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Impact of Artificial Intelligence on Quality Online Banking Services Field Study at the Trade Bank of Iraq

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Abstract: The study examines the impact of artificial intelligence (AI) on the quality of online banking services, with a specific attention to the Trade Bank of Iraq. As AI technologies evolve, their integration into Bankverk has made significant changes to service distribution, which improves customer satisfaction. Research adopts a field study approach, using examination and interviews with both bank employees and customers to assess that AI-operated system-like chatbot, automated fraud detection and forecast analysis affect the experienced quality of online banking services. Conclusions indicate a positive correlation between the implementation of AI and dimensions for service quality, including accountability, reliability and user experience. In addition, AI emphasizes the importance of investments in infrastructure and training to maximize the study benefits. The results provide practical insight into the decision, which aims to use AI to improve banking services in Iraq and similar development economies.

Key words: Artificial Intelligence, Quality Online Banking Services, Trade Bank of Iraq.

1. Introduction

In recent years, artificial intelligence (AI) has emerged as a transformation strength in various fields, especially in the financial sector. With the rapid development of digital technologies, banks have used rapid AI-operated solutions to increase the quality of online services, to streamline operations and improve the customer experience. Of these, online banking has seen significant growth, with AI personal services, future indication analysis, fraud detection and effective customer support.

Trade Bank of Iraq (TBI), as one of the major financial institutions in the country, has begun to integrate AI technologies into its online banking platforms to meet the increasing expectations of technology-bearing customers. However, the real effect of these technologies is on the quality of provided services provided an area that requires a thorough examination. Understanding how AI

contributes to the quality of service can help banks like TBI to make strategic decisions and increase competition in digital bank scenario.

The purpose of this study is to find out the effect of artificial intelligence on the quality of online banking services provided by the Trade Bank of Iraq. It wants to identify large areas where AI adds value, checks the customer's perceptions and evaluates the effectiveness of applications to improve service distribution. By conducting a field study provides research with practical insight into the implementation of the real world and the benefits of AI in the Iraqi banking sector.

2. LITERATURE REVIEW

A. Artificial Intelligence

Artificial Intelligence (AI) refers to imitation of human intelligence in machines that are programs for thinking, learning and decision making. In online banking, AI changes the scenario by automating AI processes, increasing customer experiences, detecting fraud and improving the decision (Suleimenov, et al, 2020).

Artificial intelligence (AI) significantly changes the banking sector, especially to increase the quality of online banking services. This change is inspired by the ability to analyze large amounts of AI, predict customers' needs and automate different banking processes, which improves customer experiences and operating capacity (Kahit, et al, 2024).

The dimensions of Artificial Intelligence can be categorized into several key areas: (Alhazmi, et al, 2025)

Customer Interaction: AI enhances customer interaction through personalized services and automated responses. Chatbots can handle routine inquiries, while AI algorithms can analyze customer data to provide tailored financial advice

Data Analysis and Insights: AI systems can process and analyze large volumes of data quickly, providing banks with insights into customer behavior, market trends, and operational performance. This data-driven approach allows for better decision-making and strategic planning

Compliance and Regulatory Adherence: With the banking sector being heavily regulated, AI assists in monitoring compliance with legal standards. AI tools can automatically update processes in response to changing regulations, ensuring that banks remain compliant without extensive manual oversight

Innovation and Competitive Advantage: As new banking startups leverage AI to offer innovative services, traditional banks must adopt similar technologies to remain competitive. AI not only helps in enhancing existing services but also opens avenues for new product development

B. Quality Online Banking Services

Quality online banking services are important in today's digital economic scenario, which affects customers' satisfaction and loyalty. When more consumers approach digital banking solutions, understand the dimensions that contribute to the quality of the service, it becomes necessary for banks to increase offers and maintain competitive benefits (Mujinga, 2020).

Quality online banking services are important for both customers and financial institutions. They increase customers' satisfaction, promote loyalty and provide a competitive advantage in the rapid digital bank scenario. As more consumers approach online banking for simplicity, the quality of these services affects direct customer inventory and procurement (Gazi, et al, 2024).

The quality of online banking services can be evaluated through different dimensions, which help to understand customers' perceptions and experiences. Here are some large dimensions: (Islam, et al, 2023)

Customer Service Quality: This includes responsibility, reliability and capacity for employees. Effective customer service can significantly increase the overall banking experience

Web Design and Usability: A well -designed site that is easy to navigate is important. This dimension covers aesthetics, ease of use and general user experience

Security and insurance: Customers should realize that their personal and financial information is safe. This dimension includes the implementation of strong security protocols and insurance on data security

Information provision: It is necessary to provide accurate and timely information. This includes clarity in communication and availability of resources required for customers .

Accessibility: Services should be easily accessible on different devices and platforms so that customers can manage their banking needs at anytime and anywhere.

3. HYPOTHESIS

Artificial Intelligence is essential to improve Quality online banking services. In the digital age, artificial intelligence (AI) has emerged as a transformation strength in different fields, especially in online banking. The integration of AI technologies has revolutionized the way banks have spoken to customers, managing risk and distribution of services. This article examines the role of AI in increasing the quality of online banking services, which focuses on large dimensions such as customer experience, privatization, security, efficiency and availability of services (Castelli, et al, 2016).

Therefore, the following hypotheses were formulated {see figure 1}

- H1: There is a positive significant effect of Artificial Intelligence on Quality online banking services.
- H1a: There is a positive significant effect of Customer Interaction on Quality online banking services.
- H1b: There is a positive significant effect of Data Analysis and Insights on Quality online banking services.
- H1c: There is a positive significant effect of Compliance and Regulatory Adherence on Quality online banking services.
- H1d: There is a positive significant effect of Innovation and Competitive Advantage on Quality online banking services.

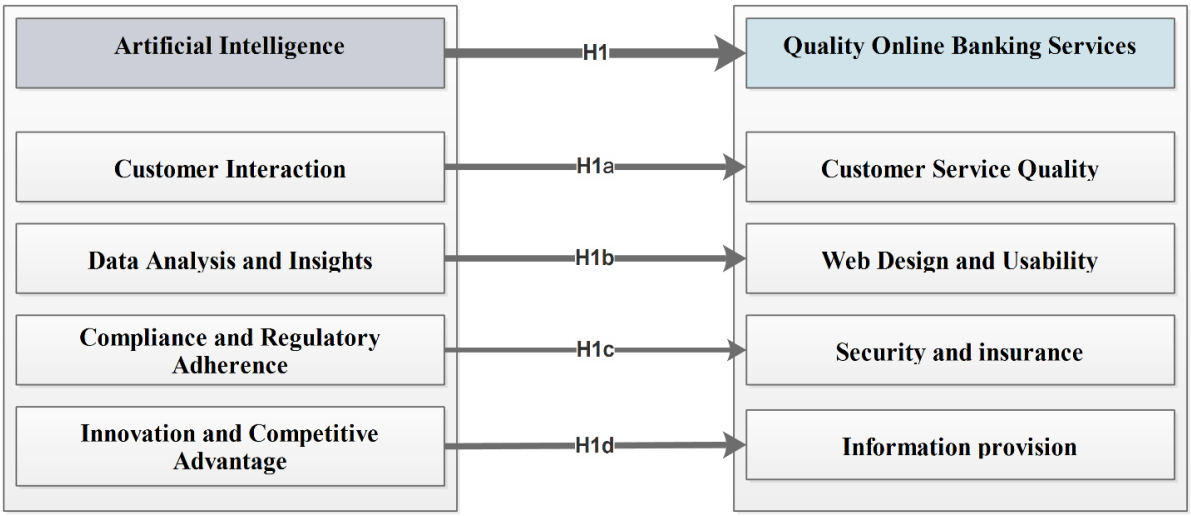

Figure 1. Hypotheses Diagram

4. MEASUREMENT

The study adopted established instruments from previous studies to measure Artificial Intelligence and Quality online banking services. Table 1 provides used measures.

Table 1. Measurement of variables

Variable's code	Items	source
AI	**3**	(Dattathrani, & De'2023) (Alhazmi, et al, 2025)
✓ **CI**	**3**	
✓ **DAI**	**3**	
✓ **CRA**	**3**	
✓ **ICA**	**3**	
QOBS	**3**	(Islam, et al, 2023)
✓ **CSQ**	**3**	
✓ **WDU**	**3**	
✓ **SIN**	**3**	
✓ **INP**	**3**	

Source: By author based on literature in the Table

5. DATA COLLECTION

The questionnaire was distributed the use of a random sampling approach, with members decided on from trainees on Najaf Passports Department. From August 15, 2024, to March 20, 2025, a complete of 78 legitimate responses have been amassed, which have been deemed suitable for statistical analysis.

6. DATA ANALYSIS

The information analysis accompanied a 3-step method. First, a descriptive analysis supplied an outline of the collected statistics. The subsequent steps worried a two-degree PLS-SEM analysis, consisting of (a) comparing the measurement model's validity and reliability and (b) examining the structural model, including path analysis to check the hypothesized relationships.

A. Descriptive Analysis

The descriptive analysis objectives to summarize the gathered records. As proven in Table 2, the mean and standard deviation for the variables. All variables exceeded the assumed mean of three at the 5-factor Likert scale, indicating variability throughout the studied pattern.

Table. 2 Descriptive analysis results

Variable	Mean	Standard Deviation
AI - IV		
✓ **CI**	**3.688**	**0.923**
✓ **DAI**	**3.403**	**0.753**
✓ **CRA**	**3.45**	**0.943**
✓ **ICA**	**3.665**	**0.872**
QOBS - DV		
✓ **CSQ**	**3.855**	**0.697**
✓ **WDU**	**3.731**	**0.872**
✓ **SIN**	**3.95**	**0.917**
✓ **INP**	**3.641**	**0.929**

Source: By author based on SmartPLS V. 4 software outputs

B. Measurement model

According to Hair et al. (2017), the measurement model should meet three key criteria:

Internal consistency reliability, with composite reliability values of at least 0.60 and Cronbach's Alpha of 0.70 or higher.

Indicator reliability, where standardized loadings should reach a minimum of 0.70.

Convergent validity, indicated by an average variance extracted (AVE) value of 0.50 or above.

A dimension model became evolved using SmartPLS V. 4 software, and the outcomes—provided in Table (three)—met all the required assessment criteria.

Table 3. Measurement model

items	Factor loading	Cronbach Alpha	composite reliability	AVE
CI1	0.722	0.74	0.82	0.57
CI2	0.767			
CI3	0.769			
DAI1	0.787	0.77	0.88	0.59
DAI2	0.791			
DAI3	0.801			
CRA1	0.776	0.79	0.89	0.54
CRA2	0.784			
CRA3	0.772			
ICA1	0.79	0.73	0.83	0.58
ICA2	0.784			
ICA3	0.789			
CSQ1	0.721	0.76	0.85	0.57
CSQ2	0.729			
CSQ3	0.749			
WDU1	0.749	0.79	0.87	0.60
WDU2	0.798			
WDU3	0.735			
SIN1	0.733	0.75	0.88	0.53
SIN2	0.761			
SIN3	0.797			
INP1	0.767	0.74	0.84	0.61
INP2	0.868			
INP3	0.776			

Source: By author based on SmartPLS V. 4 software outputs

C. Structural Model

To test the relationships between the studied variables, a path model was built using SmartPLS V. 4, where each path (relationship) is significant when the t-value > 1.96 and the p-value < 0.05. Table 4 illustrates the results.

Table 4. Path Analysis

Hypothesis	path	path coefficient	t-Value	P-value	Result	R^2
H1	AI → QOBS	0.810	9.011	0.000	Accepted	0.656
H1a	CI → QOBS	0.671	7.571	0.000	Accepted	0.840

H1b	**DAI →QOBS**	**0.703**	**6.380**	**0.000**	**Accepted**	
H1c	**CRA→QOBS**	**0.699**	**6.190**	**0.000**	**Accepted**	
H1d	**ICA→ QOBS**	**0.710**	**7.666**	**0.000**	**Accepted**	

Source: By author based on SmartPLS V. 4 software outputs

Table (4) presents the path coefficients; based on the required criteria outlined by Hair et al. (2017), all the hypotheses were accepted. The coefficient of determination (R^2) for the main hypothesis was found to be 0.656. This indicates that Artificial Intelligence explains 65% of the variance in the Quality online banking services variable, while the remaining percentage is attributed to factors not addressed in the current study.

7. DISCUSSION

The findings of this study provide substantial evidence in support of the hypothesis that Artificial Intelligence has a positive effect on Quality online banking services among the Trade Bank of Iraq. Using PLS-SEM, all five hypotheses were retrieved, indicating the importance of each dimension of Artificial Intelligence in promoting Quality online banking services.

The study is consistent with previous literature that Artificial Intelligence as a whole significantly increases Quality online banking services. By Customer Interaction, Data Analysis and Insights, Compliance and Regulatory Adherence, and Innovation and Competitive Advantage, Trade Bank of Iraq can improve the Quality online banking services provided. These findings have practical implications for Costumers in the Trade Bank of Iraq and suggest that fostering an Artificial Intelligence can significantly improve the effectiveness of Quality online banking services in the Trade Bank of Iraq.

8. CONCLUSION AND RECOMMENDATIONS

CONCLUSION

The field study conducted in the Trade Bank of Iraq has shown that the integration of artificial intelligence (AI) into online banking services improves the quality of the service. Important findings indicate that AI technologies improve the customer experience by providing fast service distribution, personal banking solutions and increased security measures. AI-driven equipment, such as chatbots and predictive analysis, has proven to be important for addressing customer surveys immediately and efficiently.

In addition, AIS is able to analyze large amounts of data to tailor their offers to meet customer specific requirements, leading to an increase in customers' satisfaction and loyalty. The study also emphasizes the importance of continuous training and adaptation of the AI system to ensure that they are alliances with customers who develop expectations and bank rules.

Recommendations

In order to continue the benefits of AI in online banking services, the following recommendations are suggested:

- ✓ Invest in advanced AI technologies: Trade Bank should continue to invest in state -art -art AI technologies to increase their online banking platform. This involves upgrading the existing system and detecting the new AI application that can improve the quality of the service.
- ✓ Increase security protocols: When AI increases the risk of dangers of cyber security, it is important to implement strong security measures. Regular revision and updates for security protocols will help protect sensitive customer information.

- ✓ Be aware of customer training: Educating customers about AI functions and benefits can improve commitment and use. The bank will offer resources such as training programs and common questions to help the bank with certainty to navigate the services.
- ✓ Collecting feedback for continuous improvement: Installation of a reaction mechanism will allow the bank to gather insight from customers about their experiences with AI services. This information can be used to make the necessary adjustment and improvement.
- ✓ Surveillance regulator compliance: When AI technologies develop, government requirements make. The bank should inform about changes in rules related to AI in banking, and all practices should be complied with to avoid possible legal issues.

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