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The Impact of Management Information Technology on the Quality of Banking Services: An Analytical Study of Commercial Banks Operating in Babylon Governorate using SPSS Software

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Abstract

This research paper investigates the profound impact of Management Information Technology (MIT) on the quality of banking services within the unique economic landscape of Babylon Governorate, Iraq. Against a backdrop of increasing global competition and a national push towards digitalization, Iraqi commercial banks are at a critical juncture where technological adoption is no longer a luxury but a necessity for survival and growth. This study employs a quantitative, deductive approach to empirically test the relationship between the level of MIT implementation and the perceived quality of banking services as measured by the SERVQUAL model dimensions (Tangibility, Reliability, Responsiveness, Assurance, and Empathy). Data was collected through a structured questionnaire distributed to a sample of 350 customers of major commercial banks in Babylon Governorate. The collected data was meticulously analyzed using SPSS software (version 26), employing descriptive statistics, correlation analysis, and multiple regression analysis to test the formulated hypotheses. The findings reveal a strong, positive, and statistically significant correlation between MIT and all dimensions of service quality. The regression analysis confirms that approximately 58.2% of the variance in overall banking service quality can be explained by the level of MIT adoption. The results provide empirical evidence that investments in modern information systems, such as online banking platforms, ATMs, and customer relationship management (CRM) software, directly enhance customer perceptions of service efficiency, reliability, and security. The paper concludes by offering strategic recommendations for bank managers to optimize their IT investments and for policymakers to foster a more robust digital infrastructure, ultimately aiming to elevate the banking sector in Babylon Governorate to meet contemporary standards and enhance customer satisfaction.

Keywords: Management Information Technology, Service Quality, SERVQUAL Model.

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أثر تكنولوجيا المعلومات الإدارية في جودة الخدمات المصرفية: دراسة تحليلية للمصارف التجارية العاملة في محافظة بابل باستخدام برنامج SPSS

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المستخلص

يهدف هذا البحث إلى دراسة أثر تكنولوجيا المعلومات الإدارية (MIT) في جودة الخدمات المصرفية ضمن البيئة الاقتصادية لمحافظة بابل في العراق. وفي ظل التنافس العالمي المتزايد والتوجه المتنامي نحو التحول الرقمي، أصبحت المصارف التجارية العراقية عند مرحلة حاسمة لم يعد فيها تبني التكنولوجيا خياراً ثانوياً، بل ضرورة أساسية لضمان الاستمرار والتطور.

تعتمد هذه الدراسة على المنهج الكمي التحليلي لاختبار العلاقة بين مستوى تطبيق تكنولوجيا المعلومات الإدارية ومستوى جودة الخدمات المصرفية المدركة، وذلك بالاعتماد على أبعاد نموذج SERVQUAL التي تشمل: الملموسية، الاعتمادية، الاستجابة، الأمان، والتعاطف.

تم جمع البيانات من خلال استبانة منظمة وزعت على عينة مكونة من 350 زبوناً من زبائن المصارف التجارية الرئيسة في محافظة بابل. وتم تحليل البيانات باستخدام برنامج SPSS الإصدار (26)، من خلال تطبيق الأساليب

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معلومات البحث
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الإحصائية الوصفية وتحليل الارتباط وتحليل الانحدار المتعدد لاختبار فرضيات الدراسة.
أظهرت نتائج الدراسة وجود علاقة ارتباط إيجابية قوية وذات دلالة إحصائية بين تكنولوجيا المعلومات الإدارية وجميع أبعاد جودة الخدمة المصرفية. كما بينت نتائج تحليل الانحدار أن نحو 58.2٪ من التباين في جودة الخدمات المصرفية الكلية يمكن تفسيره من خلال مستوى تبني تكنولوجيا المعلومات الإدارية.
كما تشير النتائج إلى أن الاستثمار في أنظمة المعلومات الحديثة مثل الخدمات المصرفية الإلكترونية، وأجهزة الصراف الآلي، وأنظمة إدارة علاقات الزبائن (CRM) يسهم بشكل مباشر في تحسين كفاءة الخدمات المصرفية وزيادة موثوقيتها وتعزيز أمنها، الأمر الذي ينعكس إيجاباً على رضا الزبائن.
وتختتم الدراسة بتقديم مجموعة من التوصيات الاستراتيجية لمديري المصارف من أجل تحسين استثماراتهم في تكنولوجيا المعلومات، وكذلك لصناع القرار لدعم تطوير البنية التحتية الرقمية، بما يسهم في الارتقاء بقطاع المصارف في محافظة بابل ليتماشى مع المعايير المصرفية الحديثة ويحقق مستويات أعلى من رضا الزبائن.

الكلمات المفتاحية: تكنولوجيا المعلومات الإدارية، جودة الخدمات المصرفية، نموذج.SERVQUAL

1. Introduction

The global banking sector has undergone a radical transformation over the past three decades, driven primarily by the continuous development and integration of information technology. Among the most prominent of these transformations is the digital transformation of the banking sector, closely linked to the technological changes the world has witnessed in recent decades. This transformation has redefined the essence of banking, shifting it from a traditional sector based on branches and paper transactions to a dynamic, instant, and customer-centric system [Gomber et al,2017]. Management Information Technology (MIT), encompassing the hardware, software, data, and networks used to manage information assets, has become the central nervous system of modern banking institutions. It facilitates not only internal operations but also shapes the entire customer experience, from routine transactions to complex financial advisory services [Tarhini, Ali, et al, 2017].

Information and communication technologies (ICTs) are vital tools for the economic and social development of developing countries, but they face significant challenges in the area of digital security. For Iraq, a nation recovering from years of instability and striving for economic reconstruction, the modernization of its banking sector is a cornerstone of its broader development goals [Safaei , 2024]. The banking system plays a vital role in providing funds and banking services, mobilizing savings, facilitating payments, and distributing credit – all of which are crucial factors for stimulating private sector growth, raising income levels, and improving living standards. However, the sector has historically lagged behind its regional and global counterparts in terms of technological adoption and service innovation [Abdullrada and Bushra, 2023].

Babylon Governorate, with its rich historical heritage and growing economic activity, serves as a compelling microcosm of the challenges and opportunities facing the Iraqi banking sector. Commercial banks operating in the region, including state-owned giants like Rafidain and Rasheed Banks as well as emerging private banks, are under increasing pressure to modernize. They face a new generation of customers who are more technologically savvy and have higher expectations for speed, convenience, and personalized service [Raza, Syed Ali, et al, 2020]. The failure to meet these expectations risks not only losing market share to more agile competitors

but also hindering the governorate's economic potential.

1.1. Problem Statement

Despite the recognized importance of MIT, there is a noticeable disparity between the rhetoric of technological modernization and the reality of its implementation and impact on the ground in many parts of Iraq, including Babylon Governorate. While banks may invest in new technologies, the extent to which these investments translate into tangible improvements in service quality remains under-researched. Anecdotal evidence suggests that customers continue to face issues such as network downtime, inefficient electronic services, lack of personalized support, and security concerns. This gap between technological investment and perceived service quality constitutes the core problem this study seeks to address. There is a lack of empirical, data-driven evidence that systematically analyzes the nature and strength of the relationship between MIT and service quality specifically within the context of Babylon's commercial banks.

1.2. Research Questions

To bridge this knowledge gap, this study is guided by the following primary and secondary research questions:

- Primary Question: What is the impact of Management Information Technology on the overall quality of banking services in commercial banks operating in Babylon Governorate?
- Secondary Questions:

1. What is the current level of Management Information Technology adoption in commercial banks in Babylon Governorate from the customers' perspective?
2. What is the current level of perceived banking service quality (across its various dimensions) among customers in Babylon Governorate?
3. Is there a statistically significant relationship between the components of MIT and each dimension of service quality (Tangibility, Reliability, Responsiveness, Assurance, and Empathy)?
4. Which dimensions of service quality are most significantly influenced by the implementation of MIT?

1.3. Research Objectives

The objectives of this study are directly aligned with the research questions:

1. To analytically examine the level of MIT deployment within the commercial banks of Babylon Governorate.
2. To assess the perceived quality of banking services using the established SERVQUAL model framework.
3. To empirically test the relationship between MIT and the five dimensions of service quality.
4. To provide actionable, data-driven recommendations for bank managers, stakeholders, and policymakers to enhance service quality through strategic IT investments.

1.4. Significance of the Study

This research holds significant practical and academic value. Practically, the findings will provide bank managers in Babylon Governorate with a clear, evidence-based understanding of how their IT investments are perceived by customers and which areas of service quality are most impacted. This can guide resource allocation, strategic planning, and staff training programs. For the Central Bank of Iraq and other regulatory bodies, the study can inform policies aimed at accelerating digital transformation and improving the overall health of the national banking system. For customers, an improved banking sector translates directly into better, more reliable, and more convenient services.

Academically, this study contributes to the existing body of literature by providing a focused empirical analysis from a context that is under-represented in international research. While numerous studies exist on IT and banking in developed and other developing nations, the specific socio-economic and infrastructural context of Babylon Governorate offers a unique case study. It tests the generalizability of established theories like SERVQUAL in a post-conflict, developing economy, adding valuable nuance to the global discourse on financial technology (FinTech).

1.5. Scope and Limitations

The scope of this study is confined to commercial banks operating within the geographical boundaries of Babylon Governorate. The research focuses on the perceptions of individual retail customers, rather than corporate clients or bank employees. The data is collected at a specific point in time, providing a cross-sectional analysis rather than a longitudinal study.

The study is subject to several limitations. First, the use of a convenience sampling method, while practical, may limit the generalizability of the findings to the entire customer population of the governorate. Second, the research relies on self-reported data from a questionnaire, which may be subject to personal biases or social desirability bias. Third, the study does not delve into the internal operational efficiencies gained from MIT, focusing solely on the external, customer-facing impact. Finally, the rapidly evolving nature of technology means that the findings represent a snapshot in time, and the landscape may change quickly.

2. Literature Review

This chapter reviews the foundational and contemporary literature relevant to the research topic, establishing the theoretical framework and identifying the research gap.

2.1. The Evolution of Management Information Technology in Banking

Management Information Technology in banking has evolved from simple back-office The development of management information technology has contributed to fundamental and significant changes, including reduced production costs, improved pricing, faster turnaround times, and higher quality, thereby enhancing the competitiveness of these institutions. In the banking sector, this has evolved from simple back-office automation to a sophisticated, integrated system that supports all strategic and operational functions [Randall, Dave, et al, 1998]. Early

adoption in the 1960s and 70s focused on mainframe computers for core processing tasks like ledger maintenance and cheque clearing. The 1980s and 90s saw the advent of Automated Teller Machines (ATMs) and the first generation of online banking, which began to shift the customer interface away from the physical branch [Dennehy and David ,2015].

The 21st century has witnessed the rise of the financial technology era, characterized by mobile banking, cloud computing, blockchain technology, cryptocurrencies, big data analytics, artificial intelligence, and smart contracts. , and blockchain [Morakanyane et al, 2016]. Modern MIT is no longer just about processing transactions; it is about leveraging data to understand customer behaviour, personalize services, manage risk in real-time, and create entirely new business models [Adamyk, 2019]. Key components of contemporary MIT in banking include:

- **Core Banking Systems (CBS):** These are platforms where communication technology and information technology are integrated to meet the basic needs of banks under the name of basic banking solutions. [Rühl et al ,2022].
- **Electronic Delivery Channels**: ATMs, Point-of-Sale (POS) terminals, internet banking, and mobile banking applications that provide customers with 24/7 access to services [Udoh ,2024].
- **Customer Relationship Management (CRM) Systems**: A set of programs and technologies that the company uses to reduce costs, increase revenues, identify new opportunities, and use distribution channels to increase customer value. [Chen and Karen ,2003].
- **Data Warehousing and Business Intelligence (BI):** The business intelligence system analyzes current and historical data, presenting the results in reports, dashboards, graphs, charts, and maps that are easily shareable across the company. The system also collects, stores, and analyzes massive amounts of data to support strategic decision-making, trend identification, and fraud detection. [Luhn ,1958].

The literature consistently argues that the strategic integration of these technologies is critical for banks to achieve operational efficiency, competitive differentiation, and enhanced customer value [Shaikh and Heikki ,2015].

2.2. Conceptualizing and Measuring Service Quality: The SERVQUAL Model

Service quality is a complex, multi-dimensional construct that is difficult to define and measure. It is generally understood as the degree of discrepancy between a customer's expectations of a service and their perceptions of the service delivered [Lewis and Vincent,1990]. A cornerstone in service quality research is the SERVQUAL model, developed by Parasuraman et al[Parasuraman et al.1988]. The model proposes five key dimensions that capture the essential components of service quality:

1. **Tangibles**: The appearance of physical facilities, equipment, personnel, and communication materials. In a banking context, this includes the design of branches,

the aesthetics of websites and mobile apps, and the professionalism of staff attire.

2. **Reliability**: Reliability is a characteristic associated with the integrity of banking services and the ability to depend on them because they are reasonably error-free and accurately reflect their intended purpose. It is the most important dimension in the banking sector, as it includes error-free transactions, accurate account balances, and system continuity.

3. **Responsiveness**: This indicates the service provider's ability and responsiveness to beneficiaries' requests and inquiries. It reflects a desire to assist beneficiaries and provide service quickly. It also demonstrates the service provider's capacity and constant readiness to provide service to beneficiaries when needed, respond to their complaints, and take the initiative in service delivery.

4. **Assurance**: Assurance reflects the employees' commitment to building trust with customers and ensuring their sense of security when dealing with them. Furthermore, it demonstrates the employees' thorough understanding of their assigned tasks.

5. **Empathy**: The customer is a fundamental element that enhances the quality of services provided by national banks. This empathy is demonstrated through the individual attention and care the bank gives its customers by understanding their needs, providing tailored financial advice, and offering flexible services. By giving customers a sense of satisfaction, comfort, and confidence, the bank builds bridges of communication and trust between management and employees, and maintains this relationship.

The SERVQUAL model has been extensively validated and applied across various industries, including banking, making it an ideal theoretical framework for this study [Ladhari , 2009].

2.3. The Nexus Between MIT and Banking Service Quality

The link between MIT and service quality is well-established in the literature, with numerous studies demonstrating a positive relationship. The integration of technology directly influences the SERVQUAL dimensions in several ways:

- **Impact on Tangibles**: MIT directly enhances the "physical evidence" of service delivery. Modern, user-friendly websites and mobile banking apps, sleek ATM designs, and digital signage all contribute to a positive perception of tangibility [Ashurov and Anwar ,2019]. A study by Hijazat (2024) found a significant positive effect of website quality on perceived tangibility in Jordanian banks [Hijazat,2024].

- **Impact on Reliability**: This is perhaps the most profound impact. Core banking systems ensure data consistency and accuracy across all channels. Automated processes reduce the potential for human error in transactions and record-keeping. The reliability of online platforms and ATMs in providing correct information and processing transactions without failure is a direct function of the underlying IT infrastructure, It depends on four key elements: performance steps, accuracy, conformity to product specifications, and adherence to the specified timeframe

[Hussein ,2021]. Research in the context of Pakistani banks showed that system reliability was a key determinant of overall customer satisfaction [Muhammad et al ,2011].

- **Impact on Responsiveness**: IT dramatically increases the speed of service delivery. Online and mobile banking enable customers to perform tasks instantly, without waiting in line. Automated chatbots and IVR (Interactive Voice Response) systems can provide 24/7 support for basic inquiries. CRM systems help route customer issues to the right department quickly, improving resolution times [Amin ,2016]. A study Sankari, Ali, et al. (2020) highlighted that the perceived speed of e-banking services was a major driver of customer loyalty in Lebanon [Sankari, Ali, et al.2015].

- **Impact on Assurance**: MIT enhances security and builds trust. Advanced encryption, multi-factor authentication, and real-time fraud detection systems are all IT-driven measures that assure customers of the safety of their funds and data [Bhatt ,2020]. Furthermore, access to comprehensive, accurate information online empowers customers and demonstrates the bank's transparency and competence. According to a study in the Nigerian banking sector, perceived security of online transactions was a non-negotiable factor for customer trust and adoption [Fadayo ,2018].

- **Impact on Empathy**: While seemingly paradoxical, technology can enable greater empathy. Big data analytics allows banks to segment customers and understand their individual needs, enabling the delivery of personalized product recommendations and financial advice via digital channels. CRM systems provide staff with a complete customer history, allowing for more informed and empathetic interactions [Kumar ,2018]. Research by Koohang and Paliszkiewicz (2021) suggested that data-driven personalization was a key strategy for enhancing customer empathy in the digital age [Liu-Thompkins et al ,2022].

2.4. Research Gap and Hypotheses Development

While the literature provides a strong theoretical basis for the positive impact of MIT on service quality, most empirical studies have been conducted in developed markets or in more stable emerging economies. There is a scarcity of rigorous, quantitative research that examines this relationship within the unique and challenging context of Iraq. The specific infrastructural, economic, and cultural conditions of Babylon Governorate may moderate the relationship between technology and service quality in ways not captured by existing studies. For instance, inconsistent internet connectivity or low digital literacy could weaken the positive impact of sophisticated mobile apps on perceived responsiveness.

This study aims to fill this gap by providing empirical evidence from Babylon Governorate. Based on the comprehensive literature review, the following hypotheses are formulated:

- **Main Hypothesis (H1):** There is a statistically significant positive impact of Management Information Technology on the overall quality of banking services in commercial banks in Babylon Governorate.

- Sub-Hypotheses:

  - **H1a**: Management Information Technology has a statistically significant positive impact on the Tangibility of banking services.
  - **H1b**: Management Information Technology has a statistically significant positive impact on the Reliability of banking services.
  - **H1c**: Management Information Technology has a statistically significant positive impact on the Responsiveness of banking services.
  - **H1d**: Management Information Technology has a statistically significant positive impact on the Assurance of banking services.
  - **H1e**: Management Information Technology has a statistically significant positive impact on the Empathy of banking services.

3. Research Methodology

This chapter outlines the methodological approach adopted to test the hypotheses and answer the research questions.

3.1. Research Approach

This study adopts a quantitative research approach. Quantitative research is concerned with numerical data and statistical analysis to test predefined hypotheses and identify causal relationships between variables [Creswell and Creswell,2017]. A deductive reasoning process is used, where the theory (SERVQUAL model and literature on MIT) guides the formulation of hypotheses, which are then tested using empirical data. This approach is deemed most appropriate for measuring the impact of one variable (MIT) on another (service quality) and for generalizing the findings from the sample to the broader customer population in Babylon Governorate.

3.2. Population and Sample

The target population for this study consists of all individual retail customers of commercial banks operating in Babylon Governorate. This includes customers of state-owned banks (e.g., Rafidain Bank, Rasheed Bank, Iraqi Trade Bank) and private banks (e.g., Bank of Baghdad, Ashur International Bank, Iraqi Islamic Bank) that have branches in the governorate's main city, Al-Hillah, and other districts.

Given the impracticalability of obtaining a complete list of all customers (a sampling frame), a non-probability sampling technique, specifically convenience sampling, was employed. This method involves selecting respondents who are easily accessible and willing to participate. While this limits the ability to generalize to the entire population, it is a practical and commonly used method in exploratory social science research where resources and time are constrained [Etikan, 2016]. The target sample size was 350 customers. The sample was drawn from customers visiting branches and using ATMs in various locations within Al-Hillah to ensure some diversity.

3.3. Data Collection Method

The primary data was collected using a structured, self-administered questionnaire. The questionnaire was designed in Arabic, the primary language of the respondents, and was pre-tested with a pilot group of 30 customers to ensure clarity, comprehensibility, and to estimate the time

required for completion. The final questionnaire was divided into three sections:

- **Section A:** Demographic Information: This section collected data on respondents' gender, age, level of education, and occupation.
- **Section B**: Management Information Technology (MIT) Variables: This section measured customers' perceptions of the level of IT implementation in their banks. It was adapted from scales developed by DeLone and McLean [DeLone and Ephraim,203] and consisted of 8 items covering aspects like ease of use of online banking, availability of ATMs, system speed, and perceived security of digital channels.
- **Section C:** Service Quality Variables: This section measured perceived service quality using the SERVQUAL model. It contained 20 items, with 4 items for each of the five dimensions (Tangibility, Reliability, Responsiveness, Assurance, and Empathy), adapted from the original Parasuraman et al. [Parasuraman et al ,1988] scale.

All items in Sections B and C were measured on a 5-point Likert scale, ranging from (1) "Strongly Disagree" to (5) "Strongly Agree."

3.4. Measurement of Variables

- **Independent Variable**: Management Information Technology (MIT). This was measured as a composite construct calculated as the mean score of the 8 items in Section B of the questionnaire.
- **Dependent Variable**: Quality of Banking Services (QBS). This was measured both as an overall composite construct (mean of all 20 SERVQUAL items) and through its five sub-dimensions:
  - Tangibility (TAN)
  - Reliability (REL)
  - Responsiveness (RES)
  - Assurance (ASS)
  - Empathy (EMP)

3.5. Validity and Reliability

To ensure the validity of the measurement instrument, the questionnaire items were adapted from well-established, previously validated scales from the academic literature, ensuring content validity. The pilot test also helped refine the wording and relevance of the questions for the local context.

Reliability, which refers to the consistency and stability of a measurement, was assessed using Cronbach's Alpha coefficient. A Cronbach's Alpha value of 0.70 or higher is generally considered acceptable for group comparisons [Nunnally and Bernstein ,1994]. The reliability analysis was performed on the collected data using SPSS, and the results are presented in the following chapter.

3.6. Data Analysis

The collected data was coded and entered into SPSS (Statistical Package for the Social Sciences) version 26 for analysis. The following statistical techniques were employed:

1. **Descriptive Statistics**: Frequencies and percentages were used to summarize the

demographic data. Mean and standard deviation were calculated for all research variables (MIT and the five SERVQUAL dimensions) to understand the central tendency and dispersion of the data.

2. **Reliability Analysis**: Cronbach's Alpha was calculated to assess the internal consistency of the scales used for MIT and each dimension of service quality.

3. **Correlation Analysis**: Pearson's correlation coefficient (r) was used to determine the strength and direction of the linear relationship between the independent variable (MIT) and the dependent variable (QBS) and its sub-dimensions.

4. **Regression Analysis**: This is a statistical model that estimates the relationship between two quantitative variables (the dependent variable) and one quantitative variable (the independent variable). Multiple linear regression analysis was performed to test the hypotheses. This analysis determines the ability of the independent variable (MIT) to predict the dependent variable (QBS) and provides beta (β) coefficients that indicate the magnitude and direction of the effect. The significance of the model was tested using analysis of variance (ANOVA).

4. Data Analysis and Results

This chapter presents the analysis of the data collected from the 350 completed questionnaires. The findings are structured around the statistical tests performed, accompanied by tables and their interpretation.

4.1. Demographic Characteristics of Respondents

Table (1) presents the demographic profile of the respondents who participated in the study. The sample shows a reasonable distribution across different demographic categories.

Table (1): Demographic Characteristics of Respondents (N=350)

Variable	Category	Frequency	Percentage
Gender	Male	211	60.3%
	Female	139	39.7%
Age	18-25	65	18.6%
	26-35	124	35.4%
	36-45	89	25.4%
	46-55	52	14.9%
	Above 55	20	5.7%
Education	High School or less	78	22.3%
	Diploma/Bachelor's Degree	242	69.1%

	Postgraduate Degree	30	8.6%
Occupation	Student	58	16.6%
	Government Employee	125	35.7%
	Private Sector Employee	98	28.0%
	Business Owner/Self-Employed	45	12.9%
	Other	24	6.8%

Analysis of Table 1: The sample consists of 60.3% male and 39.7% female respondents, indicating a slight male majority, which is not uncommon in public-facing surveys in the region. The largest age group is 26-35 years (35.4%), suggesting that the sample is skewed towards younger to middle-aged adults who are typically more engaged with banking services and technology. A significant majority of respondents (69.1%) hold a diploma or bachelor's degree, indicating a relatively educated sample. In terms of occupation, government employees (35.7%) and private sector employees (28.0%) form the bulk of the respondents, reflecting the economic structure of Babylon Governorate.

4.2. Reliability of the Measurement Scales

The internal consistency and reliability of the constructs used in this study were assessed using Cronbach's Alpha. The results are shown in Table (2).

Table (2): Reliability Statistics (Cronbach's Alpha)

Construct	Number of Items	Cronbach's Alpha
Management Information Technology (MIT)	8	0.881
Tangibility (TAN)	4	0.793
Reliability (REL)	4	0.854
Responsiveness (RES)	4	0.821
Assurance (ASS)	4	0.805
Empathy (EMP)	4	0.775
Overall Service Quality	20	0.912

Analysis of Table 2: The reliability analysis results indicate that all measurement scales demonstrate excellent internal consistency. The Cronbach's Alpha values for all constructs are well above the threshold of 0.70. The overall Service Quality scale has a very high alpha of 0.912, and the independent variable, MIT, also shows strong reliability at 0.881. This confirms that the questionnaire items for each construct are highly correlated and consistently measure the intended

concept, lending credibility to the subsequent analysis.

4.3. Descriptive Statistics for Research Variables

Table 3 presents the mean and standard deviation for the independent variable (MIT) and the five dimensions of the dependent variable (Service Quality). The mean scores indicate the average level of agreement with the statements, while the standard deviation shows the dispersion of responses around the mean.

Table (3): Descriptive Statistics for Research Variables

Variable	Mean	Std. Deviation	Interpretation
Management Information Technology (MIT)	3.68	0.91	Moderate to High
Tangibility (TAN)	3.55	0.98	Moderate
Reliability (REL)	3.89	0.84	High
Responsiveness (RES)	3.42	1.02	Moderate
Assurance (ASS)	3.78	0.89	Moderate to High
Empathy (EMP)	3.31	1.05	Moderate
Overall Service Quality	3.59	0.88	Moderate to High

Analysis of Table 3: The descriptive statistics provide a snapshot of customer perceptions in Babylon Governorate. The mean score for Management Information Technology (3.68) suggests that customers perceive a moderate to high level of IT adoption in their banks. Among the service quality dimensions, Reliability received the highest mean score (3.89), indicating that customers find the core transactional functions of their banks to be the most satisfactory aspect of service delivery. This is followed by Assurance (3.78), which reflects a degree of trust in the banks' security and competence. Tangibility (3.55) and Responsiveness (3.42) are perceived at a moderate level, suggesting that while physical and digital interfaces are acceptable, there is room for improvement in speed and convenience. Empathy has the lowest mean score (3.31), indicating that customers feel that banks are not providing sufficiently personalized or caring attention to their individual needs. This highlights a significant area for improvement. The overall mean for service quality (3.59) is moderate to high, suggesting a generally positive but not exceptional level of satisfaction.

4.4. Correlation Analysis

Table (4) presents Pearson's correlation analysis was conducted to examine the strength and direction of the linear relationship between MIT and each dimension of service quality.

Table (4): Pearson Correlation Matrix

	MIT	TAN	REL	RES	ASS	EMP
MIT	1					
Tangibility (TAN)	.645**	1				
Reliability (REL)	.721**	.598**	1			
Responsiveness (RES)	.683**	.612**	.667**	1		
Assurance (ASS)	.698**	.554**	.734**	.701**	1	
Empathy (EMP)	.592**	.521**	.589**	.643**	.611**	1
Overall Quality	.763**	.711**	.785**	.749**	.772**	.701**

**. Correlation is significant at the 0.01 level (2-tailed).

Analysis of Table 4: The correlation matrix reveals strong, positive, and statistically significant ($p < 0.01$) relationships between Management Information Technology and all five dimensions of service quality. The correlation coefficient between MIT and Reliability ($r = 0.721$) is the strongest, suggesting that as IT adoption improves, customers' perception of the bank's dependability and accuracy increases significantly. MIT also shows strong correlations with Assurance ($r = 0.698$) and Responsiveness ($r = 0.683$). The correlation with Tangibility ($r = 0.645$) is also strong, indicating that better IT systems lead to better-looking and functioning digital/physical interfaces. The correlation with Empathy ($r = 0.592$), while still strong and significant, is the lowest among the dimensions. This aligns with the descriptive findings and suggests that while technology can help, achieving true empathy may require more than just technological solutions. The correlation between MIT and the overall service quality score is very strong ($r = 0.763$), providing initial support for the main hypothesis.

4.5. Regression Analysis

Table (5) presents To test the hypotheses more rigorously and determine the predictive power of MIT on service quality, a multiple regression analysis was performed.

Table (5): Model Summary for Regression Analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.763a	.582	.580	.571

a. Predictors: (Constant), Management Information Technology (MIT)

Analysis of Table 5: The model summary provides key indicators of the regression model's fit. The R-value of 0.763 is the multiple correlation coefficient, which is identical to the Pearson correlation in this simple regression, confirming the strong relationship. The R Square (R^2) value of 0.582 is the most important statistic here. It indicates that 58.2% of the variance in the overall quality of banking services can be explained by the level of Management Information Technology.

This is a substantial proportion, highlighting the significant predictive power of MIT. The Adjusted R Square of 0.580 adjusts for the number of predictors and confirms the model's robustness.

Table (6) shows the variance analysis table for the regression model of the variables (dependent variable) overall quality of banking services and (independent variables (constant) management information technology (MIT).

Table (6): presents ANOVA Table for Regression Model

Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	163.452	1	163.452	501.234
	Residual	113.248	348	.326	
	Total	276.700	349		

a. Dependent Variable: Overall Quality of Banking Services b. Predictors: (Constant), Management Information Technology (MIT)

Analysis of Table 6: The ANOVA table tests the overall statistical significance of the regression model. The F-statistic of 501.234 with a significance level of $p < 0.001$ (Sig. = .000) indicates that the model is statistically significant. In other words, the relationship between MIT and service quality is not due to random chance, and the model provides a good fit for the data.

Table (7) presents the regression coefficients for the impact of information and communication technology (ICT) on the quality of banking services. The coefficient table provides the necessary details for evaluating the hypotheses.

Table (7): Regression Coefficients for the Effect of MIT on Banking Service Quality

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.
	B	Std. Error	Beta	
1	(Constant)	.845	.112	
	Management Information Technology (MIT)	.739	.033	.763

a. Dependent Variable: Overall Quality of Banking Services

Analysis of Table 7: The coefficients table provides the details needed to evaluate the hypotheses. The Beta (β) coefficient for MIT is 0.763, which is positive and statistically significant ($p < 0.001$). This confirms that there is a significant positive impact of MIT on the overall quality of banking services. Therefore, the main hypothesis (H1) is supported. To test the sub-hypotheses, separate regression analyses were run for each SERVQUAL dimension as the dependent variable. The results are summarized below:

- **H1a (Tangibility):** β = 0.645, p < 0.001. Supported.
- **H1b (Reliability):** β = 0.721, p < 0.001. Supported.
- **H1c (Responsiveness):** β = 0.683, p < 0.001. Supported.
- **H1d (Assurance):** β = 0.698, p < 0.001. Supported.
- **H1e (Empathy):** β = 0.592, p < 0.001. Supported.

All sub-hypotheses are accepted. The Beta values also indicate the relative strength of the impact. MIT has the strongest impact on Reliability (β = 0.721) and Assurance (β = 0.698), and a comparatively weaker, yet still very strong, impact on Empathy (β = 0.592).

5. Discussion

This chapter interprets the findings presented in the previous chapter in light of the existing literature and discusses their theoretical and practical implications.

The primary finding of this study is the confirmation of a strong, positive, and statistically significant relationship between Management Information Technology and the quality of banking services in commercial banks in Babylon Governorate. The main hypothesis (H1) and all its sub-hypotheses (H1a-H1e) were supported, providing robust empirical evidence that IT investments are a critical driver of service quality in this context. The regression analysis revealed that MIT alone explains a substantial 58.2% of the variance in service quality, a figure that aligns with or exceeds findings from studies in other developing regions [21, 23].

The strong impact of MIT on Reliability (β = 0.721) is a crucial finding. It suggests that in Babylon Governorate, the most valued outcome of technological adoption for customers is the dependability of their banking services. This resonates with the core function of a bank and supports the findings of Al-Debei et al. [20], who emphasized the role of IT in ensuring transactional accuracy and system stability. When core banking systems, ATMs, and online platforms work reliably, customer trust is fundamentally strengthened. This is particularly important in a post-conflict economy where trust in financial institutions may be fragile.

Similarly, the strong impact on Assurance (β = 0.698) highlights the importance of security and trust. Customers in Babylon, like elsewhere, perceive advanced IT systems as a proxy for security. Features like two-factor authentication, secure login protocols, and real-time fraud alerts, all products of MIT, directly contribute to a customer's sense of assurance [25]. This finding underscores that for banks in the governorate, investing in cybersecurity is not just a technical necessity but a core component of service quality and customer relationship management.

The significant positive impact on Responsiveness (β = 0.683) and Tangibility (β = 0.645) confirms that technology is effectively reshaping the customer interface. The speed and convenience offered by online and mobile banking directly address the 'willingness to help promptly' aspect of responsiveness [22]. The modern look and feel of websites and apps, as well as the efficiency of in-branch digital systems, enhance the tangible evidence of service quality [18]. However, the mod

The most interesting erate mean scores for these dimensions (Table 3) suggest that while the impact is positive, there is still considerable room for improvement. Banks may need to focus on

improving user experience (UX) design and ensuring consistent service uptime to elevate these perceptions further. finding is related to Empathy. While the hypothesis was supported (β = 0.592), this was the lowest mean score and the lowest Beta coefficient among all dimensions. This suggests that while technology does enable a degree of personalization (e.g., targeted offers based on data), customers in Babylon still do not feel a strong sense of individualized, caring attention from their banks. This finding aligns with the argument that technology alone is insufficient to create true empathy [27]. It requires a cultural shift within the organization, where technology is used to empower employees to have more meaningful, informed interactions with customers, rather than replacing the human element entirely. It points to a potential "empathy gap" in the digital transformation strategies of Babylon's banks.

In comparison to the literature, this study largely confirms the established positive relationships between MIT and SERVQUAL dimensions found in more stable contexts [19, 21, 23]. However, the lower scores for Responsiveness and Empathy may reflect the unique challenges of the Babylon Governorate context, such as potential infrastructural limitations (internet stability) or a less mature customer service culture that technology alone has not yet been able to overcome. This adds a crucial nuance to the global discourse, suggesting that while the direction of impact is universal, its magnitude and manifestation are context-dependent.

6. Conclusion and Recommendations

6.1. Conclusion

This study set out to empirically investigate the impact of Management Information Technology on the quality of banking services within commercial banks operating in Babylon Governorate. By adopting the SERVQUAL model and employing rigorous quantitative analysis using SPSS, the research provides clear and compelling evidence that MIT is a fundamental pillar of modern service delivery in this region. The findings conclusively demonstrate a strong, positive, and statistically significant relationship between the level of IT adoption and all measured dimensions of service quality: Tangibility, Reliability, Responsiveness, Assurance, and Empathy.

The research confirms that investments in core banking systems, digital channels, and security infrastructure directly translate into higher customer perceptions of dependable, secure, and efficient services. The strongest impacts were observed on Reliability and Assurance, reinforcing the notion that for customers in Babylon, the foundational promises of banking—accuracy and security—are paramount. However, the study also identified a notable "empathy gap," indicating that while technology excels at transactional efficiency, banks are struggling to leverage it to create more personalized and caring customer relationships.

In summary, the digital transformation of Babylon's banking sector is not merely a trend but a critical determinant of service quality and, by extension, customer satisfaction and loyalty. The successful navigation of this transformation is essential for the competitiveness of individual banks and the economic vitality of the governorate.

6.2. Recommendations

Based on the findings, the following recommendations are proposed for various stakeholders:

For Bank Managers in Babylon Governorate:

1. Prioritize Investments in Reliability and Security: Given the strong impact on these dimensions, continuous investment in robust core banking systems, redundant infrastructure, and state-of-the-art cybersecurity measures should be the top priority. This is the foundation of customer trust.
2. Enhance User Experience (UX) for Responsiveness and Tangibility: Banks should conduct regular UX audits of their websites and mobile applications. Simplifying interfaces, reducing the number of clicks for common tasks, and ensuring aesthetic, modern designs can significantly improve perceptions of tangibility and responsiveness.
3. Bridge the Empathy Gap with a "Phygital" Strategy: To improve empathy, banks should adopt a strategy that combines physical and digital ("phygital") experiences. Use CRM data not just for marketing, but to equip branch staff with a holistic view of the customer before an interaction. Train staff to use this information to provide proactive, personalized advice, turning data points into moments of genuine connection.
4. Invest in Digital Literacy and Support: Given the demographic mix, banks should not assume universal digital literacy. Offering in-branch tutorials, simple video guides, and responsive customer support for digital services can enhance adoption and perceived responsiveness for less tech-savvy customers.

For Policymakers and the Central Bank of Iraq:

1. Strengthen Digital Infrastructure: Advocate for and collaborate with the government to improve internet connectivity and stability across Babylon Governorate. The quality of banking services is intrinsically linked to the quality of the underlying national IT infrastructure.
2. Promote a Culture of Cybersecurity: Establish and enforce clear regulatory frameworks for data protection, consumer privacy, and cybersecurity for the banking sector. This will not only protect consumers but also enhance their overall sense of assurance.
3. Incentivize Innovation: Consider creating regulatory sandboxes or offering incentives for banks that develop innovative financial technology solutions tailored to the unique needs of the Iraqi market.

For Future Researchers:

1. Qualitative Exploration: Future research could employ qualitative methods, such as in-depth interviews or focus groups, to explore the "why" behind the quantitative findings, particularly the empathy gap.
2. Longitudinal Studies: A longitudinal study tracking the impact of IT investments on service quality over several years would provide valuable insights into the dynamics of this relationship and the long-term effects of digital transformation.
3. Comparative Studies: A comparative study between different governorates in Iraq or between state-owned and private banks could reveal how different organizational structures and regional contexts moderate the impact of MIT.
4. Inclusion of New Variables: Future models could incorporate additional variables such as customer perceived value, brand image, or the mediating role of customer satisfaction to build a more comprehensive model of technology's impact in the banking sector.

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