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The Impact of Using Intelligent Chatbots as a Fintech Application on Customer Service Quality in Iraqi Banks: An Analytical Study

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Abstract

This study aims to examine the impact of utilizing intelligent chatbots on customer service quality within the Iraqi banking sector, with a practical application focused on users of the "Zain Cash" application. The research adopts a descriptive-analytical methodology, employing a structured questionnaire to collect data from a random sample of 147 respondents.

The study investigates several dimensions of the independent variable, including response speed, information accuracy, process automation, human-like interaction, cybersecurity, and regulatory compliance. There are many methods to measure the quality of customer service, such as satisfaction, trust, accessibility, customization, financial inclusion, and quick response.

The researchers demonstrate the statistical analysis to explore the relationship between Chabot features and service quality was not the same in terms of strength and importance. the accuracy of the information offered and the level of cybersecurity are the two most essential things that made customers happier and made more people able to use financial services were. Instead, the element that mimics human interaction was found to be weaker. This suggests that to better meet users' needs, the way it mimics natural communication needs to be enhanced.

Consequently, the researchers suggest a number of helpful suggestions for Iraqi banks. to use digital financial services, these ideas highlight how vital it is to develop Chabot technology

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better. So that they operate better, help customers better, and make it easier for more individuals in the country.

Keywords: *Intelligent Chatbots, Fintech Tools, Banking Applications, Digital Automation, Financial Inclusion, Iraqi Bank*

تأثير روبوتات المحادثة الذكية كأحد أدوات التكنولوجيا المالية على جودة خدمة الزبائن في المصارف العراقية: دراسة تحليلية

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المستخلص:

تهدف هذه الدراسة إلى دراسة أثر استخدام روبوتات الدردشة الذكية على جودة خدمة العملاء في القطاع المصرفي العراقي، مع تطبيق عملي يركز على مستخدمي تطبيق "زين كاش". يعتمد البحث على منهجية وصفية تحليلية، مستخدمًا استبيانًا منظمًا لجمع البيانات من عينة عشوائية من 147 مشاركًا. تبحث الدراسة في عدة أبعاد للمتغير المستقل، بما في ذلك سرعة الاستجابة، ودقة المعلومات، وأتمتة العمليات، والتفاعل البشري، والأمن السيبراني، والامتثال التنظيمي. وتُقيّم جودة خدمة العملاء، كمتغير تابع، من خلال الرضا، والثقة، وإمكانية الوصول، والتخصيص، والشمول المالي، والاستجابة الفورية. أشارت نتائج التحليل الإحصائي إلى تفاوت العلاقة بين ميزات روبوتات الدردشة وعناصر جودة الخدمة من حيث القوة والأهمية. والجدير بالذكر أن دقة المعلومات المُقدمة ومستوى الأمن السيبراني برزا كعاملين رئيسيين يُسهمان في زيادة رضا العملاء وتوسيع نطاق الشمول المالي. من ناحية أخرى، وُجد أن جانب التفاعل البشري أضعف نسبيًا، مما يشير إلى الحاجة إلى تحسين محاكاة التواصل الطبيعي بما يتماشى مع تفضيلات المستخدم

الكلمات المفتاحية: *روبوتات الدردشة الذكية، أدوات التكنولوجيا المالية، تطبيقات الخدمات المصرفية، الأتمتة الرقمية، الشمول المالي، البنك العراقي*

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1. Introduction

Recently, by the accelerating integration of digital technologies particularly artificial intelligence drive the banking sector having witnessed a significant transformation. in delivering financial services, the innovations such intelligent Chatbots have emerged as a dynamic tool, especially in Banking sector to increase customer engagement, decrease operational costs, and progress service awareness. In real-time, Artificial intelligence systems are certainly no extended limited to answering routine requests. As a substitute, these systems have evolved into dynamic mechanisms of financial platforms such as (i) capable of interacting with users, (ii) providing support, and (iii) even simplifying transactions.

Despite Artificial intelligence systems increasing attendance in global financial systems, however, chatbots use still relatively novel and underexplored in the Iraqi banking. While financial service providers and some banks, such as the “Zain Cash” application, have begun to integrate chatbot technology. From the customer’s perspective, the questions carry on about the level to which one of these tools actually contribute to service quality. There are several factors such as personalization, accuracy of information, response speed, and trust are essential in determining whether the use of chatbot decodes into meaningful enhancements in customer satisfaction and loyalty.

By both rapid digitalization and a diverse user base, the Iraqi financial sector presents a convincing environment for investigative the real-world effectiveness of chatbot applications. With increasing demand for secure financial services, accessible, and efficient, particularly, among the unbanked and underbanked people. There is a pressing need to assess the performance of such technologies out there their technical capabilities.

This research tries to find and examine the applied implications of employing smart chatbots in the Iraqi banking landscape. The study also aims to recognize the key

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elements that effect service quality and evaluate how the features of Chatbot bring into line of customer expectations that can be happen by focusing on user experiences with digital financial applications. The expected results of this study are to offer insights that support both academic understanding and practical decision making within financial institutions experiencing digital transformation.

2. Previous Studies and Related Literature

In recent years, the increasing integration of artificial intelligence in financial services, particularly Chatbots use, has strained substantial scholarly attention. There are several studies have inspected the influence of Chatbot technology on service quality, customer engagement, and operational efficiency in the banking sector. In enhancing digital financial experiences, the studies proposed respected insights into the effectiveness, challenges, and evolving roles of Chatbots. The following studies review places of interest a selection of key research works. So, that are directly relevant to the present study and how an emphasis on their findings and how they inform the current research context.

The study of Adamopulou and Mousiades (2020)

In this study, in service (banking) sectors, an in-depth inspection used for the historical and technological evolution of Chatbots. The researchers exemplify how Chatbots consume removed from simple rule based borders to complex Artificial Intelligence driven systems that skilled of simulating human corresponding chats. This study highlights the strategic value of Chatbots in improving cost efficiency, streamlining service delivery, and promoting customer satisfaction. These understandings deliver initial support to our study's focus on operational automation and user experience.

The Study of Nguyen and Lê (2024):

This study examines how AI-based chatbots contribute to sustainable development in banking by enhancing service accessibility and reducing digital exclusion. The authors

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argue that chatbots act as catalysts for financial inclusion, especially in underserved regions. By promoting equitable access to financial services, chatbots become essential tools for modern banking strategies. The implications of this study align with the current research's investigation of chatbot roles in financial inclusion within the Iraqi banking context.

The study of Misra, Malik, and Singh (2025) :

Focusing on cultural sensitivity and emotional intelligence, this study introduces a humanized approach to designing banking chatbots. It explores how personalization and empathetic communication can enhance customer satisfaction and brand loyalty. The authors emphasize the importance of aligning chatbot behavior with local user expectations to ensure effectiveness. The findings offer a valuable perspective for analyzing the relatively low scores of human-like interaction and personalization observed in the present study's statistical results.

2.1 Problem Statement

Financial institutions are undergoing a swift transition towards the adoption of AI technologies to improve service quality. Among the most prominent of these technologies are intelligent chatbots, which offer real-time, interactive support without the need for direct human intervention.

Despite these advancements, key concerns remain regarding the effectiveness of such systems in the Iraqi banking environment, particularly in terms of their influence on customer satisfaction, trust, and accessibility. Thus, this research problem is centered on understanding the relationship between the use of intelligent chatbots and customer service quality, based on the actual experiences of users of digital financial applications such as "Zain Cash"—a leading example in the Iraqi market.

Research Questions:

To what extent does the use of intelligent chatbots affect the quality of customer

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service in Iraqi banks?

What are the most influential dimensions impacting customer satisfaction, trust, and financial inclusion in the context of digital automation

2.2 Research Significance

1. **Scientific Significance**:

This study contributes to Arabic academic literature concerning the applications of AI in the banking sector by examining a practical case involving chatbot technologies, a relatively novel feature in the Iraqi market.

2. **Practical Significance**:

The research provides empirical indicators that can help Iraqi banks and financial institutions optimize chatbot design, improve digital customer experience, and enhance service efficiency and financial inclusion.

3. **Social Significance**:

The findings may assist in enabling unbanked populations to access financial systems by improving the reach and reliability of digital services in a secure and user-friendly manner.

2.3 Research Objectives

This study aims to:

a. Analyze the relationship between the use of intelligent chatbots and customer service quality in Iraqi banks.
b. Measure the impact of chatbot-related dimensions (e.g., information accuracy, response speed, cybersecurity) on customer satisfaction.
c. Assess the influence of chatbot technology on trust and loyalty toward banking institutions.
d. Examine the role of chatbots in enhancing financial inclusion by improving service accessibility.

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e. Offer development-oriented recommendations to banking decision-makers for the effective use of chatbot technology.

2.4 Research Hypotheses

2.4.1 Main Hypothesis:

a. H_0: There is no statistically significant effect of using intelligent chatbots on customer service quality in Iraqi banks.
b. H_1: There is a statistically significant effect of using intelligent chatbots on customer service quality in Iraqi banks.

2.4.2 Sub-Hypotheses:

c. H_1-*1*: Response speed of the chatbot has a statistically significant effect on customer satisfaction.
d. H_1-*2*: Information accuracy provided by the chatbot has a statistically significant effect on customer trust and loyalty.
e. H_1-*3*: Automation of banking operations via chatbots has a statistically significant effect on real-time responsiveness.
f. H_1-*4*: Human-like interaction capabilities of the chatbot have a statistically significant effect on service personalization.
g. H_1-*5*: Enhanced cybersecurity has a statistically significant effect on financial inclusion.
h. H_1-*6*: The use of intelligent chatbots significantly improves service accessibility.

2.5 Research Population

The population consists of users of the “Zain Cash” application by Zain Iraq, representing a real-world segment of consumers interacting with AI-powered chatbot technologies in digital financial services.

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2.6 Research Sample

A simple random sample of Zain Cash users was selected. The questionnaire was distributed electronically, yielding 147 valid responses for statistical analysis—an adequate sample size according to the formula:

n ≥ 30 + (10 × number of independent variables)

2.7 Research Instrument

A closed-ended questionnaire was developed based on recent literature and prior studies. It comprised two primary constructs:

a. **Independent Variable**: Use of intelligent chatbots, encompassing dimensions such as:
Response Speed, Information Accuracy, Process Automation, Human-like Interaction, Cybersecurity, and Regulatory Compliance.
b. **Dependent Variable**: Customer service quality, assessed through dimensions including:
Customer Satisfaction, Accessibility, Instant Responsiveness, Personalization, Trust and Loyalty, and Financial Inclusion.

All items were measured using a five-point Likert scale ranging from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*).

2.9 Statistical Tools

Data were analyzed using the SPSS software, employing the following statistical methods:

a. **Descriptive Statistics**: Used to calculate means and standard deviations to describe the central tendency and dispersion of responses.
b. **Pearson Correlation Analysis**: Applied to assess the strength and direction of the relationships between the studied dimensions.

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c. **Multiple Linear Regression Analysis**: Utilized to determine the explanatory power of the independent variables' dimensions in predicting customer service quality.

2.10 Validity and Reliability Verification

a. **Internal Consistency Reliability**: The reliability of the research instrument was verified through Cronbach's Alpha coefficient. All computed values exceeded the threshold of 0.70, indicating an acceptable level of internal consistency.
b. **Content Validity**: The questionnaire was reviewed by a panel of academic experts to ensure the appropriateness and relevance of its content, thereby confirming content validity.

3. Theoretical Framework

3.1 Concept of Intelligent Chatbots

Intelligent chatbots have emerged as a key technological solution in fostering interaction between banks and their clients. No longer limited to basic communication tasks, these systems have evolved into fundamental elements within digital financial infrastructures. They contribute significantly to innovation in service delivery, support cost minimization, enhance flexibility and operational efficiency, and promote stronger engagement with customers (Adamopoulou & Moussiades, 2020: 376).

At their core, chatbots are software programs that rely on artificial intelligence (AI) and natural language processing (NLP) to simulate human-like conversations. They function across digital platforms such as mobile apps, websites, and messaging services, enabling them to handle routine tasks including answering client queries, facilitating transactions, and delivering instant technical assistance These virtual agents communicate using either text or voice, and their sophistication ranges from preprogrammed dialogue scripts to adaptive systems that learn from previous interactions (Brandtzaeg & Følstad, 2017: 378).

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Through the integration of AI algorithms and NLP models, chatbots are able to interpret user input and respond promptly and accurately, completing assigned tasks efficiently without requiring human oversight (Gnewuch et al., 2017: 134; Misra, 2025: 45). With the progression of AI capabilities, these tools have advanced to support more customized experiences, drawing on user profiles and prior behavior to tailor interactions. Reinforcement learning has further enhanced their adaptability, allowing continuous improvement over time (Xu et al., 2020: 2165).

Additionally, emotional intelligence features have been incorporated into modern chatbot designs, enabling the recognition of user sentiment and delivering responses that reflect empathy. Increasingly, financial organizations are deploying specialized bots that provide advisory functions, portfolio management, and intelligent risk assessment (Brandtzaeg & Følstad, 2017: 380). Rather than being optional add-ons, such technologies have become strategic assets in digital transformation efforts and a critical factor in maintaining competitiveness (Adamopoulou & Moussiades, 2020: 250).

3.2 Importance of Intelligent Chatbots

Intelligent chatbots help financial institutions improve service quality, reduce operational costs, and enhance responsiveness to customer needs. Their significance includes the following (Le, 2024: 65; Nguyen et al., 2024: 110)

a. Accelerating service delivery and boosting customer satisfaction.
b. Reducing dependency on human employees for routine tasks, thus lowering operational costs and optimizing resource management.
c. Improving the accuracy of financial processes and supporting digital transformation.
d. Automating financial transactions such as fund transfers, bill payments, and account opening without human involvement.

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e. Enhancing cybersecurity through the integration of machine learning to detect fraud and ensure safer financial transactions.

Chatbots are applied in various financial domains (Marinchak et al., 2018: 45), including:

a. **Customer Service**: Automated responses to balance inquiries and transaction-related questions.
b. **Bank Lending**: Initial assessment of loan applications through intelligent conversations.
c. **Investment Management**: Real-time, data-driven investment advice.
d. **Fraud Detection**: Immediate alerts for suspicious activities.
e. **Financial Education**: Promoting saving and expense management awareness.

3.3 Mechanism of Intelligent Chatbots

Chatbots are classified as technologies designed to support intentional social interaction between users and digital systems. Their behavior and capabilities are largely shaped by the type of programming language and architectural design applied during their development (Abdulghani, 2023: 286). In their early iterations, chatbot systems operated using a narrow framework of scripted inputs and outputs, which, while suitable for anticipated scenarios, often failed to address unstructured or novel queries effectively (Al-Maliki, 2025: 93).

These systems are designed to replicate human interactions through real-time messaging platforms, utilizing either textual or voice-based communication channels. To enhance their responsiveness and naturalness, many chatbots are developed with advanced tools such as machine learning algorithms, big data processing capabilities, and natural language processing (NLP). In practical use, the interaction process usually

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starts with a greeting, followed by the chatbot interpreting the user's input, analyzing the request, and then delivering a structured and contextually relevant reply.

A large number of chatbot systems are structured around decision-tree frameworks, which enable them to interpret specific keywords within user input and steer the dialogue along predetermined conversational routes. In cases where the system cannot generate a suitable response, the inquiry is typically transferred to a human representative. With continued use, artificial intelligence capabilities allow the chatbot to learn from such interactions and expand its internal database for more effective future responses (Abdulghani, 2023: 286–287).

3.4 Challenges Associated with Chatbot Adoption

Although intelligent chatbots have achieved significant advancements, they still encounter a range of limitations. For instance, handling sophisticated inquiries that demand nuanced human judgment remains a weakness, which may lead to a decline in the perceived quality of service. Moreover, excessive dependence on automation could diminish the human element in customer interactions, potentially undermining user confidence. There are also serious concerns regarding the protection of confidential user data, as any technical glitches or breaches may compromise service continuity and security Additional difficulties include:

a. **Information Security**: Increased chatbot adoption heightens the risk to sensitive customer data (Adamopoulou & Moussiades, 2020: 255).
b. **Trust Gap**: Many customers still prefer dealing with human representatives, necessitating improved emotional intelligence in bots (Al-Kaabi, 2021: 41).
c. **Regulatory Compliance**: Bots must adhere to local and international legal frameworks, such as the EU's GDPR (Xu et al., 2020: 7).

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Thus, successfully deploying chatbots in financial services requires striking a careful balance between automation and human interaction to ensure customer satisfaction and long-term trust

3.5 Customer Service Quality

The financial sector comprises a broad spectrum of monetary operations that support the efficient circulation and utilization of funds. These activities play a critical role in enabling liquidity, supporting investment processes, and transforming idle savings into productive capital, thus contributing to broader economic development (World Bank, 2021: 112). Common offerings in this domain include savings and credit facilities, digital and mobile payment systems, interbank transfers, insurance products, and financial risk coverage. Maintaining a high standard in service delivery—particularly in terms of reliability, responsiveness, and ease of access—is essential for financial institutions aiming to stay competitive in an increasingly digitized market landscape (Allen & Santomero, 2000: 241).

3.6 The Relationship Between Chatbots and Customer Service Quality

Chatbots play a vital role in enhancing operational efficiency within financial institutions by offering fast and accurate services. They rely on automation to handle inquiries, execute routine transactions, and deliver real-time support (Pushpalatha, 2025: 32).

The relationship between chatbots and customer service quality can be illustrated as follows:

a. **Enhanced Customer Interaction**: Chatbots significantly improve customer experience by offering immediate responses to inquiries without the delays of traditional service channels. Studies show that customers express high satisfaction with prompt and accurate replies, which fosters trust and loyalty

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b. **Operational Efficiency and Cost Reduction**: Automating responses and transactions reduces the workload on contact centers, decreasing the need for extensive support staff. According to Sharma & Sharma (2020: 220), chatbot adoption can reduce operational costs by up to 30% in large financial institutions.

c. **Personalized Financial Services**: Chatbots offer tailored recommendations by analyzing user behavior and financial history, thereby increasing customer engagement and transaction success (Xu et al., 2020: 2166).

d. **Security and Compliance Support**: Advanced bots use multi-factor authentication and data encryption. They can also be programmed to comply with financial regulations, reducing legal risks

e. **Promoting Financial Inclusion**: By providing simple and accessible digital financial services, chatbots support inclusion, particularly in underserved regions

f. **Transaction Automation**: Bots efficiently handle basic operations like fund transfers, bill payments, and account openings.

Research shows that chatbot use can reduce response time by up to 70% and cut operational costs by 30%, enabling banks to reallocate resources toward growth and innovation (PwC, 2021: 35; McKinsey, 2020: 90).

3.7 The Role of Intelligent Chatbots within Fintech Applications

In recent years, financial technology has played a transformative role in redefining the way banking services are structured and provided. Banks and financial institutions are progressively adopting digital platforms to enhance their ability to respond to customer demands with greater speed and efficiency. Within this context, intelligent chatbots have emerged as pivotal tools that enable users to obtain information and complete routine operations independently, without the immediate need for human assistance.

Chatbots within the financial technology landscape serve functions that surpass their technical foundations. They actively support efforts to enhance the quality of customer

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service, expand access to financial services for underserved populations, and build stronger trust between financial institutions and their clients. Chatbots assistance reduce delays and streamline user interactions from side to side uninterrupted and real time communication abilities. The integration of central banking platforms also confirms secure and precise responses. The platforms are solidifying the role as strategic assets in the broader movement toward digital transformation in banks' systems.

4. Applied and Analytical Section

4.1 Overview of the Zain Cash Application

Under the supervision of the Central Bank of Iraq, "*Zain Cash*" is one of the leading electronic payment solutions in Iraq. This solution is a digital financial product launched by Zain Iraq and it is in partnership with a local company specializing in electronic wallet services and operates.

To both banked and unbanked segments of the population, the main objective of this application is promoting financial inclusion through propose secure and flexible digital financial services in mobile phones. This solution delivers a complete group of services such:

a. **Internal money transfers and remittances**
b. **Mobile top-up and utility bill payments (electricity, internet, etc.)**
c. **QR code payments and online shopping**
d. **Cash withdrawals through authorized agents**
e. **Wallet integration with a virtual Mastercard**

Zain Cash is characterized by its user-friendly interface and widespread adoption across various Iraqi provinces through an extensive network of agents. To the reduction of cash dependency and supporting the government's vision for a cashless society, this solution helps as a key enabler of Iraq's digital financial transformation.

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Recently, to provide instant support and improve user experience making, this application has integrated artificial intelligence technologies including intelligent Chatbot services. It is dynamic model investigative the association between digital innovation and customer service quality.

4.2 Descriptive Analysis

Table (1) illustrates the means and standard deviations of the variables' dimensions.

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Table (1): Descriptive Statistical Analysis

Dimension	Mean Score	Standard Deviation	Interpretation
x1 - Response Speed	4.272	0.603	Indicates a high evaluation, reflecting user satisfaction with the chatbots' responsiveness.
x2 - Information Accuracy	4.218	0.555	High mean with low deviation, suggesting consistent responses and strong customer trust in the content.
x3 - Process Automation	4.211	0.770	Demonstrates positive acceptance of automation, with some variation in user perspectives.
x4 - Human-like Interaction	4.197	0.679	Relatively high score, though the variation reflects diverse expectations regarding human-like behavior.
x6 - Cybersecurity	4.184	0.673	A good evaluation, indicating acceptable confidence in data security, despite some variability.
y1 - Customer Satisfaction	4.088	0.767	A generally favorable satisfaction level, though not among the highest-rated dimensions.
y2 - Accessibility	3.599	0.808	Moderate rating with noticeable variance, pointing to areas for improvement in user interface design.
y3 - Instant Responsiveness	4.320	0.561	High and consistent score, reflecting efficiency in real-time responses.
y4 - Personalization	3.531	0.924	Lowest rated dimension, indicating limited ability of chatbots to deliver personalized services.
y5 - Trust and Loyalty	4.408	0.582	The highest score in service quality, indicating a strong impact on customer loyalty.
y6 - Financial Inclusion	3.776	0.874	Relatively good rating with clear variability, reflecting unequal benefit from digital services.

Table prepared by the researchers based on computer-generated outputs.

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4.3 Correlation Analysis

The table below presents the correlation matrix between the independent variables and the dimensions of customer service quality:

Table (2): Correlation Analysis Between Smart Chatbot Dimensions (Independent Variables) and Customer Service Quality Dimensions (Dependent Variables)

Independent Variable	y1 Customer Satisfaction	y2 Accessibility	y3 Instant Responsiveness	y4 Personalization	y5 Trust & Loyalty	y6 Financial Inclusion	Interpretation
x1 - Response Speed	0.303	0.254	0.389	0.305	0.423	0.078	Positively correlated with all dimensions, especially trust (y5).
x2 - Information Accuracy	0.550	-0.109	0.127	0.160	0.274	0.115	Strong correlation with satisfaction, weaker for access and inclusion.
x3 - Process Automation	0.340	-0.304	0.033	-0.158	0.326	-0.072	Positively impacts satisfaction and trust, negatively associated with accessibility.
x4 - Human-like Interaction	0.269	-0.092	0.301	0.225	0.401	0.029	Generally positive but weak correlations, indicating a need for improvement.
x6 - Cybersecurity	0.433	0.023	0.388	0.283	0.244	0.408	Positively correlated across all dimensions, notably with financial inclusion.

Table prepared by the researchers based on computer-generated outputs.

4.4 Multiple Linear Regression Analysis

The following table illustrates the influence of each chatbot dimension on three dependent variables: customer satisfaction (y1), trust and loyalty (y5), and financial inclusion (y6):

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Table (3): Regression Analysis of the Impact of Smart Chatbot Dimensions on Customer Satisfaction (y1), Trust & Loyalty (y5), and Financial Inclusion (y6)

Independent Variable	β on y1	P on y1	β on y5	P on y5	β on y6	P on y6	Interpretation
x1 - Response Speed	-0.077	0.501	0.398	0.000	-0.183	0.201	Significant effect only on trust; no meaningful influence on satisfaction or inclusion.
x2 - Information Accuracy	0.579	0.000	-0.100	0.359	-0.140	0.396	Strong significant impact on customer satisfaction only.
x3 - Process Automation	0.299	0.001	0.159	0.025	0.034	0.746	Clearly affects satisfaction and trust; no significant effect on inclusion.
x4 - Human-like Interaction	-0.292	0.012	0.169	0.076	-0.406	0.005	Statistically significant negative impact on satisfaction and inclusion.
x6 - Cybersecurity	0.370	0.001	-0.068	0.462	0.927	0.000	Most influential factor on financial inclusion.

Table prepared by the researchers based on computer-generated outputs.

5. Conclusions & Recommendations

5.1 Conclusions

1. The accuracy of information provided by intelligent chatbots emerged as the most influential factor in customer satisfaction, highlighting the critical role of content reliability in automated systems.
2. Cybersecurity demonstrated a highly significant effect on financial inclusion, indicating that trust in digital protection encourages non-banked segments to use financial services.
3. The findings revealed that chatbot response speed significantly impacts customer trust and loyalty, though it does not necessarily explain satisfaction or perceived service value.

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4. The automation of banking operations showed a clear and meaningful influence on both satisfaction and trust, affirming the effectiveness of smart systems in reducing time and operational effort.
5. Insufficient human-like interaction was found to negatively affect both satisfaction and financial inclusion, pointing to an empathy gap in current chatbot design.
6. Personalization and contextual relevance received the lowest ratings in the descriptive analysis, suggesting that chatbots have limited capacity to understand individual contexts and deliver tailored services.
7. Despite the overall positive evaluation of all dimensions, some users still face challenges in accessing services through intelligent chatbots, which negatively affects the overall customer experience.

5.2 Recommendations

1. It is essential to enhance chatbot cognitive algorithms to improve the accuracy of information delivered to customers by relying on updated databases and advanced behavioral analytics.
2. Invest in secure digital infrastructure to boost user trust and promote financial inclusion, especially in the Iraqi context, where high levels of data protection are required.
3. Improve the real-time responsiveness of chatbots by integrating them with comprehensive technical support systems, thus enhancing trust and customer perception.
4. Strengthen intelligent automation mechanisms for routine tasks and simple transactions to minimize the need for human intervention and improve user satisfaction.

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5. Integrate emotional artificial intelligence (Emotional AI) into chatbot design to enhance human-like interaction and foster stronger psychological connections with users.
6. Personalize customer experiences by implementing user behavior analytics systems, allowing chatbots to deliver tailored services and recommendations based on individual needs.

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