VILNIUS UNIVERSITY
BUSINESS SCHOOL

DIGITAL MARKETING

BADER AMERDOUL

Dirbtinio intelekto valdomų pokalbių robotų vaidmuo gerinant klientų patirtį ir lojalumą telekomunikacijų sektoriuje.	***The Role of AI-Powered Chatbots in Enhancing Customer Experience and Loyalty in The Telecommunication Sector.***

Academic Supervisor: Mikael Forsström

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SUMMARY

VILNIUS UNIVERSITY BUSINESS SCHOOL

DIGITAL MARKETING STUDY PROGRAMME

BADER AMERDOUL

THE ROLE OF AI-POWERED CHATBOTS IN ENHANCING CUSTOMER EXPERIENCE AND LOYALTY IN THE TELECOMMUNICATION SECTOR.

Supervisor – Mikael Forsström
Master's thesis was prepared in Vilnius, in 2026
Scope of Master's thesis – 81 pages.
Number of tables used in the FMTP – 12 pcs.
Number of figures used in the FMTP – 16 pcs.
Number of bibliography and references – 37 pcs.

The thesis explores how AI-powered chatbots enhance customer experience and customer loyalty in the telecommunication sector through and integrated SERVQUAL and TAM models. It tests hypotheses linking service quality to perceived usefulness/ ease of use, intention to use, customer satisfaction, customer experience and overall customer loyalty.

The problem is the fact that the effect that the AI chatbots have on the telecom customer loyalty has not been empirically tested. Objective: To explore the role of service quality in a positive perception generating and positive outcomes. Tasks: Literature review, model construction, data mining survey and hypothesis theories, discussion of implications

Quantitative, cross-sectional survey design, convenience sampling (n=171), Likert scale questionnaire, analysis conducted using Excel and JASP, assumptions checked.

All hypotheses supported ($p < .001$, R^2 = 65.5 % – 73.5%). The perceived usefulness (β =.810) and perceived ease of use (β =.857) positively influenced by the service quality, these two constructs influence positively the intention to use (R^2=.680). Customer satisfaction and customer experience both are positively influenced by the intention to use (β =.820 and β =.829), and both influence customer loyalty (β =.814).

The implementation of AI-powered chatbots deliver high service quality and improve customer perceptions, satisfaction, experience and overall customer loyalty. Therefore, companies should invest in AI-powered chatbots for competitive advantage.

SANTRAUKA

VILNIAUS UNIVERSITETO VERSLO MOKYKLA

DIGITAL MARKETING STUDIJŲ PROGRAMA

BADER AMERDOUL

Dirbtinio intelekto valdomų pokalbių robotų vaidmuo gerinant klientų patirtį ir lojalumą telekomunikacijų sektoriuje.

Darbo vadovė – Mikael Forsström
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Baigiamajame darbe nagrinėjama, kaip dirbtinio intelekto pokalbių robotai pagerina klientų patirtį ir klientų lojalumą telekomunikacijų sektoriuje per integruotus SERVQUAL ir TAM modelius. Jis tikrina hipotezes, siejančias paslaugų kokybę su suvoktu naudingumu / naudojimo paprastumu, ketinimu naudoti, klientų pasitenkinimu, klientų patirtimi ir bendru klientų lojalumu.

Problema ta, kad AI pokalbių robotų poveikis telekomunikacijų klientų lojalumui nebuvo empiriškai patikrintas. Tikslas: Ištirti paslaugų kokybės vaidmenį kuriant teigiamą suvokimą ir teigiamus rezultatus. Užduotys: Literatūros apžvalga, modelio konstravimas, duomenų gavybos tyrimas ir hipotezių teorijos, implikacijų aptarimas

Kiekybinis, skerspjūvio tyrimo planavimas, patogumo atranka (n=171), Likerto skalės klausimynas, analizė atlikta naudojant Excel ir JASP, prielaidos patikrintos.

Visos hipotezės patvirtintos ($p < .001$, R^2 = 65,5 % – 73,5 %). Suvokiamas naudingumas (β =.810) ir suvokiamas naudojimosi patogumas (β =.857) teigiamai veikia paslaugų kokybę, šie du konstruktai teigiamai veikia ketinimą naudotis (R^2=.680). Klientų pasitenkinimą ir klientų patirtį teigiamai veikia ketinimas naudoti (β =.820 ir β =.829), ir abu turi įtakos klientų lojalumui (β =.814).

Dirbtinio intelekto valdomų pokalbių robotų įdiegimas užtikrina aukštą paslaugų kokybę ir pagerina klientų suvokimą, pasitenkinimą, patirtį ir bendrą klientų lojalumą. Todėl įmonės, siekdamos konkurencinio pranašumo, turėtų investuoti į DI valdomus pokalbių robotus.

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ABBREVIATIONS

AI	: Artificial Intelligence
TAM	: Technology Acceptance Model
PEOU	: Perceived Ease of Use
PU	: Perceived Usefulness
SERVQUAL	: Service Quality Model
IU	: Intention to Use
CS	: Customer Satisfaction
CX	: Customer Experience
CL	: Customer Loyalty
VIF	: Variance Inflation Factor
NLP	: Natural Language Processing
SA	: Sentiment Analysis

INTRODUCTION

The telecommunications business is changing fast due to the increasing demands of efficiency, personalization and technological advancement by the customers. With the growing intensity of competition and the growing number of digitally literate consumers, telecom operators are now moving towards artificial intelligence AI-based chatbots in order to revolutionize the customer service delivery. Such smart systems offer real-time communication that is scalable and can help cut down on the cost of operations, with simultaneous better response time and access to the services. To give an example, Vodafone has already deployed AI systems to handle large amounts of customer requests and raise the rates of first-contact resolution (Tarla, 2021)

As a critical tool in the service delivery and enhancement process in the variety of industries, AI chatbots have become important in offering instant, personalized solutions at a lower cost (Wang et al., 2022; Hsu & Lin, 2023). Chatbots provide an effective and easily scalable way to fulfill the changing customer needs and react to the market developments with the help of the natural language processing (NLP) and machine learning algorithms. This technological change is in line with the current trends of digital change and introducing digital access as a core constituent of modern citizenship (Vassilakopoulou et al., 2023;Alafnan, 2025). In addition to the practical advantages, the use of AI chatbots can also help meet the wider goals of society, such as resource conservation and increased accessibility of people with disabilities and other marginalized communities.

Existing studies also show that AI chatbots have the potential to be very useful in automating customer support features such as billing questions; technical support; and account management (Ghosh et al., 2022). According to research, approximately 40 percent of users nowadays prefer to communicate with chatbots rather than human agents when posing questions to the customer service (Yuen et al., 2022). Besides, 24/7 access and the multilingual nature of chatbots have been useful in meeting customer demands in different touchpoints such as websites, mobile apps, and social networks.

Nevertheless, the apparent increase in AI chatbots did not happen without difficulties, and many gaps still persist in determining the extent to which they can influence the experience of the customers in telecommunications. Although the mentioned functional advantages, including cost reduction and higher efficiency, are thoroughly reported, their reliability, effectiveness, and perceptions among users remain unanswered and require in-depth empirical research (Chen et

al., 2023; Chizoba Ekechi et al., 2024). In particular, the effects of AI chatbots on the emotional involvement, individual customer experience, and the further loyalty are not sufficiently comprehended. This is a major area of knowledge deficiency that is vital within the telecommunications industry where customer relations are the key parameter, and the competition is high. It is not clear that AI chatbots will be able to rise to operational advantages to create a significant level of emotional relationship with customers, provide a personal customer experience throughout the customer lifecycle, and eventually, be able to build customer loyalty and retention.

Problem Statement

Telecommunications sector is undergoing a huge change with respect to the rising customer demands of efficiency, personalization and the changes in technologies. Chatbots powered by AI have become a necessity in the field of customer service and can offer real-time communication, 24/7 existence, and cost-effective solutions. Nevertheless, the wide adoption of AI chatbots to facilitate the job of services does not yet have sufficient empirical evidence on the role of this tool in terms of customer experience (CX) in the telecommunications industry. Although the operational advantages are evident, it is not obvious how far the AI chatbots can go in terms of influencing customer satisfaction, individualization, emotional engagement, and loyalty. This gap in knowledge does not mean that telecommunications companies are able to make the most of AI chatbots as one of their strategic resources to improve their customer experience and to gain a competitive advantage.

Research Questions

1. What is the effect of AI-powered chatbots on customer experience within the telecommunication sector?
2. What makes AI-based chatbots successful in improving customer satisfaction and interaction over telecommunications?
3. What is the relationship between service quality, perceived ease of use, and perceived usefulness in relation to customer satisfaction, customer experience, and customer loyalty in the case of AI chatbots?

Aim of the Reseach

This paper seeks to discuss and evaluate how AI-driven chatbots can be used to improve the customer experience (CX) within the telecommunications sector. The proposed study will examine how AI chatbots can enhance personalization, emotional engagement, and service quality using the TAM and SERVQUAL models and finally determine its effects on customer satisfaction and loyalty.

Objectives of This Study

1. To analyze how AI-driven chatbots will help telecom companies to interact with their customers and achieve customer satisfaction.
2. To investigate the issue of personalization and emotional engagement in improving customer experience with AI chatbots.
3. The purpose of the study is to determine the impact of the functionality and the level of service quality of AI chatbots (considered through the SERVQUAL model) on customer satisfaction and customer loyalty in the telecommunications industry.
4. To find out the limitations and issues of implementing AI-based chatbots in the telecommunications sector to improve the customer experience.

Structure of the Thesis

To fulfill the purpose and objectives of its research, this thesis devoted to the given topic The Role of AI-Powered Chatbots in improving customer experience in the telecommunications sector is logically split into five major sections that achieve one of the main objectives of the general research coverage of the given study topic. The paper starts with the introduction section, which gives the background of the AI-based chatbots in telecommunication, the purpose of the study, and the terms that will be used in the report. The Theoretical Background section lays the theoretical basis and principles required to analyze the potential of chatbots in the real-time communication, considering both the advantages of 24/7 accessibility and the deficiencies of handling a multifaceted case. The Research Methods section is an explanation and description of the methodology used in the study giving detailed descriptions of the processes used in data collection and data analysis. Research Results section provides an in-depth discussion of survey methodology findings, transforming the data received into significant meaning that is a direct answer to the questions on the effect of AI chatbots on telecommunication customer experience. Lastly, there is the Conclusion section where all findings are summarized during the research.

1. THEORETICAL FRAMEWORK

1.1. Artificial Intelligence in Customer Service

One of the most significant paradigms shifts in the contemporary business activity is the digitization of customer service, and Artificial Intelligence seems to be the central figure in the given process. Such a theoretical framework predetermines the exclusive conceptual background to understand the varied role of AI-powered technologies to change the nature of customer relationships in the telecommunications sector.

This chapter is a theoretical review of theoretical frameworks on which we base our research on AI-driven customer service solutions. We begin with the existing notion of the Artificial Intelligence in the context of customer service environments, and we trace its evolution since the primitive automation of the low-tech nature, through the further evolution of the sophisticated chatbot systems, facilitated with the help of the Natural Language Processing and machine learning algorithms. It is on this scale that we can comprehend the emergence of the 24/7 support, the real time response and personalized treatment being relevant sources of competitive difference in the telecommunications market and the contribution of the AI technologies in the current age to the realization of this particular factors.

Then, we consider the theoretical background of the topic of customer experience and the quality of service and explain how the incorporation of AI influences the traditional service delivery paradigms. Special attention is paid to the description of the manner how chatbots can address the issue of enhancing the effectiveness of the work and maintaining the impression with the same level of personalization the balance that is especially critical in high-stakes and competitive environments like telecommunications.

1.2. AI-Chatbots in Customer Experience: Definitions and Key Concepts

Due to the rapid developments in the field of technology, the way in which business interacts with the customers has been largely influenced. The dawn of Artificial Intelligence (AI), or rather AI-powered chatbots, has been an urgent customer care instrument that is transforming the way companies interact and offer services to their clients. The technology provides for automated communication in real-time, which allows businesses to increase their customer service activities without affecting the high level of efficiency and personalization (Daqar and Smoudy, 2019).

The high customer expectations and cutthroat competition in the field of telecommunication makes the use of AI chatbots in the sector indispensable in the face of the increasing demands of 24 hours a day support, instant replies, and personalized treatment.

The customer service has been the first area where AI experienced a huge momentum with the introduction of the chatbots that rely on Natural Language Processing (NLP) and machine learning algorithms to understand and respond to customer queries. These chatbots can perform such a range of tasks as to respond to simple inquiries, provide personalized product recommendations, deal with service-related issues, etc. it will make it a useful addition to customer experience (CX) (Huang & Rust, 2018). The ever-increasing dependence on AI has allowed the companies to meet the customer demand faster than before by reducing waiting time and improving the quality of the service (Ghosh et al., 2022).

The interface used in the field of telecommunications provides a special opportunity for the use of AI-powered chatbots that help companies to make their interaction with their customers more personalized. The AI will be able to analyze the data in terms of previous contacts, preferences, and actions and give its answers to the exact needs of the customer. This does not only lead to customer satisfaction, it also improved chances of customer loyalty (Adamopoulou & Moussiades, 2020).

These chatbots assist companies to ensure high rates of efficiency and provide customers with personalized support as the industry becomes increasingly complex, which is one of the main considerations in establishing good customer relationships.

1.2.1. Background of Customer Experience

Customer experience as a concept has developed considerably in the last several decades, and it is now a marketing and business strategy focus. Transactions of customer relationships, including customer satisfaction and service quality, occupied the center stage of the early marketing theories (Lemon & Verhoef, 2016). But as the era of digital technologies was ushered in and as touchpoints, through which the customer can connect with the firm, were proliferated, the customer experience became broader. Customer experience in the contemporary age does not simply involve the definition of what customers buy, but rather how they feel, think, and act, in their association with a firm, beginning with the initial point of contact, right up to the stage of post purchase (Schmitt, 1999).

The rise in the focus on customer experience can be explained by the change in the more customer-focused approach to business. The companies started to understand that holistic experiences that customers had with a brand played an important role in their customer loyalty,

word-of-mouth marketing, and overall satisfaction. This saw the creation of models such as SERVQUAL model (Parasuraman et al., 1988), that emphasized service quality as an important factor in customer satisfaction. Moreover, the emergence of the omnichannel marketing also complicated the customer experience, as companies need to deal with communication on multiple platforms, such as physical stores, websites, social media, and mobile apps.

As the competition in the market became tougher, companies began to consider customer experience as a vital differentiation instrument. Several businesses started to have Chief Customer Experience Officers (CXOs) and spent a lot of money in learning and perfecting the experience they provide to their customers (Meyer & Schwager, 2007). The awareness of the fact that positive customer experience will result in a higher level of customer loyalty and a better financial performance has put it on the marketing strategy focus today. So, what is the definition of the Customer Experience?

1.2.2. Definition of Customer Experience

Customer experience is a multi-dimensional construct and entails cognitive, emotional, behavioral, sensorial and social reactions of a customer towards the offerings of a firm during the whole cycle of customer experience. It is a process that involves the pre-purchase, purchase and post purchase process and the customers engage with a firm in different touch points. Such touchpoints can be either personal engagement with the company or determined by external influences (social media and peer reviews) (Lemon & Verhoef, 2016). Every phase of the journey offers the unique opportunity to the firm to influence the customer experience, which subsequently affects the customer loyalty, satisfaction, and engagement.

1.2.3. AI in Customer Experience

The artificial intelligence (AI) is instrumental in improving customer experience by providing personalized services and the efficiency of customer support. A study by (Daqar & Smoudy, 2019) showed that AI has a powerful ability to enhance two major areas of the customer experience, which include personal customer service and after-sale services. The analysis identified that AI forecasted 22.9% of the individualization of customer service and 7% of after-sale service suggesting its favorable impact on these areas of customer communication.

The personalization of the customer experience, whether it is recommending a product in the purchasing stage or providing a real-time support, is one of the aspects of artificial intelligence that are the key to enhancing customer satisfaction and loyalty. The research also highlights the

significance of AI in eliminating customer wait times and simplifying service delivery that in effect improves the overall experience of the customer (Daqar & Smoudy, 2019).

Nevertheless, there are challenges associated with the implementation of AI. The study points to the very expensive implementation cost and a shortage of technical skills in certain areas, which could impair the full implementation, especially among the smaller businesses (Daqar & Smoudy, 2019). Nevertheless, the adoption of AI technologies is regarded as a necessity of companies that want to stay competitive through superior customer service.

1.2.4. AI-Powered Chatbots

The AI-driven chatbots are already necessitated in enhancing customer experience (CX) by offering automated and real-time chat, which makes them appear to be talking to a human being. They are chatbots which apply technologies such as Natural Language Processing (NLP) and machine learning algorithms to understand and respond to customer questions and improve the efficiency and accessibility of customer service (Huang & Rust, 2018).

By the past decade, AI chatbots have developed to be much more sophisticated than the query-answering system to complex, assign-specific AI-assistants able to fulfill various customer service activities (including troubleshooting, billing support, technical service) (Ciechanowski et al., 2019). Besides, the ability of AI chatbots to customize communication in real-time via data analysis and sentiment analysis (SA) can make interactions more engaging and emotionally intelligent, providing a more profound emotional bond between a client and a brand (Adamopoulou & Moussiades, 2020).

Consequently, AI chatbots will not only make customers less frustrated because they provide quick solutions but also help to develop customer loyalty due to personalized and empathetic assistance (Uzan et al., 2025).

Their sophistication and incorporation into the customer service processes points to the role they play in the modern customer experience, which makes AI chatbots an essential aspect to customer service planning in any industry (Schmitt, 1999; Lemon & Verhoef, 2016).

1.2.5. Measuring the Customer Experience

The list of key constructs that may be applied to measure customer experience with AI chatbots is quite considerable since it includes user satisfaction, engagement, and the perceived quality of interactions. Satisfaction is one of the most popular constructs that can be utilized in the research of the customer experience, and it can be measured in such measurements as

perceived usefulness and ease of use as specified by the Technology Acceptance Model (TAM) (Davis, 1989). TAM concentrates on two primary variables, namely perceived ease of use (the level to which a user believes that communication with the AI chatbot is effortless) and perceived usefulness (the degree to which the chatbot assists the user in accomplishing a desired task).

These constructs play an important role in determining the effectiveness of AI chatbots in improving the user experience. Also, another important construct is emotional response since the AI chatbots must evoke positive emotions in the users to gain trust and loyalty. According to research conducted by (Beldad et al., 2016), qualities of humans that include empathy and personalized response play a critical role in ensuring a strong emotional bond with the AI systems. Additionally, the SERVQUAL model that measures the quality of service according to the reliability, responsiveness, assurance, empathy, and tangibles can be modified to measure the performance of the AI chatbot. As an example, reliability may be used to define how good the chatbot is in terms of the information it delivers, whereas responsiveness measures how well the chatbot may respond to the customers in real time. Together, these constructs can give a framework that is wholesome to evaluate the experience of the customer using AI-driven chatbots, both in terms of functionality and emotion.

1.2.6. AI-Powered Chatbots: Personalization and Emotional Involvement in CX

The telecommunications sector has been among the most major benefactors of the AI-based chatbots in terms of customer experience (CX). The possibility to provide 24/7 support, which means that AI chatbots are available all the time, is one of the greatest contributions of the technology that guarantees the continuous availability of the service and, consequently, enhances the accessibility of the service, particularly in contrast to the traditional approaches that are constrained by human presence (Tarla, 2021). This availability enables the customers to ask questions like billing queries, service provision, or troubleshooting instantly, raising the level of customer satisfaction (Ghosh et al., 2022).

The other important factor that alters the interaction through chatbots is personalization. Natural Language Processing (NLP) and machine learning algorithms are used by AI chatbots to process customer data and preferences and historical interactions. This enables chatbots to give a personalized response that would address the needs of the individual and this makes the experience more applicable and interesting (Huang & Rust, 2018). Exclusive experiences make customers feel more appreciated, and this creates a sense of trust and ultimately brand loyalty to the customers (Uzan et al., 2025).

Moreover, AI chatbots are now more emotionally intelligent due to Sentiment Analysis (SA) that enables them to read and react to their feelings. As an example, a chatbot can provide understanding words to a customer when he or she feels negative emotions through de-escalation of a situation and thus alleviates negative emotions (Ciechanowski et al., 2019). Such personalized and emotionally conscious reactions along with a distinctive service build the emotional attachment of the customer to the brand, which improves CX even more (Adamopoulou & Moussiades, 2020) Besides, the multilingual nature of AI chatbots makes the experience more inclusive, enabling the business to cater to a wider world client base. Chatbots eliminate communication barriers by communicating with customers in their preferred languages, which leads to trust and enhances the customer experience (Tarla, 2021). This cultural sensitivity and the capacity to meet the customer needs in a more intimate, emphatic and multilingual way can complement both the practical and emotional aspects of the customer experience.

In conclusion, AI chatbots can improve the CX through the personal and emotional intelligent communication, which increase the satisfaction, loyalty, and efficiency of the operations. This is because the ability to provide anticipatory solutions, anticipation of the customer needs and sympathy to the users have resulted in them being a significant component of the current customer care in the telecommunications industry.

1.2.7. Personalization and Its Role Transforming the Customer Experience

Directly affecting customer satisfaction, engagement, and loyalty, personalization is a key factor in improving customer experience (CX) with the help of AI-based chatbots. NLP and machine learning algorithms are used by AI chatbots to adjust to the personal preferences and emotional conditions of customers and give a personalized response that will be more appealing to the user (Uzan et al., 2025). AI chatbots enhance the value of the interaction by customizing it to the customer behavior and past questions; therefore, it results in enhanced customer engagement (Huang & Rust, 2018).

Moreover, the intimate communications establish an emotional connection between the chatbot and the customer. Considering emotional feedback using Sentiment Analysis (SA), AI chatbots will be able to vary their reactions and provide sympathy and reassurance where necessary (Ciechanowski et al., 2019). This emotional intelligence will help increase customer satisfaction as they feel that they are understood and they are well appreciated, which will subsequently result in a long-term commitment.

To sum up, personalization enables the AI chatbots to deliver a more meaningful and emotionally relevant customer experience. Making interactions personal and responding in an

empathetic manner, AI chatbots do not only increase satisfaction but also lead to better customer loyalty and trust.

1.2.8. The Influence of Multilingual and Cultural Adaptability on CX

The online chatbots use AI to have a great benefit when it comes to multilingual support, which can be very helpful in the case of a company with a global clientele. The chatbots with the multilingual features are essential as the requirements of customer services grow more complicated with the geographical spread and the necessity to serve diverse cultural and linguistic audiences. Adapting to the idea of chatbots powered by AI, Natural Language Processing (NLP) is used to comprehend, interpret, and react to customer requests in more than one language, enabling businesses to offer effective and appropriate service to customers in different parts of the world, where the language is different (RAFI et al., 2022).

This ability to handle communication across more than one language will ensure that the businesses are able to attain a stable level of communication, reduce difficulties in communication, and consumer satisfaction in different markets. Additionally, chatbots with several languages allow the companies to gain more business without recruiting a significant number of human workers and offer 24/7 communication with clients in other time zones (RAFI et al., 2022).

The automation of the common customer service and culturally aware communication will assist AI chatbots to make customer experience more inclusive and receptive, enabling businesses to be capable of serving a global customer base effectively and in a sensitive manner (RAFI et al., 2022). These functions allow multilingual chatbots to become one of the strategic assets of the companies that want to enhance their customer experience on the international level and maintain their competitive edge on the global market.

1.3. Technology Acceptance Model (TAM)

Technology adoption behaviors are often studied using the Technology acceptance model (TAM) formulated by (Davis, 1989). TAM considers two main constructs, which are Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) (Venkatesh & Davis, 2000) Perceived Usefulness, when applied to AI chatbots, means how much the customers assume that the chatbot will improve their service experience, be able to solve their problems, and deliver the

information they require on a timely basis. Perceived Ease of Use, on the contrary, is the way customers find it easy and intuitive to communicate with the chatbot.

In the case of AI chatbots, the perceived usefulness directly correlates with the capability to answer the inquiries and provide solutions that are considered personal to customers, thus enhancing customer satisfaction and engagement. PEOU is important since in case customers experience the use of chatbot as a seamless and easily integrated system, they will tend to embrace and use the system frequently. As highlighted by (Ghosh et al., 2022), "when customers perceive AI chatbots as user-friendly and beneficial, their likelihood of adoption increases significantly." This reiterates the need to ensure that chatbot interaction is not only efficient, but also stress free to the customers.

Telecommunications firms tend to enhance the perceived useability and ease of use of AI chatbots to make them more welcomed by users. Telecommunications companies may improve customer experience, promote adoption, and eventually make the service more efficient by prioritizing user-friendly interfaces and ensure that the chatbot is useful using the modes of addressing the needs of the customers.

Figure 1: Technology acceptance model as the theoretical framework

Source: (Davis, 1989)

1.4. The SERVQUAL Model

One of the most used frameworks of assessing service quality is the SERVQUAL model, created by (Parasuraman et al., 1988) to measure the discrepancy between the expectations and perceptions of customers concerning the actual service performance. This model is based on the idea that the disparity between what customers expect and what they receive defines the level of quality of a service, and the five core dimensions to define this disparity and, consequently, the

overall service quality include reliability, responsiveness, assurance, empathy, and tangibles (Parasuraman et al., 1988).

Although rooted in the history of the traditional service industry, the SERVQUAL model proved to be successfully adapted to the analysis of online interactions, such as the work of AI-powered chatbots in telecommunication industries, where customer experience has become a crucial point of divergence.

The five major dimensions identified by the SERVQUAL model (Parasuraman et al., 1988) that are vital in the quality-of-service measurement could be modified to test the efficacy of AI chatbots in enhancing customer experience (CX). These are Reliability, Responsiveness, Assurance, Empathy and Tangibles which are essential in assessing the capability of the chatbot to fulfill customer expectations.

Reliability is a term that is used to refer to consistency and dependability of service such that it is done properly and at the appropriate moment (Parasuraman et al., 1988). As far as AI chatbots are concerned, reliability refers to the ability to do things right and in a predictable way, like solving billing problems, diagnosing technical support, and giving service upgrades, among others, without mistakes. The chatbots that can efficiently respond to customer queries without failure and provide correct information instill trust and satisfaction because of customer confidence in the system to serve their needs.

Responsiveness refers to the readiness to serve clients in a timely manner and readiness to respond to the customer requests promptly (Parasuraman et al., 1988). Responsiveness in the case of AI chatbots is also determined by how fast the chatbots are responsive to customer inquiries and how the chatbot can serve multiple interactions simultaneously. Chatbots can also be of great importance in industries such as telecommunications, where clients would demand immediate response. A chatbot that responds to customer concerns promptly and at the same time, does not compromise the quality of the services provided is highly responsive and customers will feel valued and attended to.

Assurance is the knowledge, courtesy and capacity of service providers to make their customers trust and have confidence towards them (Parasuraman et al., 1988). In case of AI chatbots, the guaranteed element is the ability of the chatbot to provide safe and reliable transactions and information. Chatbots must offer secure communication in the telecommunications sector, which involves the exchange of sensitive customers personal information. Also, chatbots should show strong knowledge of the technical issues with complexities, which will reduce the number of escalations and gain customer trust in the system.

Empathy refers to the personalized, caring concern, which a company gives its consumers (Parasuraman et al., 1988). Within the domains of AI chatbots, empathy entails the ability to identify and react to the emotional state of the customers. Although AI chatbots cannot perceive human emotions, AI development in the field of Natural Language Processing (NLP) and Sentiment Analysis gives a possibility to chatbots to identify emotional states of their customers like frustration and satisfaction. Chatbots improve customer experience by reacting with the right reassuring messages and addressing their concerns in a more human approach, so the interaction with the customer is more personal and emotionally pleasing.

Tangibles describe the evidence of the service that is provided in form of physical appearance of the facilities, people, and equipment involved in service delivery (Parasuraman et al., 1988). Regarding AI chatbots, tangibles will involve the visual and functional elements of the chatbot interface. Through an intuitive interface that is easy to use, the interaction is improved by ensuring that the navigation is intuitive or that the content is easily accessible. Also, multimedia features such as the frequently asked questions, problem-solving manuals, video instructions could be very useful in making the chatbot more helpful, providing a more interactive and smooth customer experience.

1.5. Conceptual Framework

The theoretical framework of the proposed study will be created to examine the effects of AI-based chatbots on customer experience (CX) in the telecommunications sector as a synthesis of the Technology Acceptance Model (TAM) and SERVQUAL Model. Both models provide a supplementary approach to the adoption of technology and quality of service that is critical in explaining what drives the use of chatbots to create customer perceptions, satisfaction, and loyalty.

1.5.1. Overview of the Framework

Technology Acceptance Model (TAM) proposes that Perspectives of Perceived Use (PU) and Perceived Ease of Use (PEOU) among customers are the main factors that influence the adoption and future use of technology (Venkatesh & Davis, 2000). Customers will also feel more inclined to use the chatbot when they believe it is convenient and helpful, which will increase their satisfaction with the service. Perceived Usefulness is important in terms of how much the customers think that when using the chatbot they will be able to have a better experience with the

service, and Perceived Ease of Use is important in terms of how easy the customers can communicate with the chatbot (Venkatesh & Davis, 2000).

The SERVQUAL Model dwells on the dimensions of service quality that determine customer satisfaction and loyalty. These dimensions are Reliability, Responsiveness, Assurance, Empathy and Tangibles (Parasuraman et al., 1988). In AI chatbots, these dimensions can be regarded as the parameters according to which the quality of the chatbot to the expectations of the customers and its ability to improve the entire service experience are evaluated. The SERVQUAL model is also found to be effective in assessing the emotional and functional service delivery that is a key factor in customer satisfaction (Parasuraman et al., 1988).

A combination of TAM and SERVQUAL offers an in-depth model to analyze the connection between technology acceptance and the quality of services that determines customer satisfaction and loyalty in the telecommunications industry.

1.5.2. Major Scope of the Conceptual Framework.

Perceived Usefulness (PU): Such an element of the framework shows the perception of the customers regarding the efficiency of the AI chatbot in addressing their issues, responding to their questions, and giving them the right and timely information. It is likely that PU will produce a positive effect on the customer satisfaction since customers are more inclined to become satisfied when the chatbot fulfills their expectations regarding usefulness (Davis, 1989).

Perceived Ease of Use (PEOU): This aspect reflects on the AI chatbot's usability. It is the ease and naturalness with which the customers can converse with the chatbot. The ease of use of the chatbot means that the customers will more readily incorporate the chatbot and use it regularly, thus boosting their customer experience (Venkatesh & Davis, 2000).

Service Quality Dimensions (SERVQUAL): Reliability: The chatbot should have a capacity to deliver consistent, correct, and reliable answers. The consistency of chatbots is also needed to make sure that a customer will trust the service and will not have doubts that his/her problem will be solved.

Reliability: The chatbot must be able to give reliable, accurate, and consistent responses. The uniformity of chatbots is required to guarantee that the customer will trust the service and communicate without any doubts that his/her issue will be resolved (Parasuraman et al., 1988)

Responsiveness: This dimension will demonstrate how fast the chatbot will respond to the queries and requests of the customers. A chatbot that reacts to the needs of the customers ensures that it is met in a timely fashion, which results in the development of a positive perception of the customers towards the effectiveness of the services (Parasuraman et al., 1988).

Assurance: The degree of trust and confidence the chatbot will gain with its users entails the way the chatbot can process sensitive data as well as conduct itself professionally. The customers must also be assuring to gain customer loyalty particularly in an industry like telecommunications (Bendapudi and Berry, 1997).

Empathy: This aspect deals with a support of chatbot regarding emotional needs of customers. Chatbots will identify and respond to emotional cues (e.g., frustration or satisfaction) with the help of Natural Language Processing (NLP) and Sentiment Analysis to improve the emotional aspect of customer experience (Parasuraman et al., 1988).

Tangibles: Chatbot aesthetic, appearance, and design (e.g. easy navigation, ease of accessibility, multimedia elements such as images and videos) matter. The tangibles come in handy regarding the creation of a flowing and interactive user experience, which can have a direct impact on customer satisfaction (Parasuraman et al., 1988).

Customer Satisfaction: Perceived Usefulness (PU) and Service Quality dimensions are both involved in this outcome. In case customers see the chatbot helpful and service is of their quality level (in terms of reliability, responsiveness, etc), they will probably be satisfied with the service (Oliver, 1980).

1.5.3. Component to Component Relationships.

Two important elements that have impacts on customer satisfaction and intention to use are Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). The TAM constructs indicated that the more useful and easier to use the AI chatbot is perceived by customers, the more they will be satisfied with the service, which will subsequently result in a higher customer loyalty.

Service Quality Dimensions of SERVQUAL (reliability, responsiveness, assurance, empathy, and tangibles) affect customer satisfaction because of the way customers can sense the chatbot in relation to the performance expectations. These dimensions additionally influence both technical and functional features of the chatbot (e.g., giving correct answers, being responsive) as well as emotional component of the customer interactions (e.g., empathy and reassurance).

The combination of the TAM and SERVQUAL in this context highlights the critical role of the practical (usefulness, ease of use, reliability, responsiveness) and the emotional (assurance, empathy) features of the chatbot performance in the development of the overall customer experience.

1.5.4. Conceptual Model

The Conceptual Model below incorporates the TAM and SERVQUAL attributes together and represents the relationship between these elements to influence customer satisfaction and loyalty.

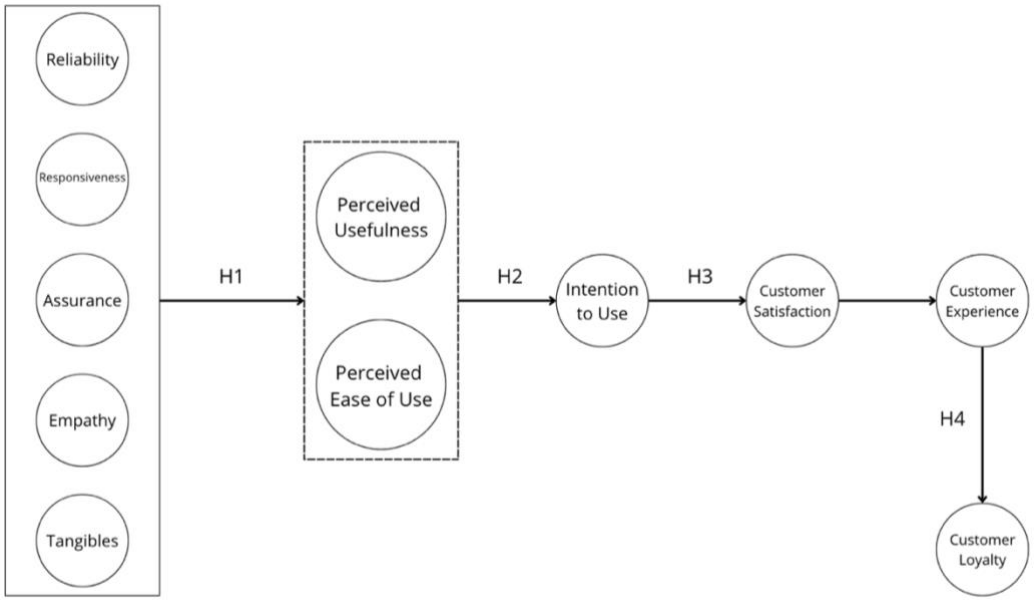

Figure 2: Conceptual Model: The Combination of the TAM and SERVQUAL Models

Note. Developed by the author.

The model is presented in the form of a graph that illustrates the connection between the two most important models (TAM and SERVQUAL) in which Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) in TAM by (Davis, 1989) determine the customer satisfaction that consequently predetermines customer loyalty. The SERVQUAL dimensions by (Parasuraman et al., 1988) (Reliability, Responsiveness, Assurance, Empathy, Tangibles) produce a direct impact on customer satisfaction and mediate the results of TAM constructs on the overall customer experience.

Hypotheses:

H1: THE SERVICE QUALITY OF AI POWERED CHATBOTS HAS A POSITIVE EFFECT ON THE PERCEIVED USEFULNESS AND PERCEIVED EASE OF USE.

H2: THERE IS A POSITIVE RELATIONSHIP BETWEEN PERCEIVED USEFULNESS AND PERCEIVED EASE OF USE AND THE INTENTION TO USE THESE AI CHATBOTS

H3: THE INTENTION TO CONTINUE USING AI-POWERED CHATBOTS HAS A POSITIVE INFLUENCE ON CUSTOMER SATISFACTION AND EXPERIENCE.

H4: CUSTOMER EXPERIENCE WITH AI POWERED CHATBOTS HAS POSITIVELY INFLUENCES CUSTOMER LOYALTY TOWARDS THE TELECOMMUNICATION PROVIDER.

1.6. Hypotheses Development

Regarding this study, we set four hypotheses that test the relations between the quality of the service, perceived usefulness, perceived ease of use, customer satisfaction, and customer loyalty. The hypotheses are found on the Technology Acceptance Model (TAM) and SERVQUAL model. This is the presentation of the following hypotheses:

H1: THE SERVICE QUALITY OF AI POWERED CHATBOTS HAS A POSITIVE EFFECT ON THE PERCEIVED USEFULNESS AND PERCEIVED EASE OF USE.

The quality of service in our case AI-powered chatbots has been identified to be a major determinant of user acceptance in Technology Acceptance Models. As shown by the Technology Acceptance Model (TAM), the quality of the service offered has a positive impact on the perceived usefulness and the perceived ease of use of a technology (Davis, 1989). When service quality is improved in a service environment, it might result in an increased perception of the value and utility of the technology and its appeal to users. The hypothesis seeks to understand the influence of the quality of the service in relation to the perceived usefulness and ease of use.

This hypothesis is based on the research findings of (Davis, 1989), who listed perceived usefulness and ease of use as the key elements of technology adoption. It has been demonstrated in previous research that, in most cases, an increase in service quality results in enhanced user satisfaction and a subsequent increase in perceptions toward the technology (Venkatesh & Davis, 2000). Therefore, the positive effect of service quality on the users in terms of their perception of the usefulness and ease of use is anticipated.

H2: THERE IS A POSITIVE RELATIONSHIP BETWEEN PERCEIVED USEFULNESS AND PERCEIVED EASE OF USE AND THE INTENTION TO USE THESE AI CHATBOTS

The TAM postulates that the usefulness and ease of use of a given technology can directly determine the intention of users to use it. Users are inclined to develop the intention to use a certain technology on a regular basis when they discover it useful and convenient to interrelate with (Davis, 1989). This hypothesis tests the direct relationship between perceived usefulness and perceived ease of use on the behavioral intentions of the users to adopt the technology.

This hypothesis is confirmed by the fundamental tenets of TAM (Davis, 1989) and Venkatesh and (Venkatesh & Davis, 2000) which hold that perceived usefulness and ease of use are critical factors in influencing the user acceptance. It is common knowledge that once the user sees a system as useful and easy to use then their intentions to use the system also go a long way.

H3: THE INTENTION TO CONTINUE USING AI-POWERED CHATBOTS HAS A POSITIVE INFLUENCE ON CUSTOMER SATISFACTION AND EXPERIENCE.

The connections between the intention to use a technology and customer satisfaction have already been widely researched in the literature. The intention to use a technology is most of the time a prelude to actual usage resulting in subsequent satisfaction and an improved experience altogether when the system is found to match or even surpass their expectations (Venkatesh et al., 2003). This hypothesis aims at analyzing how intention to use AI chatbots affects the satisfaction and general experience of users.

The hypothesis was built on the assumption that intention to use is a good predictor of actual use, which is directly related with customer satisfaction (Ajzen, 1991). The user satisfaction and interest in the system is usually enhanced when the users are intending to adopt and use a system, and this also enhances the overall experience (Venkatesh et al., 2003).

H4: CUSTOMER EXPERIENCE WITH AI POWERED CHATBOTS HAS POSITIVELY INFLUENCES CUSTOMER LOYALTY TOWARDS THE TELECOMMUNICATION PROVIDER.

In other industries, customer experience has been regarded as the major driver of customer loyalty. Customers will feel more loyal towards telecommunications services when the experience they have with AI chatbots was positive. In cases where the customers feel their

communication with AI chatbots is efficient, effective, and satisfying, it is expected that the loyalty to the service provider will increase.

The reason is that this hypothesis has been corroborated by the existing studies that propose that better customer experience results in customer satisfaction and higher chances of reuse and recommendation (Oliver, 1980; Parasuraman et al., 1988). Hence, the more positive experience that the customer has with the AI chatbot, the more customer loyalty.

2. METHODOLOGY

2.1. Introduction to the Methodology

The chapter presents the quantitative approach employed on this research, and it will be used to examine the effects that AI-powered chatbots have on customer experience, satisfaction, and loyalty in the telecommunications industry. The deductive and hypothesis-based approach was adopted because the study will be testing relationships based on known theories, Technology Acceptance Model (TAM) (Davis, 1989) and SERVQUAL model (Parasuraman et al., 1988), in a new contextual setting.

The main aim of the research is to find out the impact of the service quality on the perceived usefulness and ease of use, the effect of perceived usefulness and ease of use on intention to continue using these AI chatbots and the eventual impact of intention to use on customer satisfaction, overall experience and customer loyalty. A correlational research design using an online structured questionnaire was chosen as the most suitable for this research to test the four hypotheses (Saunders et al., 2023).

This chapter elaborates the research design, hypotheses, population and sampling procedure, questionnaire development and validation, data collection process, methods of analysis using JASP, precautions taken to guarantee validity and reliability and ethical concerns.

2.2. Research Approach and Design

This paper assumes a deductive, correlational research approach, based on a quantitative approach. The choice of the deductive approach is explained by the theories we operate with e.g. Technology Acceptance Model (TAM) (Davis, 1989) and SERVQUAL model (Parasuraman et al., 1988) who draw testable hypotheses about the connection between the quality of services, perceived usefulness, perceived ease of use, intention to use, customer satisfaction, customer experience, and customer loyalty in the context of AI-powered chatbots in telecommunications (Saunders et al., 2023).

A correlational (non-experimental) design is the most appropriate to address the research objectives because the researcher can examine the strength and direction of the relationships between multiple independent and dependent variables in a real-life situation, which is not manipulable, and the samples are not randomly assigned (Creswell & Creswell, 2018). In this case, a correlational design best suits the objectives of describing and predicting phenomena (in

this case, customer experience and customer loyalty) using naturally occurring perceptions and experiences since one wants to employ the existing chatbot systems.

The design supports the hypothesis testing directly through multiple regression analysis and provides the possibility to evaluate the extent to which the proposed model can explain the variability in customer satisfaction, experience, and loyalty. Technology acceptance and customer experience studies that used TAM and SERVQUAL (e.g., Adam et al., 2020;Hsu & Lin, 2023; Megdadi et al., 2025) are quite common, which is why it can be considered theoretically and practically suitable to this research.

2.3. Research Design and Connection to Research Questions (and Hypotheses)

The study is guided by the following three research questions that were originally presented in the introduction.

1. What is the effect of AI-powered chatbots on customer experience within the telecommunication sector?
2. What makes AI-based chatbots successful in improving customer satisfaction and interaction over telecommunications?
3. What is the relationship between service quality, perceived ease of use, and perceived usefulness in relation to customer satisfaction, customer experience, and customer loyalty in the case of AI chatbots?

Four deductive hypotheses were formed to answer these questions on the empirical scale basing on a combination of integration of TAM (Davis, 1989) and SERVQUAL (Parasuraman et al., 1988) and with the assistance of current literature on chatbot:

H1: THE SERVICE QUALITY OF AI POWERED CHATBOTS HAS A POSITIVE EFFECT ON THE PERCEIVED USEFULNESS AND PERCEIVED EASE OF USE.

(Addresses RQ3 – how service quality shapes core TAM beliefs)

H2: THERE IS A POSITIVE RELATIONSHIP BETWEEN PERCEIVED USEFULNESS AND PERCEIVED EASE OF USE AND THE INTENTION TO USE THESE AI CHATBOTS

(Addresses RQ2 and RQ3 – classic TAM relationship)

H3: THE INTENTION TO CONTINUE USING AI-POWERED CHATBOTS HAS A POSITIVE INFLUENCE ON CUSTOMER SATISFACTION AND EXPERIENCE.
(Addresses RQ1 and RQ2 – links behavioral intention to attitudinal outcomes)

H4: CUSTOMER EXPERIENCE WITH AI POWERED CHATBOTS HAS POSITIVELY INFLUENCES CUSTOMER LOYALTY TOWARDS THE TELECOMMUNICATION PROVIDER.
(Addresses RQ1 and RQ2 – outcome variable)

These hypotheses represent a sequence of steps (service quality → PU and PEOU → intention to use → customer satisfaction and experience → loyalty) that directly reflects the research questions and allows testing the conceptual framework through multiple regression analysis. All constructs are operationalized through the correlational design and the structured questionnaire and as a result, the hypotheses can be tested using the collected quantitative data.

2.4. Data Collection Methods

The primary data were collected using a structured online questionnaire through Google Forms. It will be utilized because it is cost-effective, has a quick distribution to a geographically distributed group of international participants, and it is the most used to gather data in quantitative research especially on the AI chatbots and customer experience (Adam et al., 2020;Hsu & Lin, 2023; Saunders et al., 2023).

The questionnaire was distributed via social media platforms such as LinkedIn, Facebook telecom groups, WhatsApp, Reddit r/telecom and r/technology, and university contacts, and personal contacts of the researcher.

A mandatory screening question was used to filter out the rest of the respondents who had not engaged with an AI-powered chatbot in the telecommunication sector at least once during the past 12 months, and who are not able to understand English.

All measurement items (except demographics) were a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The purpose of the selection of 5-point scale, which is used in the research, is its simplicity, cross-cultural reliability, reduce the fatigue of the respondent, and the wide application in the traditional TAM and SERVQUAL research (Parasuraman et al., 1988;Davis, 1989).

Answers will be exported as a CSV file from google form to Excel for cleaning and calculating the mean and the Std. Deviation for each question then exported to JASP for the analysis.

2.5. Sampling and Participant Selection

This research will use a non-probability convenience sample where the screening questions will be applied to make sure that the participants have recent and pertinent experience with AI-powered chatbots in telecommunication. The convenience sampling was chosen because of its convenience, low cost, and prevalence in other quantitative studies on technology acceptance and customer experience (Etikan et al., 2016; Saunders et al., 2023).

The questionnaire link was sent through social media platforms, university networks, online forums and personal contacts as explained in Section 2.4. Two screening questions which are mandatory to rule out the ineligible respondents.

Target Sample size and Justification

The sample was determined to be 150-200 valid answers. This range was estimated based on the data obtained by computing the mean of the number of participants involved in the recent and high-quality peer-reviewed studies that design AI-powered chatbot and customer experience based on the similar theoretical model (TAM and/or SERVQUAL) and quantitative survey data gathering.

Table 1: Similar Studies on AI-Powered Chatbots and Customer Experience (Sample Size)

Author(s) & Year	Research Context	Number of Respondents
(Adam et al., 2020)	AI-based chatbots in customer service and their effects on user compliance	308
(Hsu & Lin, 2023)	Understanding the user satisfaction and loyalty of customer service chatbots	219
(Putra et al., 2025)	The Effect of Utilizing AI Chatbot and Recommendation System on Customer Satisfaction and Retention in Local Marketplace in Bandung	200
(Megdadi et al., 2025)	The Impact of Chatbots on Customer Experience in e-commerce: Examining Responsiveness, Ease of Use, and Personalization	206

Note. N in sum of studies = 933; N/4 = 933/4 = 233.25 (around 233).

Since the average sample size of similar studies conducted in the literature is 233 individuals (see Table 1) we decided to get between 150 and 200 valid responses due to the typical time and the cost. This is approximately between 64% and 86% of the published a range of mean that is acceptable. It has enough statistical power (≥ 0.80, $\alpha = .05$) to detect the medium effect sizes ($f^2 = 0.15$) in the multiple regression model applied in this paper (Faul et al., 2009).

The participants who were chosen to participate in the study were supposed to have the following qualifications: they had to be 18 or older, know English to complete the survey and had to have at least once in the past 12 months, used an AI-based chatbot offered by a telecom company (for any reason, including billing inquiries, technical support, plan information, or troubleshooting), otherwise they will be excluded.

These inclusion and exclusion criteria were established to offer high level of validity of responses and ensure the participants had recent and relative hand experience with this AI-powered chatbots regarding quality of service, perceived usefulness, perceived ease of use, intention to use, customer satisfaction, customer experience, and customer loyalty.

2.6. Research Instruments and Materials

A structured online questionnaire formulated and administered in Google Forms. It was the main data collection tool (full questionnaire is presented in Annexes Part 1). We used a quantitative method which is the most common and successful way of quantifying perceptions and behavioral intentions in such models like TAM and SERVQUAL studies (Saunders et al., 2023; Adam et al., 2020; Hsu & Lin, 2023).

The questionnaire was also made up of two sections only:

- Screening and demographic questions (5 items).
- 29 perceptual items were used to assess the seven theoretical constructs.

The measurement items (all 29) were measured in terms of a 5-point Likert scale (1- Strongly Disagree to 5- Strongly Agree). The scale has been chosen due to the fact that it is the original format of the classic TAM and SERVQUAL scales, is easy to interpret by the respondents of various cultural and education background and is the most widespread scale in such studies (Davis, 1989; Parasuraman et al., 1988).

Table 2: Constructs Used in the Research, Measurement Items, and Reliability

Construct	Number of Items	Measurement Scale	Source
Service Quality	9	5-pont Likert Scale	(Parasuraman et al., 1988)
Perceived Usefulness	3	5-pont Likert Scale	(Davis, 1989)
Perceived Ease of use	3	5-pont Likert Scale	(Ghosh et al., 2022) (Venkatesh & Davis, 2000)
Intention to Use	3	5-pont Likert Scale	(Davis, 1989)
Customer Satisfaction	4	5-pont Likert Scale	(Oliver, 1980)
Customer Experience	4	5-pont Likert Scale	(Lemon & Verhoef, 2016)
Customer Loyalty	3	5-pont Likert Scale	(Parasuraman et al., 1988) (Oliver, 1980)

Source: Compiled by the author based on previous research findings

Pilot Testing of the questionnaire was conducted in December 2025 among 16 respondents who had recent experience with AI-powered chatbots in the telecommunication sector. The process of reliability analysis was conducted with the help of JASP. The findings are shown in Table 3.

Table 3: Cronbach's α Values from Pilot Study (n=12)

Construct	Items	Cronbach's α
Service Quality	9	0.875
Perceived Usefulness	3	0.121
Perceived Ease of use	3	0.286
Intention to Use	3	0.506
Customer Satisfaction	4	0.311
Customer Experience	4	0.552
Customer Loyalty	3	0.260

It is very important to mention that the lower α values for constructs in the table above are very normal in such pilot sample (16 participants) (Streiner, 2003; Tavakol & Dennick, 2011). Reliability enhances significantly when it comes to larger sample size which can be observed in TAM studies. No items were removed or modified.

Final answers were exported from Google Forms as CSV file to Excel for cleaning and calculating the Frequencies for Countries, mean question answers for each construct, then analyzed using JASP.

2.7. Data analysis procedure

The collected data will be analyzed using JASP, a free, open-source statistical package that produces transparent and reproducible results.

The analysis will follow four e steps:

- **Descriptive statistics** Frequency distributions and percentages will be reported for the demographic variables (age, gender, country). Means and standard deviations will be calculated for the seven constructs to summarize respondents' perceptions.
- **Reliability analysis** Cronbach's alpha will be computed for each construct. Values of $\alpha \geq 0.70$ will be regarded as acceptable evidence of internal consistency (Nunnally & Bernstein, 1994)
- **Correlation analysis** Pearson correlation coefficients will be calculated among all seven constructs to examine the strength and direction of the relationships between variables.
- **Hypothesis testing** the four research hypotheses will be divided and tested using multiple linear regression analysis with mean composite scores:
  H1a: Service Quality → Perceived Usefulness
  H1b: Service Quality → Perceived Ease of Use
  H2: Perceived Usefulness + Perceived Ease of Use → Intention to Use
  H3a: Intention to Use → Customer Satisfaction
  H3b: Intention to Use → Customer Experience
  H4: Customer Experience → Customer Loyalty

2.8. Validity and Reliability

The measurement instrument was carefully designed and analyzed to provide the required validity and reliability. The content validity was determined through the use of items on other existing, well-tested scales (Davis, 1989; Parasuraman et al., 1988; Venkatesh & Davis, 2000; Oliver, 1980; Lemon & Verhoef, 2016; Zeithaml et al., 1996;Hsu & Lin, 2023), with a slight modification of words to suit the context of the telecommunications chatbot, but still maintaining the original meaning of the items.

Cronbach alpha will be used to determine internal consistency reliability on the final sample in JASP. The acceptable evidence of reliability will be $\alpha \geq 0.70$ (Nunnally & Bernstein, 1994).

Patterns of inter-construct correlations and significance and direction of regression coefficients in hypothesized relationships will be used to assess construct validity.

2.9. Ethical Considerations

This research was conducted according to the ethical research principles. The respondents were made to take part in the study on free and voluntary terms and it was made clear to them at the start of the questionnaire that their answers would remain anonymous and not be utilized in any other way. No information that could identify the individuals (names, email addresses, IP addresses, etc.) was obtained. The optional demographic questions (age, gender, and country of residence) were in general categories to exclude any chance of personal identification.

The respondents were allowed to not answer any survey question they wished without incurring any form of punishment. The data is kept in a safe place under passwords on the hard drives of Google Drive folders which only the researcher can access. The research will have low risk and be classified as low-risk anonymous survey research. Hence, the research did not need formal approval of the ethics committee at the university as per institutional expectations. All ethical standards which were required by the university had been applied.

3. RESULTS OF THE RESEARCH

3.1. Introduction

This chapter present the results of the statistical tests that were performed to test hypotheses of this research. Excel and JASP were used to analyze the data. Following the quantitative, hypothesis-driven research design presented in the methodological part, descriptive statistics, reliability analysis, correlation analysis, and multiple linear regression analysis were conducted. Linear regression assumptions were checked and proved to be met. The chapter has ended with the conclusion on the hypothesis testing results.

3.2. Demographic Profile

We had received 172 valid responses and discarded later one who wasn't able to understand English.

Table 4: Frequencies for Age

Age	Frequency	Percent
Under 18	0	0.0
18 – 24	95	55.2
25 - 34	47	27.3
34 - 44	30	17.4
Total	172	100.0

Based on the results above, we have the most of the participants (95 participants) which is 55.2% were between 18 and 24 years old, followed by 47 participants which is 27.3% who are between 25 and 34, then 30 participants around 17.4% who are between 34 and 44 years old.

Table 5: Frequencies for Gender

Gender	Frequency	Percent
Female	93	54.1
Male	78	45.3
Non-binary	1	0.6
Total	172	100.0

Based on gender variable, as shown in Table 5, 93 participants were female (54,1%) and 78 participants were male (45,3%). A very small proportion (0.6%) described themselves as non-binary. This suggests a slightly increased representation of females in the survey, which is almost balanced in terms of gender distribution.

Table 6: Frequencies for Country

	Frequency	Percent
Morocco	43	25
Lithuania	39	22.67
Ukraine	33	19.19
India	16	9.3
Spain	14	8.14
Others	27	15.7

Regarding the counry of the participants, in Table 6, it can be observed that 43 people (25%) are Moroccan, 39 people (22.67%) are Lithuanians and 33 people (19.19%) are Ukrainians. A further and smaller number, 16 participants (9.3%), have come from India and 14 participants (8.14%) have come from Spain. A total of 27 participants (15.7%) are from other countries. This distribution shows a high participation of those who are from Lithuania, Morocco, and Ukraine; however, at the same time illustrates the international aspects as there are several nations represented.

3.3. Descriptive Statistics

Table 7: Means and Std. Deviations of the Constructs measured on a 5-point Likert scale

Constructs	Mean	Std. Deviation
Service Quality (SERVQUAL)	4.182	0.728
Perceived Usefulness (PU)	4.240	0.728
Perceived Ease of use (PEOU)	4.302	0.684
Intention to Use (IU)	4.241	0.816
Customer Satisfaction (CS)	4.250	0.728
Customer Experience (CX)	4.279	0.737
Customer Loyalty (CL)	4.376	0.747

The descriptive statistics highlight that the construct we had measured had a very good mean and standard deviation score, reflecting the favorable image of these AI chatbots between the participants. The service quality (SQ) has a very good score of 4.182, which means the AI-powered chatbots have a good quality of service. Perceived Usefulness (PU) has 4.240 and Perceived Ease of Use (PEOU) has 4.302, these numbers show that participants find AI-powered chatbots useful and easy to interact with. The intention to use (IU) has 4.241, which indicates that participants intend to use AI-powered chatbots in the future. Customer Satisfaction (CS) and Customer Experience (CX) have 4.250 and 4.279, which indicates participants were very satisfied while interacting with these AI chatbots, and they were satisfied. Lastly, Customer Loyalty (CL), where we can expect that it's going to achieve a very good score, since the results of all constructs were highly satisfying, and it got 4.376. Overall, all constructs exhibit means above 4.1, which highlights the generally favorable attitudes and perceptions of the respondents towards the AI-powered chatbots.

3.4. Reliability Analysis

Table 8:Reliability Coefficients (Cronbach's α) for the Study Constructs (N = 171)

Constructs	Items	Cronbach's α
Service Quality (SERVQUAL)	9	0.939
Perceived Usefulness (PU)	3	0.819
Perceived Ease of use (PEOU)	3	0.809
Intention to Use	3	0.864
Customer Satisfaction (CS)	4	0.870
Customer Experience (CX)	4	0.873
Customer Loyalty (CL)	3	0.882

After calculating the coefficients of Cronbach alpha to determine the internal consistency of the constructs of the study as demonstrated in Table 8. The value of all the constructs was far above the recommended value of 0.70 (Nunnally & Bernstein, 1994), and the value of each of the constructs was between 0.809 and 0.939. Therefore, all the constructs have excellent reliability. The highest reliability was observed is the Service Quality (SERVQUAL) with Cronbach alpha of 0.939 which shows very good internal consistency. Customer Experience (CX), Customer Satisfaction (CS), and Customer Loyalty (CL) were also strong constructs with a value ranging between 0.870 and 0.882. The high internal consistency of all the constructs guarantee the validity and dependability of the measures used in the reseach.

3.5. Correlation Analysis

Table 9: Pearson Correlation Matrix of the Study Constructs (N = 171)

Model	SQ	PU	PEOU	IU	CS	CX	CL
SQ	-						
PU	.810***	-					
PEOU	.857***	.747***	-				
IU	.829***	.793***	.742***	-			
CS	.868***	.801***	.819***	.820***	-		
CX	.836***	.804***	.775***	.829***	.857***	-	
CL	.774***	.784***	.699***	.833***	.815***	.814***	-

The Pearson correlation matrix highlight the strong correlation between the components and their directions. All correlations are positive and statistically significant at $p < .001$.

The service quality (SQ), perceived usefulness (PU) and perceived ease of use (PEOU) have a strong positive correlation (0.810) and (0.857). Intention to use (IU), Perceived usefulness (PU) and perceived ease of use (PEOU) have a strong positive correlation (0.793) and (0.742). Intention to use (IU), customer satisfaction (CS) and customer experience (CX) have also the same strong positive correlation (0.820) and (0.829). Customer experience (CX) and customer loyalty (CL) have also the same positive correlation (0.814).

By these results, we can say that there is a strong positive correlation between all the 7 constructs in the context of AI-powered chatbots.

H1: THE SERVICE QUALITY OF AI POWERED CHATBOTS HAS A POSITIVE EFFECT ON THE PERCEIVED USEFULNESS AND PERCEIVED EASE OF USE.

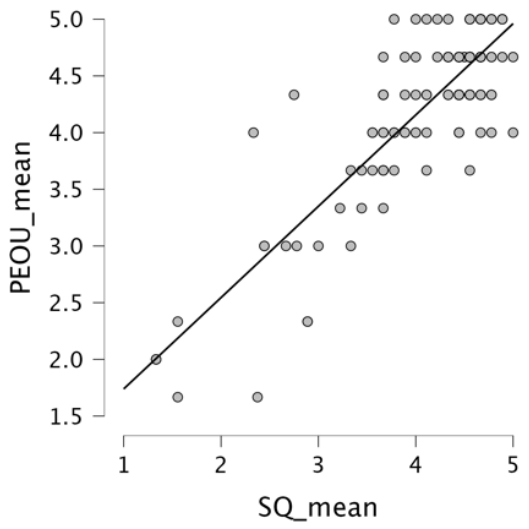

Figure 3: Scatter Plots: Correlation between SQ and PEOU

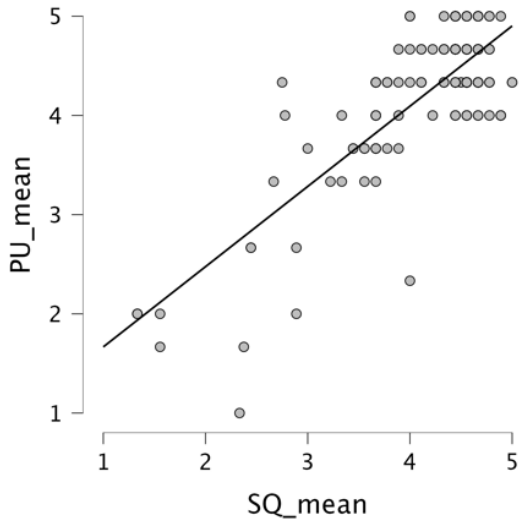

Figure 4: Scatter Plots: Correlation between SQ and PU

The figure 3 and 4 present scatter plots that illustrate the relationship between the three constructs proposed in H1. The first one (Figure 3) shows the positive correlation between the service quality (SQ) and the perceived ease of use (PEOU) which indicates that if the service quality (SQ) is good the perceived ease of use (PEOU) is going to be good and vice versa. This relationship is supported by the regression analysis which confirms a significant positive effect between the components ($\beta = 0.857$, $p < 0.001$). The second scatter plots (Figure 4) highlight the positive correlation between the service quality (SQ) and perceived usefulness indicating that if the service quality is good the perceived usefulness (PU) is going to be good, and this relationship is supported by the regression analysis which shows a significant positive correlation between the two components ($\beta = 0.810$, $p < 0.001$).

The two Scatter Plots highlight the significant correlation between these constructs indicating a strong positive relationship between service quality (SQ), perceived usefulness (PU) and perceived ease of use (PEOU) in terms of AI-powered chatbots.

H2: THERE IS A POSITIVE RELATIONSHIP BETWEEN PERCEIVED USEFULNESS AND PERCEIVED EASE OF USE AND THE INTENTION TO USE THESE AI CHATBOTS

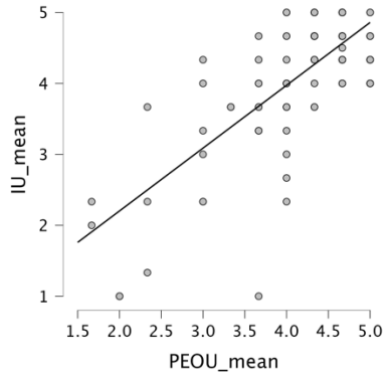

Figure 5: Scatter Plots: Correlation between PEOU and IU

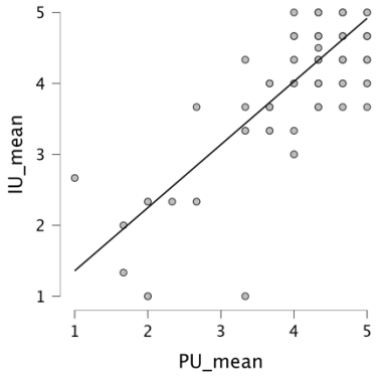

Figure 6: Scatter Plots: Correlation between PU and IU

The figure 5 and 6 present scatter plots that illustrate the relationship between the three constructs proposed in H2. The first one (Figure 5) shows the positive correlation between the perceived ease of use (PEOU) and the intention to use (IU) these AI-powered chatbots which indicates that if the perceived ease of use (PEOU) is good the intention to use (IU) is going to be good and vice versa. This relationship is supported by the regression analysis which confirms a significant positive effect between the components ($\beta = 0.742$, $p < 0.001$). The second scatter plots (Figure 6) highlight the positive correlation between perceived usefulness (PU) and intention to use (IU) indicating that if the perceived usefulness (PU) is good the intention to use (IU) these AI-powered chatbots is going to be good, and this relationship is supported by the regression analysis which shows a significant positive correlation between the two components ($\beta = 0.793$, $p < 0.001$).

The two Scatter Plots highlight the significant correlation between these constructs indicating a strong positive relationship between perceived ease of use (PEOU), perceived usefulness (PU) and intention to use (IU) in terms of AI-powered chatbots.

H3: THE INTENTION TO USE THESE AI POWERED CHATBOTS HAS A POSITIVE INFLUENCE ON CUSTOMER SATISFACTION AND EXPERIENCE.

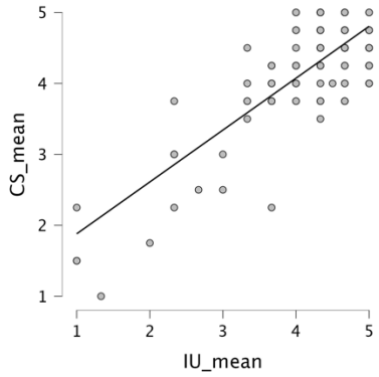

Figure 7: Scatter Plots: Correlation between IU and CS

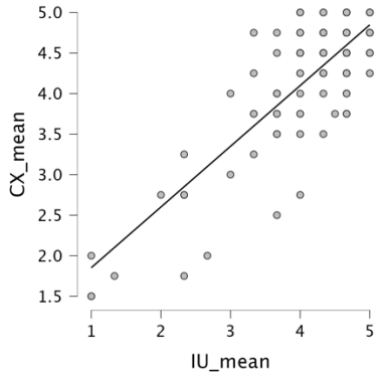

Figure 8: Scatter Plots: Correlation between IU and CX

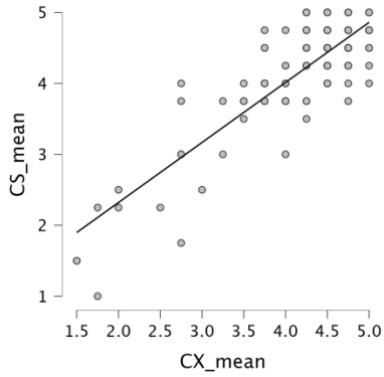

Figure 9: Scatter Plots: Correlation between CX and CS

The figure 7, 8 and 9 present scatter plots that illustrate the relationship between the four constructs proposed in H3. The first one (Figure 7) shows the positive correlation between the Intention to Use (IU) and the customer Satisfaction (CS) which indicates that if the Intention to Use (IU) is good the customer Satisfaction (CS) is going to be good and vice versa. This relationship is supported by the regression analysis which confirms a significant positive effect between the components ($\beta = 0.820$, $p < 0.001$). The second scatter plots (Figure 8) highlight the positive correlation between Intention to use (IU) and Customer Experience (CX) indicating that if the Intention to use (IU) is good the Customer Experience (CX) is going to be good, and this relationship is supported by the regression analysis which shows a significant positive correlation between the two components ($\beta = 0.829$, $p < 0.001$). The third scatter plots (Figure 9) highlight the positive correlation between Customer Satisfaction (CS) and Customer Experience (CX) indicating that if the Customer Satisfaction (CS) is good the Customer Experience (CX) is going to be good, and this relationship is also supported by the regression analysis which shows a significant positive correlation between the two components ($\beta = 0.857$, $p < 0.001$).

The three Scatter Plots highlight the significant correlation between these constructs indicating a strong positive relationship between Intention to Use (IU), Customer Satisfaction (CS) and Customer Experience (CX) in terms of AI-powered chatbots.

H4: CUSTOMER EXPERIENCE POSITIVELY INFLUENCES CUSTOMER LOYALTY.

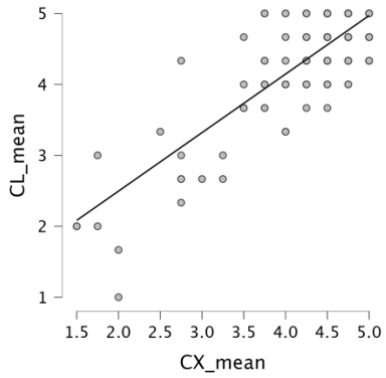

Figure 10: Scatter Plots: Correlation between CX and CL

The figure 10 presents scatter plots that illustrate the relationship between the two constructs proposed in H4. It shows the positive correlation between the Customer Experience (CX) and Customer Loyalty (CL) which indicates that if the Customer Experience (CX) is good the Customer Loyalty (CL) is going to be good and vice versa. This relationship is supported by the regression analysis which confirms a significant positive effect between the components ($\beta = 0.814$, $p < 0.001$).

This Scatter Plots highlight the significant correlation between these constructs indicating a strong positive relationship between perceived Customer Experience (CX) and Customer Loyalty (CL) in terms of AI-powered chatbots.

3.6. Hypothesis Testing

Table 10: Summary of Linear Regression Results (N = 171)

Hyp.	B	SE	ß	t	p	R^2	Adj. R^2	Decision
H1a	0.809	0.045	.810***	17.984	<.001	.665	.653	Supported
H1b	0.806	0.037	.857***	21.772	<.001	.735	.734	Supported
H2						.680	.676	Supported
PU→	0.605	0.073	.540***	8.237	<.001			
PEOU→	0.405	0.078	.339***	5.178	<.001			
H3a	0.731	0.039	.820***	18.666	<.001	.672	.670	Supported
H3b	0.749	0.039	.829***	19.313	<.001	.687	.685	Supported
H4	0.825	0.045	.814***	18.281	<.001	.663	.661	Supported

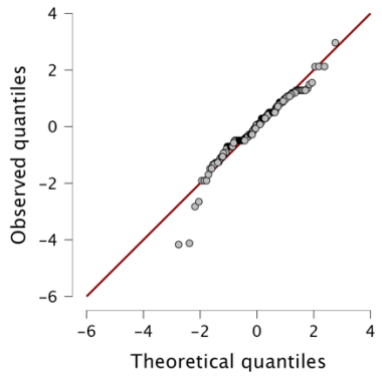

Figure 11: H1a: Service Quality impact positively Perceived Usefulness

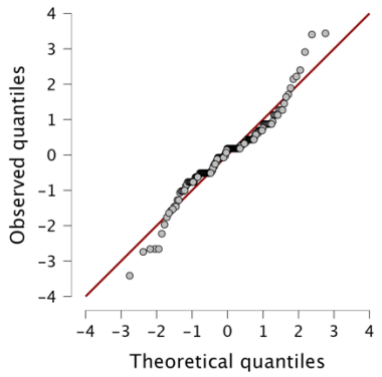

Figure 12: H1b: Service Quality impact positively Perceived Ease of Use

Based on the lineare showed on the figure 11 and numbers in table 10 where we have a significant regression coefficient (B) of 0.809, standardized coefficient (β) of 0.810 with a t-value of 17.984 ($p < 0.001$) and $R^2 = 0.665$ and the lineare showed on the figure 11, we can confirm that the Service Quality is positively associated with Perceived Usefulness.

The same goes for the H1b (Table 10; Figure 12) where we have a significant regression coefficient (B) of 0.806, standardized coefficient (β) of 0.857 with a t-value of 21.772 ($p < 0.001$) and $R^2 = 0.735$, we can confirm that the Service Quality is positively associated with Perceived Ease of Use.

Therefore, we can confirm hypothesis 1; Service Quality (SQ) impact positively both Perceived Usefulness (PU) and Perceived Ease of Use (PEOU).

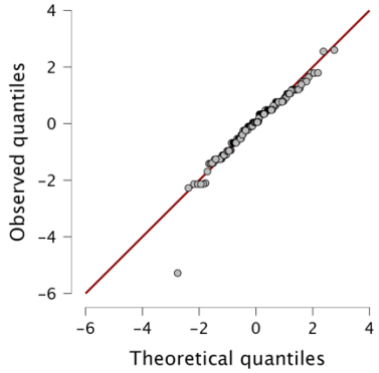

Figure 13: H2: PU and PEOU impact positively Intention to Use

For the second hypothesis we have the same combination of a positive numbers and effects (Table 10; Figure 13). We have a significant regression coefficient (B) of 0.605, standardized coefficient (β) of 0.540 with a t-value of 8.237 for PU and 5.178 for PEOU and β = 0.339 where ($p < 0.001$) and $R^2 = 0.680$. Thus, we can confirm the Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) are positively associated with the Intention to Use (IU).

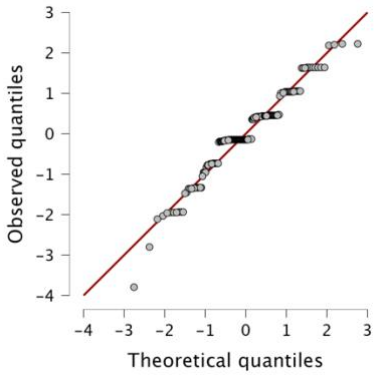

Figure 14: H3a: Intention to Use impact positively Customer Satisfaction

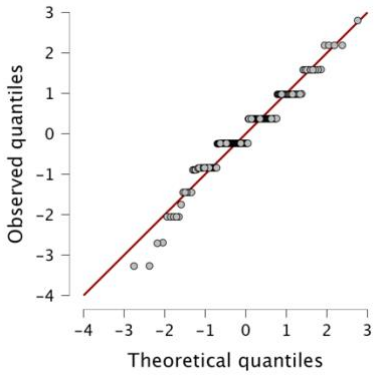

Figure 15: H3b: Intention to Use impact positively Customer Experience

H3a and H3b were both strongly supported (Table 10; Figures 14 and 15) since they have a significant regression coefficient (B) of 0.731 and 0.749 with β = 0.820 for H3a and β = 0.829 for H3b, with a t-value of 18.666 and 19.313 ($p < 0.001$) and $R^2 = 0.672$ and $R^2 = 0.687$. Therefore, we can say The Intention to Use AI-powered chatbots is positively associated with Customer Satisfaction (CS) and Customer Experience (CX).

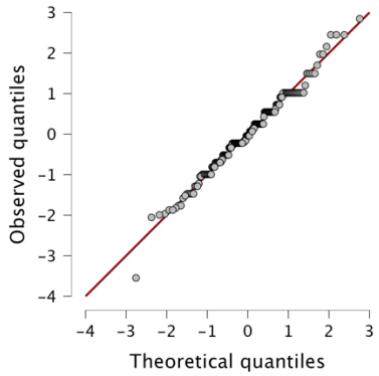

Figure 16: H4: Customer Experience impact positively Customer Loyalty

Lastly, the hypothesis 4 (Table 10; figure 16) where we had a significant regression coefficient (B) of 0.825, standardized coefficient (β) of 0.814 with a t-value of 18.281 ($p < 0.001$) and $R^2 = 0.663$.

In conclusion, after all these analysis we can clearly confirm the relatioship proposed in the model.

In order to ensure the validity of multiple regression model (H2, the only model having two predictors) multicollinearity was checked with Variance Inflation Factor (VIF), as well as tolerance values in JASP.

Table 11: Multicollinearity Diagnostics for H2

Predictor	VIF	Tolerance
Perceived Usefulness (PU)	2.265	0.442
Perceived Ease of Use (PEOU)	2.265	0.442

A value of VIF of less than 5 and tolerance above 0.2 can be explained that there are no serious multicollinearity issues.The moderate correlation between Perceived Usefulness and Perceived Ease of Use (r = .747) explains why their standardized beta coefficients in H2 (β = .540 and β = .339) are lower than their bivariate correlations with Intention to Use (r = .793 and r = .742). This shared variance is normal in multiple regression and does not affect the reliability of the results; it simply shows that the two predictors overlap in explaining Intention to Use.

3.7. Summary of findings

Table 12: Summary of Hypothesis Results

Hyp.	Proposed Relationship			Conclusion
H1a	Service Quality	→	Perceived Usefulness	Supported
H1b	Service Quality	→	Perceived Ease of Use	Supported
H2	Perceived Usefulness & Perceived Ease of Use	→	Intention to Use	Supported
H3a	Intention to Use	→	Customer Satisfaction	Supported
H3b	Intention to Use	→	Customer Experience	Supported
H4	Customer Experience	→	Customer Loyalty	Supported

After analyzing the results, both H1a and H1b hypotheses have been confirmed and proved the positive impact of the service quality on the perceived usefulness and perceived ease of use.

(For H1a: $\beta = 0.810$, $p < 0.001$) ; (For H1b: $\beta = 0.857$, $p < 0.001$)

The second hypothesis H2 was also confirmed and highlight the positive impact that perceived usefulness and perceived ease of use play on the intention to use.

(For H2: PU → β = 0.540, $p < 0.001$; PEOU → β = 0.339, $p < 0.001$)

The third hypothesis which is split and in two small hypotheses had been also confirmed and proved that the intention to use impacts positively the customer satisfaction and the customer experience.

(For H3a: β = 0.820, $p < 0.001$) ; (For H3b: β = 0.829, $p < 0.001$)

At last, the fourth hypothesis also had been confirmed and shows that the customer experience positively the customer loyalty in the context of AI powered chatbots.

(For H4: β = 0.814, $p < 0.001$)

In summary and after revealing these numbers we could confirm that all the constructs had been mentioned in our conceptual model such as service quality, technology acceptance model, customer satisfaction and customer loyalty are positively related.

CONCLUSION

The main goal of the study was to examine the role of AI-powered chatbots in the telecommunications industry and the impact that the service quality has, in turn, on the perceived usefulness and ease of use, the impact of the perception on the intention to maintain the use of these chatbots, and the subsequent effects on customer satisfaction, the overall customer experience, and loyalty. JASP was used to analyse 171 valid responses.

These findings demonstrate that Service Quality has a very strong positive influence on the Perceived Usefulness ($\beta = .810$, $p < .001$, $R^2 = .655$) and the Perceived Ease of Use ($\beta = .857$, $p < .001$, $R^2 = .735$). Intention to Use is strongly predicted by Perceived Usefulness ($\beta = .540$) and Perceived Ease of Use($\beta = .339$), together with a p value of less than.001. Intention to Use also has a positive effect on Customer Satisfaction ($\beta = .820$, $p < .001$, $R^2 = .672$) and Customer Experience ($\beta = .829$, $p < .001$, $R^2 = .687$).

Lastly, Customer Experience positively influences Customer Loyalty ($\beta = .814$, $p < .001$, $R^2 = .663$).

The four hypotheses were all completely accepted at p =.001, and the proposed model explains between 66.3 % and 73.5 % of the variance in the dependent constructs and has a good explanatory power.

These findings supports the idea that the high level of service provided by AI-powered chatbots is strongly associated with higher perceived usefulness and ease of use as well as the intention to use a chatbot further as well as customer satisfaction, overall experience, and loyalty in the telecommunications context.

1. Discussion of the Results

The results of the current study can be well allined with the current literature in the area of AI chatbots and their impact on customer experience, although the specific findings are stronger and clearer compared to multiple past researchers.

The most significant component in the model was Service Quality, which is positively associated with Perceived Usefulness ($\beta = .810$), and Perceived Ease of Use ($\beta = .857$). These findings are in accordance with the findings reported by (Hsu & Lin, 2023), who also had similar positive correlations between the quality of chatbot services and the TAM constructs, but the effect sizes in the current research are much higher. The same pattern is also observed in (Adam

et al., 2020; Megdadi et al., 2025) where responsive and correct chatbot communications enhanced the perceptions of usefulness and simplicity of use with the system. The fact that the obtained β values are extremely high indicates that the telecommunication audience is exceptionally sensitive about the quality of the chatbot service provided.

68 % of the variance of Intention to Use was explained by perceived usefulness and perceived ease of use close to the original TAM (Davis, 1989) and recent studies of chatbots (Putra et al., 2025). The unique impact of Perceived Usefulness (β =.540) was greater than that of Perceived Ease of Use (β =.339), highlighting that telecom customers are more concerned about whether "does the chatbot actually solve my problem?" rather than "is it easy to talk to?".

Intention to Use was also strongly associated with Customer Satisfaction (β =.820) and Customer Experience (β =.829). These coefficients are also greater than some previous studies on chatbots, which implies that in the case when customers are planning to continue using the chatbot, their overall satisfaction and general experience are dramatically increased.

Lastly, Customer Loyalty was significantly predicted by Customer Experience (β = .814, R^2 = .663), confirming what (Lemon & Verhoef, 2016; Hsu & Lin, 2023) reported that overall experience is the most important predictor of customer loyalty in digital services. The high explained variance shows that telecom companies are able to really boost the retention of their customers just by providing good chatbot experience.

In general, the findings do not only confirm the integrated TAM and SERVQUAL model, but it also proves that in the telecommunication sector, AI-powered chatbots can generate even more significant impacts on satisfaction, experience, and loyalty than in most other sectors.

2. Theoretical Implications

This research makes multiple crucial contributions to the theoretical understanding of AI-powered chatbots in customer service.

To begin with, it effectively combines the SERVQUAL and TAM models to the context of telecommunications chatbots. Although different studies use TAM in the context of chatbots, a few of them directly related perceived service quality (responsiveness, reliability, assurance, empathy, tangibility) to Perceived Usefulness and Perceived Ease of Use. Such high standardised coefficients (β = .810 and β = .857) are solid empirical indicators that dimensions of service quality are the most significant antecedents of TAM constructs in conversational AI systems. This

reinforces and expands the traditional TAM model by showing that “external variables” are not only system design features (Davis, 1989) but also the perceived quality of the interaction itself.

Second, the findings validate and support the consecutive chain marionette of the conceptual model: Service Quality → PU and PEOU → Intention to Use → Customer Satisfaction and Experience → Loyalty. All paths were very important and explained 66 % to 74 % of variance, which is more than most prior chatbot researches. This implies that the combined model is especially highly explanatory in telecommunications, where the customers use chatbots most frequently to address complicated or annoying problems (billing, technical support, switching plans, etc...).

Third, the paper puts more emphasis on the central mediating position of Intention to Use. Intention to Use showed to be among the strongest predictors of both the satisfaction and overall experience with 0.820 (CS) and 0.829 (CX) which is much higher than most previous results. This is in line with (Venkatesh & Davis, 2000) and subsequent extensions that behavioural intention is a pivotal mediator between cognitive belief and the real results.

Lastly, the study empirically proves the customer-journey view of (Lemon & Verhoef, 2016) when considering pure digital-touchpoint environment by proving the claim that Customer Experience is the direct antecedent of Customer Loyalty ($\beta = 0.814$, $R^2 = .663$). That is, in a world where the only interaction between humans and brands is a chatbot, two-thirds of customer loyalty can be attributed to the quality of that experience.

In conclusion, the study has been offering a clear and solid validations of an integrated TAM and SERVQUAL models to AI chatbots and is establishing Service Quality as the pivotal force behind the entire process of acceptance and loyalty in telecommunications customer service.

3. Practical / Managerial Implications

The results of this reseach highlight the direct and practical implications for telecommunications firms companies that have or intend to utilize AI-powered chatbots as a main customer-service tool.

Continuous improvement of the quality of the chatbot service should be the top priority of managers as it turned out to be the most powerful driver of the whole model. Even minor gains in speed of response, accuracy, personalisation, and problem-solving lead to vast benefits in perceived usefulness, ease of use and eventually customer loyalty. Since Service Quality on its

own described 65% to 73% of the variance in the two core constructs of TAM, investments to improve natural language processing, more extensive knowledge bases and real-time escalation to human agents when it's necessary will produce quantifiable returns in terms of customer retention.

Firms must also be aware that the Perceived Usefulness is more important than Perceived Ease of Use when it comes to continuing to use AI chatbots by customers in the future. It implies that the main focus of the training data and algorithms must be on the ability of AI-chatbots to provid clear and correct answers on the first attempt, not only on making the interface looks more beautiful or the conversation friendlier. The solid path from Intention to Use to both Customer Satisfaction and Customer Experience demonstrates that as soon as customers have got used to the idea of addressing their queries to the AI-powered chatbot, the general perception of the brand enhances significantly.

Telecom companies can develop this habit very fast through proactive nudges (the use of push notifications, in-app messages, or after-call messages) that guide users kindly to use AI chatbots for repetitive tasks like balance checks, plan adjustments, or reports on outages.

Lastly, the strong and clear direct connection between Customer Experience and Customer Loyalty (β = .814) proves the fact that, in the age of dealing with entirely digital interaction, the quality of the chatbot experience proves to be the only touchpoint in most cases. The poor experience with a chatbot can make the customer lose the customer completely and a good one can even turn a frustrated customer into a backer.The metrics of chatbot performance (resolution rate, number of conversations, sentiment score) should be prioritized by customer-experience teams and in marketing departments just like the Net Promoter Score or churn rates.

Simply put, telecommunications firms that regularly follow and refine the quality of service provided by their AI chatbots will be capable of receiving significant gains in customer satisfaction, overall experience, and loyalty in the long term, which puts them in an advantageous position in a highly saturated market.

4. Limitations

As in the case of any empirical study, many limitations are present in this research.

To begin with, the research was based on non-probability convenience and self-selection. Despite inclusion of screening questions that measured the recent experience of all the respondents with telecommunications chatbots, the sample is not statistically representative of

the worldwide customer base of telecommunications company. There is over-representation of younger, more technologically-oriented people, which could have affected more favorable attitudes towards AI chatbots than they would be among older or less tech-savvy customers.

Second, the cross sectional design would capture perceptions at a single point in time. The attitude towards chatbots held by customers can evolve as the technology advances or the user experience increases. To make causality more firmly and to track the progression of relationships with repeated interactions, a longitudinal study would be required.

Third, all data were self-reported. The research design of TAM-based studies uses these measures but participants might remember events incorrectly or present themselves in a more positive light when they assess their satisfaction and loyalty levels. Moreover, as the study is cross-sectional, and based on self-reported perceptions, the analyses identify the associations and predictive relationships instead of identifying the causal effects.

Fourth, the survey instrument used English as its exclusive language for administration. The screening question showed that participants had sufficient language skills but non-native speakers who make up most of the international group might have responded differently because of their language skills.

Lastly, the research narrowed down to AI-powered chatbots in telecommunications. Findings might not always be applicable to other sectors (banking, retail and healthcare) in which the type and involved complexity of customer queries vary.

Despite these limitations, the sample is relatively large (n = 171), the reliability coefficients are high, the explained variance is high, and the results are consistent with prior studies, which indicate that the results are strong and acceptable both in theory and in practice.

5. Recommendations for Future Research

Although the fact that the present research offers powerful and clear findings, there are multiple opportunities that future research can be based on in order to develop these findings further.

First, a longitudinal design would be valuable. The research design uses a cross-sectional approach which prevents scientists from establishing cause-and-effect relationships and monitoring user perception evolution during extended chatbot interaction periods. A study which

follows participants over time or uses experimental methods would verify if better chatbot service quality results in higher customer loyalty during extended periods.

Second, the larger and more representative samples should be the goal of the future studies. Incorporation of older customers, less tech-savvy users, and customers in other countries would be a confirmation that the very positive outcomes obtained in this paper are applicable to all the demographic categories of telecommunications market.

Third, more variables might be added to the model to improve its validity. Other perceived forms of trust, privacy concerns, chatbot personality or even cultural differences were not studied in this context yet and have been demonstrated to moderate the acceptance of chatbots in other scenarios. These factors might account for the leftover 26% to 35% of unexplainable variance.

Fourth, it would be beneficial to conduct comparative analysis across industries. The current research was limited to telecommunication. Comparisons of the same model in banking, retail, or healthcare might identify whether the prevalent role of Service Quality of these AI-powered chatbots is specific to telecommunication sector or it is more generally applicable to other sectors.

Finally, The "why" behind the strong quantitative relationships would become more understandable through qualitative or mixed-methods research approaches. The research team should conduct in-depth interviews or focus groups with telecom customers to determine which chatbot behaviors between humor and empathy and fast escalation times affect customer quality perceptions and loyalty levels the most.

6. Final Conclusion

The research study of this master's thesis evaluated AI chatbot systems in telecommunications to determine their impact on service quality delivery which would enhance user perceptions of system usefulness and usability and lead to better customer satisfaction and experience and loyalty.

The research data from 171 valid responses of actual telecom subscribers across different nations confirms all components of the proposed model. Service Quality emerged as the foundation: users who received quick and precise and supportive chatbot responses found the technology both valuable and simple to operate. The positive perceptions users had about the chatbot led them to continue using it which resulted in higher satisfaction levels and improved

customer experience quality. Customer loyalty emerged as the primary result which customer experience delivered to customers.

The research confirmed all four hypotheses which included two separate sub-hypotheses for H1 and H3 through measurements that produced high effect sizes and explained variance between 65.5 % and 73.5 %. The research combined SERVQUAL and Technology Acceptance Model frameworks to show that telecommunications customers base their loyalty on the quality of their chatbot interactions with their service provider.

The message for practitioners states that telecommunications companies which dedicate resources to enhance their chatbot service quality through speed and accuracy and personalization and effective problem resolution will achieve major improvements in customer satisfaction and experience and loyalty which will create a significant market advantage.

AI-powered chatbots function as more than budget reduction tools because proper design and training enables them to create authentic service experiences which strengthen customer bonds in today's digital world.

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ANNEXES

PART 1

Questionnaire

Dear Participant,

I am a Master student at Vilnius University Business School who does research on how AI-powered chatbot enhance the customer experience and overall customer loyalty in the telecommunication sector.

This brief questionnaire (about 8 minutes) will inquire about your recent interactions with an AI chatbot offered by a telecommunications company. All your answers will remain anonymous and would be utilized in academic purposes.

Keep in mind! There are no right or wrong answers, please answer as sincerely as possible using your own experience.

Your contribution is much needed and will play a significant role in the process of learning the ways AI can enhance customer service.

Thank you very much for your participation!

How old are you?

- Under 18
- 18 – 24
- 25 – 34
- 35 – 44
- 45 – 54
- 55 or older

Gender

- Male
- Female
- Non-binary

- Prefer not to say

Country

- “Country”

Have you used AI powered chatbots in telecommunication in the last 12 months?

- Yes
- No

Do you understand English?

- Yes
- No

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The AI chatbot could provide the correct information at the right time when I required it.					
The AI chatbot proved helpful to solve my issues.					
The AI chatbot answered my query in good time.					
The AI chatbot managed to address my problem effectively and in a reasonable time.					
The chatbot AI provided simple and comprehensible answers.					

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I was confident in the information offered by the AI chatbot.					
The AI chatbot received my problem and provided corresponding help.					
My chatbot AI provided customized answers to my situation.					
The AI chatbot had a user interface that was simple to use.					

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The chatbot with AI served me in resolving my problem or answering my question successfully.					
The customer support with the AI chatbot was more efficient.					
The chatbot AI helped me to save time in resolving my problem.					

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The AI chatbot was easy to communicate with.					
The chatbot AI was convenient to work with and user-friendly.					
The chatbot interface was user-friendly.					

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I would also refer to the AI chatbot in case of future customer support.					
I would rather employ the chatbot in artificial intelligence as opposed to talking to a human representative in the future.					
I would suggest to other people that they ought to utilize the AI chatbot in the customer care.					

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I am satisfied with the service provided by the AI chatbot.					
I found the AI chatbot to be as expected when it came to how it dealt with my problem.					
The general interaction with the chatbot AI was pleasant.					
My general experience with customer services was positively influenced by the AI chatbot.					

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The chatbot was an easy customer service experience.					
I was generally pleased with my interaction with the AI chatbot.					
The customer service process was also enjoyable because of the AI chatbot.					
During my communication with the AI chatbot, I felt that					

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
the chatbot cared about me and empathized.					

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
In the future, I would be inclined to use AI chatbots to serve customers.					
I would choose a telecommunications company that employs AI chatbots rather than those that do not.					
My recommendation to others would be the use of AI chatbots to provide customer services.					

PART 2

Frequency Tables ▼

Frequencies for Gender ▼

Gender	Frequency	Percent	Valid Percent	Cumulative Percent
Female	93	54.1	54.1	54.1
Male	78	45.3	45.3	99.4
Non-binary	1	0.6	0.6	100.0
Missing	0	0.0		
Total	172	100.0		

Frequency Tables ▼

Frequencies for Age ▼

Age	Frequency	Percent	Valid Percent	Cumulative Percent
18 - 24	95	55.2	55.2	55.2
25 - 34	47	27.3	27.3	82.6
34 - 44	30	17.4	17.4	100.0
Missing	0	0.0		
Total	172	100.0		

	A	B	C
1	**Row Labels**	**Count of Country**	**Percent**
2	Morocco	43	25,00
3	Lithuania	39	22,67
4	Ukraine	33	19,19
5	India	16	9,30
6	Spain	14	8,14
7	Pakistan	9	5,23
8	-	5	2,91
9	France	4	2,33
10	Latvia	3	1,74
11	Belarus	1	0,58
12	Algeria	1	0,58
13	Turkey	1	0,58
14	Nigerian	1	0,58
15	Germany	1	0,58
16	Azerbaijan	1	0,58
17	Grand Total	172	100,00

Descriptive Statistics

Descriptive Statistics

	SQ_mean	PU_mean	PEOU_mean	IU_mean	CS_mean	CX_mean	CL_mean
Mean	4.182	4.240	4.302	4.241	4.250	4.279	4.376
Std. Deviation	0.728	0.728	0.684	0.816	0.728	0.737	0.747

Unidimensional Reliability ▼

Frequentist Scale Reliability Statistics

			95% CI	
Coefficient	Estimate	Std. Error	Lower	Upper
Coefficient α	0.939			

Note. The analytic confidence interval is not available for coefficient alpha/lambda2 when data contain missings and pairwise complete observations are used. Try changing to 'Delete listwise' within 'Advanced Options'.

Frequentist Individual Item Reliability Statistics ▼

	Coefficient α (if item dropped)		
Item	Estimate	Lower 95% CI	Upper 95% CI
The AI chatbot could provide the correct information at the right time when I required it.	0.935		
The AI chatbot proved helpful to solve my issues.	0.930		
The AI chatbot answered my query in good time.	0.930		
The AI chatbot managed to address my problem effectively and in a reasonable time.	0.932		
The chatbot AI provided simple and comprehensible answers.	0.931		
I was confident in the information offered by the AI chatbot.	0.932		
The AI chatbot received my problem and provided corresponding help.	0.930		
My chatbot AI provided customized answers to my situation.	0.930		
The AI chatbot had a user interface that was simple to use.	0.932		

Note. The analytic confidence interval not available for coefficient alpha/lambda2 when data contain missings and pairwise complete observations are used. Try changing to 'Delete listwise' within 'Advanced Options'.

Unidimensional Reliability ▼

Frequentist Scale Reliability Statistics ▼

			95% CI	
Coefficient	Estimate	Std. Error	Lower	Upper
Coefficient α	0.819			

Note. The analytic confidence interval is not available for coefficient alpha/lambda2 when data contain missings and pairwise complete observations are used. Try changing to 'Delete listwise' within 'Advanced Options'.

Frequentist Individual Item Reliability Statistics

	Coefficient α (if item dropped)		
Item	Estimate	Lower 95% CI	Upper 95% CI
The chatbot with AI served me in resolving my problem or answering my question successfully.	0.762		
The customer support with the AI chatbot was more efficient.	0.740		
The chatbot AI helped me to save time in resolving my problem.	0.752		

Note. The analytic confidence interval not available for coefficient alpha/lambda2 when data contain missings and pairwise complete observations are used. Try changing to 'Delete listwise' within 'Advanced Options'.

Unidimensional Reliability

Frequentist Scale Reliability Statistics

			95% CI	
Coefficient	Estimate	Std. Error	Lower	Upper
Coefficient α	0.809	0.038	0.734	0.884

Frequentist Individual Item Reliability Statistics

	Coefficient α (if item dropped)		
Item	Estimate	Lower 95% CI	Upper 95% CI
The AI chatbot was easy to communicate with.	0.745	0.635	0.854
The chatbot AI was convenient to work with and user-friendly.	0.735	0.633	0.838
The chatbot interface was user-friendly.	0.735	0.635	0.835

Unidimensional Reliability

Frequentist Scale Reliability Statistics

			95% CI	
Coefficient	Estimate	Std. Error	Lower	Upper
Coefficient α	0.864			

Note. The analytic confidence interval is not available for coefficient alpha/lambda2 when data contain missings and pairwise complete observations are used. Try changing to 'Delete listwise' within 'Advanced Options'.

Frequentist Individual Item Reliability Statistics

	Coefficient α (if item dropped)		
Item	Estimate	Lower 95% CI	Upper 95% CI
I would also refer to the AI chatbot in case of future customer support.	0.815		
I would rather employ the chatbot in artificial intelligence as opposed to talking to a human representative in the future.	0.812		
I would suggest to other people that they ought to utilize the AI chatbot in the customer care.	0.800		

Note. The analytic confidence interval not available for coefficient alpha/lambda2 when data contain missings and pairwise complete observations are used. Try changing to 'Delete listwise' within 'Advanced Options'.

Unidimensional Reliability

Frequentist Scale Reliability Statistics

			95% CI	
Coefficient	Estimate	Std. Error	Lower	Upper
Coefficient α	0.870			

Note. The analytic confidence interval is not available for coefficient alpha/lambda2 when data contain missings and pairwise complete observations are used. Try changing to 'Delete listwise' within 'Advanced Options'.

Frequentist Individual Item Reliability Statistics

	Coefficient α (if item dropped)		
Item	Estimate	Lower 95% CI	Upper 95% CI
I am satisfied with the service provided by the AI chatbot.	0.831		
I found the AI chatbot to be as expected when it came to how it dealt with my problem.	0.869		
The general interaction with the chatbot AI was pleasant.	0.814		
My general experience with customer services was positively influenced by the AI chatbot.	0.816		

Note. The analytic confidence interval not available for coefficient alpha/lambda2 when data contain missings and pairwise complete observations are used. Try changing to 'Delete listwise' within 'Advanced Options'.

Unidimensional Reliability

Frequentist Scale Reliability Statistics

			95% CI	
Coefficient	Estimate	Std. Error	Lower	Upper
Coefficient α	0.873	0.024	0.826	0.919

Frequentist Individual Item Reliability Statistics

	Coefficient α (if item dropped)		
Item	Estimate	Lower 95% CI	Upper 95% CI
The chatbot was an easy customer service experience.	0.847	0.785	0.908
I was generally pleased with my interaction with the AI chatbot.	0.832	0.767	0.898
The customer service process was also enjoyable because of the AI chatbot.	0.838	0.782	0.893
During my communication with the AI chatbot, I felt that the chatbot cared about me and empathized.	0.831	0.764	0.897

Unidimensional Reliability

Frequentist Scale Reliability Statistics

			95% CI	
Coefficient	Estimate	Std. Error	Lower	Upper
Coefficient α	0.882	0.026	0.831	0.932

Frequentist Individual Item Reliability Statistics

	Coefficient α (if item dropped)		
Item	Estimate	Lower 95% CI	Upper 95% CI
In the future, I would be inclined to use AI chatbots to serve customers.	0.846	0.779	0.913
I would choose a telecommunications company that employs AI chatbots rather than those that do not.	0.846	0.781	0.912
My recommendation to others would be the use of AI chatbots to provide customer services.	0.803	0.715	0.890

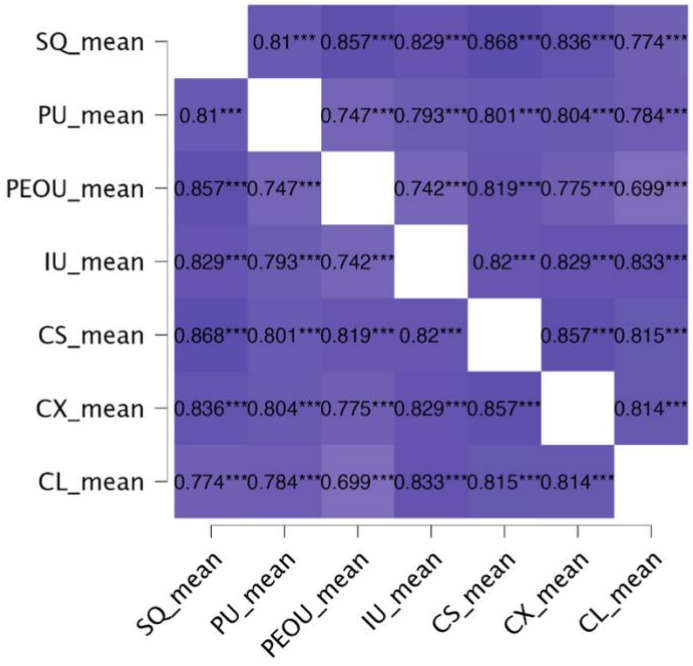
Correlation ▼

Pearson's Correlations ▼

			Pearson's r	p
SQ_mean	–	PU_mean	0.810***	< .001
SQ_mean	–	PEOU_mean	0.857***	< .001
SQ_mean	–	IU_mean	0.829***	< .001
SQ_mean	–	CS_mean	0.868***	< .001
SQ_mean	–	CX_mean	0.836***	< .001
SQ_mean	–	CL_mean	0.774***	< .001
PU_mean	–	PEOU_mean	0.747***	< .001
PU_mean	–	IU_mean	0.793***	< .001
PU_mean	–	CS_mean	0.801***	< .001
PU_mean	–	CX_mean	0.804***	< .001
PU_mean	–	CL_mean	0.784***	< .001
PEOU_mean	–	IU_mean	0.742***	< .001
PEOU_mean	–	CS_mean	0.819***	< .001
PEOU_mean	–	CX_mean	0.775***	< .001
PEOU_mean	–	CL_mean	0.699***	< .001
IU_mean	–	CS_mean	0.820***	< .001
IU_mean	–	CX_mean	0.829***	< .001
IU_mean	–	CL_mean	0.833***	< .001
CS_mean	–	CX_mean	0.857***	< .001
CS_mean	–	CL_mean	0.815***	< .001
CX_mean	–	CL_mean	0.814***	< .001

* p < .05, ** p < .01, *** p < .001

Pearson's r heatmap ▼



Results ▾

Linear Regression ▾

Model Summary - PEOU_mean

Model	R	R^2	Adjusted R^2	RMSE
M_0	0.000	0.000	0.000	0.684
M_1	0.857	0.735	0.734	0.353

Note. M_1 includes SQ_mean

ANOVA

Model		Sum of Squares	df	Mean Square	F	p
M_1	Regression	58.86	1	58.856	471.9	< .001
	Residual	21.20	170	0.125		
	Total	80.06	171			

Note. M_1 includes SQ_mean

Note. The intercept model is omitted, as no meaningful information can be shown.

Coefficients

Model		Unstandardized	Standard Error	Standardized	t	p
M_0	(Intercept)	4.302	0.052		82.464	< .001
M_1	(Intercept)	0.934	0.157		5.931	< .001
	SQ_mean	0.806	0.037	0.857	21.724	< .001

Linear Regression

Model Summary - PU_mean

Model	R	R^2	Adjusted R^2	RMSE
M_0	0.000	0.000	0.000	0.728
M_1	0.810	0.655	0.653	0.428

Note. M_1 includes SQ_mean

ANOVA

Model		Sum of Squares	df	Mean Square	F	p
M_1	Regression	59.33	1	59.328	323.4	< .001
	Residual	31.18	170	0.183		
	Total	90.51	171			

Note. M_1 includes SQ_mean

Note. The intercept model is omitted, as no meaningful information can be shown.

Coefficients

Model		Unstandardized	Standard Error	Standardized	t	p
M_0	(Intercept)	4.240	0.055		76.438	< .001
M_1	(Intercept)	0.858	0.191		4.495	< .001
	SQ_mean	0.809	0.045	0.810	17.984	< .001

Results

Linear Regression

Model Summary - IU_mean

Model	R	R^2	Adjusted R^2	RMSE
M_0	0.000	0.000	0.000	0.816
M_1	0.824	0.680	0.676	0.465

Note. M_1 includes PU_mean, PEOU_mean

ANOVA

Model		Sum of Squares	df	Mean Square	F	p
M_1	Regression	77.43	2	38.715	179.4	< .001
	Residual	36.47	169	0.216		
	Total	113.90	171			

Note. M_1 includes PU_mean, PEOU_mean

Note. The intercept model is omitted, as no meaningful information can be shown.

Coefficients

							Collinearity Statistics	
Model		Unstandardized	Standard Error	Standardized	t	p	Tolerance	VIF
M_0	(Intercept)	4.241	0.062		68.154	< .001		
M_1	(Intercept)	−0.066	0.234		−0.283	.778		
	PU_mean	0.605	0.073	0.540	8.237	< .001	0.442	2.265
	PEOU_mean	0.405	0.078	0.339	5.178	< .001	0.442	2.265

Results ▾

Linear Regression

Model Summary - CS_mean

Model	R	R^2	Adjusted R^2	RMSE
M_0	0.000	0.000	0.000	0.728
M_1	0.820	0.672	0.670	0.418

Note. M_1 includes IU_mean

ANOVA

Model		Sum of Squares	df	Mean Square	F	p
M_1	Regression	60.91	1	60.907	348.4	< .001
	Residual	29.72	170	0.175		
	Total	90.63	171			

Note. M_1 includes IU_mean

Note. The intercept model is omitted, as no meaningful information can be shown.

Coefficients

Model		Unstandardized	Standard Error	Standardized	t	p
M_0	(Intercept)	4.250	0.056		76.564	< .001
M_1	(Intercept)	1.149	0.169		6.789	< .001
	IU_mean	0.731	0.039	0.820	18.666	< .001

Results ▾

Linear Regression

Model Summary - CX_mean

Model	R	R^2	Adjusted R^2	RMSE
M_0	0.000	0.000	0.000	0.737
M_1	0.829	0.687	0.685	0.414

Note. M_1 includes IU_mean

ANOVA

Model		Sum of Squares	df	Mean Square	F	p
M_1	Regression	63.87	1	63.870	373.0	< .001
	Residual	29.11	170	0.171		
	Total	92.98	171			

Note. M_1 includes IU_mean

Note. The intercept model is omitted, as no meaningful information can be shown.

Coefficients

Model		Unstandardized	Standard Error	Standardized	t	p
M_0	(Intercept)	4.279	0.056		76.106	< .001
M_1	(Intercept)	1.103	0.167		6.588	< .001
	IU_mean	0.749	0.039	0.829	19.313	< .001

Results ▾

Linear Regression

Model Summary - CL_mean

Model	R	R^2	Adjusted R^2	RMSE
M_0	0.000	0.000	0.000	0.747
M_1	0.814	0.663	0.661	0.435

Note. M_1 includes CX_mean

ANOVA

Model		Sum of Squares	df	Mean Square	F	p
M_1	Regression	63.28	1	63.276	334.2	< .001
	Residual	32.19	170	0.189		
	Total	95.47	171			

Note. M_1 includes CX_mean

Note. The intercept model is omitted, as no meaningful information can be shown.

Coefficients

Model		Unstandardized	Standard Error	Standardized	t	p
M_0	(Intercept)	4.376	0.057		76.809	< .001
M_1	(Intercept)	0.846	0.196		4.318	< .001
	CX_mean	0.825	0.045	0.814	18.281	< .001