# Master Thesis

# Exploring the Dark Side of AI-enabled Services:
## Impacts on Customer Experience and Well-being

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*"Unless we learn how to prepare for, and avoid, the potential risks, AI could be the worst event in the history of our civilization."*

*Stephen Hawking*

# Abstract

Artificial Intelligence (AI) is transforming service delivery in various sectors, promising efficiency and personalization. However, it is crucial to consider the unintended consequences of these innovations on customer experience and well-being. While potential benefits of AI to enhance service provision is widely recognized, there is still a critical need to examine the challenges and complexities of these technologies from the customer's perspective. This research delves into the "dark side" of AI integration into services, highlighting concerns such as privacy breaches, reduced human interaction, and ethical dilemmas that have not received sufficient attention in academic literature. Through explorative research using a qualitative approach, we identified significant areas where AI services could negatively impact customer experience and well-being. These findings are categorized into three aggregate dimensions: Technological Dependence and Systemic Failures, which highlight issues of over-reliance and trust erosion; Interpersonal Dynamics and Psychological Effects, covering the loss of personal touch and emotional discomfort; and Cognitive and Economic Well-being, focusing on the implications for mental health, cognitive abilities, and self-actualization. The findings provide valuable insights into the dual nature of AI's impact on service interactions, and offer a nuanced understanding of how these technologies can both enhance and damage customer experience and well-being. This study contributes to the need to prioritize human values and needs in the design and implementation of AI services. We advocate for strategies that leverage the technological capabilities of AI, while protecting and promoting the psychological and emotional well-being of customers to ensure that the advancements in service delivery truly enrich human experiences.

**Keywords**: Artificial Intelligence, AI-Enabled Services, Smart Services, Customer Experience, Service Experience, Customer Well-being, Human Interaction, Ethical AI.

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# Introduction

Artificial intelligence (AI) benefits have attracted the attention of researchers, experts, and the general public in recent years (Davenport et al., 2020; Grewal et al., 2021). Global industries and societies are being transformed by significant advances in artificial intelligence, machine learning, automation, and robotics (Wang & Siau, 2019). It has provided customers with amusing, useful, customized services and social interactions (Grewal et al., 2021) that is significantly changing the service landscape (Hu & Min, 2023) and customer behaviors (Davenport et al., 2020). Thus, there is no doubt that with the emergence of AI, the way we work, live, and interact with others will undergo radical changes at a pace and scale that has never been seen in the past (Wang & Siau, 2019).

The growing use of AI, has led to many service providers offering smart services in a variety of industries (Larivière et al., 2017; Wuenderlich et al., 2015). These industries and the relationships between service providers and customers are expected to be revolutionized by smart services, according to academics and practitioners (e.g., Kabadayi et al., 2019; McLean & Osei-Frimpong, 2019). The essence of "smartness" in service provision lies in the incorporation of technologies that elevate the service process (Heller et al., 2021) in a way that with these advanced services, customers embark on experiences that traditional services could not provide (Kabadayi et al., 2019).

These technological innovations hold the potential to fundamentally reshape the provision of services in an emergent and inevitable manner (Huang & Rust, 2018). As Lim and Maglio (2018) argue, the widespread use of smart service systems has already transformed customer experiences significantly in diverse sectors such as homes, transportation, energy, and healthcare. The integration of smart services offers manifold benefits such as cost reduction, time efficiency, and streamlined processes (Mele et al., 2022). There are multiple examples of chatbots optimizing customer interactions, understanding preferences and delivering relevant

information (Heller et al., 2021). They also provide users with increased independency, visibility, accessibility, detection, and seamless communication (Gonçalves et al., 2020).

However, on the dark side, as with any novel innovation, there is an increased likelihood of unforeseen consequences or vulnerabilities that have not been fully explored (Grewal et al., 2021). This "industrial revolution" resulting from adapting AI and other emerging technologies, while promising, could introduce significant risks for both customers and society at large (Grewal et al., 2021) and scholarly exploration in understanding this "double-edged impact" (Huang & Rust, 2018) on customer experience is still in its infancy (Ameen et al., 2021; Kabadayi et al., 2019; Wuenderlich et al., 2015).

Customer experience is a complex, multi-dimensional construct that includes customers' cognitive, affective, sensory, social, and physical responses to the service provider (Grewal et al., 2009; Schmitt, 2010) and is shaped by both direct and indirect interactions with the service and its provider (Jaakkola et al., 2015; Lemon & Verhoef, 2016). It might be tangible or virtual, directly felt, witnessed, or visualized, and can pertain to an individual occurrence, a series of events, or a procedure (Helkkula, 2011).

Customers often view smart services as risky if they are not visible, make a lot of decisions automatically, or let the service provider see sensitive information. This heightened sense of risk primarily comes from worries about privacy breaches and fears around the security of their data (Keh & Pang, 2010). Privacy concerns, security of data, adoption issues, automation of jobs and putting human jobs at risk (Huang & Rust, 2018), ethical and governance issues (Wang & Siau, 2019), perceived risk (Mele et al., 2022), trust (Grewal et al., 2021), explicitness and transparency of algorithms (Paluch & Blut, 2013) are the main sources of these risks.

Reflecting on these advancements and challenges, in service-dominant logic, with focus on operant resources and value creation, "service" is emphasized as "the foundation of all transactions" (Vargo & Lusch, 2008). Simply put, this perspective asserts that service constitutes the core of all exchanges (Koskela-Huotari & Vargo, 2018). Therefore, with the continual emergence of technologies, understanding and enhancing customer experiences using such smart services are crucial (Huang & Rust, 2018), and can be a strategic differentiator for many companies that not only brings added value to the providers but also greatly benefits their customers (Kabadayi et al., 2019)

Given the potential repercussions and challenges tied to these innovative technologies, it is imperative to evaluate and address these concerns. Thus, this study aims to explore how do customers perceive drawbacks associated with AI-enabled services in their service experience.

Accordingly, the first research question arises:

1. How do AI-enabled services negatively impact customer experience?

Moreover, in the age of smart services, increasing attention is being paid to the importance of customers' well-being among researchers (e.g., Anderson et al., 2013; Ostrom et al., 2015; Volkmer & Lermer, 2019) and it is identified as research priority in recent years (Ostrom et al., 2015). Hollebeek & Belk (2018), for instance, advocate for technology-based services such as smart services to enhance customer well-being. However, while these smart systems aim to enhance the intelligence of their offerings, the potential repercussions they can have for customer well-being are widely neglected (Henkens et al., 2021). This underscores the importance of thoroughly investigating the adverse effects of AI-driven services on customer well-being throughout their service interactions. Instances such as perceptions of privacy invasion, evidenced by the discontinued COVID-19 contact-tracing app and privacy anxiety surrounding devices like Alexa, emphasize the necessity for a deeper exploration of the negative effects of smart service systems on well-being (Mani & Chouk, 2016; Xu et al., 2011). Therefore, the second research question emerges as:

2. How do the negative impacts of AI-enabled services influence customers' well-being during their service experience?

In scrutinizing these research questions, this study adopts an exploratory research design underpinned by qualitative research. An inductive research strategy is deployed, as it implies the development of a theory based on patterns found within the data and promotes exploratory research more efficiently than deductive strategy (Bernard, 2017). Qualitative methodology is used as it has a massive capacity to understand social lives and human behavior (Walker & Myrick, 2006). Data collection will be conducted through literature reviews of researchers and scholars, as well as in-depth interviews with customers who have interacted with and experienced AI-enabled services. By using this approach, participants' perceptions can be explored in a flexible manner while their experiences can be captured in-depth at the same time (Fusch & Ness, 2015).

This research contributes to both theoretical perspectives and practical applications in different ways. Firstly, this study extends the theoretical and practical understanding of AI's role in shaping customer experiences and their well-being, an area with certain gaps left unaddressed by prior studies (e.g., Grewal et al., 2021; Huang & Rust, 2018). While much of the current scholarship concentrates on the tangible benefits and technological advances provided by AI, this work delves into the potential pitfalls and challenges within the service domain and highlights an area that has received less attention. Secondly, by emphasizing the potential drawbacks and challenges of integrating AI into services, this study sheds light on an area that is usually overlooked because of the excitement around technological advancements. Prior research has acknowledged the dual-edged nature of AI (e.g., Grewal et al., 2021; Huang & Rust, 2018), this study also delves deeper into this aspect.

Furthermore, this research provides practical advice for industries using or considering AI-driven smart services. By highlighting areas of potential concerns and challenges from the customers' perspective, organizations can adjust their strategies, to make sure that the integration of these technologies does not negatively impact customers' experience and well-being. Lastly, this study looks into potential challenges AI may pose for customer experience, encouraging further research in this interesting domain.

An outline of this study is provided in four sections. First, the theory discusses literature and theories on Customer Experience, well-being, and AI in Service. Next, the method section outlines the appropriate methods to collect and analyze relevant data for this study. After that, the study's findings are presented, followed by a discussion and managerial implications, limitations, future research areas, and conclusion in the last section.

# Theoretical Framework

In this section, the conceptual foundation of the study is elaborated through the description of the theoretical framework, which consists of three main topics. The intricacies of customer experience and customer well-being will be explored first, followed by a comprehensive discussion of AI-driven services. Finally, a review of the dark side of using AI in services will be performed.

## 2.1 Customer Experience

Customer experiences initially defined by Holbrook and Hirschman (1982, p. 132), as a "... primarily subjective state of consciousness with a variety of symbolic meanings, hedonic responses, and aesthetic criteria." (Holbrook et al., 1982). Becker and Jaakkola (2020) broadly define Customer experience as "non-deliberate, spontaneous responses and reactions to offering-related stimuli along the customer journey" (Becker & Jaakkola, 2020). However, this definition is deemed too broad, and so, specific components are then proposed by De Keyser et al. (2020); 1) customer responses to service interactions and 2) their contextual surroundings.

Customer responses are the cornerstone of several definitions. Verhoef et al. (2009) define customer experience as an evaluation of customer interactions and subsequent emotional, cognitive, and behavioral responses. Lemon and Verhoef (2016), specify it as customers' subjective reactions to both direct and indirect service contacts. Customer experience is defined by Díaz-Garrido et al. (2018) as the cognitive, emotional, and behavioral responses stemming from service encounters, leaving a lasting memory. Jaakkola et al. (2015) define service experience as "a customer's individual and subjective response to any direct or indirect contact with the provider".

Concerning contextual surroundings, customer experience is defined as extending beyond the mere shopping or consumption phase; it encompasses the entire customer journey, triggering cognitive, emotional, and behavioral responses from the customer (Verhoef et al., 2009).

It is seen as a comprehensive response to service-related stimuli, covering sensory, affective, intellectual, and behavioral aspects (Brakus et al., 2009).

Customer experience has traditionally been studied via three different approaches; moments of truth, entire journey mapping, and service blueprinting processes (McColl-Kennedy et al., 2015). Moments of truth is referring to interactions between customers and service providers throughout the customer's journey. These interactions are restricted to direct exchanges between firms and customers. Journey mapping describes how customers interact with firms' offerings, often referred to as a "customer experience map", illustrating the entire service journey, which includes the beginning, middle, and end, as customers utilize a service to fulfill their objectives. This map illustrates both tangible and measurable interactions and touchpoints, as well as qualitative and intangible motivations, meanings, and frustrations. Firms utilize journey mapping to identify and enhance their customers' desired experiences, concentrating on processes within services (McColl-Kennedy et al., 2015). Lastly, service blueprints are visual representations or maps illustrating the customer actions, onstage and backstage employee actions, and support processes, which have gained widespread adoption (Fließ & Kleinaltenkamp, 2004).

We distinguish the concept of customer experience from service experience. The fundamental distinction between these two concepts is rooted in the subjects of the experiences (Bueno et al., 2019). Customer experience is exclusively centered on the customer's subjective response to interactions with a company. In contrast, service experience encompasses not only customers but also representatives of the service provider and other actors within networks of social experience (Vasconcelos et al., 2015).

## Customer experience with smart technologies

Despite the anticipation of significant changes in service due to smart technologies (Ostrom et al., 2015), there is a limited body of research on customer experience within this emerging landscape (Gonçalves et al., 2020).

Early investigations into customer experience in technological settings outlined dimensions such as efficiency, fulfillment, system availability, and privacy (Parasuraman et al., 2005). In technology-based services, research has delved into the influence of factors such as control and convenience on various customer experience responses (Collier & Sherrell, 2010). More recent literature has begun identifying customer perceptual responses unique to the smart service

context, such as invisibility, autonomous decision-making, and risk (Wuenderlich et al., 2015). Additionally, barriers to adopting smart home services, including privacy concerns, perceived risk, and safety concerns, have been acknowledged (Chou & Gusti Ayu Novi Yutami, 2014; Yang et al., 2018).

In exploring technology dimensions, characteristics such as pervasiveness, information intensity, autonomy, and interactivity have been identified. These characteristics stem from the implicit features of smart technology, which are rooted in intense data flow, interactions within a network of actors, and the visibility of data (Carsten et al., 2018).

However, considering the profound impact of smart technologies on the service landscape, there is a pressing need for deeper insights into customer experience with smart services.

## 2.2 Customer Well-being

Customer well-being, as defined by Ryan and Deci (2001), refers to the optimal psychological state of the customer. Deviations from this optimal state are termed customer ill-being, as the counterpart to customer well-being (Deci & Ryan, 2000).

Customer well-being comprises both hedonic facets (namely the extent of pleasure and happiness) and eudaimonic facets (namely the extent of self-realization) (Kuppelwieser & Finsterwalder, 2016). Anderson et al. (2013) propose that hedonic well-being involves life satisfaction, positive affect, and the absence of negative affect (Anderson et al., 2013). That is, elevated life satisfaction, increased positive and decreased negative emotions collectively contribute to greater hedonic well-being (Diener et al., 1999).

While, eudaimonic well-being explores the extent of an individual's complete functioning, including meaning realization and self-actualization, characterized as "human flourishing" (Haybron, 2008). It involves achieving the optimization of one's self-potential (Ryff & Keyes, 1995). Omodei and Wearing (1990) argue that meeting fundamental psychological needs is a significant contributor to well-being (Omodei & Wearing, 1990). Consequently, individuals who experience a sense of life purpose and encounter challenging situations may be characterized as undergoing eudaimonic well-being. This aspect of well-being emphasizes the significance of life's meaning and self-actualization (Ryan & Deci, 2001).

Both facets are complementary, offering a comprehensive understanding of an individual's psychological condition (Ryan & Deci, 2001). Horwood and Anglim (2019) underscore that

both hedonic and eudaimonic facets are pertinent and significant within smart service systems (Horwood & Anglim, 2019).

## 2.3. AI-Enabled Services

### 2.3.1 Smart Services

Smart services, as a contemporary concept, are becoming increasingly crucial in both B2B and B2C settings, and drawing significant interest from service managers and researchers (Kabadayi et al., 2019; Wuenderlich et al., 2015).

Smart services involve the use of "intelligent objects", such as technology, devices, and sensors -able to detect their surroundings and conditions (Allmendinger & Lombreglia, 2005)-, to enable effective communication between devices, service providers and recipients and facilitate real-time data collection (Porter & Heppelmann, 2015; Wuenderlich et al., 2015). Kabadayi et al. (2019) define them as services carried out within a "Phy-Digital" space, in where interactions can occur in various forms, including customer-to-service provider, customer-to-customer, customer-to-service, service-to-service provider, and machine/ device/ sensor to machine/ device/ sensor interactions. The goal is to deliver intelligent services that cater to personalized needs. This approach benefits users by providing tailored offerings and enhances service providers' capabilities to deliver superior solutions, as highlighted by Kabadayi et al. (2019).

These intelligent objects have a profound impact on how services are designed and delivered, given their ability to collect and analyze data, make decisions, and take actions (Allmendinger & Lombreglia, 2005) that could be related to a single customer, a group of customers, or a company (Wuenderlich et al., 2015). They include collecting, integrating, analyzing, and employment of both general and specific data of customers (Gretzel et al., 2015). This capability facilitates the creation of an interconnected ecosystem of smart services (Allmendinger & Lombreglia, 2005). In other words, when customers interact with these novel services, their perceptions and experiences are shaped by the very nature of the technology (De Keyser et al., 2019. This complex relationship suggests that the true value of smart services for customers is deeply rooted in the improved experiences they facilitate, experiences that provide them with values (Hong et al., 2017; Mele et al., 2022; Ryu et al., 2010), as Norman (2007) argues, the true measure of a successful integration of technology into services lies in its ability to enrich user experience with added value.

## 2.3.2 Artificial Intelligence in Service

The existing body of literature commonly characterizes Artificial Intelligence (AI) by its resemblance to Human Intelligence (HI) and the imitation of intelligent human behaviors, in other words, AI refers to machines with human-like qualities. This involves various cognitive functions, including rational thinking, problem-solving, and learning, as discussed by Huang and Rust (2018). Unlike standard technology, AI can learn, connect, and adapt. Whether it learns or not depends on its purpose. AI varies in how much it can learn, adapt, and connect, depending on its design. It can adapt to changing needs because of two main features: self-learning and connectivity (Huang & Rust, 2018).

**Self-learning:** AI's self-learning capability, utilizing inputs like big data and machine learning, enables it to adapt automatically. This adaptability allows AI, such as the Alexa assistant, to continuously learn from user interactions, tailoring its responses to individual needs over time (Dawar 2018).

**Connectivity**: AI rarely operates in isolation; instead, it thrives on connectivity. This connection can be machine-to-machine, machine-to-customer, or machine-to-employee. In the context of the Internet of Things (IoT), AI exemplifies this connectivity, where machines, humans, and objects are seamlessly linked. This interconnected network allows data to flow ubiquitously, promoting shared information that facilitates learning and improvement (Hoffman & Novak, 2018). The IoT serves as a socio-cyber-physical system, creating a dynamic environment where information and data are fluid and accessible (Ng & Wakenshaw, 2017).

As Artificial Intelligence continues to emerge and integrate, the way we work, live, and interact with others is set to undergo radical changes at a pace and scale that has never been seen in the past (Wang & Siau, 2019). Recent years have seen the exponential growth and interest in artificial intelligence (AI), capturing the attention of a global audience, including researchers and experts (Davenport et al., 2020; Grewal et al., 2021). Global industries and societies are being transformed by significant advances in artificial intelligence (AI), machine learning, automation, and robotics (Wang & Siau, 2019). It has provided customers with amusing, useful, customized services and social interactions (Grewal et al., 2021) that is significantly changing the service landscape (Hu & Min, 2023) and customer behaviors (Davenport et al., 2020).

AI, recognized for its learning, connecting, and adapting capabilities, stands as a pivotal force driving innovation in the service sector (Huang & Rust, 2021). Examples such as service robots ensuring consistent customer interactions (Wirtz et al., 2018), personalized recommendations powered by big data and machine learning (Chung et al., 2016), and the engagement of natural language-based social robots (Lee et al., 2018) showcase the transformative impact of AI on service offering. This evolution underscores the strategic importance for service providers to thoughtfully integrate AI into their operations (Mende et al., 2019).

Huang et al. (2019) develop a framework, categorizing AI into three types: Mechanical, Thinking, and Feeling. This classification predicts the progression of AI replacing human service and highlights the evolutionary shift from Mechanical and Thinking AI to Feeling AI. When deciding when and which AI to use in services, service providers should consider the service's complexity and emotional nature. Mechanical AI suits standardized and routine tasks, thinking AI is ideal for personalization, systematic, complex tasks, and feeling AI specializes in building relationships, emotional and interactive tasks. Each AI type brings unique benefits for engaging customers in service. The choice depends on the service's unique characteristics, as increased AI use could lead to reduced human service (Huang & Rust, 2021).

## 2.4 The Dark Side of Utilizing AI in services

AI initiatives are experiencing a growing implementation trend within service industries. This implementation significantly influences both service operations, and the responses and behaviors of customers (Belanche et al., 2024). It is reshaping services by taking on diverse tasks, emerging as a significant source of innovation (Huang & Rust, 2018). The increasing popularity of AI-driven services is evident in their ability to provide quick and real-time information in both B2B and B2C settings. There is a growing demand for AI-enabled services, with users seeking intelligent, easily accessible service gateways (Sheth et al., 2023). These services have the potential to revolutionize the way organizations service (Chaturvedi & Verma, 2023), interact with their customers (McLean & Osei-Frimpong, 2019), and create value co-creation through personalization, convenience, security, etc. (Manser Payne et al., 2021). As per a study by Gartner, AI technologies like machine learning enable the analysis of customer sentiment and feedback "at a scale, precision, and speed" beyond human capabilities (Gartner, 2020).

It is evident that, existing literature tends to display an optimistic outlook on AI integration. However, this tendency overlooks potential negative consequences and dismisses associated

moral and practical concerns (Belanche et al., 2024). AI consists of both bright and dark sides (Chaturvedi & Verma, 2023), and there remains a critical necessity to delve into the adverse aspects of this technology, specifically examining its possible negative effects on consumers and businesses. Additionally, ethical concerns linked to the use of AI in services require further exploration (Belanche et al., 2024).

There are also concerns regarding potential disruptions and anxiety caused by the notorious nature of AI and errors in AI-enabling tools (Sheth et al., 2023). This includes the possibility of co-destructing value through technology anxiety, privacy concerns, and psychological obstacles (Chaturvedi & Verma, 2023; Plé, 2017). Furthermore, the autonomy of AI may result in less-than-ideal outcomes if the technology adapts unexpectedly or acts on inaccurate data, as noted by Bock et al. (2020).

Moreover, AI technologies require participation from customers, which leads to add more complexity to the service and increase the risk of service failure (Hilton & Hughes, 2013). As customers spend more time and effort, their frustration increases if the co-created service disappoints them in meeting their expectations (Grönroos & Voima, 2013). These situations signify the waste of valuable resources, including time and patience, for the customer (Harrison & Waite, 2015). Additionally, while AI is a key innovation source, it poses a threat to human service jobs, mirroring job displacement observed in manufacturing's shift to service industries (Buera & Kaboski, 2012).

On the other hand, customers welcome AI advancements when the technology operates imperceptibly or aligns with their expectations. However, once the technology exceeds these boundaries, their perceptions tend to become negative. It is difficult for people to believe that they are being deceived by technology that either replaces humans or mimics human behavior. This resistance may stem from a sense of threat related to their own inability to recognize tasks performed by machines or the potential risk of machines replacing them (Belanche et al., 2024).

These considerations, along with various other aspects, underscore a pivotal moment where the downsides of AI implementation need to be carefully weighed against its benefits (Belanche et al., 2024).

In recent years, few studies have focused on the dark sides of AI implementation in service. For instance, Ashfaq et al. (2020) discovered that the insufficient communication quality in AI-based services poses difficulties for both users and service providers. Their findings indicate

that numerous individuals are dissatisfied with various AI-driven services due to the challenges in comprehending and responding to inquiries effectively.

Exploring the darker aspects of AI, Grewal et al. (2021) refer to relationship marketing literature to identify key drivers; lack of trust and power asymmetries. The study reveals that a lack of trust has a stronger impact in B2C settings, whereas power asymmetries are more significant in B2B settings (Grewal et al., 2021). In another review of dominant service theories, Bock et al. (2020) explore the current and potential positive and negative impacts of Artificial Intelligence (AI) on marketing, particularly within the service encounter.

Mikalef et al. (2022) investigated the negative aspects of AI use, aiming to improve practical insights and minimize unintended outcomes. They examine how AI may lead to unintended consequences. Castillo et al. (2021) delve into the consequences of introducing AI at the service frontline from a service innovation standpoint. They highlight that such introductions can lead to customer anger, confusion, or dissatisfaction, ultimately resulting in value co-destruction. Belanche et al. (2020) suggest that customers with strong relationships with their service providers may feel offended when AI replaces human service providers.

Additionally, Belanche et al. (2021) investigate the implementation of service robots in restaurants, highlighting that customers interpret the adoption of such technology as a cost-cutting measure by service providers. This perception, in turn, results in decreased intentions to utilize and endorse the services. This aligns with findings that customers experience anxiety when served by human-like robot waiters (e.g., Mende et al., 2019)

Overall, this review highlights the dual nature of AI in smart service experiences, its transformative potential, and the need to delve deeper into their potential challenges and negative effects on customer experience and well-being as two less-explored topics in the realm of AI technologies in service industry. To provide a clear and structured representation of these concepts, we present a visualization of the conceptual framework in figure 1.

**Figure 1. Conceptual Model**



**AI-Enabled Services**
(Characteristics)

e.g., Customer Support Chatbots, Visual
Assistants, Personalized Recommendations,
...

**Customer Experience**
(Negative aspects)

e.g., Ethical & Privacy concerns,
Disruptions & Anxiety, Job displacement,
Trust issues, Anger & Confusion, ...

**Well-Being Influence**

**Hedonic Facets**
Mental Health (Stress, Anxiety)
Emotional State (Frustration, Irritation)
Health (Potential Impact on Physical Health
via Stress)

**Eudaimonic Facets**
Life's Meaning Realization, Self-
Actualization, Achieving Optimized Self-
Potential,

The following section will detail the selected methodology for this study, aiming for addressing the mentioned challenges and adverse effects.

# Method

The methodology section will provide details on the research method employed in this paper, including three subsections that address research design, data collection, and data analysis.

## 3.1 Research Design

This study aims to explore how AI-enabled services negatively impact customers' experience and well-being.

For these objectives, the following research questions were created:

1. *How do AI-enabled services negatively impact customer experience?*

2. How do these negative impacts influence the well-being of customers during their experience?

Due to a lack of empirical studies on this topic, we employed an exploratory research design that utilizes a qualitative research method to acquire a comprehensive understanding of how AI-powered services negatively affect customer experience, as well as to understand how these negative impacts influence customers' well-being during their experience (Edmondson & Mcmanus, 2007). Qualitative approach aims to organize and reduce the enormous amount of empirical data with different interpretations and group them into themes or categories, resulting in generating descriptions, models, or theories (Walker & Myrick, 2006). Inductive strategy deals with developing new theories out of observing phenomena in the social world (Hodkinson, 2008) and aims at identifying "generalizations, rules, regularities", and even "irregularities and diversities" (Klauer & Phye, 2008).

To investigate the research questions empirically, this study relies mainly on in-depth, semi-structured interviews with customers who have experienced AI-enabled services (Appendix A). This methodology is grounded in established research practices and aligns with the qualitative research approach recommended by scholars (e.g., Creswell & Cheryl, 2016). These in-depth

interviews serve as the cornerstone of this research. By engaging directly with professionals who have practical experience of using AI-enabled services, we aim to capture rich, first-hand insights into their perceptions, experiences, and concerns (Patton, 2014). The semi-structured format allows for open and flexible discussions (Seidman, 2006), enabling interviewees to express their thoughts in their own words and providing the depth necessary to uncover varied perspectives (Miles & Huberman, 1994).

## 3.2 Research Settings

In this study, we refer to AI-enabled services as any service or application that leverages artificial intelligence to automate processes, make decisions, provide personalized services for customers, etc. These services encompass various sectors, including healthcare, finance, customer support, e-commerce, and entertainment. AI technologies in these services range from chatbots and virtual assistants to recommendation systems, automated financial advisors, and AI-driven therapeutic tools. Given the exploratory nature of this research, we focused on services that are widely used by customers, directly interact with them, have significant consequences for them in their daily lives and decision-making processes, and thus impact their experience and well-being through these interactions.

## 3.3 Data Collection

Given the exploratory nature of this study and the limited existing knowledge on the topic, a qualitative research approach is employed for data collection in this research (Denzin et al., 2023). Data can be collected via different sources in qualitative research, including interviews, direct observations, records, documents and films (Strauss & Corbin, 1998). Given the need to delve into the thoughts, opinions, and feelings of professional who have interacted with AI-enabled services, in-depth interviews emerge as the most suitable data collection method. In-depth interviews involve non-standardized questions, interview topics, and probes, allowing for a nuanced exploration of the subject from the perspective of the participants (Sayrs, 1998).

All interviews in this study follow a semi-structured format, guided by a predefined interview protocol designed according to Seidman's concept of a "three-interview series", which involves focusing respectively on the participant's life history, the specifics of the targeted experience(s), and reflections on the meaning derived from the experience(s) (Seidman, 2006). This approach ensures that both sub-questions are systematically addressed, while also allowing for the flexibility to pose follow-up questions and uncover unexpected insights (Seidman, 2006).

In addition, "Microsoft Teams" as a digital platform is used to facilitate the interviews. This approach ensures participants' accessibility and provides a convenient means of conducting interviews while adhering to ethical considerations (Jacob et al., 2012).

All interviews' transcripts were recorded for transcription purposes, to help in the comprehensive analysis of the data (Miles et al., 2014). Transcripts are anonymized to protect participants' privacy. Participants have been asked both for their consents and approval for recording the transcripts.

Regarding the selection of participants, this study focuses on professionals who have practical experience with AI-enabled services in the context of their customer journey. Given the vastness of the potential participant pool, a purposive sampling method is appropriate. Purposive sampling allows for the selection of participants who align with the study's objectives, reducing potential biases and errors in the sampling process (Etikan et al., 2016).

The sampling frame in this study consists of professionals who have interacted with and used AI-enabled services at work. From this sampling frame, a purposive sample is drawn, with participants selected based on their relevance to the research goals (Creswell, 2014). We defined our purposive sample based on the following sampling criteria: (1) accessibility to key respondents with practical experience in utilizing AI-enabled services; (2) inclusion of individuals with diverse education and professional backgrounds; and (3) incorporation of professionals with various levels of experience to gain a deeper understanding of the phenomenon.

The number of participants in the interviews is guided by the aim of theory development, which suggests that a sufficient sample size typically falls between ten and thirty participants (Creswell & Poth, 2016). However, the final sample size is based on the concept of data saturation. Data saturation is the point at which no fresh information or insights emerge from the data, and the ability to replicate the study's findings is established (Guest et al., 2006). There is no one-size-fits-all method to reach data saturation, as study designs vary. However, researchers generally agree on some key principles and concepts: data saturation is achieved when no new data, no new themes, and no new coding are observed in the analysis, and the study's findings can be replicated (Patricia et al., 2015).

## 3.4 Data Analysis

Using Gioia methodology with an inductive approach, data analysis was performed on 11 interview transcripts to uncover insights into how AI-enabled services adversely affect customer experience and to explore how the negative impacts of these services affect customers' well-being. Based on this methodology, data analysis consists of identifying three-step coding in order to identify themes and patterns. This method involves a systematic approach that starts with open coding of interview transcriptions to identify first-order concepts. These concepts are then categorized into second-order themes. Subsequently, these themes are aggregated to define "aggregate dimensions" that provide a comprehensive understanding of the phenomenon. Through this iterative, inductive approach, the analysis stays close to the data while also generating a new theoretical framework based on participants' experiences (Gioia et al., 2013).

We utilized open coding to pinpoint crucial themes, guided by (Tuli et al., 2007), we focused on three indicators for categorizing initial codes: (1) relevance beyond specific contexts, (2) insights shared by multiple participants, and (3) insights that offer valuable conclusions.

Our primary data analysis involved thorough reviewing interview transcripts to extract phrases and passages tied to our study. The transcripts were examined verbatim, and any specific idea or concept from the data and relevant segments of text were extracted and coded. This led to identifying first-order concepts. For example, participant statements like, *"Suppose that you have a health problem. You call an emergency room or a hospital or a doctor, but instead of a person, a machine takes over and talks to you. But you can't have that feeling of satisfaction and you don't feel that you're being taken care of."*, were categorized as "Lack of Personal Touch."

Through axial coding, we searched for relationships, similarities, and connections between and among the first-order concepts to develop higher-order themes. These second-order themes provided a deeper understanding of the underlying patterns and concepts related to the subject.

Finally, through selective coding, we categorized second-order themes into aggregate dimensions, as the most abstract level of coding in our study. These aggregate dimensions provide a comprehensive framework (Gioia et al., 2013) for how AI-enabled services can adversely affect customer experience and how these negative effects influence customers' well-being, as elaborated in the following section.

# Findings

This research revealed several critical areas where AI-enabled services negatively impact customer experience and well-being. Applying qualitative approach and conducting eleven intensive interviews with professionals, we categorized these areas into six second-order themes: Technological Reliance and Vulnerabilities, Systemic Issues in Functionality, Human-AI Interaction Challenges, Psychosocial Impacts, Cognitive and Emotional Well-being, and Economic and Productivity Concerns. We then categorized the identified themes into three main aggregate dimensions: Technological Dependence and Systemic Failures, Interpersonal Dynamics and Psychological Effects, and Cognitive and Economic Well-being.

Figure 2 shows the relationships between first-order concepts, second-order themes and aggregate dimensions (see Appendix B).

**Figure 2. Coding Structure**
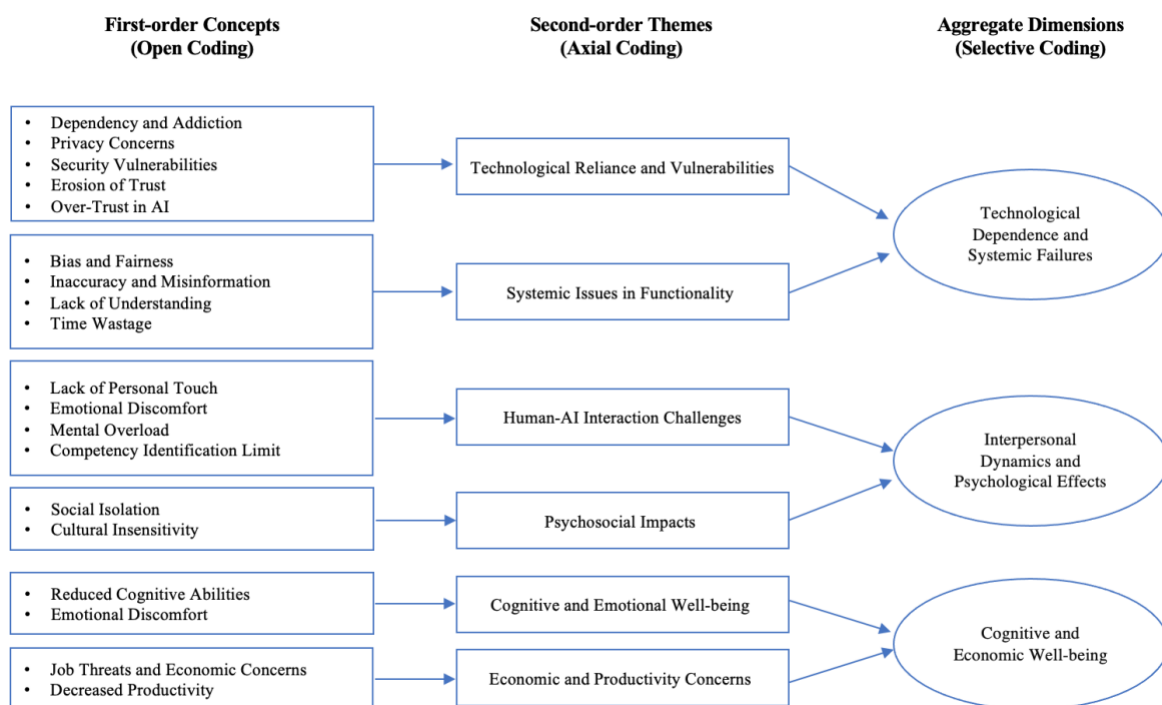
## Theme 1. Technological reliance and vulnerabilities

### Dependency and Addiction

Interviewees expressed concerns about becoming overly reliant on AI, leading to situations where the absence of AI services could induce stress. One participant noted, "*I find myself constantly reaching for AI solutions, even for the simplest tasks... it's like I can't function without it*". This dependency reflects a growing trend where convenience offered by AI, in extreme cases, transitions into a form of addiction that affects individuals' ability to perform tasks independently.

### Privacy Concerns

Privacy emerged as a significant concern among interviewees who were worried about how their data is used and shared by AI systems. "*Every time I interact with AI, I wonder where my data is going. It's like you're trading privacy for convenience without even realizing it,*" shared an interviewee. The concern about personal data underscores the need for transparency and robust data protection measures in AI-driven applications.

### Security Vulnerabilities

The potential for AI-driven services to be misused or hacked raises concerns about security. "*The thought that someone could hack into the AI system I use and access my personal information is terrifying,*" one respondent remarked. Such vulnerabilities not only pose a risk to individual privacy but also to the overall trust in AI technologies. Moreover, the necessity for transparency, user consent, and robust safeguards was emphasized to protect against misuse of data and security breaches.

### Erosion of Trust

Repeated negative experiences with AI, such as encounters with biased decisions or security failures, have led to a gradual loss of trust in AI-enabled services. This erosion of trust is particularly concerning given the integral role AI has begun to play in daily life. "*Security too is a headache. AI systems can be hacked, manipulated. Imagine the fallout from that!*". This quotation showcases the direct link between security concerns and diminishing trust in AI systems.

### Over-trust in AI

The tendency to overly trust AI's capabilities was identified as a potential pitfall. "*Sometimes I just take what the AI says as fact without questioning it... it's easy to forget it's not always right,*" a participant admitted. This over-trust can lead to misinformation and a decline in critical thinking skills.

## Theme 2. Systemic issues in functionality

### Bias and Fairness

This concept emerged from reports of AI-enabled services making decisions that unfairly advantage or disadvantage certain groups. An interviewee's reflection underscores the concern: "*One biggie is bias ... these algorithms, they learn from data, and if that data is biased, well, the AI can end up making biased decisions like in loan approvals or hiring*". The quote reveals the critical need for fairness in AI algorithms to prevent the perpetuation of existing biases.

### Inaccuracy and Misinformation

Participants voiced frustrations with AI-enabled services for providing incorrect information or failing to keep data updated. Highlighting this, an interviewee shared, "*I felt very frustrated since it kept telling me this one is the right solution and every time it was wrong*". Such experiences highlight the reliability issues in AI services, and emphasizes the importance of accuracy in AI-generated content and solutions.

### Lack of Understanding

AI's inability to fully comprehend user inquiries or needs was a significant concern for participants. As one interviewee explained, "*Yes. So the case of Airbnb or generally those chatbots... it was not smart enough to understand*". This illustrates the gap in AI services' ability to process and respond to user queries effectively, which was observed particularly regarding chatbots. This highlights a need for improvements in AI's comprehension capabilities.

### Time Wastage

Efficiency concerns were highlighted when AI services led to unnecessary time consumption with no desirable outcome. An interviewee detailed a specific scenario, illustrating the broader issue: "*There's been multiple instances of me contacting my bank and since I couldn't rely on*

*those automated systems or bots, I had to literally get few hours off from my work, get on the car, go to the branch and find the person and talk to them so that was a waste of time because instead of having someone immediately responsive to my phone calls they had this bot or automatic system, nobody was available*". This highlights the paradox where AI, which is intended to save time, consumes it instead due to inefficiencies or failures in understanding and responding to user needs effectively. This concept emphasizes the need for AI services to enhance productivity and efficiency in applications.

## Aggregate Dimension 1. Technological Dependence and Systemic Failures

These findings led us to the first aggregate dimension, Technological Dependence and Systemic Failures, which consists of the paradox of AI as both a facilitator and an obstacle to efficiency. Interviewees express growing concerns over a high level of dependency on AI, leading to addiction.

More importantly, the ease and convenience of AI services' solutions unintentionally diminish individuals' capacity for independent thinking and problem-solving. This dependency is further complicated by concerns regarding privacy, security vulnerabilities, and an overarching erosion of trust in AI technologies. We identified that users often accept AI-generated information without critical examination, as they expressed fears of over-trust in AI-enabled services. This identification highlights a significant shift in the mechanisms of decision-making and underscores a vital need for not only ensuring robust AI governance frameworks but also fostering users' digital knowledge.

## Theme 3. Human-AI interaction challenges

### Lack of Personal Touch

The absence of human warmth and understanding in interactions with AI-driven services, especially in contexts requiring empathy, led to dissatisfaction and emotional discomfort. Participants missed the human touch in service delivery, affecting their overall satisfaction and emotional state. "*Suppose that you have a health problem. You call an emergency room, hospital or doctor, but instead of a person, a machine talks to you [...] you can't have that feeling of satisfaction or you don't feel that you're being taken care of*", expressed a participant. This lack of personal touch, especially in sensitive situations, underscores the importance of empathy and understanding in customer service.

## Emotional Discomfort

Instances of frustration, stress, and anger were frequently cited by participants, caused mostly by poor or insufficient support by or errors in AI-enabled services. Such negative emotional responses can affect mental health and individuals' mood and outlook. "*One example is that when I wrote my code and so there's about programming about Python And it couldn't understand my question at all and then I felt very frustrated since it kept telling me this one is the right solution and [...] every time it was wrong.*"

## Mental Overload

The cognitive burden of dealing with complex or malfunctioning AI systems was a frequent theme. An interviewee described the stress involved: "*Firstly, the constant pressure and stress at work, especially dealing with misleading information from AI, have changed the rhythm of my daily tasks*".

This points to the mental pressure users experience when AI services do not function as intended, so using them leads to complicating the tasks rather than simplifying them.

## Competency Identification Limit

Interviewees noted AI's failure to capture the breadth of human skills and attributes, particularly soft skills and nuanced competencies that are not easily quantifiable by algorithms.

Reflecting on the experience during job interviews, one participant remarked, "*So again we had a debate on this that during an interview especially in the first stages I, for example, have a lot of soft experience and capabilities and competencies that cannot be captured by bots. For example, my maturity in solving problems, the charisma that I may have that could be very helpful in my role, are not easy to capture by screening so mistakenly could easily drop a good candidate just because that algorithm has not captured that*".

This insight underscores the limitations of AI in recognizing and valuing the complex, intangible qualities that are crucial for many roles and points to a significant gap in AI's application in situations that require a deep understanding of human skills and attributes.

## Theme 4. Psychosocial impacts

### Social Isolation

AI-enabled services replacing human interaction were seen as contributing to feelings of loneliness and isolation. An interviewee's remark; "*Unless the whole society is used to it, you can't have that feeling of satisfaction or you don't feel that you're being taken care of*", emphasizes the social disconnect that can result from pervasive AI mediation.

### Cultural Insensitivity

The inability of AI to recognize and adapt to users' cultural backgrounds was underscored by concerns over AI-driven therapeutic services. An interviewee shared insights on the limitations of AI in the context of mental health support and highlighted a significant gap in AI's ability to provide personalized care that respects and incorporates individual cultural backgrounds and personal histories.

## Aggregate Dimension 2. Interpersonal Dynamics and Psychological Effects

These findings helped us develop the second dimension which delves into the emotional and psychological consequences of AI-enabled service interactions. The data illustrates a significant lack of personal touch and empathy in AI services, leading to emotional discomfort and dissatisfaction for users.

More importantly, in contexts requiring sensitive human interaction, the AI's inability to emulate human warmth and understanding becomes significantly more apparent. Additionally, the complexities and inefficiencies of AI-driven systems cause users to experience a mental overload that indicates cognitive damage in imperfect AI service solutions. These findings call for a human-centered approach in AI-driven services' design that is focused on the importance of empathy and user-centricity to enhance customers' experience.

## Theme 5. Cognitive and Emotional Well-being

### Reduced Cognitive Abilities

Concerns were raised about the potential for AI reliance to diminish human cognitive skills and creativity. "*Our mind and our skills get lazy and without them, we may not be able to do the same like before*". This comment highlights worries about the long-term effects of dependency on AI for cognitive tasks and suggests a need for a balance in using AI-enabled services.

## Emotional Discomfort

The stress, frustration, or anger stemming from unsatisfactory interactions with AI-enabled services was emphasized as affecting users' well-being. This repeats the sentiment expressed under Human-AI Interaction Challenges and illustrates the emotional impact of poor and inadequate AI-enabled services.

## Theme 6. Economic and Productivity Concerns

### Job Threats and Economic Concerns

Anxiety over AI replacing human jobs and the implications for economic stability and employment opportunities were prevalent concerns among participants. One interviewee sadly remarked, "*Yes I think so. I think it threatens a lot of jobs [...] he's really scared that AI will kill humanity*", another interviewee mentioned: "*I think it is happening that AI will take over the world [...] as soon as it becomes something more reliable, I guess. [...] that's one of the major reasons that I'm not so happy with it*". These insights reflect widespread fears about the disruptive potential of AI on the labor market and as a result, the broader economic structures.
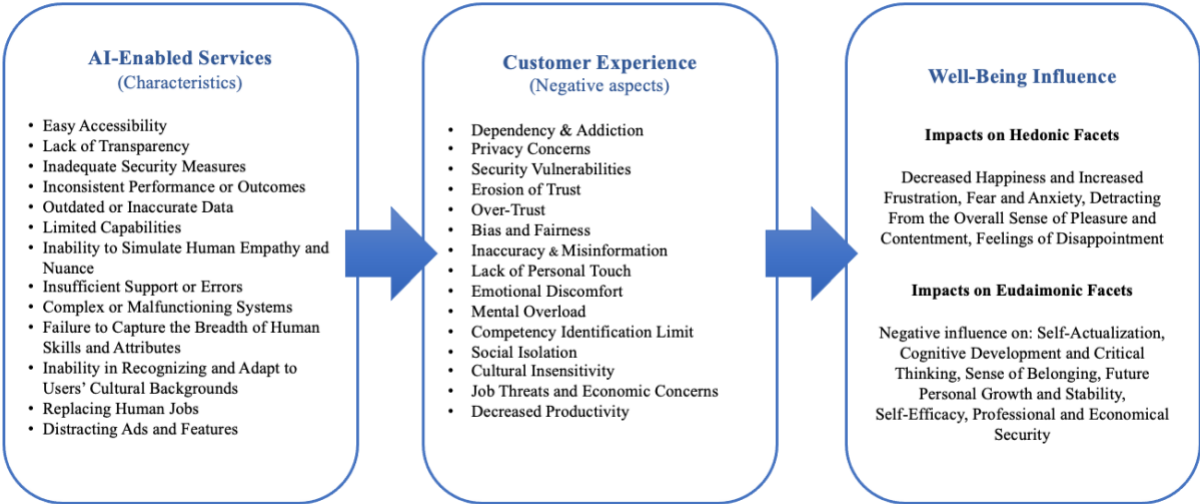
### Decreased Productivity

The issue of AI-driven attractiveness and features leading to decreased productivity was highlighted. An interviewee observed, "*The advertisements by AI on social media make me stay longer on social media and decrease my productivity*", highlighting how AI can encourage unproductive behavior and divert attention from more meaningful or essential tasks.

### Aggregate Dimension 3. Cognitive and Economic Well-being

These findings led us to the third aggregate dimension; Cognitive and Economic Well-being. The focus of this dimension is to address the broader social and economic impacts of AI-enabled services. Concerns over diminished cognitive abilities reflect anxiety about the long-term effects of depending and reliance on AI for tasks that previously required human intelligence. Fears of losing jobs due to AI's capacity to execute similar tasks raise economic concerns among the participants. Moreover, the reported decrease in productivity due to AI-driven distractions highlights the paradoxical nature of AI as both a tool for efficiency and a potential source of inefficiency.

Therefore, it is evident that the efficiency and convenience offered by AI services are overshadowed by significant challenges when these dimensions are intersected. This comprehensive analysis helped us refine our conceptual model to more accurately show the interactions uncovered in this study and provide a clearer visual summary of the key findings which is shown in figure 3.

**Figure 3. Refined Conceptual Model**



**AI-Enabled Services**
(Characteristics)

- Easy Accessibility
- Lack of Transparency
- Inadequate Security Measures
- Inconsistent Performance or Outcomes
- Outdated or Inaccurate Data
- Limited Capabilities
- Inability to Simulate Human Empathy and Nuance
- Insufficient Support or Errors
- Complex or Malfunctioning Systems
- Failure to Capture the Breadth of Human Skills and Attributes
- Inability in Recognizing and Adapt to Users' Cultural Backgrounds
- Replacing Human Jobs
- Distracting Ads and Features

**Customer Experience**
(Negative aspects)

- Dependency & Addiction
- Privacy Concerns
- Security Vulnerabilities
- Erosion of Trust
- Over-Trust
- Bias and Fairness
- Inaccuracy & Misinformation
- Lack of Personal Touch
- Emotional Discomfort
- Mental Overload
- Competency Identification Limit
- Social Isolation
- Cultural Insensitivity
- Job Threats and Economic Concerns
- Decreased Productivity

**Well-Being Influence**

**Impacts on Hedonic Facets**

Decreased Happiness and Increased Frustration, Fear and Anxiety, Detracting From the Overall Sense of Pleasure and Contentment, Feelings of Disappointment

**Impacts on Eudaimonic Facets**

Negative influence on: Self-Actualization, Cognitive Development and Critical Thinking, Sense of Belonging, Future Personal Growth and Stability, Self-Efficacy, Professional and Economical Security

# Discussion

## 5.1 Key Findings

The development of the research questions for this study is influenced by the complex interplay between AI-enabled services and their consequences on customer experiences and overall well-being. Despite an understanding that AI-driven service innovations have the power to revolutionize service offerings across multiple industries by enhancing efficiency and personalizing experiences (McLean & Osei-Frimpong, 2019), this study focuses on the darker, less explored side of AI deployment (Ameen et al., 2021; Kabadayi et al., 2019).

Considering this gap in the literature, we shaped the purpose of our study; to explore the negative effects of AI-enabled services on customer experience and how such experiences influence customer well-being.

We employed qualitative research and conducted in-depth interviews with professionals using AI-enabled services, to explore the negative impacts of AI-enabled services on customer experience, and how these impacts affect customer well-being.

The findings of this thesis reveal a multifaceted and complex landscape where AI-enabled services significantly and diversely influence customer experience and well-being. In addressing the first research question, it became evident that AI-enabled services can detrimentally affect customer experience. The reliance on AI for routine and complex decision-making processes leads to over-trust that can conversely hinder individuals' ability to perform tasks independently. Customers who are deeply captivated by the convenience and efficiency of AI-enabled services may overlook crucial information and thus, risk the quality of their decisions. Moreover, privacy concerns were another prominent issue, when customers expressed anxiety and concern about the handling and security of their personal data by AI systems and how it has led to weakening trust in these services. The systemic issues in AI functionality, such as bias and fairness, inaccuracy and misinformation, and a lack of

understanding, undermine the reliability and fairness of AI-driven decisions, which lead to further deterioration of the customer experience.

Furthermore, the increased use of AI-driven interactions has led to a loss of personal touch and empathy in customer service, which is a critical component in building and maintaining customer satisfaction. We realized that this lack is particularly felt in contexts requiring sensitivity and human understanding, such as patients interacting with hospitals and doctors, that lead to emotional discomfort and dissatisfaction (Ye et al., 2017). Such findings underscore a gap in AI's ability to replicate human interactions. Additionally, the mental overload experienced from dealing with complex, ineffective AI-enabled systems demonstrates a cognitive burden that complicates customers' tasks rather than simplifying them.

Exploring the second research question, the effects of these negative impacts on customers' well-being are profound. The over-reliance on AI-enabled services not only alters customers' overall engagement with technology but also affects their cognitive abilities and thus, their decision-making processes. Additionally, the erosion of trust and privacy concerns contribute to a sense of vulnerability, stress, and anxiety in customers, impacting their psychological well-being (Smith & Yang, 2017). Economic anxieties emerging from fears of being laid off and replaced by AI, highlight broader societal and economic concerns related to AI-enabled services' integration into the workforce. Moreover, the loss of personal touch and empathy in AI-enabled services creates feelings of isolation and dissatisfaction in customers as well (Pol et al., 2020). This finding highlights the emotional negative impacts of these technologies. The emotional discomfort and stress arising from unsatisfactory AI service interactions, coupled with the social isolation and cultural insensitivity experienced in AI-enabled services, highlight the adverse psychological and cultural impacts on well-being. These effects are seen more in AI systems that fail to recognize or respect individual cultural backgrounds and personal histories, such as the intricacies in and differences between Western and Eastern cultures. These failures lead to customers experiencing these AI-enabled services as impersonal and alien.

Therefore, while AI-enabled services offer remarkable opportunities for innovation and efficiency in service delivery, their implementation also introduces complex challenges that can negatively affect customer experience and well-being.

The results highlighted in this study emphasize the necessity of adopting a balanced approach when developing and implementing AI technologies in services. The study supports

implementing solutions that showcase advanced technological capabilities while emphasizing principles centered around human needs and values. Building this important while challenging balance is crucial to guarantee that AI-powered services enhance the overall quality of customer experiences, and as a result, make positive contributions to their general well-being.

## 5.2 Contributions

This thesis delved deep into the complex effects of AI-enabled services on customer experience and well-being. Despite the rapid developments in AI technology that have caused revolutionary changes in service delivery (Chaturvedi & Verma, 2023) and its transformative potential for efficiency and personalization (Huang & Rust, 2021; Manser Payne et al., 2021), there remains a pressing need for a deeper understanding of AI's potential negative impacts from customers' standpoint. This investigation aligns with the suggestions of scholars such as Grewal et al. (2021) and Kabadayi et al. (2019) for a more holistic examination of AI in service sectors.

Firstly, this research dove into this gap by providing insights into the adverse effects of AI on customer experiences and provided insights to help balance between AI's technological advancements and its human-centric concerns. It underscored the necessity of scrutinizing AI's dual nature, as emphasized by Huang and Rust (2018), acknowledging not only its potential to revolutionize service offerings but also the importance to address emerging ethical dilemmas and human interaction challenges. This balance deepens our theoretical understanding and contributes to a deep understanding of both the promises and pitfalls of AI in service delivery.

Secondly, this study expands the discussion on customer well-being within the context of AI services. The study confirms concerns raised by scholars such as Sheth et al. (2023) and Chaturvedi and Verma (2023) and contributes to the body of literature focusing on the ethical deployment of AI and its effects on mental health and satisfaction. Through a detailed analysis via in-depth interviews, we explored the negative impacts of AI on well-being and discovered a novel perspective on how these effects manifest, thereby underscoring the need for AI systems that are developed with a keen awareness of their psychological footprint.

Thirdly, the findings underscore the significance of trust, privacy, and the human interaction in AI-driven services. This thesis advocates for a paradigm shift towards AI systems that prioritize empathy and user trust. These findings are aligned with the concerns highlighted by Liu-Thompkins et al. (2022) and Montemayor et al. (2022) over the challenges of AI encounters in

replicating human empathy and maintaining user trust. These findings proposes a framework for future AI innovations that go beyond technical capabilities and understand the complexities of human interaction, which are essential for fostering positive customer relationships.

Fourthly, this thesis contributes to service-dominant logic (S-D logic) literature by illustrating AI's dual role in value co-creation, a core concept in S-D logic, outlined by (Vargo & Lusch, 2008). Our findings highlight that lacking personalization and empathy, AI services fail in fostering the co-creation of value which is crucial for positive customer experiences. The study suggests an AI service design that actively involves customers -as co-creators of value- in shaping AI services and recognizes them as active value co-creators and key players in the service ecosystem, as noted by Prahalad and Ramaswamy (2000).

Finally, our research introduces new perspectives by focusing on specific factors related to AI such as dependency, over-trust, and cultural insensitivity, which are crucial for understanding the challenges and possibilities brought by AI in improving customer experiences.

## 5.3 Managerial Implications

In the current dynamic service environment, businesses are facing the multifaceted effects of AI-driven services on both customer experience and well-being. Our study revealed several crucial aspects that companies can implement practical measures to address the complexities posed by AI technologies. By doing so, they can effectively leverage these tools to enhance customer satisfaction, rather than diminish it.

Firstly, it has become apparent that transparency is first and foremost, especially concerning how customer data is managed and protected. Businesses must openly communicate their data practices to rebuild and/or strengthen trust among their customers. By clarifying data usage and emphasizing robust security measures, companies can reduce and control privacy concerns and foster a more secure and trusted environment for their customers.

Additionally, our findings highlight a significant gap in AI's ability to replicate human interaction, particularly empathy. To address this, we suggest organizations explore a hybrid model that combines AI services that are able to be replaced by human touch in handling complex or sensitive situations. This approach ensures that while routine tasks are efficiently managed by AI, the more delicate aspects of customer service retain a personal and empathetic touch.

Finally, the hesitancy of some companies to delve into the negative aspects of AI services points to a broader industry challenge. We advocate for a culture shift towards more openness and a commitment to continuous improvement. Businesses can identify and address shortcomings by actively seeking feedback on AI services internally and from customers. Leveraging this feedback can help them enhance the services in a way that resonate with customers' needs.

By addressing these issues and incorporating the mentioned insights, companies can successfully integrate AI technologies into their service portfolios. Employing AI strategically, grounded in ethical principles and a deep understanding of customer requirements, is essential for delivering seamless and favorable service encounters in today's competitive landscape.

## 5.4 Limitations and Future Research

Exploring the negative impacts of AI-enabled services on customer experience and well-being has been a fascinating journey, yet not without its challenges. Understanding these limitations opens the door for future research.

One key limitation we faced was the difficulty in recruiting a diverse set of professionals for interviews due to my limited network in the Netherlands. This challenge might have narrowed the insights we could gather, potentially affecting the study's depth. To overcome this, we recommend future researchers with broader networks to reach a wider and more varied participant base. Expanding the geographical scope beyond the Netherlands could also provide a richer understanding of AI's impacts across different cultural and regulatory contexts.

Another significant limitation was our focus on the "negative" effects of AI-enabled services, which led to some companies' reluctance to participate in the research. This hesitancy not only limited our access to industry insights but also necessitated a shift in our approach from conducting research within companies to solely reaching out to professionals with hands-on experience in using AI-enabled services. To prevent this, future studies should aim for exploring both positive and negative facets, to provide a more balanced examination of AI's impact. This approach might lower barriers to company participation. Additionally, it would be beneficial to create strategies that clearly communicate the constructive goals of exploring AI's negative aspects. By highlighting how this research can lead to enhancements in AI service design, we can encourage companies to view participation not as a risk but as an opportunity for improvement. This approach could significantly increase their willingness to collaborate and share insights.

Thirdly, the explorative nature of our study made it challenging to identify the exact negative impacts of AI-enabled services on customer experience and well-being. To broaden the applicability of our insights, future studies could integrate quantitative methods, such as surveys. This step would help confirm our qualitative observations across a wider range of people and situations and make the conclusions more universally relevant. Employing a mixed-methods approach would also enhance our understanding of how AI services impact customer well-being by combining personal experiences with statistical trends.

Lastly, our methodological focus did not allow for exploring the long-term effects of AI on customer experience and well-being. We see a valuable opportunity for research that examines these dynamics over an extended period. Such studies could track the evolution of customer perceptions and AI technologies to provide insights into the long-term impacts of AI-enabled services on society.

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Despite challenges during the final stages of my thesis, I am grateful for the unwavering support from my supervisors. With their guidance and assistance, I was able to successfully defend and graduate within the given timeframe.

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# Appendices

## Appendix A. Interview Protocol

**Interviewee's background information**

1. Can you briefly introduce yourself?

**Artificial Intelligence**

2. What does AI mean to you?
3. How do you define it in context of customer experience?

**Experience with AI services**

4. Have you used AI-enabled services in your work or personal life?
5. Can you share examples of specific AI services you have used and the context in which you used them?
6. How do you generally find AI services in terms of usefulness?

**Challenges and negative experiences**

7. Can you recall any instances where using AI services posed challenges, was frustrating, or problematic? Please share your experience.
8. In your experience, have there been instances where the use of AI services in your interactions as a customer led to dissatisfaction, or any notable errors or inconvenience?

**Impact on Well-being**

9. Can you share specific examples of the effects of these negative experiences on your overall feelings or well-being? (By well-being, I mean your overall state of health, satisfaction and happiness). For instance, have there been instances where these experiences have caused stress, anxiety, or frustration?
10. How do you perceive the repercussions of using AI services in your daily life? how it has negatively influenced your life?
11. Thinking about these experiences, how did they influence your daily work or routines?
12. Have there been instances where these negative experiences prevent you from achieving your goals? Or fulfilling a task at work?

**Coping mechanisms**

13. How do you cope with these negative experiences? Can you elaborate on that?

14. Have you implemented any strategies (in your life or at work) to adapt to challenges and frustrations, or to prevent negative experiences?

15. If you would be in charge and based on your experiences,

    a. How would you change these AI services in a way that minimize negative impacts on your (or others') experiences?

    b. What aspects would you improve in AI services to maximize positive impacts on your (or others') experiences?

**Additional information**

16. Is there anything else you would like to add or clarify?

## Appendix B. Coding Scheme

| Quotes | First-Order Concepts | Second-Order Themes | Aggregate Dimensions |
|---|---|---|---|
| *I find myself constantly reaching for AI solutions, even for the simplest tasks... it's like I can't function without it.* | Dependency and Addiction | Technological Reliance and Vulnerabilities | Technological Dependence and Systemic Failures |
| *Every time I interact with AI, I wonder where my data is going. It's like you're trading privacy for convenience without even realizing it.* | Privacy Concerns | | |
| *The thought that someone could hack into the AI system I use and access my personal information is terrifying.* | Security Vulnerabilities | | |
| *Security too is a headache. AI systems can be hacked, manipulated. Imagine the fallout from that.* | Erosion of Trust | | |
| *Sometimes I just take what the AI says as fact without questioning it... it's easy to forget it's not always right.* | Over-Trust in AI | | |
| *One biggie is bias ... these algorithms, they learn from data, and if that data is biased, well, the AI can end up making biased decisions like in loan approvals or hiring.* | Bias and Fairness | Systemic Issues in Functionality | |
| *I felt very frustrated since it kept telling me this one is the right solution and every time it was wrong* | Inaccuracy and Misinformation | | |
| *Yes. So the case of Airbnb or generally those chatbots... it was not smart enough to understand.* | Lack of Understanding | | |
| *There's been multiple instances of me contacting my bank and since I couldn't rely on those automated systems or bots, I had to literally get few hours off from my work, get on the car, go to the branch and find the person and talk to them so that was a waste of time because instead of having someone immediately responsive to my phone calls they had this bot or automatic system, nobody was available.* | Time Wastage | | |
| *Suppose that you have a health problem. You call an emergency room, hospital or doctor, but instead of a person, a machine talks to you [...] you can't have that feeling of satisfaction or you don't feel that you're being taken care of.* | Lack of Personal Touch | Human-AI Interaction Challenges | Interpersonal Dynamics and Psychological Effects |
| *One example is that when I wrote my code and so there's about programming about Python And it couldn't understand my* | Emotional Discomfort | | |

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| *question at all and then I felt very frustrated since it kept telling me this one is the right solution and [...] every time it was wrong.* | | | |
| *Firstly, the constant pressure and stress at work, especially dealing with misleading information from AI, have changed the rhythm of my daily tasks.* | Mental Overload | | |
| *Unless the whole society is used to it, [...] you don't feel that you're being taken care of.* | Social Isolation | Psychosocial Impacts | |
| | Cultural Insensitivity | | |
| *So again we had a debate on this that during an interview especially in the first stages I, for example, have a lot of soft experience and capabilities and competencies that cannot be captured by bots. For example, my maturity in solving problems, the charisma that I may have that could be very helpful in my role, are not easy to capture by screening so mistakenly could easily drop a good candidate just because that algorithm has not captured that.* | Competency Identification Limit | | |
| *Our mind and our skills get lazy and without them, we may not be able to do the same like before.* | Reduced Cognitive Abilities | Cognitive and Emotional Well-being | Cognitive and Economic Well-being |
| *One example is that when I wrote my code and so there's about programming about Python And it couldn't understand my question at all and then I felt very frustrated since it kept telling me this one is the right solution and [...] every time it was wrong.* | Emotional Discomfort | | |
| *Yes I think so. I think it threatens a lot of jobs [...] he's really scared that AI will kill humanity*<br>*I think it is happening that AI will take over the world [...] as soon as it becomes something more reliable, I guess. [...] that's one of the major reasons that I'm not so happy with it.* | Job Threats and Economic Concerns | Economic and Productivity Concerns | |
| *The advertisements by AI on social media make me stay longer on social media and decrease my productivity.* | Decreased Productivity | | |