Exploring the Effect of Al Chatbots Service Quality on Loyalty and Attitude: Mediating Effects of Customer Value, Trust and Satisfaction

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Abstract

The growing use of AI chatbot provides customers with exceptional ability to communicate the banks' products and services in a manner that can't be met across any other traditional tools. The software positively affects customer experience, where many customers enjoy talking to a virtual assistant during or after their purchasing process. The study is important to pinpoint the effective use of advanced technology as AI in present exceptional service to the target market. It provides the use of customer-personalized services and proved effective when customers are deciding what products to buy.

This research used mixed methodology, both data collection techniques combines both the qualitative with 10 managers at the banking sector and quantitative methodology with 206 consumers to expand the usefulness of the research and

gain the ability to generalize the results, and make sure that there is no bias concerning the use of chatbot by bank users and the effect on their experience, satisfaction and attitudes. The research used statistical analysis, including correlation, reliability, structural equation model and regression models applied to validate hypotheses and assess the relationship between variables at the study.

The key findings indicate that respondents are satisfied and loyal to their utilization of the new AI chatbot software, as it helps to overcome the traditional channel and reduce the challenge of crowding and waiting lines at the bank's branches. The research respondents already engage in automated conversation with intelligent assistants at their Egyptian banks. The key strategic recommendations devoted to practitioners for development performance of AI chatbots include compare between the behavioral intention of using chatbot at banking sector versus other sector at the Egyptian market, in order to identify the differences in usage and thus being able to understand the devoted efforts. Finally, it's suggested to use longitudinal studies tracking consumer usage of AI chatbots over several months to understand the key services used by bank users. While, suggestions for banking sector include use of AI software automating repetitive tasks, chatbots free up human agents to focus on more complex queries.

Key words: Artificial intelligence, Service quality, Chatbot, Banking, Online banking, Trust, Customer Satisfaction, Customer loyalty

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ملخص الرسالة

إن الاستخدام المتزايد لروبوتات المحادثة المدعومة بالذكاء الاصطناعي يوفر للعملاء قدرة استثنائية على التواصل حول المنتجات والخدمات المصرفية بطريقة لا يمكن توفرها عبر أي أدوات تقليدية أخرى. يؤثر البرنامج بشكل إيجابي على تجربة العملاء، حيث يستمتع العديد من العملاء بالتحدث إلى مساعد افتراضي خلال عملية الشراء أو بعدها. الدراسة مهمة لتحديد الاستخدام الفعال للتكنولوجيا المتقدمة مثل الذكاء الاصطناعي في تقديم خدمات استثنائية للسوق المستهدفة. كما أنها توفر استخدام خدمات مخصصة للعميل وثبتت فعاليتها عندما يقوم العملاء بتحديد المنتجات التي يرغبون في شرائها.

استخدمت هذه الدراسة منهجية مختلطة، حيث جمعت تقنيات جمع البيانات بين المنهج الكيفي مع ١٠ مدراء في القطاع المصرفي والمنهج الكمي مع ٢٠٦ مستهلكين لتوسيع فائدة البحث وكسب القدرة على تعميم النتائج، والتأكد من عدم وجود تحيز فيما يتعلق باستخدام الروبوتات الدردشة من قبل مستخدمي البنوك وتأثيرها على تجربتهم ورضاهم ومواقفهم. استخدمت الدراسة التحليل الإحصائي، بما في ذلك الارتباط، والموثوقية، ونموذج المعادلة الهيكلية، ونماذج الانحدار التي تم تطبيقها للتحقق من الفرضيات وتقييم العلاقة بين المتغيرات في الدراسة.

تُشير النتائج الرئيسية إلى أن المستجيبين راضون ومخلصون لاستخدامهم لبرمجيات الدردشة الجديدة المعتمدة على الذكاء الاصطناعي، حيث تساعد في تجاوز القنوات التقليدية وتقليل تحديات الازدحام وطوابير الانتظار في فروع البنك. ويشارك المستجيبون في البحث بالفعل في محادثات آلية مع مساعدي الذكاء الاصطناعي في بنوكهم المصرية. تشمل التوصيات الاستراتيجية الرئيسية المخصصة للممارسين لتحسين أداء الدردشة الآلية مقارنة بين النية السلوكية لاستخدام الدردشة الآلية في

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القطاع المصرفي مقابل القطاعين الآخرين في السوق المصرية، من أجل تحديد الاختلافات في الاستخدام ومن ثم القدرة على فهم الجهود المبذولة. أخيراً، يُقترح استخدام دراسات طولية تتعقب استخدام المستهلك لبرمجيات الدردشة الذكية على مدى عدة أشهر لفهم الخدمات الرئيسية التي يستخدمها عملاء البنك. بينما تشمل الاقتراحات للقطاع المصرفي استخدام برمجيات الذكاء الاصطناعي لأتمتة المهام المتكررة، حيث يُتيح استخدام الدردشة الآلية للعملاء البشريين التركيز على مهام أكثر.

الكلمات المفتاحية: الذكاء الاصطناعي، جودة الخدمة، روبوت الدردشة، البنوك، الخدمات المصرفية، الخدمات المصرفية عبر الإنترنت، الثقة، رضا العملاء، ولاء العملاء

CHAPTER 1: INTRODUCTION

1.1 Research Overview

The business paradigm has changed dramatically in recent years, because of the emergence of digital transformation. Revolutionary technological change includes the development of a variety of tools, including but not limited to artificial intelligence. Tools like artificial intelligence have helped businesses engage with more customers, thereby substantially increasing their profits. "For instance, banks have developed complex artificial intelligence systems and software to rely on for all departments of any business, especially marketing to deliver better value to customers" (Asad Ullah, 2023).

Based on Egyptian online banking, the share of Egyptian adult population using a mobile phone or the internet to send money is at minimal. The total number of Egyptians who hold bank accounts is 44 million (Central Bank of Egypt, 2023), and

up to 40% of them have mobile wallets. As for 2024, only 2.6 percent used online banking in the past year. "It is hypothesized that all interactions with banks' customers will occur through media supported by artificial intelligence". (Statista.com/ Egypt: online banking). Banking chatbots are digital assistants created to engage with customers through different channels, like websites or mobile apps. They functions and utilize machine learning to understand customer requests and be able to assist them. This study aims to investigate the impact of service quality dimensions of banks' chatbot on customers' perceived value

1.2 Problem Definition

The growth of electronic services offered by banks depends on many factors, such as bank ability to offer high quality of online banking features, offer dependable services to the customers for which they may be relatively satisfied than of manual system of banking. Thus, chatbot helps bank users to offer a basis for e-service quality improvement as well as the improvement of banks' efficiency, competitiveness and attractiveness in the virtual market.

1.4 Research Questions

To explore the AI chatbot service quality on customers' loyalty & attitude, moderated by value, trust and satisfaction. The line of interest of this dissertation is the Banking sector in Egypt, aiming to answer the following questions:

1. What is the effect of AI-Chatbots Service Quality on customers' perceived value?

1.5 Research Objectives

The primary objectives of this research are as follows:

1. To assess the use of banks' AI-powered digital technology as Chatbots Service Quality on customers' perceived value

CHAPTER 2: LITERATURE REVIEW

2.1 AI chatbots and behavioral intention

It aims to study both (**Ayanwale & Ndlovu, 2024; Aggarwal et al., 2023; Pizzi et al., 2023; Gatzioufa & Saprikis, 2022; Pillai & Sivathanu, 2020**) investigates the factors that influence undergraduate students' inclination to utilize AI application tools, specifically chatbots, for educational purposes. We applied an expanded diffusion theory of innovation framework to examine the relationships between relative advantages, compatibility, trialability, trust, perceived usefulness, perceived ease of use, and behavioral intention. The study explained some exogenous constructs as perceived usefulness, ease of use, enjoyment and perceived trust to communicate higher intention to use and moderated by perceived risks

Figure (2.1): Research model about the use of exogenous constructs to stimulate better intention to use technology, moderated by the level of perceived risks
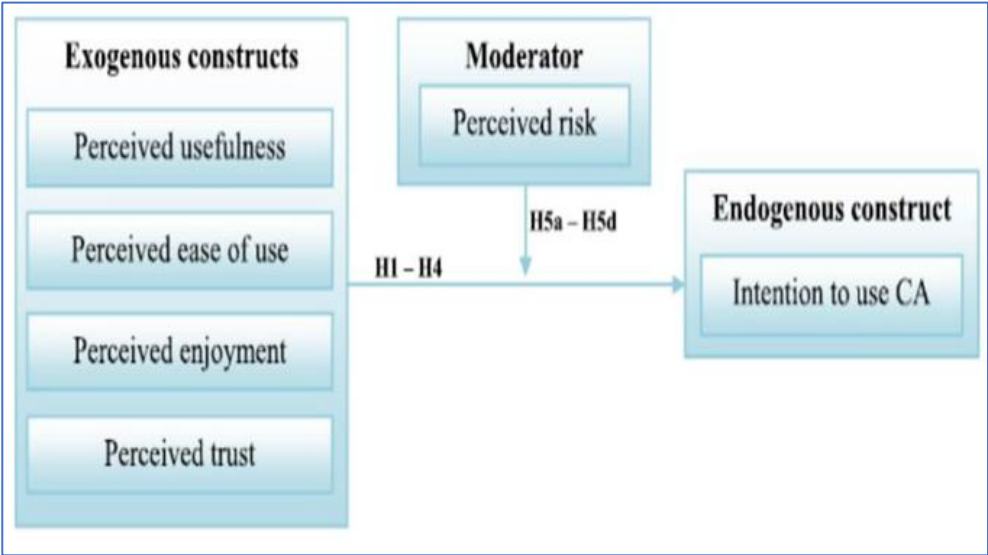
Source: Ayanwale & Ndlovu, (2024)

The results confirm the hypotheses regarding the relative advantages, compatibility, trialability, perceived usefulness, and trust of chatbots. Students who perceive the benefits of chatbots express a strong intention to use them for academic purposes. The perception of compatibility between students and chatbots positively influences their adoption intention, and those who have the opportunity to try out chatbots are more likely to use them, indicating the importance of trialability. Surprisingly, the study did not find direct relationships between perceived usefulness, perceived ease of use, and behavioral intention,

suggesting the presence of other influencing factors or dynamics in the adoption of chatbots for educational purposes.

The results shows Regarding the factors which affect the intention to use and adopt chatbots, performance expectancy, effort expectancy, social influence, trust and attitude are the most significant considerations associated with the behavioral theories on which they were based, whereas in relation to the areas on which most of the research work was focused, customer service ranks first by far.

This study **(Song & Shin, 2024)** investigates the effect of chatbot humanization on the perception of eeriness, trust, and users' behavioral intention. Specifically, this study employed a (humanization of Chabot agent avatar: hyper realistic-animated vs. cartoonish-still) (avatar familiarity: celebrity avatar vs. non-celebrity avatar) between-subjects experiment (N ¼ 185), in which participants were asked to purchase a laptop from an e-commerce vendor by interacting with a chatbot agent. Based on predictions from the uncanny valley effect hypothesis (UVE), enhancing the human likeness of a chatbot agent through visual realism and animacy was predicted to negatively influence users' trust in the chatbot agent and behavioral intention as a consequence of the activation of a negative affective state (i.e., a feeling of eeriness).

Consistent with our predictions, the results from PLS-SEM showed that (a) enhancing the human likeness of a chatbot agent significantly increased users' feeling of eeriness, (b) the feeling of eeriness negatively influenced users' trust in the chatbot agent, c) trust, determined by the feeling of eeriness, significantly affected users' purchase intention and willingness to reuse the chatbot, and d) the relationship between humanization and eeriness significantly moderated by the familiarity of the chatbot avatar. The study presents the following model explaining the ability of perceived usefulness, ease of use, compatibility and privacy risk as devoted from consumers' level of awareness to affect their behavioral intention to use banking chatbots

Figure (2.2): Research model about the relationship between awareness of service and consumers' behavioral intention to use banking chatbot
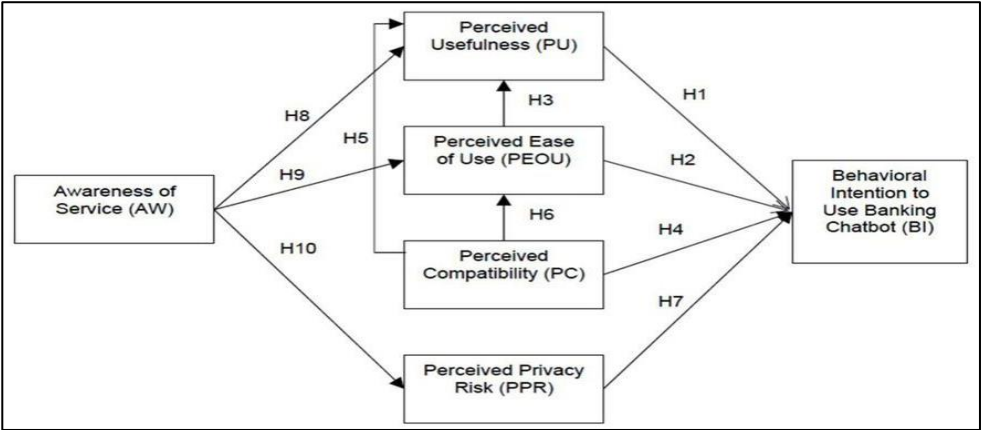
Source: Song & Shin, (2024)

2.3 Analyzing previous studies and evaluating the results

The researcher reviewed many previous studies that examined the variables under study, AI Chatbots, and perceived value

- There is general agreement about the relationship that previous studies sought to test, as we find that all studies participated in testing the relationship between AI Chatbots as an independent variable, and Perceived Value as a dependent variable.

- There is general agreement in the style and method of collecting data, as we find that all previous studies relied on preparing a survey list in collecting data. There is also a discrepancy in the size of the sample on which this group of studies relied, as well as the number of years covered by the sample.

- There is a difference in the application environment in which studies were conducted that addressed the impact of AI Chatbots on Perceived Value, and therefore the results are likely to differ depending on the difference in the environment, which requires testing the relationship between the variables of the study in the Egyptian business environment, and therefore the research gap is in studying the impact AI Chatbots on Behavioral Intention (New Evidence from the Banking Sector in Egypt).

Based on the above, the main hypothesis can be derived as follows:

"There is no a significant relationship between AI Chatbots and Perceived Value".

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Research Hypotheses

The study examines the following hypotheses:

- **H1:** There is a significant positive relationship between AI-Chatbots Service Quality and Perceived Value.

3.2 Research Approach

The research used mixed tool using qualitative methodologies are used to provide valuable information at the research. The researcher employed quantitative approaches to collect information in a questionnaire containing a range of self-administered questions from 206 participants.

3.3 Research Population and Sample Size

3.3.1- The population

Total Bank Account Holders ~44 million (Central Bank of Egypt, 2023); and adult Financial Inclusion Rate: 44% (up from 33% in 2020) (World Bank, 2023); and also the mobile Wallet Users: ~35 million (Findex, 2023). So, it is a good sample size as numbers of users of chatbot are very few

3.3.2- The sample

Sample used in the research helped to understand percentage of the research population and being able to access them online, the sample is the art of choose number of observations and choose respondents who are able to articulate opinions required in the questionnaires. The research used sample of 385 respondents, while

the accurate responses collected from 206 respondents provided a response rate of 53.5%

The sample technique is non probability – convenience sample, where the researcher didn't have frame of reference to the research population that's why the selection of sample is based on non-probability techniques and in addition the use of convenience type because the researcher lists a question to make sure of the respondents' eligibility to answer the questionnaire and they are users of chatbot bank service

3.4 Data Collection

Data collection is the systematic process of acquiring and measuring information on variables of interest to answer research questions, test hypotheses, and evaluate outcomes (Rimando et al., 2015). The questionnaire type is available online, either via email or by WhatsApp, using online questionnaire, questioner asks the questions and the interviewees answer the questions. The use of online questionnaire adds value to the research information. Questionnaires are popular research methods because they offer a fast, efficient and inexpensive means of gathering large amounts of information from sizeable sample volumes. These tools are particularly effective for measuring subject behavior, and collect 206 answers

3.5 Data coding, verification and analysis

The researcher used SPSS stands for Statistical Package for the Social Sciences, and it is used for advanced statistical data

analysis by a variety of scholars. SPSS was designed for the administration and statistical analysis of social science data. SPSS is widely regarded as the international standard for social-science data analysis. The Statistics programme in SPSS includes a variety of statistical operations, such as frequencies, cross-tabulation, and bivariate statistics.

3.6 Data tabulation and analysis

The researcher began with a descriptive analysis for demographics, gender, age, and educational level using frequencies, percentages, and means. The use of reliability test (Cronbach) to understand the reliability of the statements. Then, to measure the relation between the independent and dependent variables, the researcher used P-value to identify it, when the p-value is more than 0.05, explains that the hypothesis is accepted. The correlation coefficient test was then performed to investigate the strength and direction of the associations between each pair of variables.

CHAPTER 4: DATA ANALYSIS AND RESULTS
4.1. The Quantitative Analysis

The outcomes of the statistical analysis done with the SPSS software will be described in this chapter. Furthermore, the chapter will first analyze the reported demographics of the sample unit using descriptive statistics in order to determine whether or not the hypothesis will be accepted. Furthermore, applying the variables for each hypothesis and examining the relationship between them, an example of hypothesis testing will

be provided after this. A preliminary analysis was conducted on **206 respondents** to understand the demographic distribution and assess data quality.

Demographic Breakdown

The dataset consists of responses from individuals across **various age groups, occupations, and shopping habits**. The demographic summary is presented in the table below:

Table (4.1) Demographic breakdown

	Characteristics	Frequency	Percentage	Total
Gender	Male	81	39.32%	206
	Female	125	60.68%	
Age	25 years and less.	27	13.10%	206
	26-36 years.	110	53.4%	
	37-47 years.	36	17.5%	
	48 years and over.	33	16%	
Education level	Bachelor's Degree.	36	17.5%	206
	Master's Degree.	149	72.3%	
	PHD.	21	10.2%	
	Other.	-	-	

Table 4.1: provide insights into the demographics and characteristics of the respondents in our sample, which can be useful for understanding the composition of population:

1. Gender:
- More females (60.68%) than males (39.32%) participated.

2. Age:
- Majority of respondents (53.4%) were between 26 to 36 years old.

3. Educational level:
-Many were masters holders with (72.3%), followed by bachelor degree with (17.5%)

The demographics of the study show a notable gender gap, with more women (60.68%) than men (39.32%) taking part. The bulk of responders (53.4%) were between the ages of 26 and 36, suggesting a preponderance of adults. The group's educational backgrounds were diverse; the majority is masters' degree with (72.3%). These statistics point to a sample that is mostly made up of youthful female people, although these data provide insightful information on the tastes and behaviors of this demographic segment, it is important to consider the inherent biases and limits before extrapolating these results.

Figure 4.1: The pie chart represents the demographic breakdown by age.
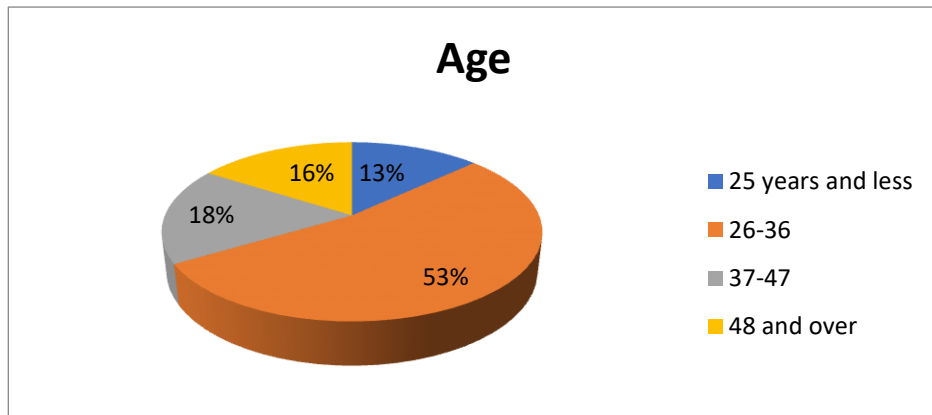
4.1.1 Reliability and Validity of Research Variables

To ensure that the study constructs are reliable, **Cronbach's Alpha** was computed for each survey scale.

Table (4.2): Reliability Scores

Variable	Cronbach's Alpha
Service quality of AI chatbot	0.906
Perceived value	0.938

Interpretation:

The consistency of a measurement over time or under many situations is referred to as reliability. It provides that a measurement tool produces accurate and random error-free data. Reliability is important in research and assessment since it shows how much the same outcomes may be predicted in similar situations. The analysis of Cronbach's Alpha greater than 0.7 a positive indicator of the increase reliability of the data collected within multiple statements

4.1.2. Descriptive Analysis of Quantitative Survey

The following table summarizes the **mean scores** of key study variables on a **scale of 1 to 5**.

Table (4.3): Descriptive Statistics related to AI chatbot service quality

Statements	Strongly disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly agree (5)	Total	Mean
Always available							
I can get the AI chatbot service at any time	22 10.7%	11 5.3%	33 16%	74 35.9%	66 32%	206 100%	3.73
This AI chatbot is always online	13 6.3%	14 6.8%	41 19.9%	80 38.8%	58 28.2	206 100%	3.75
I can get this AI chatbot at any time throughout the day	15 7.3%	14 6.8%	52 25.2%	59 28.6	66 32%	206 100%	3.71
Omnipresence							
I can contact this AI chatbot anywhere	14 6.8%	19 9.2%	41 19.9%	66 32%	66 32%	206 100%	4.02
I can use the AI chatbot on multiple devices	19 9.2%	31 15%	50 24.3%	51 24.8%	55 26.7%	206 100%	3.44

Using the AI chatbot will not be limited by place	16 7.8%	15 7.3%	37 18%	77 37.4%	61 29.6	206 100%	3.73
Consistency							
The quality of service provided by this AI chatbot is stable	8 3.8%	19 9.2%	22 10.7%	79 38.3%	78 37.8%	206 100%	3.79
This AI chatbot always tries to provide me with a relatively high level of service	8 3.8%	11 5.3%	29 14.1%	71 34.4%	87 42.2%	206 100%	3.83
The service quality of this AI chatbot will not change from time to time	14 6.8%	8 3.8%	57 27.7%	96 46.6%	44 15.1%	206 100%	3.74
Accuracy of response							
This AI chatbot can accurately understand what I say	12 6%	6 3%	42 20.4%	85 41%	61 29.6%	206 100%	3.89
The response from this AI chatbot is accurate	20 9.7%	15 7.3%	25 12%	100 48.5%	46 22.3%	206 100%	3.75
The answer of this AI chatbot corresponds to the question I asked	15 7.4%	15 7.4%	39 19.3%	69 34.2%	64 31.7%	206 100%	3.81
Availability of human service alternative							
Human service is readily available. For example, when the AI chatbot cannot solve the problem, I can easily find a human customer service	4 2%	19 9.2%	11 5.3%	66 32%	106 51.5%	206 100%	4.62
I do not encounter difficulties in obtaining human service alternative	1 0.5%	4 2%	11 5.3%	100 48.2%	90 43%	206 100%	4.48
I can easily obtain human service when necessary to continue the service	7 3%	31 15%	20 9.7%	51 24.8%	98 47.6%	206 100%	4.24
Self-Learning							
This AI chatbot can learn from past experience	15 7.4%	17 8.3%	47 23%	72 35.3%	53 26%	206 100%	3.60
This AI chatbot can become better through learning	9 4.4%	17 8.3%	32 15.5%	78 37.95	68 33%	206 100%	3.84
This AI chatbot can learn to improve themselves well	9 4.4%	18 8.7%	41 19.9%	82 39.8%	53 25.7%	206 100%	3.69
Ease of Use							
It is easy to become skillful at using the AI chatbot	4 2%	2 1%	107 51.9%	79 38.3%	14 6.8%	206 100%	3.71
The AI chatbot is flexible to interact with	5 2.4%	12 5.8%	3 1.5%	84 40.8%	102 49.5%	206 100%	3.87
My interaction with the AI chatbot is clear and understandable	8 3.8%	8 3.8%	28 13.6%	89 43.2%	73 35.4%	206 100%	3.82

Interpretation:

- Human service is readily available. For example, when the AI chatbot cannot solve the problem, I can easily find a human customer service had highest score of (4.62); means that the use of chatbot is a substitute to the humanized customer service, and this increases the satisfaction of users
- In addition, the value of feedback and contribution to the quality development is also met through consumers' opinions about the quality dedicated to the use of chatbot with mean of (4.52)
- In addition, all statements without exceptions have very positive mean value and indicate that the majority of research respondents agree that the diversity of service quality dimensions provide sufficient value to their banking experiences

Table 4.4: Descriptive Statistics related to perceived value

Statements	Strongly disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly agree (5)	Total	Mean
This AI chatbot is an excellent value for my time and effort	2 1%	11 5.3%	3 1.4%	74 33.9%	116 56.4%	206 100%	3.83
I am very happy to spend time interacting with this AI chatbot	-	4 1.9%	11 5.3%	80 38.8%	111 53.8%	206 100%	3.87
I think it is valuable for me to spend time and effort interacting with this AI chatbot	5 2.4%	4 2%	22 10.7%	52 25.2%	123 59.7%	206 100%	3.88

Interpretation:

- the statements explain highest agreements that the perceived value is essential to have high quality of chatbot

4.2. Data Analysis of Quantitative Survey

4.2.1 Correlation Analysis

Pearson's correlation coefficient was used to measure **relationships between key study variables**.

Table 4.5: Correlation Analysis

Variables Compared	Correlation Coefficient (r)	p-value
AI chatbot vs perceived value	0.577	**0.001**

Interpretations:

- Spearman's rho correlation coefficient between "chatbot used by banks" and perceived value indicates a perfect positive correlation. The significance value (Sig.) of .000 indicates that this correlation is statistically significant

4.3. Hypothesis Testing

The research hypothesis tested based on correlation and regression findings.

Table 4.6: Hypothesis Testing

Hypotheses	Supported	Explanation
H1: There is a significant positive relationship between AI-Chatbots Service Quality and Perceived Value.	☐ **Supported**	**Strong correlation (r = 0.577, p < 0.001)**

CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

This study set out to investigate the effect of AI Chatbots on Customer Perceived Value: New Evidence from the Banking sector in Egypt. In present research based on the previous literature, multiple service quality offered through AI chatbot banking service were identified and proposed indicators to measure customers' perceived value.

The integration of AI chatbots in banking services has significantly transformed customer perceived value through various dimensions of service quality. Based on empirical research, it was found that customers prioritize error-free and secure interactions over other aesthetic or speed-related features. In addition, empathy matters, as personalized, human-like interactions (e.g., addressing users by name, emotion detection) enhance perceived value. In addition, positive attitudes stem from accuracy of response; personalized recommendations; and customer experience to provide an intuitive chatbot interfaces reduces friction.

Concluded from the qualitative study that there are some challenges in emerging markets; as Egypt, due to some cultural barriers; where the older demographics prefer human interaction, weakening chatbot adoption; and also language limitations, where Arabic dialect support remains inconsistent, affecting

service quality perceptions. On the other hand, the experts explained that use of AI chatbot optimize banks' services reliability & security, where banks invest in natural language processing (NLP) upgrades to minimize errors. It enhances personalization through use sentiment analysis to detect frustration and switch to human agents when needed.

5.3 Limitations of the Research

The results of the study were satisfactory regarding the formulated hypothesis; as it's supported with the theoretical background of the research. While, the study had to encounter multiple limitations. For instance, firstly, the data was gathered from a small sample from Egypt. For qualitative research, the sample consisted of limited banks and the reason for this was the lack of AI chatbot technology-driven in Egypt. For quantitative research, the sample consisted of 206 respondents.

Secondly, while the study did find statistical significance between use of artificial intelligence chatbot on perceived value, although the need to expand the statistical information for further study is due to the limitation in time

Finally, the study is limited to the banking industry and can't be generalized across multiple sectors. The study mainly focus on chatbot services offered by Egyptian banks, but this system is completely different at different industries as fashion, retailing and medical sector as well

5.4 Recommendations
5.4.1- Recommendations from Previous Researchers

The intensity of the use of chatbots for e-service can also be played a crucial role and may influence the results as well; thus, should be considered these limitations in the future study. Future research may compare the industrial usage of chatbot services. In addition, the researcher believed that Chatbots can also be used as a companion or virtual assistant. Thus, researcher should further consider the role of perceived risk and privacy concern in the adoption of new technologies, as such technologies' lack of personal touch and lack of empathy to handle frustrated users. It's suggested to use the incorporation of relationship constructs, such as brand attachment (the emotional ties between humans and technology) or subjective well-being.

The variables as perceived information quality, Perceived waiting time, Pleasure, Arousal; Always available, Consistency, Accuracy of response, Availability of human service alternative, Ease of use are met within the study. Individuals might trust machines more than humans with personal information, with users providing more personal information even when they are concerned about privacy. Future researches might study this phenomenon and examine relationships between privacy concerns, machine heuristics, and privacy protection behaviors such as discontinuance of using AI-powered chatbots.

Chatbots are at the beginning of their product life cycle, and the number of customers who experienced the chatbot service is limited. As the number of bank customers experiencing chatbots increases, future research may require adopting different perspectives. The impact of different variables should be explored. Customers' demographic characteristics and technology readiness should be investigated, as well as customers' satisfaction with chatbots, by addressing financial products and confidentiality issues. In addition, the impact of the development of chatbots' empathy, inquiry skills and gender characteristics on customer satisfaction should be assessed in future studies. Finally, the future research could carry out an in-depth analysis of other determinants of people's attitude and intent to use chatbots, such as: the utilitarian and hedonic shopping value; the involvement of the tool in every phase of the purchasing process (or customer journey), or the degree of personalization and perceived control.

5.4.2- Recommendations for Future Researches

This study has provided valuable insights into the impact of AI chatbot services offered by Egyptian banks on consumers' perceived value and the role of different service quality factors used within chatbot software. However, as technology continues to evolve, there are several areas that require further exploration. For instance, the researchers can compare between the behavioral intention of using chatbot at banking sector versus other sector at

the Egyptian market, in order to identify the differences in usage and thus being able to understand the devoted efforts. In addition, the further research can extend the sample size more than the size used at the research, in order to generalize the results and have accurate prediction of the use of chatbots in achieving better satisfaction, loyalty and behavioral intention towards usage of AI chatbots. Finally, the use of longitudinal studies tracking consumer usage of AI chatbots over several months to understand the key services used by bank users

5.4.3- Recommendations to practitioners

It is suggested that banks boost the performance of AI chatbot, provide instant responses, reducing wait times for customers, check their account balance, transfer funds, and get real-time answers to their questions 24/7, without needing to visit a branch. The use of such software automating repetitive tasks, chatbots free up human agents to focus on more complex queries.

The bank ability to design a controversial framework is also recommended to provide a conversational flow and enable the bank users to provide a human like interactions to provide the client with effortless queries and need to cover all expected and unexpected questions to make sure that the AI bot is able to handle all the banking interactions seamlessly. In addition, increase security standards and maintenance will provide the users with highest level of assurance and dedication of customers' experience with the Egyptian banking services. The

fact that chatbot manages some sensitive financial data and so it is highly crucial to make sure that the software meets the security standards and Egyptian local regulations

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