsive and cost-effective (Şenyapar, 2024). By combining data, statistical models, and ML, businesses can estimate the likelihood of outcomes based on historical data, forecast responses to stimuli, identify engagement opportunities, and anticipate market shifts before they happen. This approach lets businesses plan ahead instead of only reacting, helping them make more informed marketing decisions (Ali et al., 2023).

Customer segmentation and targeting are central applications. By analysing past behaviour and engagement, AI predicts which segments will respond to specific messages or offers, making communication more relevant and effective. Predictive analytics also helps design smoother journeys by identifying friction points and addressing them with targeted interventions, increasing conversion and retention (Surendro, 2019).

As AI and analytics continue to advance, predictive methods are becoming more central to marketing, offering increasingly precise tools for engaging consumers in a changing marketplace (Şenyapar, 2024).

## **3 CONSUMER BEHAVIOUR**

Consumer behaviour is the study of how people and organizations choose, use, and dispose of products or services, and how these choices affect both them and society. Research on consumer behaviour often draws on psychology and sociology to explain purchasing decisions. Understanding differences in preferences, decision-making processes, and purchasing habits is essential because these factors shape business strategy and marketing approaches (Vijayalakshmi & Mahalakshmi, 2013). This thesis aims to explore psychological and social influences on consumer decisions and how businesses can respond to them using AI tools.

The study of consumer behaviour integrates elements from psychology, sociology, social anthropology, and economics. It examines individual and group decision-making, including demographics and behavioural variables in an attempt to understand people's wants. It also considers influences from family, friends, reference groups, and society.

Psychological factors that influence consumer behaviour include motivation (Maslow, 1943), perception, learning, and attitude. Motivation refers to the internal and external drives that impact the consumer's decision-making process. Maslow's hierarchy of needs is crucial in understanding how these motivations are prioritized.

- Motivation plays a significant role in shaping consumer choices. According to Maslow (1943), motivations are organized in a hierarchy, from basic survival needs to complex psychological demands. This framework suggests that consumers are more likely to address immediate physiological needs before pursuing higher-level psychological ones.
- Consumer perception is the process by which an individual selects, organizes, and interprets stimuli into a meaningful image of the world. Brands often influence consumer perception through marketing messages and product packaging to sway consumer choices.
- Learning shapes consumer decisions by driving behavioural changes rooted in experiences. According to the theory of cognitive learning, consumer behaviour is influenced by informational inputs that are processed and stored in the form of memories. This affects future purchase decisions based on past experiences.
- Attitudes reflect how consumers usually feel about and respond to a product or idea. Attitudes notably affect the choosing and purchasing of products, as they frame the consumer's approach toward available market offerings (Solomon, 2014).

Social factors involve the effects of society, culture, family, and peer groups on consumer behaviours. Social influences on buying decisions are particularly significant; they include roles and family influences. The family often plays a critical role in shaping buying behaviour, both directly by influencing purchases and indirectly by shaping values and preferences over time (Peattie, 2010).

- The family unit plays a crucial role in shaping consumer behaviour, affecting the purchase and consumption of products. Family decisions may involve collective input, where each member plays a different role in influencing the purchase process.
- Reference groups provide points of comparison for norms and behaviours. Social networks, particularly digital ones, also significantly impact consumer decisions by offering platforms for reviews, recommendations, and endorsements (Baker et al., 1994).

Cultural factors strongly affect consumer behaviour by shaping individuals' perceptions, preferences, and behaviours (Hofstede, 1980). Cultural norms dictate what is acceptable and influence daily choices. Furthermore, subcultures and social class are essential elements, with each segment exhibiting distinct purchasing behaviours and preferences.

- Culture shapes behaviour through deeply ingrained norms and values, affecting what individuals consider appropriate or desirable. These cultural parameters guide consumer behaviour, often subconsciously.
- Subcultures provide more specific identification and socialization for individuals, who often gravitate towards products that are culturally specific, increasing personal or group identity. Similarly, social class impacts consumer preferences and purchasing habits, influencing product choice across different market segments.

Personal preferences, such as lifestyle and economic circumstances, also play a critical role in determining consumer choices (Kotler & Keller, 2016).

Consumer decision-making is not driven solely by rational considerations; emotional responses and ethical concerns significantly influence purchasing behaviour. Emotional branding seeks to create a personal connection between the consumer and the product or brand, through emotions such as happiness, nostalgia, or security (Morrison & Crane, 2007). In addition, ethical consumption has grown as awareness of social and environmental issues has increased; many consumers prefer brands that are perceived as socially responsible and therefore align with their values (Auger et al., 2008).

### **3.1 Consumers' attitudes towards AI**

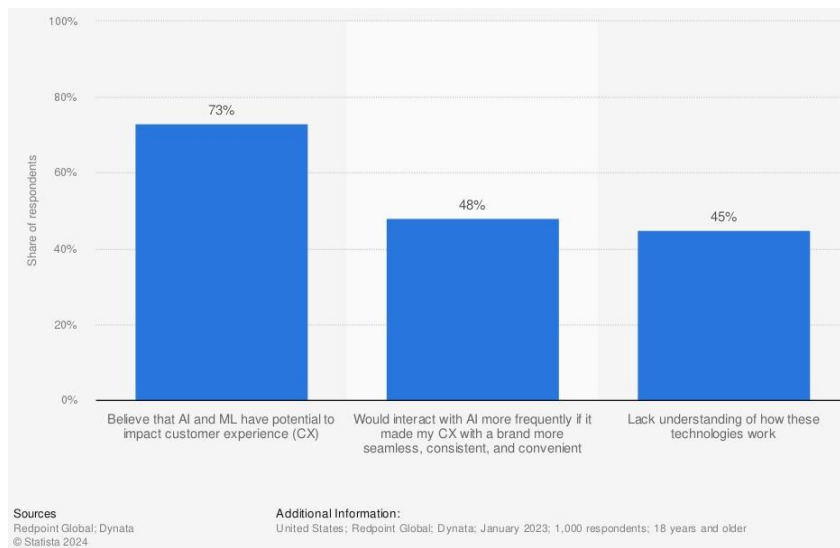
Although AI has played a role in many areas of daily life for the past few years, consumer attitudes remain mixed and complex. Understanding these views is important because they affect adoption and effective implementation. Research indicates a blend of positive expectations, concern, and caution.

Factors such as trust, risk, and the perceived usefulness of the technology shape how consumers feel about AI tools. A comprehensive study involving participants from the US, UK, Germany, and Switzerland found that attitudes are influenced by how individuals interpret AI's implications for society. Those who view AI as a threat are likely to have a more negative outlook, and those who see its transformative potential generally have a more positive attitude. This split in opinion highlights the role of risk perception and trust in shaping public acceptance of AI (Gerlich, 2023).

Several studies report a generally positive outlook on AI's potential to improve customer experience. Research shows that AI can improve brand-customer relationships in marketing by offering personalised communication and faster service, for example through recommendation systems or chatbots. Eickhoff and Zhevak (2023) suggest that consumers are open to AI's influence on customer experience, particularly when interactions are consistent, convenient, and transparent. This is further supported by Statista's 2023 data, shown in Figure 2, where 73% of those surveyed believe AI can improve consumer experience, and 48% would use it more if it enhanced brand interactions (Dencheva, 2024). Acceptance, however, varies with social norms, media portrayals, and personal experience. Studies have shown that personalization can raise engagement, but responses depend on the execution quality and transparency of these AI interactions (Chen et al., 2021).

People still value human creativity. A study by Ragot et al. (2020) demonstrates a bias towards human-generated creative output such as poems and paintings compared to AI-generated creative output. This suggests a continuing preference for human creative imagination, even when acknowledging AI's efficiency.

Figure 2: Consumer attitudes towards brands' usage of AI and ML in the US as of January 2023



Source: own work

Consumers also express concerns about AI customer service. Research by Li et al. (2020) found a more negative attitude towards AI chatbots compared to human representatives. This negativity is linked to perceived shortcomings in problem-solving abilities, response timing, and a lack of the "human touch." Additionally, consumers often dislike AI chatbots posing as human agents, emphasizing the importance of transparency (Li et al., 2020).

Data privacy is another major concern. While many acknowledge the potential benefits of AI-powered personalization, 81% express worries that it could compromise their online privacy. This highlights the need for ethical data practices and clear communication about data use in order to build trust (Data, 2022).

In business, attitudes towards AI vary by industry and context. Top management's support, competitive pressure, and regulatory environments are all factors contributing to employees' attitudes. For example, employees in organizations that have adopted AI technologies tend to have a more positive attitude compared to those in organizations not using such technologies. This suggests that exposure to and familiarity with AI can foster acceptance, or at least more positive perception (Vasiljeva et al., 2021).

In conclusion, consumer attitudes towards AI tools span a broad spectrum. Convenience and efficiency are widely acknowledged, yet concerns about human interaction, effects on employment, and caution regarding data privacy persist. As AI evolves, recognizing these nuances will help businesses implement AI responsibly and build trust (Data, 2022).

### **3.2 AI in consumer behaviour**

AI is undeniably reshaping consumer behaviour. By using enormous datasets and sophisticated algorithms, AI is influencing how people search for information, make purchasing decisions, and interact with brands. The influence of AI is visible in many ways - from predicting purchase decisions to personalizing search experiences and offering AI-supported service (Gkikas & Theodoridis, 2021).

One key area of impact is the ability of AI to predict consumer behaviour. Gkikas and Theodoridis (2021) point out that AI-based customer behaviour prediction models can analyse vast amounts of structured and unstructured data to identify patterns and hidden features. This allows businesses to anticipate customer needs and preferences, leading to more targeted marketing campaigns and personalised product recommendations. For instance, AI-powered recommendation engines on e-commerce platforms analyse a customer's past purchases and browsing history to suggest relevant products, influencing their buying decisions (Slide, 2023).

Furthermore, AI is shaping how consumers search for information. Traditional search engine optimization (SEO) techniques are no longer the only factor that determines online visibility. As Thomas Slide highlights, AI is personalizing search results by understanding a user's intent and context. This can significantly redirect consumer journeys, leading them to discover products and services that better align with their specific needs (Slide, 2023).

The impact of AI extends beyond online interactions. AI-powered chatbots now provide real-time support and resolve common issues quickly. This makes the customer experience smoother, which can improve loyalty and satisfaction (Babu, 2023).

However, the ethical implications of AI for consumer behaviour cannot be ignored. These capabilities depend on extensive data collection, which heightens concerns about transparency and control. As Jean-Baptiste Hironde emphasizes, consumers are becoming increasingly aware of how their data is used. Businesses that prioritize data transparency and responsible data handling practices are likely to earn trust and gain a competitive advantage over time (Hironde, 2023).

### **3.3 AI benefits and risks in consumer behaviour**

While AI offers plenty of benefits, its impact also raises concerns regarding privacy, bias, and manipulation.

One of the most significant benefits of AI is the ability to personalize the customer's journey. By analyzing enormous amounts of data regarding past purchases, browsing history, and demographics, AI algorithms can recommend products and services tailored to individual preferences. This level of personalization makes customers more satisfied and more likely

to remain loyal to a specific brand or make a purchase. Research suggests that AI-powered recommendation engines can significantly boost sales by anticipating consumer needs and suggesting relevant products (Dias et al., 2023).

AI also improves convenience and efficiency in consumer decision-making. Chatbots provide 24/7 customer support, and tasks such as price comparison and product research are automated, saving consumers time and reducing effort. Streamlined journeys can strengthen brand preference (Johnson, 2023).

However, the very features that make AI beneficial can also pose significant risks. Using personal data for personalization raises privacy concerns. Consumers may feel uneasy about the extent to which their online behaviour is tracked and analysed. Furthermore, AI models can also inherit and amplify biases in training data. This can lead to discriminatory outcomes, such as targeted ads or recommendations that reinforce stereotypes (Hironde, 2023).

Another risk associated with AI in consumer behaviour is the potential for manipulation. AI systems can be used to steer consumers towards specific choices by exploiting psychological factors. For instance, AI-powered pricing strategies can dynamically adjust prices based on individual consumer profiles, potentially leading to unfair pricing practices. Additionally, AI-driven marketing campaigns may use persuasive tactics that exploit vulnerabilities in consumer decision-making (IvyPanda, 2022).

### **3.4 AI and ethics**

As AI becomes more advanced and integrated into society, it is important to discuss its ethical implications. Addressing issues of bias, privacy, accountability, and the wider social impacts requires collaboration between researchers, developers, policymakers, and the public. By promoting an open dialogue and prioritizing ethical considerations throughout the AI development cycle, we can help ensure AI benefits society (Brundage et al., 2018).

One of the primary concerns lies in algorithmic bias. AI systems are trained on large datasets, which can reproduce societal biases embedded in the data itself. This can lead to discriminatory outcomes in hiring, unfair loan approvals, or loss of access to services. Brundage et al. (2020) highlight this risk and call for mitigation strategies such as bias detection, representative datasets and fairer data collection practices in their article "The Malicious Use of Artificial Intelligence: Forecasting, Prevention, and Mitigation,".

Privacy is another critical concern. Many AI systems depend on extensive personal data, raising questions about user privacy and the potential for misuse of this data. Payton and Claypoole (2014) examine tensions between innovation and individual privacy rights. They argue for robust data protection frameworks to ensure transparency and give users control over their information.

Furthermore, the increasing autonomy of AI systems raises concerns about accountability and control. As AI decision-making processes become more complex and less transparent, it becomes difficult to pinpoint responsibility for potential harm. Wischmeyer and Rademacher (2020), in their book "Regulating Artificial Intelligence," advocate for the development of clear regulatory frameworks that define roles and duties across development, deployment, and use, alongside requirements for explainability and auditability.

Ethical concerns extend beyond technical design. The potential societal impacts of AI range from job displacement to automated warfare and thus call for wider debate. Badet (2021) explores the potential economic and social disruptions caused by AI. He emphasizes the need for proactive policy measures to manage these disruptions and ensure a just transition for the workforce.

### **3.4.1 Legal aspects**

AI is quickly transforming the world, bringing both opportunities and challenges. As AI algorithms become more sophisticated and integrated into critical aspects of society, legal and ethical considerations become increasingly important.

One of the primary concerns lies in algorithmic bias. AI systems trained on biased data can produce discriminatory outcomes in areas such as loan approvals, facial recognition, or even criminal justice (Barocas & Selbst, 2016). Legal frameworks should set standards for data quality and require audits for algorithmic fairness. The European Union's General Data Protection Regulation (GDPR) offers a starting point, granting rights of access and rectification over personal data used in AI systems (European Union, 2016).

Another crucial aspect is transparency and accountability. Many AI decisions are hard to explain, making it difficult to understand how algorithms produce specific outputs, which threatens fairness and due process. If people cannot understand how decisions about them are made, they cannot challenge those decisions or hold anyone accountable for them. Law and regulation should promote explainable AI (XAI) techniques and require models and processes that are auditable and verifiable (Powers & Ganascia, 2020).

The question of liability in the context of AI malfunctions is also a pressing legal issue. If an autonomous vehicle causes an accident, who is responsible - the manufacturer, the programmer, or the user? Existing legal frameworks may not adequately address this. The legal and ethical rules surrounding AI are still evolving. As AI becomes widespread, legal frameworks need to adapt to address issues of bias, transparency, accountability, and liability. By supporting collaboration between legal scholars, ethicists, and technologists, we can ensure that AI development and deployment comply with ethical principles and safeguard human well-being (Selbst, 2019).

### 3.4.2 Privacy concerns

One of the most pressing issues regarding the impact of technology on consumer privacy is the tension between the large data demands of AI systems and the fundamental right to privacy (Mittelstadt et al., 2016).

The digital revolution has brought many benefits but also raises serious concerns about consumer privacy. The extensive data collection practices of online retailers and marketers, driven by the desire to personalize advertising and enhance consumer engagement, have increased consumers' anxiety over intrusion into their privacy (Martin & Murphy, 2017). This concern has prompted legislative responses, such as the GDPR in the European Union, to strengthen protection and ensure transparency in data usage (Voigt & von dem Bussche, 2017).

A core concern lies in the large amount of personal data required to train and operate effective AI. As Mittelstadt et al. (2016) point out in their article "The Ethics of Algorithms: Mapping the Debate," AI systems often rely on extensive personal datasets containing everything from search histories to social media activity. This creates a risk of data overload, where so much personal information is collected that it becomes hard to protect. The acquisition of such data usually depends on informed consent, but in AI it is often unclear or complicated. Terms may be complex, and purposes may be unclear, leaving individuals with limited control over their information. This can lead to situations where individuals unknowingly surrender significant control over their personal information (Zhao & Chen, 2022).

The consequences of this kind of data collection go far beyond just making people uncomfortable. Models trained on biased datasets can continue societal inequalities. Buolamwini and Gebru (2018) demonstrate this in their article "Gender Shades: Intersectional Accuracy Disparities in Commercial Gender Classification". Their findings show how facial recognition systems trained on predominantly light-skinned datasets exhibited racial bias in accuracy rates. This algorithmic bias can have real-world consequences, influencing areas such as loan approvals or criminal justice (Buolamwini & Gebru, 2018).

The question is: How do we manage these ethical challenges? Several solutions are currently emerging. One approach focuses on improving transparency in AI systems. People should understand how their data is used and have practical control over its flow (Mittelstadt et al., 2016). Additionally, regulatory frameworks like the EU's GDPR are vital in establishing data protection standards and ensuring accountability (Zhao & Chen, 2022).

In conclusion, the ethical considerations surrounding AI and privacy are multifaceted. As AI continues to evolve, so must our efforts to safeguard individual privacy and mitigate bias. By prioritizing transparency, robust data protection regulations, and responsible

development practices, we can ensure that AI serves humanity without compromising our fundamental right to privacy (Zhao & Chen, 2022).

### **3.4.3 Consumer trust**

AI has the potential to change many parts of our lives. However, the rate of adoption of AI will be determined by how much people trust it. Research suggests that consumers are apprehensive about the ethical implications of AI, and this concern directly affects their trust in the technology (Yooz, 2023).

One of the primary concerns surrounding AI is fairness and bias. Models trained on large datasets can reproduce social bias, producing discriminatory outcomes. For example, an AI-powered resume screening tool might unintentionally favor resumes with certain keywords, disproportionately impacting candidates from underrepresented groups. This lack of fairness can wear down consumer trust, as individuals become wary of AI systems making decisions that affect their lives (Bach et al., 2022).

Another concern is transparency and explainability. Many AI systems function as black boxes, making it hard to understand how conclusions are reached. This lack of transparency fosters suspicion and distrust. People are more likely to trust AI systems when they are transparent and accountable, and when their decisions can be easily explained (Reinhardt, 2022).

The concept of "ethicswashing" further complicates the trust process. Ethicswashing refers to companies superficially promoting the ethical development of their AI systems without concrete action. Consumers are increasingly savvy, therefore performative claims are recognised more easily and can backfire, reducing credibility. There are, however, paths towards building trust in AI. One crucial step is the introduction of clear and complete ethical guidelines for AI development and deployment. The European Union's ethics guidelines for "trustworthy" AI serve as a starting point. Additionally, open communication about limitations and risks can manage expectations and strengthen confidence, while simultaneously building trust (Peukert & Kloker, 2020).

Ensuring fairness and transparency in AI systems is essential. Regular audits to detect and reduce bias are vital. Clear, usable explanations of how systems reach decisions can empower users and strengthen trust, which is a foundation for ethical, successful adoption. By addressing fairness and transparency, and avoiding ethicswashing, stakeholders can build trust and help realise the benefits of AI more broadly (Reinhardt, 2022).

## **4 METHODOLOGY**

The purpose of this master's thesis is to investigate how AI technologies influence consumer perceptions, decision-making, and overall behaviour. This study aims to explore the dual

perspectives of consumers and businesses to understand how tools such as chatbots, recommendation engines, and personalised marketing shape consumer attitudes, trust, and usage patterns. Additionally, it seeks to examine the ethical concerns, privacy considerations, and perceived benefits associated with the adoption of AI. Data was collected through an online survey questionnaire with 125 respondents to record consumers' insights and experiences, and two in-depth interviews were conducted: one with a Head of Office at a marketing agency with more than 20 years of professional experience, and another with an assistant at the Faculty of Computer and Information Science, University of Ljubljana, who is also a member of the Laboratory for Computer Vision, specializing in biometrics research and teaching, with over 30 co-authored scientific publications. The ultimate objective is to provide actionable recommendations for businesses on how to leverage AI tools ethically and effectively while addressing consumer expectations and fostering trust along with sustainable engagement in the digital marketplace.

#### **4.1 Survey research design**

In order to provide answers to the posed research questions, focusing on the impact of AI on consumers' attitudes and behaviour, a survey was designed and distributed to collect primary data from respondents. The survey, designed using 1KA Arnes, was conducted in English and distributed across various channels such as social media platforms (Facebook, Instagram, LinkedIn) and direct messaging (email, Messenger). Efforts were made to partially personalize messages to enhance the response rate. Participants primarily consisted of online consumers, with questions designed to explore their demographic profiles, knowledge, and attitudes towards AI tools, as well as their experiences and concerns regarding AI in online shopping. The survey included multiple-choice questions, Likert-scale statements, and open-ended prompts to record both quantitative and qualitative insights. It concluded with questions aimed at understanding consumer preferences, trust in AI technologies, and their perceived ethical and privacy implications. This design ensured a comprehensive approach to gathering diverse perspectives on the subject.

Simultaneously, it examines the business adoption of AI, including the challenges of implementation, its impact on marketing strategies, and the measures taken to build consumer trust. By analyzing data from survey questions targeted at consumers and in-depth interviews with industry professionals, the research seeks to provide a comprehensive understanding of AI's role in transforming shopping behaviours and business practices. Ultimately, the findings aim to inform businesses on how to leverage AI tools ethically and effectively while addressing consumer expectations and cultivating trust.

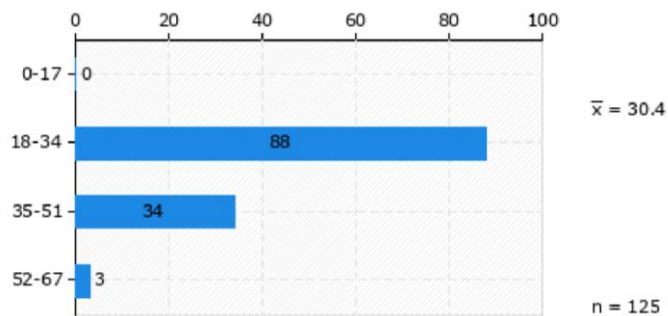
#### **4.2 Description of the survey sample**

The survey was designed via 1KA Arnes and distributed through e-mail, Instagram, LinkedIn, Facebook and direct messages. The total number of contacted people was around 700, 452 accessed the survey and 125 completed it, making it valid for the thesis. The

respondents come from various backgrounds and have different levels of knowledge of AI. The main goal was to get to know how much the average person knows about AI, and whether they actually use it on a daily basis. The survey consists of 21 questions, 17 of which are mandatory to complete the survey successfully. The questions were mainly aimed at getting to know the respondents' buying habits, knowledge of AI tools and their thoughts on privacy and ethical concerns. The last 4 questions are open-ended questions where respondents could write about their experiences and thoughts more freely.

The survey sample comprised 125 valid responses, providing a diverse representation of participants across various demographics. The respondents' ages ranged from 18 to 67 years, with an average age of 30.4 years, reflecting a primarily young to middle-aged population. The "Provide your age" question required respondents to answer with their specific ages, which were then calculated into age ranges below (Figure 3).

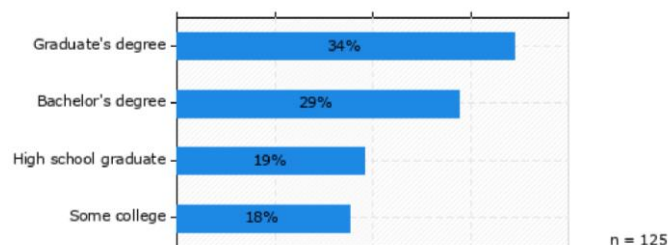
*Figure 3: Age of respondents*



*Source: own work.*

Education levels were categorized into four groups: High school graduate (1), Some college (2), Bachelor's degree (3), and Graduate degree (4), which is demonstrated below (Figure 4). The majority of participants hold a Bachelor's or Graduate degree, with an average education level of 2.8, indicating a well-educated sample.

*Figure 4: Education level of respondents*



*Source: own work.*

Since the survey aimed to assess consumers' experiences with AI tools in daily life, no specific respondent type was targeted, provided they could understand the questionnaire.

The Employment/Education background question was open-ended, and responses were categorized into common industries.

Out of 125 respondents, the largest group (18.4%) were business & management professionals, reflecting a significant representation of professionals in corporate and administrative roles. This was followed by students (17.6%), indicating a strong representation of younger demographics, which may have a notable impact on perspectives regarding AI adoption. The retail & hospitality sector accounted for 15.2%, pointing to customer-facing industries where AI is often integrated into sales and service processes. The IT (9.6%) and marketing (9.6%) fields were also well represented, and both of them are highly engaged with AI-driven tools.

Smaller industry groups included law (3%), unemployed respondents (3%), and 7 individuals (5.6%) who did not provide an answer (N/A). These missing responses may indicate reluctance to disclose employment status or difficulty in classification.

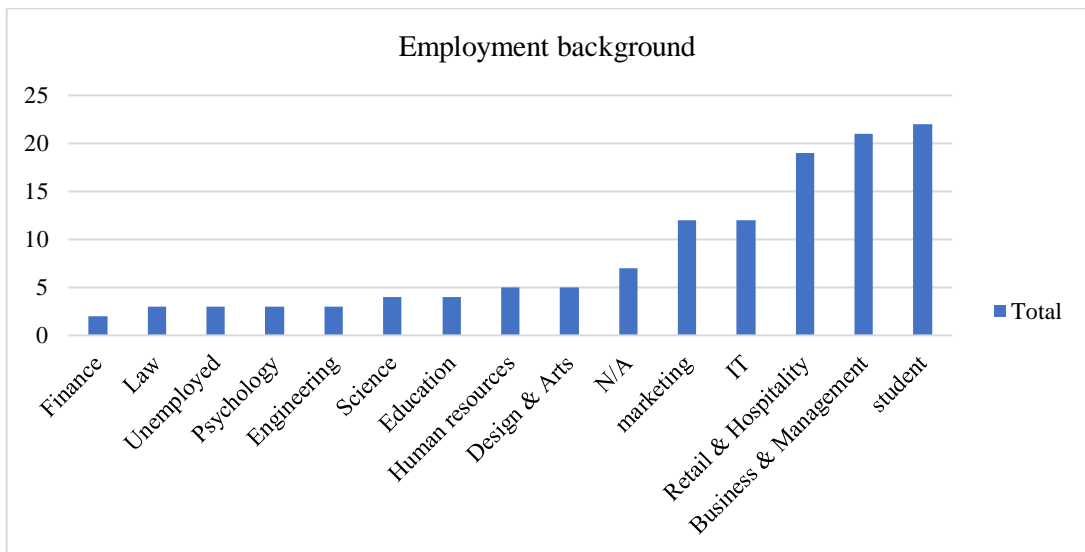
The distribution of respondents suggests a diverse sample, yet some industries (such as law and highly specialized technical fields) are underrepresented. The prominence of business & management professionals and students may indicate that the findings are influenced by respondents with managerial, financial, or academic perspectives, as well as by younger consumers who may possess different levels of AI familiarity and adoption. The results are presented in Table 1 and Figure 5.

*Table 1: Respondents' employment background*

<b>Industry</b>	<b>Count</b>	<b>Percentage</b>
Law	3	2,40 %
Engineering	3	2,40 %
Psychology	3	2,40 %
Unemployed	3	2,40 %
Science	4	3,20 %
Education	4	3,20 %
Human resources	5	4,00 %
Design & arts	5	4,00 %
N/A	7	5,60 %
Marketing	12	9,60 %
IT	12	9,60 %
Retail & hospitality	19	15,20 %
Student	22	17,60 %
Business & management	23	18,40 %
Total	125	100,00 %

*Source: own work.*

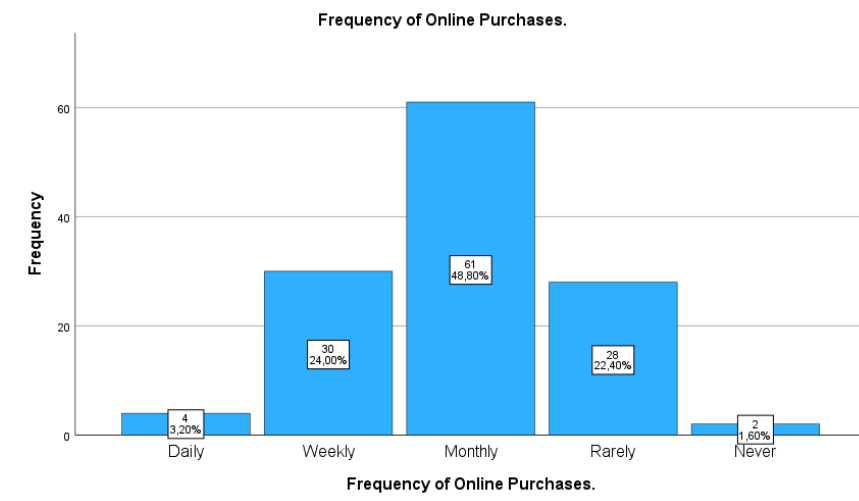
Figure 5: Respondents' employment background



Source: own work.

When analyzing online shopping frequency, the data revealed varying consumer habits. A small percentage of respondents (4 individuals) reported making online purchases daily, while 30 (24%) respondents engage in online shopping on a weekly basis. The largest portion of participants (48.80%) stated they make online purchases on a monthly basis, suggesting that regular but not frequent online shopping is the most common behaviour in the sample. A smaller segment of the population reported rarely or never shopping online, highlighting differences in digital shopping engagement. This data is shown in Figure 6.

Figure 6: Respondents' frequency of online purchases



Source: Own work.

### 4.3 Description of the expert in-depth interview sample

To complement the quantitative survey, two in-depth interviews were conducted with professionals who engage with AI in different contexts. Both were selected using purposive sampling to ensure relevant and contrasting perspectives: one participant represents the business and marketing domain, while the other brings insights from academic research into AI.

Table 2 provides an overview of the participants, including their professional roles, years of experience, fields of expertise, and the focus of their AI work. As shown below, the first interviewee is a marketing professional with over two decades of experience in branding, communication, and client management, offering a practice-oriented view of AI adoption. The second is a computer vision researcher and assistant professor specializing in biometrics, with extensive academic and publication experience, contributing a technically rigorous and ethically grounded perspective. Together, they provide a valuable contrast between applied industry practices and theoretical research developments.

*Table 2: Overview of interview participants*

<b>Participant</b>	<b>Profession &amp; Role</b>	<b>Years of Experience</b>	<b>Field of Expertise</b>	<b>Focus of AI Work</b>	<b>Interview Mode</b>
Interviewee 1	Head of Office, marketing agency	20+ years	Marketing, branding, strategic communication	Use of AI in marketing, personalization, client engagement	Face-to-face
Interviewee 2	Assistant professor & researcher, Faculty of computer and information science	10+ years (30+ publications)	Computer vision, biometrics, academic research	Development of deep learning models, ethics in AI, bias mitigation	Email

*Source: own work.*

The interviews were based on a list of pre-prepared, open-ended questions, organized into five thematic areas:

- Experiences with AI in business / Experiences with AI in research and application
- Impact of AI on marketing and consumer behaviour / Impact of AI on research
- AI and consumer perception / AI and public perception
- Ethical considerations and trust in AI / Ethical considerations in AI research

- Future direction and industry impact / Future direction and the role of AI in research industry

While the core questions remained consistent, they were adjusted to align with the professional expertise of each interviewee. The first group of questions aimed to explore the respondents' initial exposure to AI, the integration of AI tools in their respective fields, and how these technologies have evolved over time. The second group of questions sought to understand how AI influences their industry practices, enhances personalization, and shapes consumer interactions or research outcomes. The third group of questions delved into the attitudes of the public and stakeholders towards AI, highlighting trust, transparency, and common misconceptions. The fourth group of questions was designed to focus on issues such as bias, fairness, and the ethical implications of AI in the interviewees' respective domains. Finally, the last group of questions was about their predictions for AI advancement and the role of AI in shaping the future of their industries. In total, there were 11 main questions which were all open-ended, with some sub-questions in order to gain more detailed insight for the necessary research.

Before the interviews were conducted, the questions were passed to both interviewees to make sure the questions were clear and understandable. Upon the interviewees' confirmation, the respective interviews were conducted.

Both interviews were conducted in August 2024, one in person at a pre-arranged time and location, the other via email due to scheduling conflicts that prevented a face-to-face meeting from being arranged. Before the interview, the author and their goals for the thesis and purpose of the research being conducted were presented. The respondent who was interviewed face-to-face was asked to sign a consent form, as the interview was recorded for transcription purposes. Both respondents were informed that the interviewer would adhere to GDPR policies and all relevant ethical standards for field research. Additionally, they were assured that all collected data would be anonymized and used solely for research purposes.

After completing the interview, the recording was transcribed and the data from both interviews analysed using thematic analysis, a method commonly employed for examining qualitative data.

#### **4.4 Data analysis**

The data collected using the questionnaire was analysed using SPSS, a statistical software used for various types of analysis, in this case descriptive statistics cross-tabulation. As mentioned above, for the primary, qualitative data provided by the expert in-depth interviews, respondents were selected using a purposive sampling method, which allowed for more flexibility when identifying suitable interview candidates. Thematic analysis was

used to analyse the data. The findings are presented in detail in the following sections of the thesis.

## **5 ANALYSIS AND DISCUSSION**

### **5.1 Results of the survey**

The main goal of the survey was to explore consumers' attitudes towards AI tools and their privacy concerns (research question 2) while also trying to understand how AI influences consumer behaviour (research question 3). That is why the first set of questions was intended to provide basic information about the respondents, as mentioned in section 4.2. Description of survey sample. In addition, the purpose of the questionnaire was to gain insight into the average consumer's thoughts on AI, as well as where they see opportunities and challenges of using AI tools. To reach this objective, the survey was conducted using 1KA and was available online.

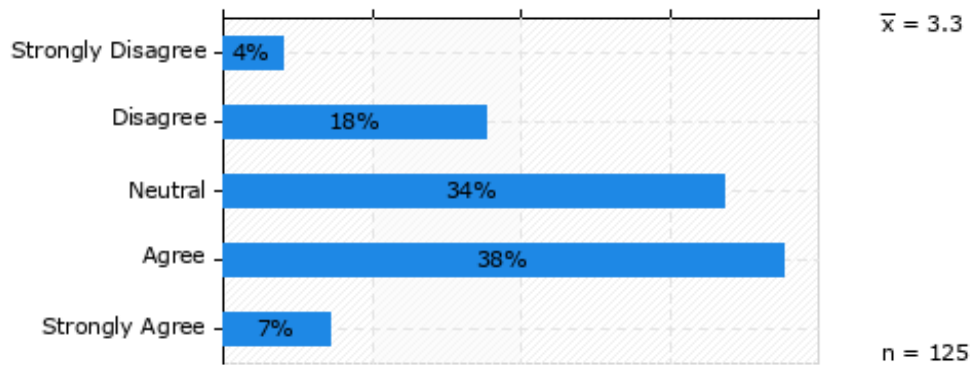
It consisted of 21 questions, 17 of which being mandatory to complete the survey. The questions were mainly aimed at getting to know the respondents' buying habits, knowledge of AI tools and their thoughts on privacy and ethical concerns. The last 4 questions were open ended questions where respondents could write about their experiences and thoughts more freely.

The survey (which is available in the appendix) consisted of 21 questions with an opening statement intended to provide respondents with basic information regarding the purpose of the survey and an exact definition of AI tools. The survey was divided into 4 parts. The first part consisted of questions aimed at finding out basic information about the respondents (age, education level, employment background, frequency of online purchases). The second part analysed the familiarity of respondents with AI and its tools, how the way AI is used within their companies affects them, the perceived benefits of using said tools and any concerns they may have regarding the use of AI. The third part of the survey was about personal use and perception of AI tools, while the fourth part was all about consumers' experiences with AI tools.

#### **5.1.1 Consumers' awareness, usage and attitudes towards AI**

For the 5<sup>th</sup> question, respondents had to indicate their level of agreement with the following statement: "I have a good understanding of how AI is used in the shopping decision-making journey." Below you can see Figure 7: Understanding AI usage, displaying their answers. 42 respondents (34%) felt neutral about the statement, while 47 (38%) of them agreed with it. The average answer of 3.3 shows a moderate understanding of how AI is used in the shopping decision-making journey.

Figure 7: "I have a good understanding of how AI is used in the shopping decision-making journey."

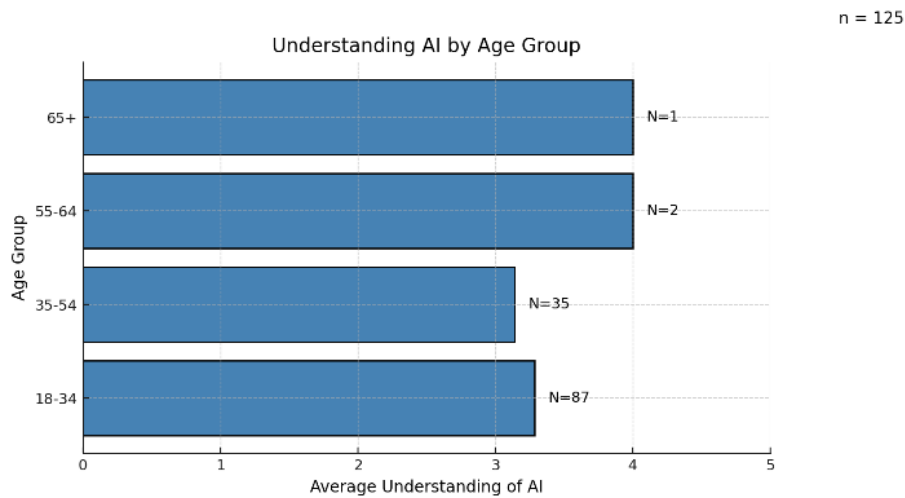


Source: own work.

Figure 8 titled "Understanding AI by Age Groups" illustrates the average level of understanding of AI among respondents, categorized by age groups. The data is derived from survey responses in which participants rated their understanding of AI on the Likert scale. The data suggests a correlation between age and understanding of AI, where younger respondents exhibit higher familiarity with and comprehension of AI concepts. This trend may highlight the need for targeted educational initiatives or simpler interfaces to help older generations engage with AI technologies more effectively. The below chart provides valuable insights for businesses and policymakers aiming to bridge the gap in AI awareness and adoption across different age groups.

The 18-34 age group has the largest number of respondents (87 people), making its AI understanding score (3.29) the most statistically significant. This group shows the highest average understanding of AI, reflecting the younger generations' familiarity with technology and frequent interaction with AI-driven tools in daily life, such as chatbots, recommendation systems, and virtual assistants. The 35-54 age group also has a decent sample size (35 respondents) with an average AI understanding of 3.14. The understanding of AI slightly decreases in this group, which might indicate a reduced exposure to emerging technologies or a slower adoption of AI tools in comparison to younger individuals. The 55+ age groups show an AI understanding score of 4.0, but with only 2-3 respondents. This data is not conclusive. It is likely that the few older respondents were more tech-savvy or confident in their AI knowledge, which could have skewed the average.

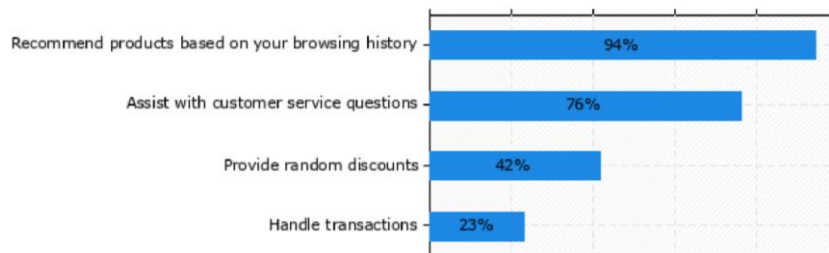
Figure 8: Understanding AI by age groups



Source: own work.

Figure 9 illustrates the responses to the 6<sup>th</sup> question "How do you think AI tools are used in online shopping?" with participants selecting all options they believed applied. The vast majority (94%) of respondents correctly identified that AI tools are commonly used to recommend products based on browsing history. This reflects a strong awareness of the role of AI in personalization, a feature prominently experienced on platforms such as Amazon or Netflix. A significant portion of respondents (76%) recognized AI's role in assisting with customer service questions, for example through chatbots or virtual assistants. This shows familiarity with AI-powered tools such as Zendesk or website chat features. Less than half of the respondents (42%) believed that AI tools are used to provide random discounts. This provided option was incorrect and reflects some confusion, as AI typically focuses on targeted rather than random discount strategies. Only 23% of respondents associated AI with handling transactions, indicating that this role is less visible for or understood by the public. The involvement of AI in transaction handling is often indirect, e.g., fraud detection or payment optimization.

Figure 9: "How do you think AI tools are used in online shopping?"



Source: own work.

Table 3 provides insight for question 7 explored the respondents' level of agreement with three key statements regarding the role of AI in business operations.

Q7a AI improves customer service speed for companies: this statement had the highest positive response rate (74%), reflecting a widely understood and accepted benefit of AI. It shows that respondents generally recognize the efficiency of AI in accelerating customer service processes, likely due to familiarity with chatbots or virtual assistants.

Q7b AI reduces the need for human employees in companies: Q7b reveals more divided opinions with 29% expressing disagreement, indicating concerns or skepticism regarding this topic. Respondents did acknowledge the automation capabilities of AI, but a sizable portion may question its broader impact on reducing human employment.

Q7c AI enhances product pricing strategies for companies: The respondents recognize the role and potential of AI in pricing strategies, but the 31% of neutral responses suggest this area is less tangible or visible to consumers. From this, a moderate understanding of consumers regarding pricing benefits can be gathered.

*Table 3: AI role in business operations based on respondents' answers*

<b>Q7</b>	<b>Please indicate your level of agreement with the following statements:</b>				
		<b>Answers</b>	<b>Frequency</b>	<b>Percent</b>	<b>Cumulative</b>
Q7a	AI improves customer service speed for companies.	1 (Strongly Disagree)	4	3%	3%
		2 (Disagree)	12	10%	13%
		3 (Neutral)	16	13%	26%
		4 (Agree)	75	60%	86%
		5 (Strongly Agree)	18	14%	100%
	Valid	Valid	125	100%	
Q7b	AI reduces the need for human employees in companies.	1 (Strongly Disagree)	9	7%	7%
		2 (Disagree)	28	22%	30%
		3 (Neutral)	20	16%	46%
		4 (Agree)	51	41%	86%
		5 (Strongly Agree)	17	14%	100%
	Valid	Valid	125	100%	
Q7c	AI enhances product pricing strategies for companies.	1 (Strongly Disagree)	2	2%	2%
		2 (Disagree)	11	9%	10%
		3 (Neutral)	39	31%	42%
		4 (Agree)	52	42%	83%
		5 (Strongly Agree)	21	17%	100%
	Valid	Valid	125	100%	

*Source: own work.*

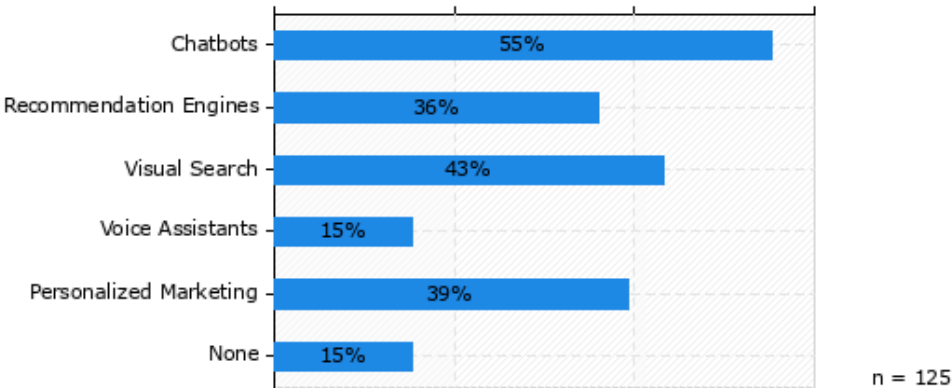
Figure 10 for question 8 provides insight into the types of AI tools respondents have used in their shopping experiences. The respondents were free to select all answers which applied.

The data on the usage of AI tools in shopping experiences reveals that chatbots are the most commonly used tool, with 55% of respondents (69 individuals) indicating that they have interacted with them. This highlights the widespread adoption of chatbots in customer service and their role in enhancing the shopping experience. Visual search and personalised marketing follow closely, with 43% and 39% of respondents respectively reporting their use. These tools reflect the growing interest in AI-powered features that offer more personalised and efficient shopping experiences, such as image-based searches and targeted advertisements.

Interestingly, only 36% of respondents mentioned using recommendation engines, which are a staple in many e-commerce platforms. This may indicate that while these tools are prevalent, users may not always recognize them as AI-driven or directly engage with them. Voice assistants, such as Alexa or Siri, are among the least-used tools, with only 15% of respondents indicating interaction. This suggests that voice-based shopping has not yet reached mainstream adoption, possibly due to usability challenges or limited awareness.

Additionally, 15% of respondents stated that they have not used any AI tools in their shopping experiences. This points to a segment of users who may either lack exposure to such technologies or are unaware of their presence in online shopping platforms. Overall, the findings emphasize the significant role of AI tools such as chatbots in transforming online shopping while highlighting the potential for growth and increased adoption of lesser-used features such as voice assistants and recommendation engines.

Figure 10: Popularity of AI tools

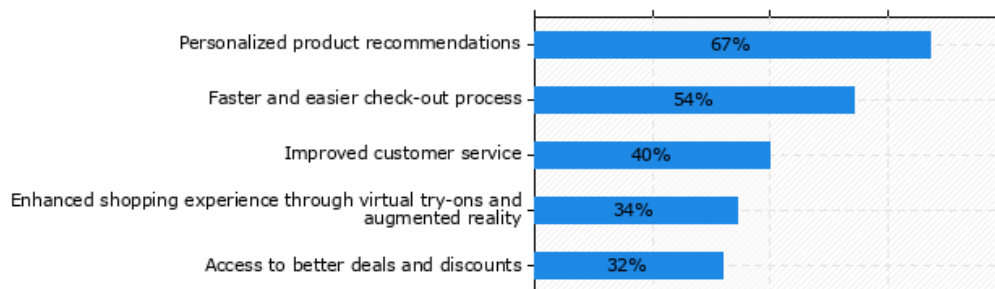


Source: own work.

Figure 11 provides the responses to question 9, which asked participants to select all applicable benefits of AI in online shopping, highlight several key advantages perceived by consumers. The most widely recognized advantage is **personalised product recommendations**, with 67% (84 respondents) acknowledging AI enhances their shopping experience by suggesting relevant products based on their preferences and browsing behaviour. **Faster and easier check-out processes** were also identified as a major benefit by 54% (68 respondents), reflecting the role of AI in streamlining online transactions and

reducing friction during purchases. Improved customer service was another significant benefit, cited by 40% (50 respondents), indicating that AI-driven chatbots and virtual assistants contribute to more efficient support and issue resolution. Additionally, 34% (43 respondents) noted the enhanced shopping experience offered by AI through features such as virtual try-ons and augmented reality, suggesting growing interest in immersive and interactive shopping technologies. Lastly, access to better deals and discounts was mentioned by 32% (40 respondents), highlighting how AI can optimize pricing strategies and promotional offers to provide shoppers with opportunities to save money. These findings suggest that consumers appreciate the ability of AI to personalize, simplify, and enhance their shopping experiences, while also recognizing its role in customer service and pricing advantages.

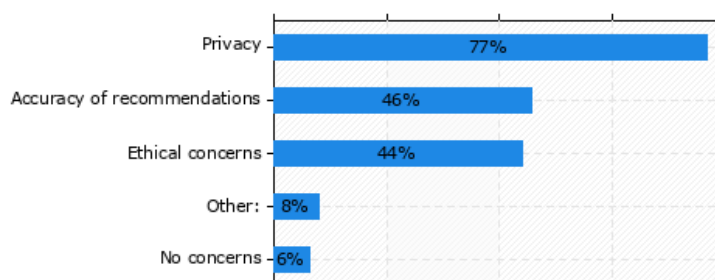
*Figure 11: Benefits of using AI in online shopping*



*Source: own work.*

Figure 12 provides the responses to question 10: "What are your main concerns regarding AI in shopping?" reveal that privacy is the most significant concern among consumers regarding AI in shopping, with 77% (96 respondents) expressing apprehension about how their data is handled. This suggests widespread unease about data security, surveillance, or potential misuse of personal information by AI-driven platforms. Accuracy of recommendations is also a notable concern, with 46% (57 respondents) questioning whether AI effectively understands their preferences and provides relevant product suggestions. Similarly, 44% (55 respondents) cited ethical concerns, highlighting worries about potential biases in AI algorithms, transparency in decision-making, and broader implications for fairness in digital commerce. A small percentage of respondents, 6% (8 individuals), indicated that they have no concerns about AI in shopping, suggesting that while AI adoption is widespread, trust remains an issue for the majority of consumers. Additionally, 8% (10 respondents) selected "Other" and provided specific concerns, such as frustration with AI's inability to understand complex requests, dissatisfaction with excessive advertising, perceived manipulation of older consumers, and concerns over biased discounting and excessive consumption. These findings underscore that while AI brings efficiency to online shopping, significant skepticism remains around data privacy, ethical considerations, and the effectiveness of AI-driven recommendations.

Figure 12: Consumers' main concerns regarding AI tools



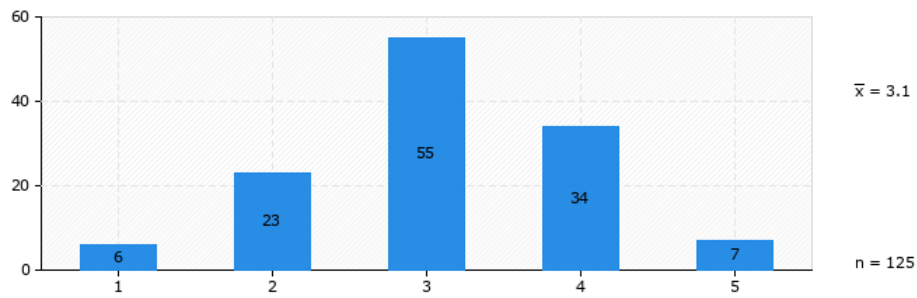
Source: own work.

### 5.1.2 Consumers' perception

The 11<sup>th</sup> question aimed to gauge how consumers feel about companies using AI tools to influence their decision-making in shopping; it is shown in Figure 13. The responses indicate a generally neutral to slightly positive sentiment, with an average rating of 3.1 on a scale from 1 (very negative) to 5 (very positive). This suggests that while AI is not overwhelmingly favored, it is also not widely rejected. The presence of both positive and negative responses indicates that factors such as personal experiences, trust in AI, and familiarity with its functions likely influence opinions. The neutral stance of most respondents suggests an opportunity for AI-driven shopping tools to improve user trust and engagement, potentially by addressing concerns related to personalization, accuracy, and data privacy. The largest proportion of respondents, 44% (55 individuals), rated their sentiment as neutral (3), suggesting that while many consumers acknowledge the role of AI in shaping their shopping experiences, they do not have strong opinions on whether this influence is beneficial or problematic. A combined 33% (41 respondents) expressed a positive outlook, with 27% (34 respondents) selecting 4 and 6% (7 respondents) choosing 5 (very positive), indicating that a portion of consumers appreciate the ability of AI to enhance their shopping journey, likely through personalization, convenience, and predictive recommendations. However, 23% (29 respondents) conveyed negative sentiments, with 18% (23 respondents) selecting 2 and 5% (6 respondents) choosing 1 (very negative), reflecting concerns or skepticism about the role of AI in decision-making, possibly linked to privacy, manipulation, or trust issues.

These findings suggest that while AI-driven decision-making is broadly accepted, many consumers remain cautious or indifferent to its influence. The presence of both positive and negative responses indicates that perceptions are shaped by personal experiences, awareness of the functions of AI, and trust in companies utilizing these technologies. The predominantly neutral stance of the respondents highlights an opportunity for businesses to build greater transparency and trust in AI-driven shopping tools, ensuring that they enhance decision-making in ways that consumers find ethical, helpful, and empowering rather than intrusive or manipulative.

Figure 13: "How do you feel about the use of AI tools in your shopping experience?"  
(scale of 1-5, 1 being very negative, 5 being very positive)



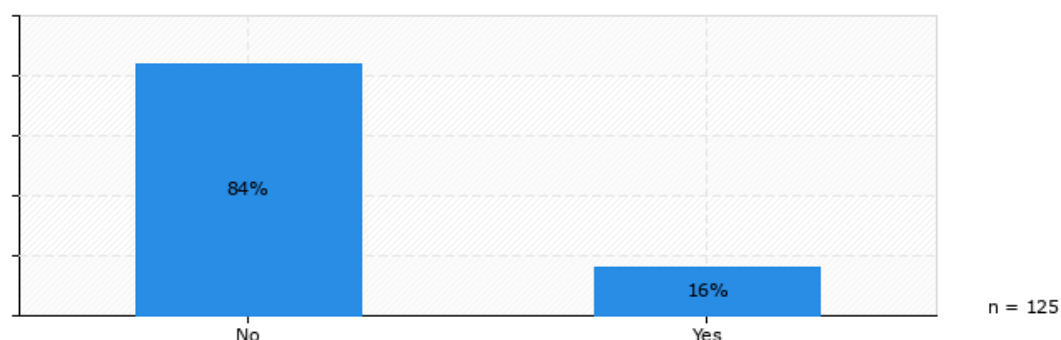
Source: Own work.

The next question was very direct: "Have you ever purchased a product because it was recommended by AI, even though it was not what you initially planned to buy? (If yes, please describe the product and situation.)". The answers are shown in Figure 14. The responses to question 12 indicate that only 16% (20 respondents) have purchased a product due to an AI recommendation, despite not originally planning to buy it. In contrast, 84% (105 respondents) stated that they had never made an unplanned purchase influenced by AI. The low percentage of affirmative responses suggests that while AI-driven recommendations are prevalent, they do not translate into impulse purchases for most consumers.

Among those who did make purchases based on AI suggestions, the descriptions provided in their responses to question 12 reveal that the most common product categories include clothing, beauty products, electronic gadgets, and fitness equipment. Many respondents referenced purchases influenced by Instagram and Facebook ads, highlighting the role of AI-powered targeted advertising in shaping consumer behaviour. Specific examples include buying additional clothing items when shopping for clothes, purchasing fitness equipment after seeing a Facebook ad, and being influenced by Instagram ads for beauty products and hair dryers. Some responses also indicate that AI recommendations introduced consumers to products they would not have discovered otherwise, reinforcing the ability of AI to introduce relevant but previously unknown options.

These findings suggest that while AI-driven recommendations can successfully encourage unplanned purchases, this effect is limited to a smaller portion of consumers. The high percentage of respondents who reported not making such purchases implies that many consumers either resist AI-driven nudges or do not find the recommendations compelling enough to alter their purchase decisions. This could indicate a need for more refined personalization strategies to better align recommendations with consumer preferences and increase their effectiveness in influencing buying behaviour.

Figure 14: "Have you ever purchased a product because it was recommended by AI, even though it was not what you initially planned to buy?"

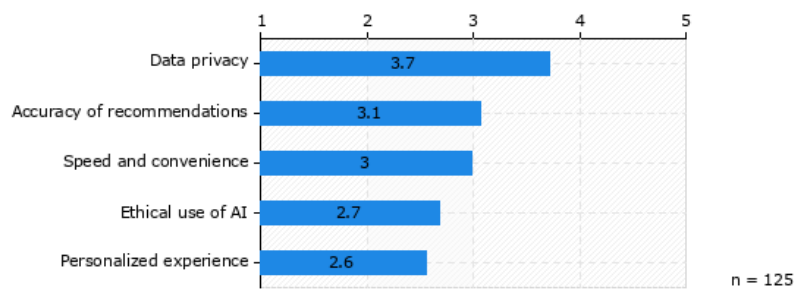


Source: own work.

Figure 15 shows results for the 13<sup>th</sup> question: "What matters most when AI helps you shop? Please rank the following from 1 (least important) to 5 (most important)." The responses indicate a clear hierarchy in consumer priorities. **Data privacy** is the most important factor for consumers, with an average rating of 3.7. A significant 42% (52 respondents) ranked it as the most important consideration (5), underlining strong concerns regarding how personal data is collected, stored, and used by AI-powered shopping tools. The **accuracy of recommendations** follows as the second most valued factor, with an average rating of 3.1. Consumers prioritize the ability of AI to deliver relevant and precise product suggestions, ensuring that recommendations align with their preferences and needs. While 29% (36 respondents) gave it a neutral rating (3), a considerable 17% (21 respondents) considered it their highest priority (5). This suggests that consumers value the ability of AI to provide precise and relevant suggestions, but it is not as critical as safeguarding personal data. **Speed and convenience**, with an average rating of 3.0, ranks similarly to recommendation accuracy. 26% (33 respondents) rated it as low importance (2), while 19% (24 respondents) rated it a 5, indicating that while efficiency is valued, it is not the top concern for most consumers. The results suggest that many shoppers prioritize secure and relevant AI-driven experiences over pure speed. **Ethical use of AI**, with an average rating of 2.7, shows that while some consumers consider ethical concerns important, it is not the primary focus when AI assists with shopping. 36% (45 respondents) rated it as least important (1), suggesting that while ethical AI practices matter, they are less crucial than practical factors such as privacy, accuracy, and convenience. The least prioritized factor is **personalised experience**, with an average rating of 2.6. 28% (35 respondents) rated it as the least important factor (1), suggesting that consumers may not see personalization as a critical advantage of AI shopping tools or may even be wary of excessive personalization due to privacy concerns.

These findings indicate that while consumers appreciate AI-driven efficiency and personalization, their primary concern remains data privacy, followed closely by the ability of AI to provide accurate and relevant recommendations. Ethical considerations and personalization, while important, are viewed as secondary factors in the AI-assisted shopping experience. A visualization of the above data is seen in figures 16 and 17.

Figure 15: "What matters most when AI helps you shop?"



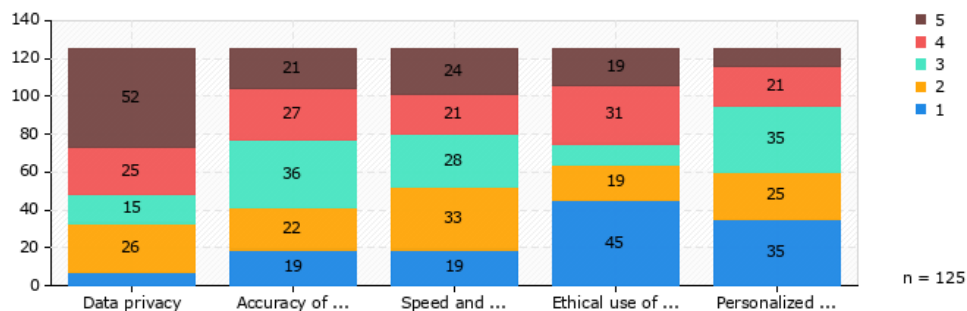
Source: own work.

Figure 16 shows how the scale of 1-5 was being used by respondents. Interpretation of the 1-5 scale is as follows:

- 5 = Most important – “This factor is essential for me when AI helps with shopping.”
- 4 = Important – “This factor matters a lot, though it is not my top priority.”
- 3 = Moderately important – “Neutral; its importance depends on the context.”
- 2 = Low importance – “This factor plays only a minor role in my shopping experience.”
- 1 = Least important – “This factor does not matter to me when using AI tools.”

Overall, the findings show that consumers primarily value secure and trustworthy AI experiences (privacy and accuracy) over speed, personalization, or ethical concerns. This highlights a cautious yet pragmatic approach: shoppers appreciate efficiency and personalization but remain most concerned with the safety and reliability of AI-assisted recommendations. Figure 17 illustrates how respondents distributed their ratings across the full 1–5 scale. Together, they confirm that data privacy is the number one priority, followed by accuracy and speed/convenience, whereas ethical considerations and personalization are secondary.

Figure 16: Respondents' ranking for the 13<sup>th</sup> question in the survey (1 = least important, 5 = most important)

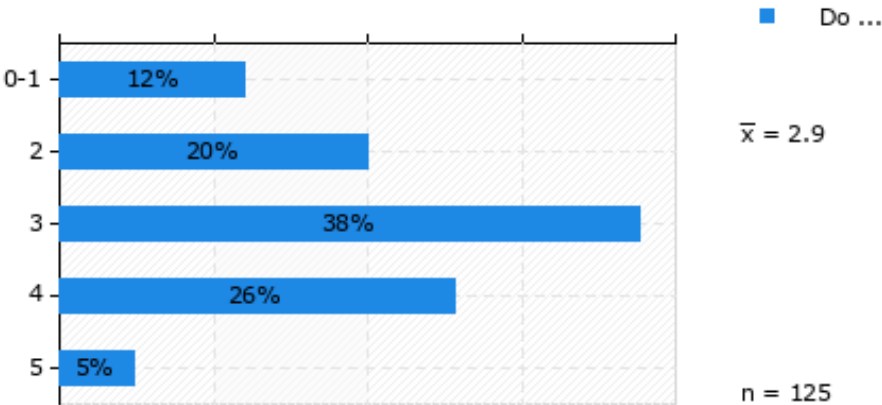


Source: own work.

Figure 17 shows results for the 14<sup>th</sup> question, which was "Do you trust AI to suggest good stuff? (Rate from 1 to 5: 1 = Not at all, 5 = Very much so)". The responses indicate a generally neutral to moderately positive level of trust in AI when it comes to suggesting products. The average rating is 2.9, suggesting that while AI recommendations are not outright rejected, they are also not fully trusted by most consumers. The majority of respondents, 38% (47 individuals), rated their trust level as 3 (neutral), indicating that they neither strongly trust nor strongly distrust AI suggestions. A combined 31% (38 respondents) expressed trust in AI recommendations, with 26% (32 individuals) rating their trust level as 4 and 5% (6 individuals) giving the highest rating of 5 (very much so). This suggests that while some consumers appreciate AI-driven recommendations, only a small portion has strong confidence in them. On the other hand, 32% (40 respondents) expressed skepticism, with 20% (25 respondents) rating their trust level as 2 and 12% (15 respondents) selecting 1 (not at all). This group may have concerns regarding the ability of AI to provide relevant and reliable suggestions or may distrust AI-driven personalization due to privacy or manipulation concerns.

Overall, the findings suggest that consumer trust in AI recommendations is mixed, leaning toward neutral. While a portion of respondents finds AI helpful in suggesting products, a significant number remain cautious, likely due to issues related to accuracy, transparency, and personal data usage. The neutral stance taken by most participants highlights an opportunity for companies to improve the quality and transparency of AI-driven recommendations to build greater trust among consumers.

Figure 17: "Do you trust AI to suggest good stuff?" (Rate from 1 to 5: 1 = Not at all, 5 = Very much so)



Source: own work.

The responses to question 15 reveal significant concerns regarding data security and privacy when AI is used in shopping, which is shown in Figure 18. The highest level of agreement was recorded for the statement "I am concerned about my data security when AI is used to analyse my shopping behaviour," with an average rating of 3.7. A substantial 68% (84

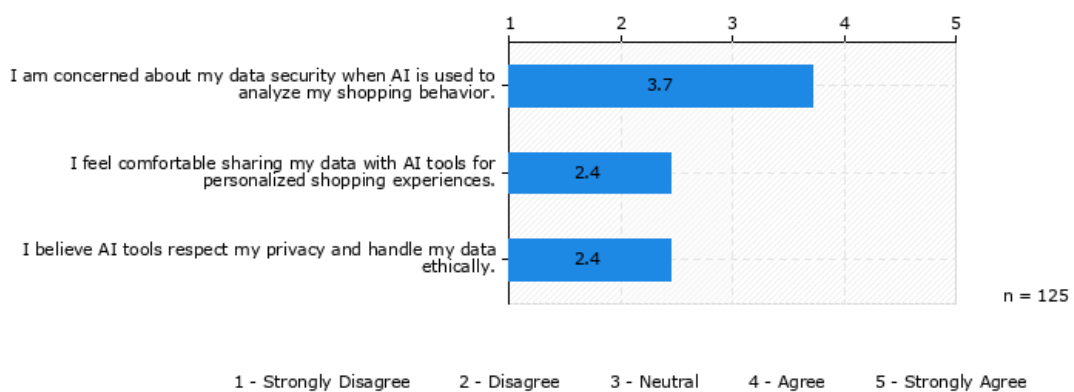
respondents) either agreed or strongly agreed, while only 14% (18 respondents) disagreed or strongly disagreed. This highlights a strong sentiment of caution among consumers regarding how their personal data is handled in AI-driven shopping experiences.

Conversely, respondents showed low levels of comfort with sharing their data with AI tools for personalised shopping experiences, with an average rating of just 2.4. The majority, 57% (72 respondents), disagreed or strongly disagreed, indicating skepticism toward AI-driven personalization and reluctance to provide personal information. Only 16% (20 respondents) agreed or strongly agreed, suggesting that while some consumers accept the role of AI in customization, most remain hesitant.

A similar trend was observed regarding trust in data being handled ethically by AI . When asked if they believe AI tools respect their privacy and handle data ethically, the average rating was again 2.4. 53% (66 respondents) disagreed or strongly disagreed, while only 13% (17 respondents) agreed or strongly agreed. The 34% (42 respondents) who remained neutral indicate a portion of consumers who may be unsure or lack enough knowledge to form a strong opinion.

These findings suggest that while AI tools play an increasing role in shaping shopping experiences, consumer trust remains a significant barrier to their full acceptance. Many individuals remain deeply concerned about data security and are reluctant to share their information, likely due to fears of misuse, lack of transparency, or past experiences with data breaches. To enhance consumer trust, businesses utilizing AI in shopping may need to focus on greater transparency, clearer data protection policies, and stronger security assurances to ensure that AI is perceived as both beneficial and ethical.

Figure 18: Consumers' main concerns



Source: own work.

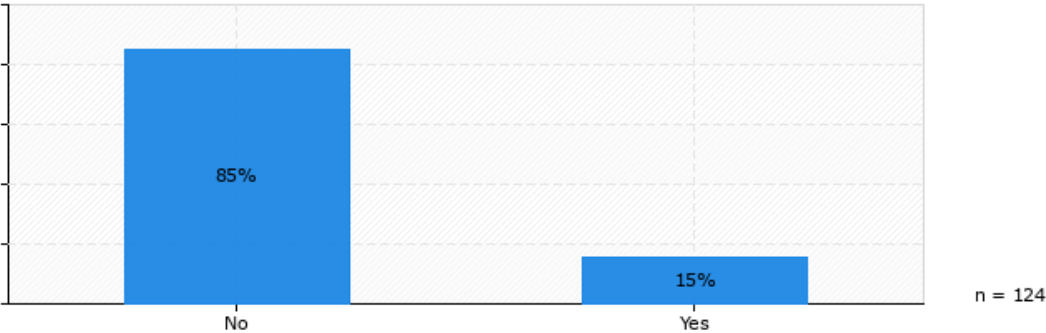
### 5.1.3 Consumers' experiences with AI

The responses to question 16 reveal that the vast majority of respondents (85% or 105 individuals) do not feel that AI has significantly impacted their shopping behaviour, which can be seen below in Figure 19. Only a small proportion (15% or 19 individuals) reported that AI has influenced how they shop. This suggests that while AI tools are widely integrated into online shopping experiences, they have not yet led to substantial behavioural shifts for most consumers. The low rate of reported change could indicate that many shoppers still rely on their usual purchasing habits, regardless of AI-driven recommendations or personalization features. It may also reflect a lack of awareness regarding the extent to which AI shapes their shopping experiences, as AI often works in the background through subtle recommendation algorithms.

For those who did report a change, there was an open-ended sub-question in order to provide further insight into how AI has impacted their shopping behaviour. Some participants mentioned that AI has reduced their visits to physical stores, with several stating they shop online more than in shopping centers or that AI recommendations have encouraged them to shift toward online shopping despite previously preferring in-person purchases. Others emphasized increased efficiency, reporting that AI helps them find products faster or offers a better overall shopping experience. Some respondents described actively engaging with AI by seeking AI-powered recommendations or experimenting with their browsing behaviour to encourage more diverse suggestions. Additionally, AI has influenced some users to shop less, possibly due to better decision-making support or reduced impulse buying.

Overall, the findings indicate that while AI is present in shopping experiences, its influence on consumer behaviour remains limited for most individuals. However, for those who do feel impacted, AI appears to offer benefits such as greater convenience, faster service, expanded shopping opportunities, and a shift toward online shopping. This suggests an opportunity for businesses to enhance AI-driven shopping tools by making their benefits more tangible and visible to consumers, potentially increasing adoption and behavioural change in the future.

Figure 19: "Has AI changed how you shop?"

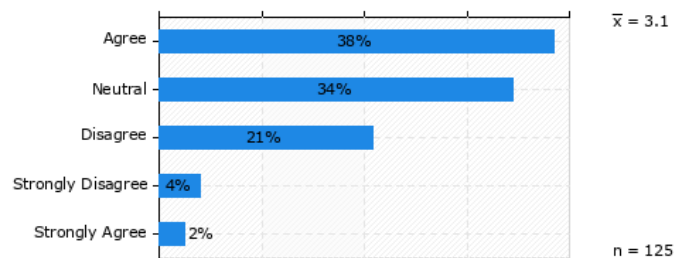


Source: own work.

Figure 20 shows results for the 17<sup>th</sup> question, which asked participants to indicate their level of agreement with the following statement: "I am likely to use AI tools in future online shopping." The responses reveal a generally neutral to slightly positive attitude toward future use of AI tools in online shopping, with an average rating of 3.1. The largest proportion of respondents, 38%, indicated agreement, suggesting that a notable share of consumers see themselves using AI-driven tools in future shopping experiences. However, a significant 34% remained neutral, indicating uncertainty about whether AI will play a meaningful role in their future purchasing decisions. Meanwhile, 21% of respondents disagreed with the statement, and a smaller 4% strongly disagreed, showing skepticism or reluctance toward further AI integration in shopping. Only 2% strongly agreed, indicating that a very small percentage of consumers are highly enthusiastic about the future role of AI in their online shopping behaviour.

These findings suggest that while a considerable number of consumers recognize the potential of AI in online shopping, many remain uncertain or unconvinced about its long-term value. The neutral responses indicate a lack of strong commitment, which could stem from concerns over trust, privacy, or the perceived usefulness of AI-driven shopping assistants. To encourage greater adoption, businesses may need to demonstrate clearer benefits, such as improved personalization, enhanced convenience, and stronger data security, to build confidence in AI-powered shopping tools.

Figure 20: "I am likely to use AI tools in future online shopping."



Source: own work.

At this point in the survey, participants could choose either to end the survey or to answer 4 additional open-ended questions.

#### 5.1.4 Consumers' experiences with AI - open-ended questions

The open-ended questions (18–21) provide valuable qualitative insights into consumers' perceptions of AI, revealing not only individual experiences but also recurring themes and broader patterns that extend beyond the quantitative findings.

Question 18: "What's good about AI in shopping? Tell us what you think is cool or helpful."

The open-ended responses highlight several perceived advantages of AI in shopping. The most frequently mentioned benefit is speed and efficiency, with many respondents appreciating how AI makes shopping faster by providing quick recommendations and filtering out irrelevant items. Another key advantage cited is personalised recommendations, with users noting that AI can suggest products they might not have found on their own, including related or interesting items. Some participants specifically mentioned the ability of AI to help in decision-making, particularly when they are unsure about which model or version of a product to buy. Several respondents also pointed out that AI can improve the shopping experience through convenience, offering better search results, chatbots for customer service, and assistance in finding deals. One participant suggested that AI should offer discounts based on frequent visits to the same product page or past purchases, which reflects a desire for AI to play a more dynamic role in price optimization.

However, not all responses were positive. A few participants expressed concerns about AI monitoring their buying behaviour, while some stated that they do not use AI in shopping or do not find it beneficial. This suggests that while AI offers clear advantages for many consumers, skepticism and privacy concerns still exist, and may limit the widespread acceptance of AI. Overall, the responses indicate that AI is valued for its ability to make shopping faster, easier, and more personalised, but there remains room for improvement in trust, transparency, and added features like intelligent discounting to further enhance its appeal.

Question 19: "How could AI improve shopping but still keep your info safe?"

The responses to question 19 reflect a mix of skepticism, uncertainty, and specific suggestions on how AI could improve shopping experiences while maintaining data security. Many participants expressed doubt about whether AI can truly keep personal information safe, with some stating outright that they do not believe it is possible. Several respondents mentioned that AI should function without collecting or sharing personal data across platforms, suggesting that anonymization and data encryption could help balance personalization with privacy protection. Some responses highlighted the importance of greater user control, such as allowing consumers to opt in or out of AI-driven personalization at the start of their shopping experience, similar to cookie consent settings. Others suggested that AI should only track user behaviour within a specific platform (e.g., Amazon) rather than across the entire web, which would limit excessive data collection. A few responses referenced GDPR and the need for stronger legislation to regulate how AI systems use personal data. A small number of participants saw potential benefits, mentioning that AI could improve shopping experiences by helping users find what they need more efficiently, as long as secure environments and strict access controls are implemented. However, the responses indicate a general lack of trust, with some participants questioning AI's ability to ensure privacy in a world where data is widely traded by large tech companies.

Overall, the findings suggest that while some consumers recognize the potential of AI to enhance shopping, concerns about data privacy remain a major barrier to trust and adoption.

To address these concerns, companies must prioritize transparency, offer user control over AI interactions, and ensure compliance with strong data protection regulations to reassure consumers that their information remains secure.

Question 20: "Any stories where AI made your shopping easier or cooler? We'd love to hear your experiences!"

The responses suggest that most consumers do not have a strong or memorable experience where AI significantly enhanced their shopping experience. A large number of participants either did not provide an answer, stated "no," or indicated that they were not familiar enough with AI in shopping to share a relevant story. This highlights the possibility that many consumers do not actively recognize the role of AI in their shopping process, as AI often functions seamlessly in the background without users explicitly engaging with it. Among the few who did share experiences, some mentioned positive interactions with AI, such as an AI chatbot helping find the perfect birthday gift by suggesting personalised options, which made the shopping process faster and more enjoyable. Another respondent referenced automatic checkout systems in physical stores, indicating that AI-driven automation contributed to a more efficient checkout process. One participant also mentioned using AI when purchasing concert tickets, describing the process as smooth and positive, facilitated by customer-friendly AI interactions.

Overall, the responses indicate that while AI can enhance shopping by offering personalised recommendations, improving checkout speed, and assisting in decision-making, many consumers either do not recognize AI's influence or have not had a standout experience with it. This suggests an opportunity for businesses to make AI-driven features more visible and engaging, helping consumers better understand and appreciate the benefits AI brings to their shopping journey.

Question 21: "What improvements or new features in AI tools would enhance your shopping experience?"

The responses suggest that consumers see room for improvement in AI shopping tools, particularly in areas such as personalization, accuracy, and enhanced user support. Several participants expressed interest in AI features that would provide more accurate size recommendations, virtual try-ons, and even VR product views, highlighting a desire for AI to improve the way they interact with and assess products before purchasing. Another commonly mentioned improvement was real-time price comparisons and discount alerts, with respondents suggesting that AI should notify them when an item they have been viewing goes on sale. Some also expressed frustration with AI-driven recommendations, suggesting that AI should compare a broader range of stores and discounts rather than just those that pay for visibility. Additionally, there was interest in more transparent product insights, with one respondent emphasizing that AI should provide genuine customer feedback, product statistics, and warranty claim data instead of just paid reviews. Concerns about customer support and problem resolution were also raised, with some respondents stating that AI chatbots should be improved, while others emphasized the need for a human

touch when dealing with complex issues. A few responses reflected skepticism toward the role of AI in shopping, with one suggesting that AI should focus on helping people buy less unnecessary products rather than driving consumption. Overall, the responses indicate that consumers want AI shopping tools to be more accurate, transparent, and user-friendly, with a stronger emphasis on honest product insights, better pricing visibility, and improved support systems. Addressing these areas could help enhance trust in AI and make it a more valuable tool in the shopping experience.

#### *5.1.4.1 Patterns and repetition in open-ended responses*

When analyzing the open-ended questions (18–21), several recurring themes and repetitions became apparent, which also reinforce the survey's quantitative findings.

The first recurring pattern is the persistent tension between functional benefits and data security concerns. Many respondents praised AI for its ability to save time, provide relevant recommendations, and increase shopping convenience. Yet, in the same breath, they voiced doubts about whether their personal information could ever be fully safeguarded. This duality - appreciation coupled with mistrust - appears repeatedly across responses.

The second pattern concerns the invisibility of AI. A large portion of respondents either left the questions unanswered or stated that they could not recall a concrete example of AI making shopping "easier or cooler." This indicates that for many consumers, AI operates seamlessly in the background, so its influence often goes unnoticed unless it is explicitly highlighted (e.g., chatbots, automatic checkout, personalised recommendations).

The third recurring theme is the demand for greater transparency and user control. Across responses, participants emphasized their wish to opt in or out of personalization, similar to cookie consent choices, and to limit tracking to a single platform instead of across the entire web. These repetitions point to a desire for AI systems that respect boundaries and give consumers more agency in how their data is used.

The fourth pattern relates to expectations for improved functionality. Consumers repeatedly suggested more accurate sizing tools, virtual try-ons, real-time price comparisons, and discount alerts. They also highlighted the need for more genuine product insights, such as transparent customer reviews and warranty statistics. These requests suggest that while AI tools are valued, they are not yet meeting the full scope of consumer expectations.

The fifth, less common but still notable repetition is a critical stance regarding the role of AI in consumption. A minority of respondents expressed the view that AI should help people purchase more responsibly, or even reduce unnecessary consumption, rather than act purely as a driver of sales. Though less frequent, this criticism highlights the ethical considerations consumers are beginning to attach to AI in commerce.

Altogether, the open-ended responses reveal a consistent structure that oscillates between utility and skepticism. AI is welcomed as a facilitator of speed, efficiency, and personalization, but its broader adoption is constrained by repeated concerns about privacy,

transparency, and trust. The repetition of these themes suggests that companies seeking to deploy AI effectively must not only improve functionality but also actively build trust through clear communication, user choice, and demonstrable consumer benefits. Taken together, these recurring patterns highlight the dual position of AI in consumer perception: while it is increasingly recognized as a tool of convenience and personalization, its long-term acceptance will depend on whether businesses can address persistent concerns around transparency, data security, and ethical use, thereby situating the findings within the wider debate between AI optimism and skepticism.

## **5.2 Results of in-depth interviews**

### **5.2.1 Overview of participants**

The interviews represent two distinct but complementary professional domains: a marketing practitioner focused on client engagement and creative strategy, and a computer scientist specialized in AI research, biometrics, and ethics. Their combined perspectives allow the analysis to capture both industry-oriented applications and research-driven ethical considerations.

### **5.2.2 Interviewee contributions**

The marketing professional highlighted the importance of creativity, adaptability, and transparent communication in client relations, emphasizing how AI tools can support personalization and strategic decision-making. In contrast, the computer vision researcher focused on data quality, bias mitigation, and the ethical challenges of AI development, particularly in biometric applications. Despite their differences, both emphasized innovation, collaboration, and ethical integrity as essential to sustainable AI practices.

### **5.2.3 Key themes and insights**

Across both interviews, five key themes emerged: success and challenges, innovation, decision-making, collaboration, and ethics. The marketing perspective framed success through client satisfaction, measurable campaign outcomes, and flexibility in team dynamics. The researcher, meanwhile, defined success through academic contributions, publications, and the advancement of fair and reliable AI models. Both perspectives underscored the value of evidence, but while the marketing professional also relied on intuition, the researcher maintained a strictly data-driven approach.

## 5.2.4 Comparison of perspectives

A structured comparison of perspectives is presented in table 4. As shown below, both interviewees value collaboration, innovation, and ethics, but have differing views on how these concepts are expressed in practice. For example, while the marketing professional associates ethics with transparent communication and client trust, the researcher emphasizes systemic fairness, bias mitigation, and privacy. Similarly, collaboration in marketing relies on diverse, creative teams, whereas research collaboration relies exclusively on evidence and peer review.

*Table 4: Comparison of perspectives*

<b>Theme</b>	<b>Marketing professional</b>	<b>Computer vision researcher</b>	<b>Shared values / differences</b>
Success	Client satisfaction, measurable campaign impact, collaboration	Academic contributions, publications, mentorship	Both value outcomes and teamwork, but define success differently (business vs. academic).
Challenges	Evolving client needs, market dynamics	Data availability, computational resources, ethical dilemmas	Both face resource-related challenges but in distinct contexts.
Innovation	Creative campaigns, consumer insights, trend adaptation	Novel algorithms, technical rigor, applied solutions	Innovation is central in both, yet marketing stresses creativity, research stresses precision.
Decision-making	Mix of data-driven analysis and intuition	Data-driven, peer-reviewed, evidence-based	Both rely on evidence; marketing integrates more intuition.
Collaboration	Diverse teams, creativity, communication	Interdisciplinary research teams, technical expertise	Both stress collaboration, but with different team structures.
Ethics	Transparency in communication, fair client relations	Algorithmic bias, privacy, compliance with EU rules	Both value ethics, but emphasize different aspects (human interaction vs. system fairness).

*Source: own work.*

## 5.2.5 Conclusions

The interviews highlight the complementary nature of business and academic perspectives on the adoption of AI. Both professionals view innovation, teamwork, and ethics as essential, though their approaches reflect the demands of their fields: business prioritizes adaptability and consumer trust, while research emphasizes rigor, accountability, and long-term societal

implications. Together, these insights illustrate how AI is understood and negotiated across professional contexts, highlighting the importance of dialogue between industry and academia to support responsible and effective use of AI.

## 6 DISCUSSION AND FINDINGS IN CONTEXT

This chapter discusses the main findings of the research in relation to the theoretical framework. It begins with concise answers to the refined research questions and illustrates these with supporting survey evidence. The results are then compared with existing theory, followed by implications for practice, study limitations, directions for future research, and the study’s overall contribution to the debate.

### 6.1 Research questions answered

To provide a concise overview of the results, table 5 presents the answers to each research question. It integrates empirical evidence from the survey, links these findings to theoretical concepts discussed in chapters 2 and 3, and outlines the key implications for business practice.

*Table 5: Research questions answered*

<b>Research question</b>	<b>Findings (survey &amp; interviews)</b>	<b>Relation to theory (chapters 2 &amp; 3)</b>	<b>Implications, recommendations &amp; future directions</b>
RQ1: What kind of attitudes do consumers have towards AI?	Survey shows skepticism with mean trust score of 2.91. Strong concerns about data privacy (mean 3.72). Interviews confirm that trust hinges on ethical handling of data.	Theory highlights trust, privacy, and ethics as key to adoption. Real findings confirm consumers demand transparency and ethical AI (Ch. 2.3, 3.4).	Businesses must enhance transparency, data security, and fairness. Future research should explore strategies to increase cross-generational trust.
RQ2: How and to which extent is AI influencing consumer behaviour?	Survey correlations: Trust linked to personalization ( $r=0.316$ ), better service ( $r=0.279$ ), and convenience ( $r=0.202$ ). Limited effect on actual shopping behaviour (only 15% reported change).	Theory (Ch. 2.2, 3.2) emphasizes AI’s role in personalization, predictive analytics, and shaping decisions. Findings show that while consumers recognize benefits, actual behavioural change is modest.	Companies should focus on visible value (accuracy, convenience) while reducing privacy concerns. Future research should examine how to transform awareness into adoption.

Table 5: Research questions answered (cont.)

Research question	Findings (survey & interviews)	Relation to theory (chapters 2 & 3)	Implications, recommendations & future directions
RQ3: What are consumers' main concerns about AI in shopping?	77% highlight privacy; 46% worry about recommendation accuracy; 44% mention ethics. Interviews echo concerns regarding data misuse and algorithmic bias.	Theory (Ch. 3.3, 3.4) stresses risks of bias, privacy, and ethics. Findings support this, showing privacy dominates consumer perceptions.	Recommendations: adopt GDPR-level standards, enable opt-in/out personalization, and invest in explainable AI. Future studies should assess effectiveness of transparency strategies.
RQ4: How do consumers envision the future use of AI in shopping?	Neutral stance: mean likelihood of future use 3.1. Younger users more open, older users skeptical. Interviews highlight both enthusiasm and caution.	Theory predicts increasing integration of AI tools (Ch. 6.1), but findings show consumer adoption is not guaranteed.	Implications: companies must show clear benefits to different demographics. Future research should explore long-term trust-building and ethical design.

Source: own work.

## 6.2 Empirical evidence

Table 6 illustrates overall consumer attitudes, showing that trust in AI recommendations is slightly below neutral ( $M = 2.91$ ,  $SD = 1.06$ ). Privacy concerns, however, are clearly above neutral ( $M = 3.72$ ), confirming that issues of data security dominate consumer evaluations. These findings directly support RQ1 and confirm earlier theoretical arguments that privacy protection is the key antecedent of trust (De Bruyn et al., 2020).

Table 6: Consumers' attitudes toward AI

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Do you trust AI to suggest good stuff?	125	1	5	2,91	1,063
Please indicate your level of: I am concerned about my data security when	125	1,0	5,0	3,720	1,028

Table continues

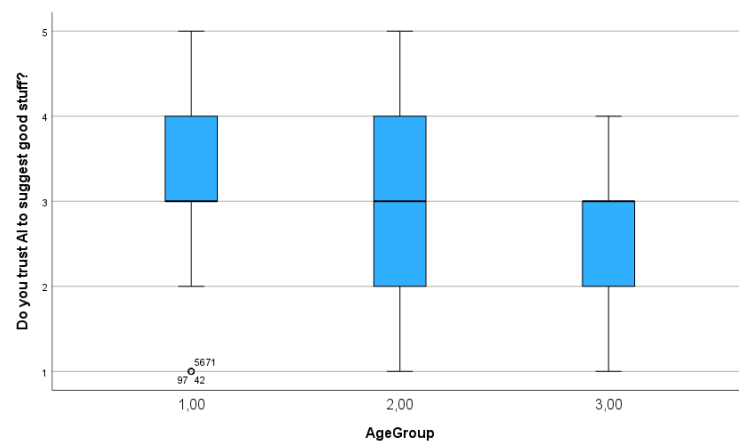
Table 6: Consumers' attitudes toward AI (cont.)

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
AI is used to analyze my shopping behavior.					
Please indicate your level of: I feel comfortable sharing my data with AI tools for personalized shopping experiences.	125	1	5	2,45	,971
Please indicate your level of: I believe AI tools respect my privacy and handle my data ethically.	125	1	5	2,44	1,003
Valid N (listwise)	125				

Source: own work.

Figure 21 adds nuance by presenting age-based differences in perceived trust. Younger respondents (under age 25) display higher and more varied levels of trust, whereas older groups report lower and more concentrated trust values. This pattern suggests that familiarity and digital literacy may foster greater openness to AI. The result aligns with Biswas and Patra (2023), who argue that generational differences in exposure to AI technologies influence adoption levels.

Figure 21: Age-based analysis of perceived trust in AI recommendations



Source: own work

Table 7 shows the correlations between ethical perceptions, privacy concerns, and trust. Strong negative correlations exist between data security concerns and both trust ( $r = -.279$ ) and willingness to share data ( $r = -.589$ ). Conversely, perceiving AI as ethical correlates positively with both trust ( $r = .299$ ) and willingness to share data. These results, which

answer RQ4, reinforce the importance of transparency and fairness in shaping adoption, echoing Nazir et al. (2023).

*Table 7: Correlation analysis between perceived ethical use of AI and trust in AI recommendations*

Correlations						
			Do you trust AI to suggest good stuff?	Please indicate your level of: I am concerned about my data security when AI is used to analyze my shopping behavior.	Please indicate your level of: I feel comfortable sharing my data with AI tools for personalized shopping experiences.	Please indicate your level of: I believe AI tools respect my privacy and handle my data ethically.
Spearman's rho	Do you trust AI to suggest good stuff?	Correlation Coefficient	1.000	-0.279**	0.245**	,299*
		Sig. (2-tailed)	.	0.002	0.006	<,001
		N	125	125	125	125
	Please indicate your level of: I am concerned about my data security when AI is used to analyze my shopping behavior.	Correlation Coefficient	-0.279**	1.000	-0.589**	-,426**
		Sig. (2-tailed)	0.002	.	<0.001	<,001
		N	125	125	125	125
	Please indicate your level of: I feel comfortable sharing my data with AI tools for personalized shopping experiences.	Correlation Coefficient	0.245**	-0.589**	1.000	-,476**
		Sig. (2-tailed)	0.006	<0.001	.	<,001
		N	125	125	125	125
	Please indicate your level of: I believe AI tools respect my privacy and handle my data ethically.	Correlation Coefficient	0.299**	-0.426**	0.701**	1,000
		Sig. (2-tailed)	<0.001	<0.001	<0.001	.
		N	125	125	125	125

\*\* . Correlation is significant at the 0.01 level (2-tailed).

*Source: own work*

Table 8 focuses on the likelihood of future AI use. The mean score of 3.14 (SD = 0.91) lies slightly above neutral, suggesting undecidedness rather than strong commitment. This confirms that behavioural intention remains conditional on improvements in accuracy and transparency, as indicated by RQ3.

Table 8: Mean and standard deviation for the question: "How likely are you to use AI tools in the future?"

Descriptive Statistics			
	N	Mean	Std. Deviation
Please indicate your level of agreement with the following statement: "I am likely to use AI tools in future online shopping."	125	3,14	,913
Valid N (listwise)	125		

Source: own work.

Table 9 further illustrates the limited behavioural impact. Most respondents stated that AI has not significantly changed their shopping routines. This underlines that adoption is still modest and that, for many consumers, AI does not yet play a central role in decision-making.

Table 9: Frequency for the question: "Has AI changed your shopping habits?"

		Has AI changed how you shop?			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	19	15,2	15,3	15,3
	No	105	84,0	84,7	100,0
	Total	124	99,2	100,0	
Missing	-1	1	,8		
Total		125	100,0		

Source: own work.

Table 10 provides insight into which perceived benefits are associated with trust. Stronger correlations exist between trust and personalization ( $r = .316$ ) as well as trust and improved customer service ( $r = .279$ ). Weaker but significant relationships are observed with convenience ( $r = .202$ ) and augmented reality experiences ( $r = .213$ ). Interestingly, discounts were not significantly correlated. This suggests that consumers primarily associate the value of AI with relevance and quality of service, not price benefits.

Table 10: Spearman correlation

			Correlations					
			Do you trust AI to suggest good stuff?	What do you see as the benefit: Personalized product recommendations	What do you see as the benefit: Faster and easier check-out process	What do you see as the benefit: Improved customer service	What do you see as the benefit: Access to better deals and discounts	What do you see as the benefit: Enhanced shopping experience through virtual try-ons and augmented reality
Spearman's rho	Do you trust AI to suggest good stuff?	Correlation Coefficient	1.000	.316**	.202*	.279**	.117	.213*
		Sig. (2-tailed)		<.001	.024	.002	.192	.017
		N	125	125	125	125	125	125
	What do you see as the benefit: Personalized product recommendations	Correlation Coefficient	.316**	1.000	-.229*	.083	.150	.183*
		Sig. (2-tailed)	<.001		.010	.355	.094	.041
		N	125	125	125	125	125	125
	What do you see as the benefit: Faster and easier check-out process	Correlation Coefficient	.202*	-.229*	1.000	.289**	-.061	.054
		Sig. (2-tailed)	.024	.010		.001	.502	.547
		N	125	125	125	125	125	125
	What do you see as the benefit: Improved customer service	Correlation Coefficient	.279**	.083	.289**	1.000	.234**	.009
		Sig. (2-tailed)	.002	.355	.001		.009	.194
		N	125	125	125	125	125	125
	What do you see as the benefit: Access to better deals and discounts	Correlation Coefficient	.117	.150	-.061	.234**	1.000	.117
		Sig. (2-tailed)	.192	.094	.502	.009		.194
		N	125	125	125	125	125	125
	What do you see as the benefit: Enhanced shopping experience through virtual try-ons and augmented reality	Correlation Coefficient	.213*	.183*	.054	.009	.117	1.000
		Sig. (2-tailed)	.017	.041	.547	.194	.194	
		N	125	125	125	125	125	125

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

Source: own work.

### 6.3 Linking theory and reality

The theoretical models discussed in Chapters 2 and 3 highlight a risk–benefit trade-off: Personalization, convenience, and efficiency are expected to enhance adoption, while privacy and ethical concerns may hold it back. The empirical results of this study confirm this trade-off but also qualify it. Consumers consistently rank privacy and accuracy above personalization, and behavioural changes remain modest. Thus, while theory presents personalization as a core benefit, the findings show that it is only valued when preceded by trust, transparency, and data protection.

## **6.4 Managerial implications**

The findings imply that businesses should prioritize consumer trust before expanding personalization strategies. Strong privacy-by-design measures, visible data security protocols, and clear explanations of AI recommendations are crucial to gaining acceptance. Demonstrating accuracy in practical, low-risk applications such as compatibility checks or customer support may build credibility. Only once trust is established should companies request additional consumer data to enable more advanced personalization. Furthermore, the study suggests that the contribution of AI to customer service and smooth checkout processes is more influential than its ability to offer discounts. Age-related differences also indicate that tailored communication strategies are necessary: younger users may be more receptive to innovation, whereas older users require reassurance and education.

## **6.5 Study limitations**

This research is subject to several limitations. First, the sample was limited to one online survey with 125 respondents, which restricts generalizability. Second, the design was cross-sectional, preventing causal inferences. Third, all measures relied on self-reported perceptions, which may differ from actual behaviour. Finally, some respondents reported little direct experience with advanced AI features, such as augmented reality, which may have influenced their evaluations.

## **6.6 Directions for future research**

Future research should test whether targeted interventions, such as transparency dashboards or accuracy guarantees, can directly shift trust and adoption in experimental settings. Long-term studies would also be valuable to track how repeated exposure changes attitudes and intentions over time. Another important avenue is the study of progressive consent models, in which data sharing is linked to clearly demonstrated benefits. Cross-market replications, including different demographic and cultural contexts, would further clarify how attitudes vary globally.

## **6.7 Contribution to discourse**

This study contributes to the ongoing discourse about whether personalization or privacy should be the leading priority in AI adoption strategies. While theory highlights both, the empirical findings demonstrate that privacy and accuracy are the non-negotiable foundations for consumer trust. Only once these conditions are met do consumers value personalization and convenience. The implication for business and policy is clear: personalization cannot precede transparency. Companies must first establish robust privacy protection and visibly communicate ethical practices if AI is to play a meaningful role in shaping consumer behaviour.

## 7 CONCLUSION

The integration of AI into consumer-facing business practices marks a significant transformation in how consumers interact with brands, make decisions, and perceive technological influence. This thesis set out to explore the complex and dynamic relationship between AI and consumer attitudes and behaviour, using a combination of secondary literature, qualitative interviews, and quantitative analysis.

The findings confirm that AI has indeed begun to shape the consumer journey - through personalization, predictive analytics, and automated customer interactions - though the extent of this influence remains moderated by trust, ethical concerns, and perceived transparency. While businesses increasingly adopt AI technologies to drive innovation, boost efficiency, and elevate user experience, consumers show a mix of appreciation and concern. They value the convenience and personalization that AI offers, yet remain cautious due to ongoing worries about data privacy, algorithmic bias, and the lack of transparency in how these systems operate.

The interviews revealed differing perspectives across technical and creative domains, but a shared emphasis on ethics and transparency. The marketing professional stressed creativity and consumer-centric strategies, while the researcher underlined algorithmic accountability and fairness. This convergence suggests that sustainable AI integration will depend on both technological progress and human-centered design.

Survey data reinforced these insights. Behavioural change remains modest, with many consumers reluctant to share personal data. Trust emerged as the decisive factor: when consumers believed AI handled data ethically, they were more open to adoption, but when such confidence was lacking, skepticism dominated. The findings also revealed a generational divide, with younger consumers more open to AI than older ones, underscoring the need for education and outreach.

In summary, while AI holds transformative potential for both businesses and consumers, its full integration into consumer life hinges on addressing ethical concerns, improving transparency, and building trust. Companies that wish to thrive in the age of AI must move beyond efficiency and innovation alone; they must engage in open dialogue with consumers, ensure compliance with evolving regulatory standards, and commit to developing AI tools that are not only intelligent, but also fair and human-centered.

Ultimately, the path forward is not a purely technological one, but also a deeply social and ethical one. As AI continues to evolve, so too must our understanding of how it fits into the fabric of everyday consumer life. This thesis provides a foundation for that conversation and invites further research into how the dynamic between humans and intelligent systems will continue to shape the marketplace of tomorrow.

Naturally, this study is not without limitations. The relatively small survey sample and limited number of interviews constrain the generalizability of the findings, and the cross-sectional design limits the ability to determine how attitudes and behaviours might change over time. These constraints, however, also open opportunities for future research to build on this thesis by testing its findings with larger, more diverse samples and longitudinal approaches.

## LIST OF KEY REFERENCES

1. Anyoha, R. (2017, 28 August). *The History of Artificial Intelligence*. <https://sitn.hms.harvard.edu/flash/2017/history-artificial-intelligence>
2. Biswas, K. & Patra, G. (2023). Role of Artificial Intelligence (AI) in Changing Consumer Buying Behaviour. *International Journal of Research Publication and Reviews*, 4(2), 943–951.
3. Brundage, M., Avin, S., Clark, J. A., Toner, H., Eckersley, P., Garfinkel, B., Dafoe, A., Scharre, P., Zeitzoff, T., Filar, B., Anderson, H. S., Roff, H. M., Allen, G. C., Steinhardt, J., Flynn, C., Éigeartaigh, S. Ó., Beard, S., Belfield, H., Farquhar, S. & Lyle, C. (2018). The Malicious Use of Artificial Intelligence: Forecasting, Prevention, and Mitigation. *arXiv preprint arXiv*. <https://doi.org/10.17863/cam.22520>
4. Gkikas, D. C. & Theodoridis, P. K. (2021). AI in Consumer Behavior. *Learning and Analytics in Intelligent Systems*, 22, 147–176. [https://doi.org/10.1007/978-3-030-80571-5\\_10](https://doi.org/10.1007/978-3-030-80571-5_10)
5. Hironde, J. B. (2023, 31 August). *Council Post: AI's Impact On The Future Of Consumer Behavior And Expectations*. <https://www.forbes.com/sites/forbestechcouncil/2023/08/31/ais-impact-on-the-future-of-consumer-behavior-and-expectations>
6. Timpone, R. & Guidi, M. (2023). *Exploring the Changing ai Landscape From Analytical to Generative AI*. <https://www.ipsos.com/sites/default/files/ct/publication/documents/2023-04/From-analytical-to-generative-AI.pdf>

## REFERENCES

7. Ali, M., Al-Obaydi, A. & Shari, A. (2023). The Impact of Predictive Analytics and AI on Digital Marketing Strategy and ROI. *Studies in Big Data*, 136(136), 367–379. [https://doi.org/10.1007/978-3-031-42455-7\\_31](https://doi.org/10.1007/978-3-031-42455-7_31)
8. American Marketing Association. (2017). *Definitions of Marketing*. <https://www.ama.org/the-definition-of-marketing-what-is-marketing>
9. Auger, P., Devinney, T. M., Louviere, J. J. & Burke, P. F. (2008). Do social product features have value to consumers? *International Journal of Research in Marketing*, 25(3), 183–191. <https://doi.org/10.1016/j.ijresmar.2008.03.005>

10. Babu, G. (2023, 5 December). *How AI helps understand Consumer Buying Behavior in Marketing* [published on blog]. Obtained from <https://www.sprintzeal.com/blog/how-ai-has-impacted-consumer-buying-behaviour>
11. Bach, T. A., Khan, A., Hallock, H., Beltrão, G. & Sousa, S. (2022). A Systematic Literature Review of User Trust in AI-Enabled Systems: An HCI Perspective. *International Journal of Human–Computer Interaction*, 40(5), 1–16. <https://doi.org/10.1080/10447318.2022.2138826>
12. Badet, J. (2021). AI, automation and new jobs. *Open journal of business and management*, 9(5), 2452–2463.
13. Baker, J., Grewal, D. & Parasuraman, A. (1994). The Influence of Store Environment on Quality Inferences and Store Image. *Journal of the Academy of Marketing Science*, 22(4), 328–339. <https://doi.org/10.1177/0092070394224002>
14. Barocas, S. & Selbst, A. D. (2016). Big Data’s Disparate Impact. *California Law Review*, 104, 671–732. <https://doi.org/10.2139/ssrn.2477899>
15. Benabdelouahed, M. R. & Dakouan, C. (2020). The Use of Artificial Intelligence in Social Media: Opportunities and Perspectives. *Expert Journal of Marketing*, 8(1), 82–87. <https://marketing.expertjournals.com/23446773-806>
16. Buolamwini, J. & Gebru, T. (2018). Gender Shades: Intersectional Accuracy Disparities in Commercial Gender Classification. *Proceedings of Machine Learning Research*, 81(81), 1–15. <https://proceedings.mlr.press/v81/buolamwini18a/buolamwini18a.pdf>
17. Campbell, C., Sands, S., Ferraro, C., Tsao, H. Y. & Mavrommatis, A. (2020). From data to action: How marketers can leverage AI. *Business Horizons*, 63(2), 227–243. <https://www.sciencedirect.com/science/article/pii/S0007681319301624>
- 18.
19. Chaudhury, D. (2020, 29 June). *Leveraging AI-Powered Visual Search for Enriched Customer Experience*. <https://talkcmo.com/featured/leveraging-ai-powered-visual-search-for-enriched-customer-experience>
20. Chen, H., Chan-Olmsted, S., Kim, J. & Mayor Sanabria, I. (2021). Consumers’ perception on artificial intelligence applications in marketing communication. *Qualitative Market Research: An International Journal*, 25(1), 125–142. <https://doi.org/10.1108/qmr-03-2021-0040>
21. Chintalapati, S. & Pandey, S. K. (2021). Artificial intelligence in marketing: A systematic literature review. *International Journal of Market Research*, 64(1), 38–68. <https://doi.org/10.1177/14707853211018428>
22. Chow, L. (2023, 22 June). *How Retailers can Leverage Visual Search for Success*. <https://www.visenze.com/blog/2023/06/22/the-rise-of-visual-search-how-retailers-can-be-more-effective>
23. Data, T. (2022, 19 April). *New Consumer Survey Showcases Shifting Attitudes Towards AI and CX*. <https://www.prnewswire.com/news-releases/new-consumer-survey-showcases-shifting-attitudes-towards-ai-and-cx-301527807.html>

24. De Bruyn, A., Viswanathan, V., Beh, Y. S., Brock, J. K. U. & von Wangenheim, F. (2020). Artificial Intelligence and Marketing: Pitfalls and Opportunities. *Journal of Interactive Marketing*, 51(1), 91–105. <https://doi.org/10.1016/j.intmar.2020.04.007>
25. Dencheva, V. (2024, 15 February). *Consumer attitudes towards brands' usage of artificial intelligence (AI) and machine learning (ML) in the United States as of January 2023*. <https://www-statista-com.nukweb.nuk.uni-lj.si/statistics/1364963/consumer-attitudes-ai-ml-brand-usage-us>
26. Dias, T., Gonçalves, R., da Costa, R. L., Pereira, L. F. & Dias, Á. (2023). The impact of artificial intelligence on consumer behaviour and changes in business activity due to pandemic effects. *Human Technology*, 19(1), 121–148. <https://doi.org/10.14254/1795-6889.2023.19-1.8>
27. Eickhoff, F. & Zhevak, L. (2023). *The consumer attitude towards AI in marketing: An experimental study of consumers attitudes and purchase intention*. <https://hj.diva-portal.org/smash/get/diva2:1762643/FULLTEXT01.pdf>
28. EMB Global. (2023, 18 December). *AI Personal Assistants: Transforming Daily Productivity* [published on blog]. Obtained from <https://blog.emb.global/ai-personal-assistants>
29. European Union. (2016). Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) (Text with EEA relevance). Europa.eu. <https://eur-lex.europa.eu/eli/reg/2016/679/oj>
30. Gerlich, M. (2023). Perceptions and Acceptance of Artificial Intelligence: A Multi-Dimensional Study. *Social Sciences*, 12(9), 502. <https://doi.org/10.3390/socsci12090502>
31. Ghallab, M., Nau, D. S. & Paolo Traverso. (2004). *Automated planning: theory and practice*. Elsevier/Morgan Kaufmann.
32. Hennessy, J. L. & Patterson, D. A. (2019). A new golden age for computer architecture. *Communications of the ACM*, 62(2), 48–60. <https://doi.org/10.1145/3282307>
33. Hirschberg, J. & Manning, C. D. (2015). Advances in natural language processing. *Science*, 349(6245), 261–266. <https://doi.org/10.1126/science.aaa8685>
34. Hofstede, G. (1980). *Culture's consequences: International differences in work-related values*. Sage.
35. Islam, M., Khan, F., Alam, S. & Hasan, M. (2023). Artificial intelligence in software testing: A systematic review. In *TENCON 2023-2023 IEEE Region 10 Conference (TENCON)* (pp. 524–529). IEEE. <https://doi.org/10.1109/tencon58879.2023.10322349>
36. IvyPanda. (2022, 30 December). *The Effect and Impact of Artificial Intelligence on Consumer Behavior*. <https://ivypanda.com/essays/the-effect-and-impact-of-artificial-intelligence-on-consumer-behavior>

37. Jackson, P. (1999). *Introduction to Expert Systems* (3rd ed.). Addison Wesley Publishing Company.
38. Johnson, M. (2023, 23 May). *AI in eCommerce: Benefits and Examples*. <https://ecommerce.cloudflight.io/blog/ai-in-ecommerce-benefits-and-examples>
39. Jordan, M. I. & Mitchell, T. M. (2020). Machine learning: Trends, perspectives, and prospects. *Science*, 349(6245), 255–260. <https://doi.org/10.1126/science.aaa8415>
40. Kanade, V. (2022, 14 March). *What Is Artificial Intelligence (AI)? Definition, Types, Goals, Challenges, and Trends in 2022*. <https://www.spiceworks.com/tech/artificial-intelligence/articles/what-is-ai>
41. *Journal*, 31(1), 3–13. <https://doi.org/10.1108/CEMJ-02-2023-0091>
42. Kotler, P. & Keller, K. L. (2016). *Marketing management* (15th ed.). Pearson.
43. Kumar, K. L. S., Desai, J. & Majumdar, J. (2016, 1 December). *Opinion mining and sentiment analysis on online customer review*. IEEE Xplore. <https://doi.org/10.1109/ICCIC.2016.7919584>
44. LakshmiPriyanka, A., Harihararao, M., Prasanna, M. & Deepika, Y. (2023). A study on artificial intelligence in marketing. *International Journal for Multidisciplinary Research*, 5(3), 1–12. <https://doi.org/10.36948/ijfmr.2023.v05i03.3789>
45. Li, C., Pan, R., Xin, H., & Deng, Z. (2020, June). Research on artificial intelligence customer service on consumer attitude and its impact during online shopping. *Journal of Physics: Conference Series*, 1575(1), 012192. <https://doi.org/10.1088/1742-6596/1575/1/012192>
46. Lima, R., Da Cruz, A. M. R. & Ribeiro, J. (2020, June). Artificial intelligence applied to software testing: A literature review. In *2020 15th Iberian Conference on Information Systems and Technologies (CISTI)* (pp. 1–6). IEEE. <https://doi.org/10.23919/cisti49556.2020.9141124>
47. Malodia, S., Islam, N., Kaur, P. & Dhir, A. (2021). Why do people use artificial intelligence (AI)-enabled voice assistants? *IEEE Transactions on Engineering Management*, 71, 491–505. <https://doi.org/10.1109/tem.2021.3117884>
48. Martin, K. D. & Murphy, P. E. (2017). The role of data privacy in marketing. *Journal of the Academy of Marketing Science*, 45(2), 135–155. [https://ideas.repec.org/a/spr/joamsc/v45y2017i2d10.1007\\_s11747-016-0495-4.html](https://ideas.repec.org/a/spr/joamsc/v45y2017i2d10.1007_s11747-016-0495-4.html)
49. Maslow, A. H. (1943). A Theory of Human Motivation. *Psychological Review*, 50(4), 370–396. <https://doi.org/10.1037/h0054346>
50. Mittelstadt, B. D., Allo, P., Taddeo, M., Wachter, S. & Floridi, L. (2016). The Ethics of algorithms: Mapping the Debate. *Big Data & Society*, 3(2), 1–21. <https://doi.org/10.1177/2053951716679679>
51. Morrison, S. & Crane, F. G. (2007). Building the service brand by creating and managing an emotional brand experience. *Journal of Brand Management*, 14(5), 410–421. <https://doi.org/10.1057/palgrave.bm.2550080>
52. Nazir, S., Khadim, S., Ali Asadullah, M. & Syed, N. (2023). Exploring the influence of artificial intelligence technology on consumer repurchase intention: The mediation

- and moderation approach. *Technology in Society*, 72, 102190. <https://doi.org/10.1016/j.techsoc.2022.102190>
53. Nichifor, E., Trifan, A. & Nechifor, E. M. (2021). Artificial intelligence in electronic commerce: Basic chatbots and the consumer journey. *Amfiteatru Economic*, 23(56), 87-101. <https://doi.org/10.24818/ea/2021/56/87>
  54. Payton, T. & Claypoole, T. (2014). *Privacy in the Age of Big Data*. Rowman & Littlefield.
  55. Peattie, K. (2010). Green Consumption: Behavior and Norms. *Annual Review of Environment and Resources*, 35(1), 195–228. <https://doi.org/10.1146/annurev-environ-032609-094328>
  56. Peukert, C. & Kloker, S. (2020). Trustworthy AI: How Ethicswashing Undermines Consumer Trust. In D. Kundisch, L. Suhl & R. Schütte (eds.), *Wirtschaftsinformatik (Zentrale Tracks)* (pp. 1100–1115). GITO Verlag. [https://doi.org/10.30844/wi\\_2020\\_j11-peukert](https://doi.org/10.30844/wi_2020_j11-peukert)
  57. Powers, T. M. & Ganascia, J. G. (2020). The Ethics of the Ethics of AI. In *The Oxford Handbook of Ethics of AI* (pp. 25–51). Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780190067397.013.2>
  58. Ragot, M., Martin, N. & Cojean, S. (2020). AI-generated vs. Human Artworks. In *A Perception Bias Towards Artificial Intelligence? Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems*. (pp. 1–10). ACM. <https://doi.org/10.1145/3334480.3382892>
  59. Reinhardt, K. (2022). Trust and trustworthiness in AI ethics. *AI and Ethics*, 3(3), 735–744. <https://doi.org/10.1007/s43681-022-00200-5>
  60. SAS. (2023). *Artificial Intelligence – What It Is and Why It Matters*. [https://www.sas.com/en\\_us/insights/analytics/what-is-artificial-intelligence.html](https://www.sas.com/en_us/insights/analytics/what-is-artificial-intelligence.html)
  61. Selbst, A. D. (2019). *Negligence and AI's Human Users*. [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3350508](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3350508)
  62. Senyapar, H. N. D. (2024). Artificial Intelligence in Marketing Communication: A Comprehensive Exploration of the Integration and Impact of AI. *Technium Social Sciences Journal*, 55(55), 64–81. <https://doi.org/10.47577/tssj.v55i1.10651>
  63. Shaik, M. (2023). Impact of Artificial Intelligence on Marketing. *East Asian Journal of Multidisciplinary Research*, 2(3), 993–1004. <https://doi.org/10.55927/eajmr.v2i3.3112>
  64. Siciliano, B. & Khatib, O. (2016). *Springer handbook of robotics*. Springer International Publishing.
  65. Slide, T. (2023, 9 May). *How AI technology is changing consumer habits*. <https://www.mintel.com/insights/technology/how-ai-technology-is-changing-consumer-habits>
  66. Solomon, M. R. (2014). *Consumer behavior. Solomon, Having and being: buying, having and being*. Pearson Education.

67. Surendro, K. (2019). Predictive analytics for predicting customer behavior. In *2019 International Conference of Artificial Intelligence and Information Technology (ICAIIIT)* (pp. 230–233). IEEE. <https://doi.org/10.1109/icaiit.2019.8834571>
68. Thiam, A. (2024). *Top 18 AI-Powered Software Testing Tools in 2024* [published on blog]. Obtained from <https://www.code-intelligence.com/blog/ai-testing-tools>
69. van Esch, P. & Stewart Black, J. (2021). Artificial Intelligence (AI): Revolutionizing Digital Marketing. *Australasian Marketing Journal*, 29(3), 199–203.
70. Vasiljeva, T., Kreituss, I. & Lulle, I. (2021). Artificial Intelligence: The Attitude of the Public and Representatives of Various Industries. *Journal of Risk and Financial Management*, 14(8), 339. <https://doi.org/10.3390/jrfm14080339>
71. Vijayalakshmi, S. & Mahalakshmi, V. (2013). An impact of consumer buying behavior in decision making process in purchase of electronic home appliances in Chennai (India): an empirical study. *Elixir Marketing Management*, 59(1), 15267–15273.
72. Voigt, P. & von dem Bussche, A. (2017). *The EU General Data Protection Regulation (GDPR)*. Springer International Publishing. <https://doi.org/10.1007/978-3-319-57959-7>
73. Wischmeyer, T. & Rademacher, T. (2020). *Regulating Artificial Intelligence*. Springer International Publishing.
- 74.
75. Yooz. (2023, 3 May). *The Potential for Bias in Artificial Intelligence* [published on blog]. Obtained from <https://www.getyooz.com/blog/ai-bias>
76. Zhao, Y. & Chen, J. (2022). A Survey on Differential Privacy for Unstructured Data Content. *ACM Computing Surveys*, 54(10s), 1–28. <https://doi.org/10.1145/3490237>
77. Zhao, Z. Q., Zheng, P., Xu, S. T. & Wu, X. (2019). Object Detection With Deep Learning: A Review. *IEEE Transactions on Neural Networks and Learning Systems*, 30(11), 3212–3232. <https://doi.org/10.1109/tnnls.2018.2876865>

## **APPENDICES**



## Appendix 1: Survey questions

### Introduction to the Survey on understanding consumers' perceptions and experiences with AI

Welcome to our survey exploring consumer experiences and attitudes towards using AI (Artificial Intelligence) tools. AI tools in the context of online shopping encompass a range of technologies designed to enhance the shopping experience by making it more personalized, efficient, and engaging. These include:

- **Chatbots and Virtual Assistants:** AI-powered software that can communicate with users, helping to answer questions, recommend products, and guide them through the shopping process.
- **Recommendation Engines:** Systems that analyse your browsing and purchase history to suggest products you might like.
- **Visual Search Tools:** Allow you to search for products using images instead of text.
- **Voice Assistants:** Enable shopping and product searches through voice commands.
- **Personalized Marketing:** AI that tailors advertisements and promotional content to individual user preferences based on their previous online behaviour.

This survey aims to gather insights into how consumers perceive and interact with these AI tools during their shopping journeys. Your participation will contribute valuable information that can help improve shopping experiences.

#### ➤ Demographic Questions

1. **Age Range:** specific age, then calculate the age ranges

2. **Education Level:**

- High school graduate
- Some college
- Bachelor's degree
- Graduate degree

3. **Employment/education background:** \_\_\_\_\_

4. **Frequency of Online Purchases:**

- Daily
- Weekly
- Monthly
- Rarely
- Never

➤ **KNOWLEDGE, Awareness, assessment usage and attitudes Towards AI**

**5. Please indicate your level of agreement with the following statement: "I have a good understanding of how AI is used in the shopping decision-making journey."**

– Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree

**6. How do you think AI tools are used in online shopping?** (Select all that apply)  
correct:1, 3, 4

Recommend products based on your browsing history

Provide random discounts

Handle transactions

Assist with customer service questions

**7. Please indicate your level of agreement with the following statements:**

"AI improves customer service speed for companies."

"AI reduces the need for human employees in companies."

"AI enhances product pricing strategies for companies."

Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree

**8. Which of the following AI tools have you used in your shopping experiences? (Select all that apply)**

– (Options: Chatbots, Recommendation Engines, Visual Search, Voice Assistants, Personalized Marketing, None)

**9. What do you see as the benefits of using AI in online shopping?** (Select all that apply)

– Personalized product recommendations

– Faster and easier checkout process

– Improved customer service

– Access to better deals and discounts

– Enhanced shopping experience through virtual try-ons and augmented reality

**10. What are your main concerns regarding AI in shopping?** (Multiple choice: Privacy, Accuracy of recommendations, Ethical concerns, Other, No concerns)

➤ **Personal use, PERCEPTION**

**11. How do you feel about the use of AI tools in your shopping experience?**

(Scale of 1-5, 1 being very negative, 5 being very positive)

**12. Have you ever purchased a product because it was recommended by an AI, even though it was not what you initially planned to buy?**

- Yes
- No

(If yes, please describe the product and situation.)

**13. What matters most when AI helps you shop? Please rank the following from 1 (least important) to 5 (most important):**

- Accuracy of recommendations
- Speed and convenience
- Personalized experience
- Data privacy
- Ethical use of AI

**14. Do you trust AI to suggest good stuff?** (Rate from 1 to 5: 1 = Not at all, 5 = Very much so)

**15. Indicate your level of agreement with the following statements:**

- I am concerned about my data security when AI is used to analyse my shopping behaviour.

Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree

- I feel comfortable sharing my data with AI tools for personalized shopping experiences.

Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree

- I believe AI tools respect my privacy and handle my data ethically.

Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree

➤ **EXPERIENCE**

**16. Changes in Shopping Behaviour Due to AI:**

Has AI changed how you shop?

- Yes
- No
- If yes, how so? (Open-ended)

**17. Please indicate your level of agreement with the following statement: "I am likely to use AI tools in future online shopping."**

- Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree

SUBMIT NOW OR TYPE MORE (option to only type the q's they want to answer from here on)

18. What's good about AI in shopping? Tell us what you think is cool or helpful.

19. How could AI make shopping better but still keep your info safe?

20. Any stories where AI made your shopping easier or cooler? We'd love to hear your experiences!

21. What improvements or new features in AI tools would enhance your shopping experience?

## **Appendix 2: In-depth interview 1**

### Section 1: Experiences with AI in Business

- Can you describe the first instance when your company started integrating AI tools? What motivated this decision?

The initial adoption of AI within our company was largely driven by curiosity and the growing buzz around its capabilities. It represented something new and promising that we felt compelled to explore. Our more tech-savvy team members were among the first to experiment with AI tools, quickly realizing their potential to streamline tasks, enhance efficiency, and support creative ideation.

- How has the adoption of AI evolved within your organization over time?

AI has gradually become more embedded in our processes. While we are still in an exploratory phase, we are steadily identifying new areas where these tools can be applied. The goal is to understand where AI adds value and how it can complement various aspects of our operations.

- What are the key AI tools and technologies your business currently uses? How do they fit into your overall business strategy?

We use a variety of AI tools, primarily for graphic creation - Adobe Firefly being our current go-to, although we previously used MidJourney. Recently, we've begun testing AI-based audio tools, though we remain somewhat skeptical of their results. The image-generation tools have evolved significantly and are now part of our daily workflow. They've become integral to the way we design visual content, rather than just being tools we turn to occasionally.

- What were the main challenges your organization faced during the initial implementation of AI? How were these challenges addressed?

Initially, the biggest hurdle was simply understanding how to interact with the tools effectively. When you're just starting out, the interface and commands can be overwhelming. Fortunately, I attended a company-organized training session that clarified the fundamentals. After that, I shared what I learned with the rest of the team. Over time, as the tools have matured and become more user-friendly, those early difficulties have largely disappeared. Today, the main challenge is crafting detailed prompts to get the best results - something that can be frustrating for those unfamiliar with the process.

### Section 2: AI in Marketing and Consumer Behaviour

- From your experience, how has AI influenced marketing strategies within your agency?

AI has significantly influenced our strategic approach to marketing. It has streamlined internal processes, especially in creative development. For example, generating visuals now takes a fraction of the time it used to. AI has also helped us experiment with new formats and campaign ideas more efficiently. While we remain cautious about completely relying on AI for client-facing outputs, it plays a crucial behind-the-scenes role in ideation and execution.

- Have you noticed any changes in consumer behavior or attitudes as a result of AI-powered campaigns? If yes, can you elaborate?

That's a difficult one to measure, to be honest. I don't think there's a clear, direct shift that we've observed among consumers. If anything, the changes are more internal - how we build and design campaigns rather than how consumers react to them. That said, there's probably a subconscious element to how personalization and relevance in AI-enhanced content influence consumers, but that would require more detailed data to confirm.

- How do you balance the use of AI tools with maintaining a personal touch in your campaigns?

That's a really good question. We're still learning how to strike that balance. At this stage, we mostly use AI as a supplementary tool - it helps generate ideas or speed up production, but the final output is always reviewed and refined by a human. Creativity and authenticity are core to our brand and messaging, so the human element remains essential.

- Are there any ethical concerns you or your clients have raised regarding the use of AI in marketing?

Ethics haven't been a major point of concern so far, but that might be because we're still using AI in fairly controlled and limited ways. We haven't yet encountered situations that would raise red flags - like deepfakes or unauthorized data use - but we're aware that as AI becomes more powerful, we'll need to set clearer boundaries and guidelines.

### Section 3: Data, Privacy, and Trust in AI

- In your opinion, how do consumers perceive the use of AI in terms of data privacy and trust?

I believe there's still a fair amount of skepticism among consumers when it comes to data privacy. Many people don't fully understand how AI works, which leads to a general lack of trust - especially around how their personal information is being used. That said, if the benefits are clear and the experience is seamless, users tend to overlook some of those concerns. Trust is definitely earned over time and through transparency.

- Has your agency taken any steps to ensure ethical use of consumer data when utilizing AI tools?

Yes, absolutely. We're very conscious of ethical standards, especially since we often work with client data. We only use AI tools that comply with GDPR and other relevant regulations. Most of our AI usage is internal - used for ideation or production purposes - not for targeting or handling consumer data directly. Still, we've put safeguards in place to ensure compliance and minimize risks.

- Do you believe consumers are fully aware when they are interacting with AI rather than a human? Should they be?

In many cases, I don't think they are fully aware, especially when AI is used subtly, like in recommendation engines or automated responses. I do believe there should be a level of transparency so consumers know what they're engaging with. At the same time, if the interaction feels natural and helpful, most people don't mind whether it's AI or a person, as long as it adds value.

- How does your agency communicate the use of AI tools to your clients or their customers?

We're quite transparent with our clients about how and when AI tools are used in our workflow. It's part of our value proposition; we're efficient and innovative. However, when it comes to their end-customers, it really depends on the campaign. Sometimes AI plays such a behind-the-scenes role that it does not need to be explicitly stated. However, if we use it in a way that affects the customer experience, then yes, we always disclose that clearly.

#### Section 4: Future of AI in Your Industry

- How do you envision the role of AI in marketing evolving over the next 5–10 years?

I think we're going to see AI become even more deeply integrated into marketing workflows, particularly in areas like content generation, automation, and data analysis. What used to take hours or days will be done in minutes, if not seconds. The creative process will still require human direction, but AI will likely handle more of the heavy lifting. We'll also see more real-time personalization in campaigns, which could drastically improve engagement rates.

- Are there any trends or upcoming technologies you are particularly excited or concerned about?

I'm intrigued by generative AI's potential, especially in video and audio. It's evolving incredibly fast, and I think it's going to unlock some new formats and storytelling methods we haven't even imagined yet. On the flip side, the speed of this advancement is a bit

concerning. There's a risk of overreliance or of losing the human touch if companies jump in without considering the long-term implications.

- What skills do you think future marketing professionals will need to work effectively alongside AI?

Adaptability will be key. Marketers will need a blend of creative thinking and technical know-how, being comfortable with data, understanding how AI tools function, and knowing when and how to use them. Soft skills like storytelling and emotional intelligence will still matter because those are the things AI can't replicate authentically.

- If you could give one piece of advice to companies just beginning to explore AI tools, what would it be?

Start small and stay curious. Test AI tools in low-risk environments and see where they can add real value. Don't try to automate everything at once, use AI to complement your existing strengths. And most importantly, make sure your team understands what the tools do and don't do. Education is key to getting meaningful results.

## Appendix 3: In-depth interview 2

### Section 1: Experiences with AI in Research and Application

- What initially drew you to the field of AI research? How have advancements in AI reshaped the landscape of your work? How has the adoption of AI evolved within your organization over time?

The definition of AI is very broad and often too vague. In computer science, we tend not to use it much. I began working seriously in computer vision (CV) when I enrolled in my PhD program. However, in 2015, the explosion of deep neural networks (generally classified as a part of AI) had not yet occurred, and the field was dominated by combinations of hand-crafted and machine-learning approaches. Although neural networks were not new, the performance of hand-crafted or rule-based methods was generally better, with some exceptions. The subsequent explosion changed everything; suddenly, all state-of-the-art approaches were deep-learning-based, including our research at the Computer Vision Laboratory. Another important milestone was the release of ChatGPT to the general public in 2022. While it did not directly affect our research, it significantly changed the way we work, both in research and pedagogy.

- Can you describe the first significant project or initiative at your institute that involved the integration of AI? What were the primary motivations behind this initiative?

When we started using convolutional neural networks for our biometric tasks.

- What are the key AI methodologies and technologies your research focuses on? How do these technologies align with the broader objectives of your institute's research agenda?

The use of deep neural networks (convolutional neural networks, generative adversarial networks and diffusion models).

- Can you provide examples of successful or challenging business implementations of AI technologies that originated from your institute's research?

Our biometrics research. Furthermore, we brought the field of ear recognition forward in some respects on par with face recognition.

- What were the primary challenges encountered during the early phases of AI research and implementation at your institute? Were there any specific challenges related to translating research into practical business solutions, and how were these addressed?

Data. Getting enough images, images that are good enough and getting those annotated was (and still is) the main challenge we faced. Additionally, I would also mention computational resources – luckily, in the first few years Nvidia helped us with its donations of their GPUs.

## Section 2: Impact of AI on Research and Industry

- How has AI research at your institute influenced or contributed to advancements in specific industries? Can you highlight any particular industry where your research had a significant impact, either positively or negatively?

Biometrics. Things are now possible that were just non-existent a few years ago. Computers are now better at recognizing people than we humans are.

- Can you provide examples of AI-driven innovations or solutions developed by your institute that have had a significant impact on industry practices / have successfully been commercialized or implemented in business contexts? What factors contributed to their success?

No commercialization. For scientific contribution check GScholar/Sicriss for our CV Lab.

- In what ways do AI tools developed by your institute enhance human-computer interaction, particularly in industry applications?

Data annotation is painful and time-consuming for humans. With pretrained segmentation models we can now pre-segment images and then humans only correct or oversee the final annotation of data.

- How do you ensure that AI systems are designed to be intuitive and user-friendly for non-expert users?

We do not deal with this. The only exception could be the explainability of predictions that models make.

## Section 3: AI and Public Perception

- How do you perceive the general public's and industry's attitudes towards AI? Are these attitudes generally informed by scientific understanding, or are they influenced by other factors such as media or business interests?

Both good and bad. Concerns of privacy, possible biases and falsified information being propagated are valid and serious. However, concerns of people losing profit and jobs over AI and then trying to stop the progress reminds me of protests of textile workers during Middle Ages, that lost their jobs to the mechanized looms.

- How does your institute engage with both the public and businesses to improve understanding and address misconceptions about AI? Can you provide examples where this engagement has had a tangible impact on business practices or public perception?

By giving general-public interviews for TV, radio and newspapers.

- What strategies does your institute employ to ensure the ethical use of AI and to build trust among both the public and business stakeholders in AI technologies?

The most important is data acquisition, which needs to follow EU rules. Second is ensuring that developed models are fair.

- How does feedback from businesses and consumers influence the direction of your research and the deployment of AI systems? Are there any examples where this feedback led to significant changes in your AI tools or strategies?

Since we do not deal with commercial aspects, nor do we prepare user-level solutions they do not affect our research significantly.

#### Section 4: Ethical Considerations in AI Research

- How does your institute tackle ethical issues related to AI, such as bias, fairness, and transparency in AI systems? How important are these considerations in the context of developing AI solutions for business applications?

When addressing bias and unfairness: The first part is trying to ensure that input datasets are as unbiased as possible and then to curate it as well as possible. The second is to augment data or even generate new samples if possible, to mitigate bias, use class rebalancing, various generalization techniques during training, regularization, etc.

When addressing transparency: Since neural networks are black-box models, you cannot directly interpret decisions it made. We use specific visualizations of interim outputs and do ablation studies to counter that to at least some extent.

- What frameworks or guidelines does your institute follow to ensure that AI research and applications adhere to ethical standards, particularly when these applications have the potential for wide commercial use?

EU laws.

- How does your institute ensure transparency in AI research and communicate complex AI concepts to non-expert audiences?

Through interviews with general public media.

- What measures are in place to balance the need for data collection with respect for privacy, especially in AI-driven projects that could be commercialized? How do these measures affect potential business collaborations or product development?

We either use existing datasets or get EU-compatible agreements from individuals that we capture.

## Section 5: Future Directions and the Role of AI in Research and Industry

- What are your predictions for the most significant advancements in AI research over the next five years? How do you see these advancements influencing industry practices or creating new business opportunities?

Not applicable to my department/research, so I would rather not answer.

- How does your institute plan to stay at the forefront of AI research, and what are the key areas of focus for future projects that might have commercial or industry applications?

We do not focus on commercial or industry applications, so we do not keep this in mind.

- How central is AI to the long-term research strategy of your institute? How does this strategy integrate potential business applications or collaborations?

Not applicable for our research at the moment, so I would rather not answer.

- In what ways do you envision AI contributing to both the future of scientific research and the evolution of business practices across various industries?

For us, scientific research is this so-called “AI”, we do “AI”.