

Measuring E-Banking Service Quality and Customer Satisfaction: A Study of Commercial Bank of Ethiopia in Nekemte Town

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Abstract

This study investigates the impact of electronic banking (e-banking) service quality on customer satisfaction in the Commercial Bank of Ethiopia (CBE) operating in Nekemte Town. The study aims to identify key service dimensions influencing customer satisfaction and provide managerial insights to improve digital banking performance. A descriptive and cross-sectional survey research design was employed. Primary data were collected from 348 active customers of CBE using a structured questionnaire based on a five-point Likert scale. Quantitative analysis was conducted using Pearson's correlation and multiple linear regression with SPSS version 25 to assess the relationship between five e-banking service quality dimensions—reliability, ease of use, delivery time, security, and overall service quality—and customer satisfaction. The results revealed a strong positive and statistically significant relationship between e-banking service quality and customer satisfaction ($R^2 = 0.758$). Among the predictors, service security and delivery time showed the highest influence on customer satisfaction, followed by reliability, ease of use, and service quality. The findings suggest that CBE should prioritize enhancing system security, improving transaction speed, and strengthening reliability to increase customer satisfaction and sustain competitive advantage in Ethiopia's digital banking sector. This study extends the SERVQUAL framework to the context of e-banking in Ethiopia, providing empirical evidence from a developing-country perspective and offering practical recommendations for service quality improvement in public banking institutions.

Keywords: E-banking service quality, Customer satisfaction, Commercial Bank of Ethiopia, Digital banking, SERVQUAL model

Introduction

Over the past two decades, the rapid advancement of information and communication technology (ICT) has transformed the banking sector worldwide. Electronic banking (e-banking) has emerged as a strategic tool that enables banks to deliver services efficiently, enhance

convenience, and strengthen customer relationships. In developing economies, e-banking adoption has accelerated financial inclusion by providing remote access to banking services and reducing operational costs.

In Ethiopia, the banking sector has experienced substantial technological upgrades, yet customer satisfaction with e-banking services remains a growing concern. Despite major investments in digital platforms by commercial banks, service delivery issues such as transaction delays, system reliability, and data security continue to influence customer perceptions.

This study is anchored on the SERVQUAL model proposed by (Parasuraman, Zeithaml, & Berry, 1988), which identifies five key dimensions of service quality—reliability, assurance, responsiveness, empathy, and tangibles. The model is adapted for the e-banking context by focusing on reliability, delivery time, ease of use, security, and overall service quality, as these variables are most relevant to electronic financial transactions.

The findings of this study contribute to the existing body of knowledge by validating the SERVQUAL dimensions in the digital banking environment of a developing country. Practically, the results will assist bank managers in designing customer-centered digital strategies that enhance satisfaction and loyalty. The study also provides insights for policymakers aiming to strengthen the digital transformation of Ethiopia's financial sector.

Problem statement

Previous studies in Ethiopia have primarily focused on urban center such as Addis Ababa, leaving smaller towns like Nekemte underexplored. Limited empirical evidence exists on how different dimensions of e-banking service quality—such as reliability, ease of use, delivery time, and security—affect customer satisfaction in semi-urban contexts. Understanding these relationships is crucial for improving digital service delivery and maintaining customer loyalty in Ethiopia's competitive banking sector.

GAP Analysis

Although prior studies e.g. (Misgana, 2017) (Asfaw, 2017) (Worku, Tilahun, & Tafa, 2016) have examined e-banking satisfaction in Ethiopia, few have addressed smaller regional contexts or tested the SERVQUAL dimensions in a comprehensive model. Moreover, the methodological rigor and empirical validation of these constructs remain limited. This study addresses these gaps by applying a structured SERVQUAL-based framework to assess the effect of five service dimensions on customer satisfaction in Nekemte Town.

- **Knowledge Gap:** The difference between what customers actually want and what managers believe customers want (Hoffman & Bateson, 2011). In many Ethiopian banks, management assumptions about customer needs in digital platforms are often inaccurate or incomplete due to limited customer feedback mechanisms. This study addresses this gap by collecting direct primary data from customers, thereby capturing authentic perceptions of e-banking service quality and satisfaction rather than relying on managerial assumptions.
- **Standards Gap:** The discrepancy between management's perception of customer expectations and the quality specifications established for service delivery. In several public banks, service performance standards for digital banking (e.g., expected response time, security protocols, or reliability levels) are not aligned with actual customer expectations. This research evaluates how such gaps influence customer satisfaction in the context of CBE's e-banking services.
- **Delivery Gap:** The gap between established service quality standards and the actual quality of service delivered, such as whether employees perform services as trained (Hoffman & Bateson, 2011). For example, even if the bank defines standard transaction times or reliability benchmarks, technical failures, network interruptions, or human errors may prevent these standards from being met. By measuring customers' perceptions of reliability, delivery time, and security, the present study examines how such operational inconsistencies affect satisfaction.

- **Communication Gap:** The inconsistency between the actual service delivered and the service quality described in external communications, including advertising and promotional messages (Hoffman & Bateson, 2011). In practice, marketing messages often promise 24/7 seamless service or high transaction security, but customers may experience slower performance or intermittent system downtime. This study indirectly explores this gap by comparing perceived service quality dimensions with reported satisfaction levels.
- **Methodological Gap:** Previous studies have used varying and often less precise methodologies compared to the present study. Some prior research used small or non-representative samples, descriptive statistics only, or lacked reliability analysis (Misgana, 2017; Asfaw, 2017). The present study fills this gap by applying a quantitative, cross-sectional survey design, with validated SERVQUAL-based scales and robust statistical tools (correlation and multiple regression).
- **Content Gap:** There is limited empirical research conducted in Nekemte Town of the Oromia Region, particularly in public enterprises such as the Commercial Bank of Ethiopia (Misgana, 2017). While several studies have been conducted in Addis Ababa or major cities, there is little empirical evidence from secondary towns such as Nekemte in the Oromia Region, particularly within public sector banks like the Commercial Bank of Ethiopia (Misgana, 2017). This study fills that contextual void by focusing on this underexplored area.
- **Issue Gap:** Prior studies have not comprehensively examined certain variables—such as reliability, delivery time, service quality, ease of use, and service security—recommended for further investigation (Asfaw, 2017; Worku, Tilahun, & Tafa, 2016). Previous studies have not comprehensively analysed all dimensions of e-banking service quality—specifically reliability, delivery time, service quality, ease of use, and service security—which were suggested for further exploration (Asfaw, 2017; Worku, Tilahun, & Tafa, 2016). The current study incorporates all these variables into a unified analytical

framework to provide a more holistic understanding of customer satisfaction determinants.

According to Hoffman and Bateson (2011), the overall service gap (Gap 5) is a result of the interaction among these four primary gaps—knowledge, standards, delivery, and communication. As each of these underlying gaps widens or narrows, the overall service gap adjusts correspondingly.

Objective of the study

1. To examine the relationship between e-banking service quality dimensions and customer satisfaction in the Commercial Bank of Ethiopia.
2. To identify the most influential service quality factors affecting customer satisfaction.
3. To provide managerial recommendations for improving e-banking services in Ethiopia.

Research Question: What is the extent to which reliability, ease of use, delivery time, security, and service quality influence customer satisfaction among CBE customers in Nekemte?

Conceptual framework

This study is anchored on the SERVQUAL model proposed by (Parasuraman, Zeithaml, & Berry, 1988), which identifies five key dimensions of service quality—reliability, assurance, responsiveness, empathy, and tangibles. The model is adapted for the e-banking context by focusing on reliability, delivery time, ease of use, security, and overall service quality, as these variables are most relevant to electronic financial transactions.

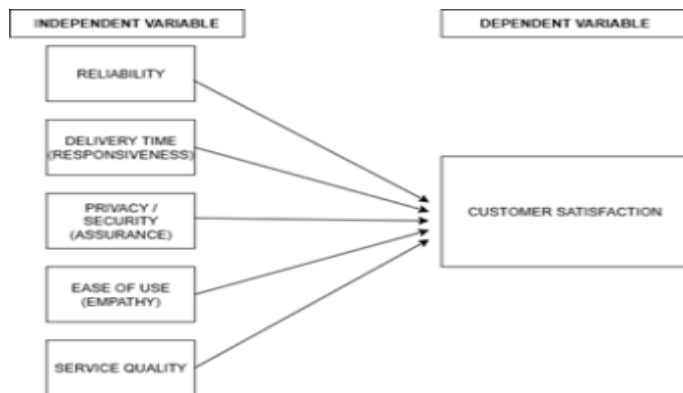
The conceptual model as shown in figure 1.1 has been developed based on literature review findings used in this research.

As illustrated in Figure 1.2, service quality represents a focused assessment that captures customers' perceptions of reliability, assurance, responsiveness, empathy, and tangibles. In contrast, customer satisfaction is a broader concept—it is shaped not only by perceived service quality but also by product quality, pricing, and various situational and personal factors. (Zeithaml, Bitner, & Gremler, 2018).

The findings of this study contribute to the existing body of knowledge by validating the SERVQUAL dimensions in the digital banking environment of a developing country.

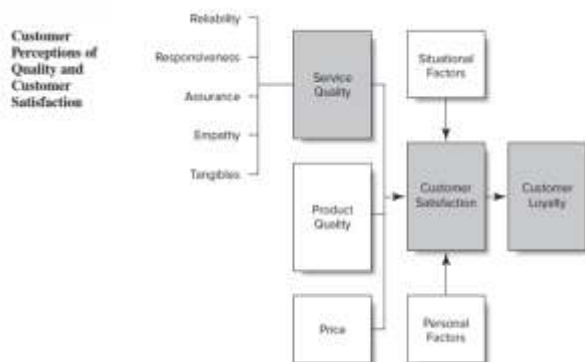
Practically, the results will assist bank managers in designing customer-centered digital strategies that enhance satisfaction and loyalty. The study also provides insights for policymakers aiming to strengthen the digital transformation of Ethiopia's financial sector.

Figure 1.1: Conceptual Framework



(Source: Developed by Researcher)

Figure 1.2 Customer Perceptions of Quality & Customer Satisfaction



(Source: Zeithaml, Bitner, & Gremler, 2018)

Literature Review

Concept of Electronic Banking

Electronic banking (e-banking) refers to the use of digital platforms and communication technologies to deliver banking services to customers without direct physical interaction. According to (Daniel, 1999), e-banking enables banks to offer financial services via computers and telecommunication networks. It encompasses a wide range of delivery channels such as Internet banking, mobile banking, automated teller machines (ATMs), point-of-sale

(POS) terminals, and telephone banking (Alagheband, 2006).

E-banking enhances convenience, reduces transaction costs, and enables banks to reach geographically dispersed customers (Tiwari & Buse, 2007). Recent studies (Adugna, 2019) (e.g., Bultum, 2023) indicate that e-banking adoption in developing economies significantly contributes to customer engagement, operational efficiency, and financial inclusion. However, challenges such as system reliability, data security, and transaction speed continue to affect user experience and satisfaction (Kaur & Singh, 2011).

Service Quality in E-Banking

Service quality is a critical determinant of customer satisfaction in both physical and digital banking environments. Parasuraman, Zeithaml, and Berry (1988) introduced the SERVQUAL model, which conceptualizes service quality through five dimensions: reliability, assurance, responsiveness, empathy, and tangibles. These dimensions have been widely adapted to e-banking contexts, emphasizing the importance of technological functionality and information security (Zeithaml, Bitner, & Gremler, 2018).

In e-banking, service quality reflects how effectively the bank's digital systems meet customer expectations in terms of accuracy, accessibility, usability, and trustworthiness. Studies such as (Kheng, Mahamad, Ramayah, & Mosahab, 2010) and Asfaw (2017) revealed that reliability and responsiveness remain the most influential factors affecting e-banking satisfaction. More recent research (Choudhury & Amin, 2022; Hassan et al., 2023) supports this by finding that security and ease of use are increasingly dominant dimensions as customers rely more on mobile and online channels.

Dimensions of E-Banking Service Quality

Empirical literature identifies several dimensions that directly affect customer satisfaction in digital banking:

- **Reliability:** The ability of the banking system to perform promised services dependably and accurately. Customers expect error-free transactions and consistent availability of digital platforms (Rose, 1999) (Worku, Tilahun, & Tafa, 2016).

- **Ease of Use:** The simplicity and clarity with which customers can navigate the bank's online or mobile interfaces. High usability minimizes effort and increases trust (Abor, 2005) (Guru, Vaithilingam, Ismail, & Rajendra, 2000).
- **Delivery Time (Responsiveness):** The speed and efficiency with which electronic transactions are processed. Fast service enhances satisfaction, while delays or downtime frustrate customers (Misgana, 2017; Bultum, 2023).
- **Security and Privacy (Assurance):** Protection of customer data and transactions against fraud or unauthorized access. Security has emerged as a central factor influencing digital trust (Zeithaml et al., 2018; Hassan et al., 2023).
- **Overall Service Quality:** The holistic perception customers form based on their experiences across all digital touchpoints. According to Carrillat, Jaramillo, and Mulki (2009), service quality is the foundation upon which customer satisfaction and loyalty are built.

Customer Satisfaction in E-Banking

Customer satisfaction is defined as the degree to which a customer's expectations are met or exceeded by actual service performance (Rai & Medha, 2013). In e-banking, satisfaction arises from positive experiences with reliability, usability, and security of online services. According to Kaur and Singh (2011), satisfied customers are more likely to continue using digital channels and recommend them to others, enhancing customer retention and profitability.

Several studies confirm the relationship between e-banking service quality and satisfaction. For instance, (Adoyo, et al., 2012) and Kheng et al. (2010) found that reliability and assurance significantly increase satisfaction and loyalty in financial services. In Ethiopia, Asfaw (2017) and Adugna (2019) reported that improvements in mobile and internet banking systems have a measurable impact on satisfaction levels, though issues related to network instability and limited digital literacy remain prevalent.

Theoretical Foundation: SERVQUAL and Technology Adoption Models

This study integrates the SERVQUAL model with insights from the Technology Acceptance Model (TAM) to explain customer satisfaction in e-banking. While SERVQUAL focuses on service performance dimensions, TAM emphasizes perceived usefulness and ease of use as determinants of technology acceptance (Davis, 1989). Combining these frameworks provides a comprehensive understanding of how both service quality and technological usability drive customer satisfaction in digital banking (Choudhury & Amin, 2022).

Empirical Evidence and Research Gap

Previous empirical research has shown that e-banking service quality significantly influences satisfaction across various countries. For example, Kheng et al. (2010) in Malaysia and (Ganiyu, Uche, & Elizabeth, 2012) in Nigeria found that reliability and responsiveness are the strongest predictors of satisfaction. In Ethiopia, Misgana (2017) and Worku et al. (2016) highlighted the positive relationship between service quality and customer satisfaction but emphasized the need for studies in less urbanized settings.

Despite growing literature, limited empirical evidence exists on how customers in secondary Ethiopian towns perceive e-banking service quality. Furthermore, few studies have statistically validated the combined effect of the five SERVQUAL dimensions on satisfaction using multiple regression models. Therefore, this study addresses these gaps by providing quantitative evidence from Nekemte Town, contributing both to academic understanding and managerial practice in digital banking.

Conceptual Framework

Drawing from the reviewed literature, the conceptual framework (Figure 1.1) illustrates the hypothesized relationship between e-banking service quality dimensions—reliability, ease of use, delivery time, security, and overall service quality—and customer satisfaction. Each independent variable is expected to have a positive influence on customer satisfaction, forming the basis for the study's regression model.

According to (Daniel, 1999), electronic banking is the delivery of banks' information and services by banks to customers through different delivery channels that can be used with different electronic devices such as computer and

a mobile phone with browser software, telephone or digital television.

The important definitions are summarized as follow:

E-banking is simply the use of electronic means to transfer funds directly from one account to another rather than by check or cash (Jaber, 2007).

It should be noted that electronic banking can also be defined as a variety of platforms such as Internet banking (or online banking), telephone banking, TV-based banking, mobile phone banking, and PC banking (or offline banking) whereby customers access these services using an intelligent electronic device, like a personal computer (PC), personal digital assistant (PDA), automated teller machine (ATM), point of sale (POS), kiosk, or Touch Tone telephone (Alagheband, 2006)

Forms of E-Banking

Automated Teller Machines ATM

According to (Rose, 1999), ATM combines a computer terminal, database system and cash vault in one unit, permitting customers to enter the bank's book keeping system with a plastic card containing a PIN or by punching a special code number into the computer terminal linked to the bank's computerized records 24 hours a day that offers a great deal of banking services to clients.

Telephone Banking

As a form of virtual banking, telephone banking is essentially the provision of branch financial services by telecommunication devices. Bank customers may perform retail banking transactions through calling a touch-tone phone or mobile communication unit that is linked to an automated system of the bank by the usage of Automated Voice Response (AVR) technology. (Guru, Vaithilingam, Ismail, & Rajendra, 2000)

Personal Computer Banking

Personal Computer Banking is a sort of service which provides the bank's clients to access their banking data through a restrictive system, through software installed on their personal PC. (Abor, 2005)

Internet banking

According to the Federal Banking System for All Americans, System that allows bank clients to use a

computer, smartphone, or other electronic device to access accounts and general information about bank products and services. (Comptroller's Licensing Manual, Charters, 2021)

POS

The point of sale, also known as the point of purchase (POP) checkout, is where a transaction takes place. A POS terminal, or more broadly, the hardware and software used for checkouts, is often referred to as a "checkout." It functions similarly to an electronic cash register and controls the selling process through an interface that is accessible to salespeople. The receipt can be created and printed using the same system. (Shittu, 2010)

Mobile Banking

The provision and use of banking and financial services via mobile telecommunication devices are referred to as mobile banking. The variety of services provided could include tools for managing accounts, conducting stock market and bank transactions, and getting access to personalized data (Tiwari & Buse, 2007).

SERVQUAL Model

During the growth of services in the last decades, many scholars have agreed the need to develop measures of service quality. One of the most frequently used measures is the SERVQUAL (the name stands for Service Quality). The foundation for the SERVQUAL scale is the gap model proposed by (Parasuraman, Zeithaml, & Berry, 1988). On their empirical research, they identified a set of 22 variable stepping five different dimensions namely Tangibles, Reliability, Responsiveness, Assurance & Empathy of service quality construct. Since their inception, service quality has been defined as the discrepancy between the expectations and perceptions of the consumer. (Parasuraman, Zeithaml, & Berry, 1988)

The service quality measurement scale, according to Parasuraman, Zeithaml, and Berry, includes 44 items in total (22 for expectations and 22 for perceptions). (P-E) gap scores are determined by comparing responses from consumers on a 7-point Likert scale to their expectations and perceptions. The perceived level of service quality improves with the greater (more favourable) perception minus expectations core. (Parasuraman, Zeithaml, &

Berry, 1988)

Service Quality Dimensions

In view of Parasuraman, Zeithaml, & Berry, 1985, focus group studies, there were ten detail dimensions of service quality. These were: Reliability, Responsiveness, Competence, Access, Curtsey, Communication, Credibility, Security, Understanding the customer and Tangibles. According to them, Reliability is the most significant dimension among others.

As per (Zeithaml, Bitner, & Gremler, 2018) satisfaction is generally viewed as a broader concept, whereas service quality is a component of customer satisfaction. Figure 1.2 graphically illustrates the relationships between the two concepts.

Customer Satisfaction

By quoting earlier researches, Rai & Medha, 2013, explained that satisfaction arises when customer weighs their perceptions of actual service performances against their expectations and any discrepancy between the two generates disconfirmation which can be of three types. Positive disconfirmation: high satisfaction, better than expectation, when product or service delivered is more than expected. Negative disconfirmation: high dissatisfaction, of inferior quality than expected, when product or service delivered is less than expected. Zero disconfirmation. According to them, the positive effect of customer satisfaction on loyalty has been repeatedly voiced in the literature.

Methodology

Research Design

This study adopted a quantitative, descriptive, and cross-sectional research design to examine the effect of e-banking service quality on customer satisfaction at the Commercial Bank of Ethiopia (CBE) in Nekemte Town. The design was appropriate because it allowed for the collection of quantifiable data from a large sample within a specific time frame, facilitating the identification of relationships between multiple variables. Similar approaches have been used in previous studies investigating service quality and satisfaction in banking contexts (Kheng et al., 2010; Asfaw, 2017; Adugna, 2019).

The study followed a positivist research paradigm, emphasizing objectivity, measurement, and statistical testing of hypotheses derived from established theories such as SERVQUAL and the Technology Acceptance Model (TAM).

Population and Sampling

The target population included all active retail customers of the Commercial Bank of Ethiopia (CBE) branches operating in Nekemte Town, Oromia Region. Based on preliminary branch data, the total customer base was considered sufficiently large to warrant a statistically valid sample.

A convenience sampling technique was employed to reach respondents who were accessible during the data collection period at five CBE branches. While probability sampling methods offer stronger generalizability, convenience sampling was suitable due to practical constraints and the exploratory nature of the research.

The sample size was determined using the formula proposed by Zikmund, Babin, Carr, and Griffin (2010) for large populations:

$$n = \frac{Z^2 c.1pq}{E^2}$$

Where -

n = number of items in sample.

$Z^2 c.1$ = Square of the confidence level in standard error units.

p = estimated proportion of successes

q = estimated proportion of failures

E^2 = square of the maximum allowance for error between the true proportion and the sample proportion, or $Zc1Sp$ squared.

Where:

→ $Z=1.96Z=1.96Z=1.96$ (confidence level at 95%)

→ $p=0.4p=0.4p=0.4$ (estimated proportion of positive responses)

→ $q=0.6q=0.6q=0.6(1-p)$

→ $E=0.05E=0.05E=0.05$ (allowable margin of error)

The calculation produced a required sample of **369 respondents**. Of these, **348 valid questionnaires** were returned, resulting in a **response rate of 94.3%**, which is considered highly satisfactory for survey research (Sekaran & Bougie, 2019).

Data Collection Instrument

Primary data were collected using a structured questionnaire designed around a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). The questionnaire consisted of two sections:

1. Demographic information of respondents (e.g., gender, age, education, income, and banking experience).
2. Measurement items for independent and dependent variables adapted from validated SERVQUAL scales (Parasuraman et al., 1988; Zeithaml et al., 2018) and customized for the e-banking context.

The instrument covered five independent variables: reliability, ease of use, delivery time, security, and overall service quality, and one dependent variable: customer satisfaction. A pilot test involving 30 customers was conducted to ensure clarity and relevance of the items before full data collection.

Data Collection Procedure

Data were collected over a period of four weeks in 2021 through personal administration of questionnaires at branch premises, ensuring real-time clarification of respondent queries and high response rates. Respondents were briefed on the purpose of the study, assured of anonymity, and informed that participation was entirely voluntary. No financial or material incentives were provided.

Validity and Reliability

Content validity of the instrument was verified through expert review by two academics in the field of management and one banking professional. Their feedback helped refine ambiguous items.

Construct reliability was assessed using Cronbach's alpha coefficients, which ranged from 0.81 to 0.87 for all constructs, exceeding the minimum threshold of 0.70 (Tavakol & Dennick, 2011). This indicates satisfactory internal consistency among measurement items.

Variable	Cronbach's Alpha	Interpretation
Reliability	0.81	Acceptable
Ease of Use	0.88	Good
Delivery Time	0.82	Good
Security	0.86	Good
Service Quality	0.84	Good
Customer Satisfaction	0.82	Good

Data Analysis Techniques

Data were analysed using Statistical Package for the Social Sciences (SPSS) version 25. Both descriptive and inferential statistics were applied.

- Descriptive analysis summarized demographic data and mean scores for each construct.
- Correlation analysis (Pearson's *r*) examined the strength and direction of associations among variables.
- Multiple linear regression analysis was

employed to test the hypothesized relationships between e-banking service quality dimensions (independent variables) and customer satisfaction (dependent variable).

The regression model was specified as:

$$CS = \alpha + \beta_1(RL) + \beta_2(EU) + \beta_3(DT) + \beta_4(SC) + \beta_5(SQ) + \epsilon$$

$$CS = \alpha + \beta_1(RL) + \beta_2(EU) + \beta_3(DT) + \beta_4(SC) + \beta_5(SQ) + \epsilon$$

$$CS = \alpha + \beta_1(RL) + \beta_2(EU) + \beta_3(DT) + \beta_4(SC) + \beta_5(SQ) + \epsilon$$

Where:

- CS = Customer Satisfaction

- RL = Reliability
- EU = Ease of Use
- DT = Delivery Time
- SC = Security
- SQ = Service Quality
- ϵ = Error Term
- Where,
- X1 = Reliability X2 = Ease of use X3 = Time of delivery
- X4 = Security X5 = Service quality
- ϵ = Model error term
- α = Constant beta value for the model

All model assumptions—including normality, linearity, multicollinearity, and homoscedasticity—were tested and found to be satisfactory.

Data Analysis and Presentation:

Respondents' profile

A total of 348 valid responses were received from the customers of the Commercial Bank of Ethiopia (CBE) in Nekemte Town, representing a 94.3% response rate. The demographic analysis showed that 57.8% were male and 42.2% were female, indicating higher adoption of e-banking among male customers. The majority of respondents (65%) were between the ages of 18 and 29, reflecting the dominance of young users in digital banking adoption. Most respondents were degree holders (33%) and government sector employees (36%), suggesting that education and employment status positively influence e-banking usage. These demographic insights are consistent with the findings of Worku et al. (2016) and Adugna (2019), which reported that younger and more educated individuals exhibit greater digital banking engagement. See table 3.1

Table 3.1: The personal profile of respondents

S. No	Personal information of respondent		frequency	percentage
1	Gender	Male	201	57.8
		Female	147	42.2
		Total	348	100%
2	Age group	18-29	226	65
		30-49	97	28
		Above 49	25	7
		Total	348	100%
3	Marital status	Married	254	73
		Single	94	27
		Divorced	-	-
		Widowed	-	-
		Total	348	100%
4	Educational Level	Primary	73	21
		Secondary	87	25
		Diploma	73	21
		Degree and above	115	33
		Total	348	100%
5	Respondents' profession	Student	56	16
		Gov. sector employed	125	36
		Private sector and self-employed	90	26
		NGO employee	77	22
		Total	348	100%

S. No	Personal information of respondent		frequency	percentage
6	Income Level	Less than Br2000	35	10
		Br2,001-10,000	254	73
		Above Br 10,000	59	17
		Total	348	100%
7	Which e -banking types do you use?	ATM	324	93
		POS	38	11
		Mobile banking	146	42
		Internet banking	14	4
8	Length of relationship with the CBE	below 1year	17	5
		1-2years	42	12
		2-4years	73	21
		>4year	216	62
		Total	348	100%
Source: Survey Result, 2021				

Descriptive analysis

Descriptive Statistics of E-Banking Service Quality Dimensions

Table summaries indicated that the overall mean scores for delivery time ($M = 4.55$) and security ($M = 4.58$) were the highest, suggesting that customers perceive these as the strongest dimensions of e-banking service quality. Conversely, reliability ($M = 2.83$) and service quality ($M = 2.56$) scored relatively lower, implying gaps in consistent service performance and general satisfaction levels.

These results reveal that while CBE's digital systems are perceived as secure and time-efficient, they need improvement in reliability and perceived quality of service delivery.

Similar patterns were reported by Asfaw (2017) and Kaur & Arora (2021), who found that technical reliability issues and limited customer support reduce satisfaction despite good transaction speed.

Correlation Analysis

Variable	Standardized Beta (β)	Sig. (p-value)	Interpretation
Reliability	0.154	0.001	Significant
Ease of Use	0.152	0.001	Significant
Delivery Time	0.228	0.000	Highly significant
Security	0.255	0.000	Highly significant
Service Quality	0.185	0.000	Significant
$R^2 = 0.762$, Adjusted $R^2 = 0.758$, $F = 218.68$ ($p < 0.001$)			

Pearson correlation results demonstrated strong and positive relationships between all independent variables and customer satisfaction (r values ranging between 0.837 and 0.926, $p < 0.05$).

The strongest correlation was observed between delivery time and customer satisfaction ($r = 0.926$), followed by reliability ($r = 0.917$) and security ($r = 0.879$).

These findings indicate that customers place high value on speed, dependability, and security in their digital banking interactions. The results align with the SERVQUAL dimensions of responsiveness and assurance, emphasizing their relevance in e-banking contexts. This outcome supports previous studies by Kheng et al. (2010) and Choudhury & Amin (2022), which found that system reliability and prompt service significantly predict satisfaction in digital financial services.

Regression Analysis

Multiple linear regression analysis was performed to examine the combined effect of e-banking service quality dimensions on customer satisfaction.

The model explains 75.8% of the variation in customer satisfaction, indicating strong explanatory power. Among the predictors, security ($\beta = 0.255$) and delivery time ($\beta = 0.228$) had the largest effects, suggesting that perceived safety of transactions and promptness of service delivery are the most influential factors driving satisfaction.

This aligns with findings from Hassan et al. (2023), who reported that transaction security and processing speed are the strongest determinants of customer confidence and continued digital usage in developing economies.

Linear Regression Model

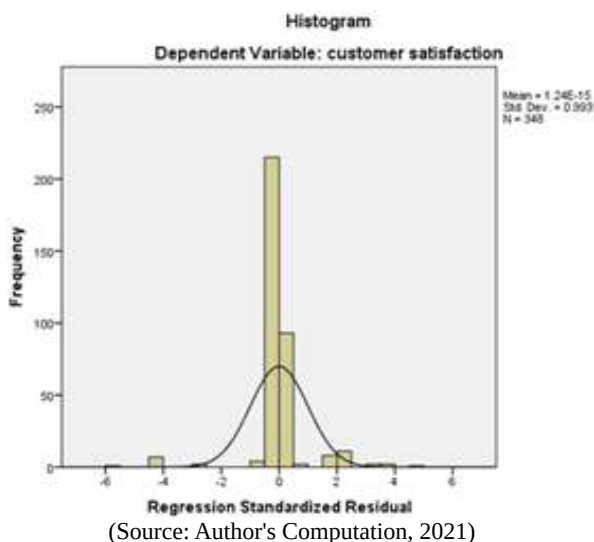
Multiple Linear regression analysis was used for investigating the effect of electronic banking services on customers' satisfaction of Commercial Bank of Ethiopia.

Linear Regression Model Assumption

Normality Assumption

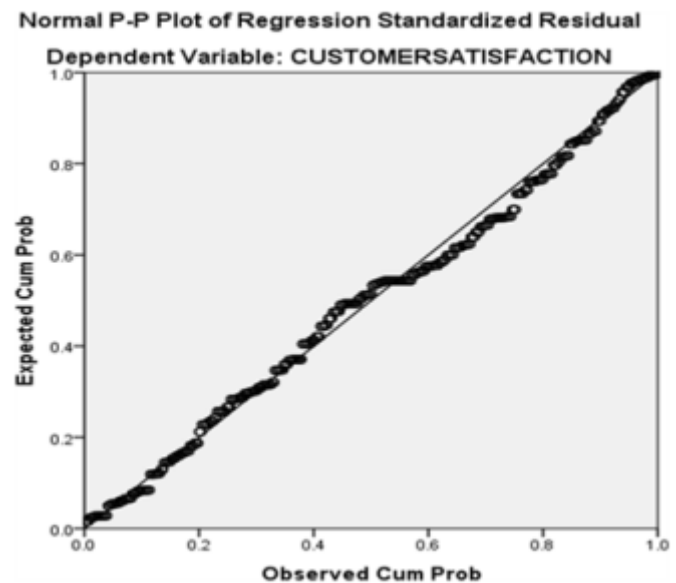
One of the linear regression model assumptions is normality. In order to test hypothesis about the model parameter the normality assumption must be fulfilled (Gujarati & Porter, 2009). The normality assumption about the mean of the residual is zero and constant (unit variance). The researcher used histogram type of graphical method for testing the normality. From the histogram shown in figure 3.1, it is revealed that the figure (histogram) is a bell-shaped indicating that the residuals are normally distributed around its mean of zeros which confirms to the normality assumption.

Figure 3.1 Normality Test



Additionally, the normal probability plots were used to test linearity of data as follows. The linearity assumption under multi linear model is straight forward. So, as revealed from the probability figure 3.2, it obeys the linearity assumption. The normal probability plots above indicate the linear distribution of the residual.

Figure 3.2 Linearity Test



Source: Author's Computation, 2021

Among the others, one of the assumptions was normality of the data should be tested before running the analysis of the data using Skewness and Kurtosis. According to Field 2005, normally distributed data assumed that the data are from one or more normally distributed populations.

Therefore, value of S (Skewness) and K (Kurtosis) and their respective standard errors were computed. An absolute value between -2 and +2 score for Skewness and Kurtosis is expected to be significant at $p < 0.05$ (Field, 2005). As we can see in table 3.9, all the absolute values of skewness and the kurtosis are between -2 and +2.

Table 3.9: Skewness and Kurtosis for normality of Data

	N Statistic	Skewness Statistic	Standard Error	Kurtosis Statistic	Standard Error
Reliability	348	-0.79	0.24	0.18	0.31
Time of delivery	348	-0.64	0.14	0.07	0.25
Service Security	348	-0.53	0.126	-0.29	0.233
Ease of Use	348	-0.53	0.132	-0.47	0.251
Service quality	348	-0.41	0.166	-0.7	0.251
Customer Satisfaction	348	-0.38	0.126	-0.76	
Source: Researcher's Survey, 2021					

Multi co-linearity Test

Multi co-linearity means the existence of “perfect,” or exact, linear relationship among some or all explanatory variables of regression model.

Any variable with tolerance value below 0.10 or with VIF value above 10.0 value would have a correlation of more than 0.90 with other variables indicate variable under

consideration is almost a perfect linear combination of the independent variables already in the equation and should not be included to the regression equation. Hence, as revealed on table 3.10: Coefficients of independent variables, all the explanatory variables fit the multi co-linearity assumption.

Table 3.10: Multi Co-linearity Test

Variables	Co-linearity Statistics	
	Tolerance	VIF
Reliability	0.427	2.34
Ease of use	0.244	4.106
Time of delivery	0.405	2.47
Privacy or security	0.38	2.63
Service quality	0.541	3.012
Source: Own Survey, 2021		

Discussion of Key Findings

The regression and correlation outcomes highlight several important theoretical and practical implications:

(a) Security as a Primary Satisfaction Driver

Customers' perception of security emerged as the most critical factor influencing satisfaction. This confirms the assurance dimension of the SERVQUAL model, where trust, confidentiality, and data protection underpin satisfaction. In developing banking environments, data breaches or transaction errors can lead to distrust. Therefore, banks must continuously strengthen encryption systems and communicate security protocols effectively.

(b) Delivery Time and Reliability

Fast transaction processing and dependable system performance were also major contributors to satisfaction.

This reflects the responsiveness and reliability dimensions of service quality. Delays in mobile or ATM transactions can create significant dissatisfaction. Similar evidence is found in studies by Misgana (2017) and Kaur & Arora (2021), emphasizing that reduced downtime and improved uptime monitoring directly improve customer experience.

(c) Ease of Use and Service Quality

Ease of navigation and user-friendly interfaces significantly influenced customer satisfaction, consistent with the Technology Acceptance Model (TAM), which highlights perceived ease of use as a determinant of acceptance. Although the general service quality score was moderate, it still significantly predicted satisfaction, implying that customers value both technical performance and service empathy. This suggests that human support (e.g., customer care responsiveness) still plays a

complementary role in digital service environments.

(d) Integration with SERVQUAL and TAM

The findings validate that the SERVQUAL dimensions remain relevant in the digital context when combined with technology adoption variables. The study confirms that assurance, reliability, and responsiveness—adapted as security, reliability, and delivery time—are the strongest predictors of satisfaction in e-banking. This integration contributes to the literature by demonstrating that SERVQUAL, when contextualized for e-banking, remains a robust predictor of customer satisfaction in developing countries.

Theoretical and Managerial Implications

Theoretical Contribution: This study extends the SERVQUAL framework into a digital environment and empirically validates its dimensions using a quantitative

model in Ethiopia's public banking sector. It supports the view that perceived service quality dimensions explain a substantial proportion (75.8%) of customer satisfaction, confirming the theoretical robustness of SERVQUAL and TAM when applied to digital service settings.

Managerial Implications: For the Commercial Bank of Ethiopia and similar institutions:

- Prioritize enhancement of digital security systems to strengthen customer trust.
- Improve system reliability and transaction uptime through better infrastructure and monitoring.
- Simplify user interfaces for mobile and online platforms to improve ease of use.
- Train customer support teams to promptly resolve technical issues, reinforcing perceptions of quality and responsiveness.

Summary of Results

Dimension	Effect on Satisfaction	Significance Level	Interpretation
Security	Strongest	$p < 0.001$	Ensures user trust and confidence
Delivery Time	Strong	$p < 0.001$	Reflects system speed and responsiveness
Reliability	Moderate	$p < 0.01$	Indicates stability of digital channels
Ease of Use	Moderate	$p < 0.01$	Influences adoption and comfort
Service Quality	Significant	$p < 0.001$	Contributes to overall perception

Overall, these findings reinforce that customer satisfaction in e-banking depends largely on security and responsiveness, supported by ease of use and reliability. The results are consistent with prior literature but contribute new empirical evidence from a less-studied Ethiopian regional context.

Conclusion and Recommendations

Conclusion

This study examined the effect of e-banking service quality on customer satisfaction in the Commercial Bank of Ethiopia (CBE), with empirical evidence from Nekemte Town. Using data from 348 customers and employing correlation and multiple regression analyses, the findings revealed that e-banking service quality significantly influences customer satisfaction, explaining approximately 75.8% of the total variance.

Among the five service quality dimensions, security and delivery time emerged as the strongest predictors of customer satisfaction, followed by reliability, ease of use, and overall service quality. This indicates that speed of service delivery are the most critical drivers of satisfaction in Ethiopia's digital banking environment.

The results confirm the continued relevance of the SERVQUAL model in the digital era when integrated with the Technology Acceptance Model (TAM). Together, they provide a robust framework for explaining customer satisfaction in online financial services. The findings contribute to the growing literature on digital transformation in banking, particularly within the context of developing economies where technological adoption is still evolving.

Theoretically, this study enhances the understanding of how classical service quality dimensions translate into

digital contexts. Practically, it highlights the need for banks to focus not only on technological investments but also on customer-centered digital strategies that enhance trust, reliability, and ease of use.

Managerial Implications

The results offer several actionable insights for the management of the Commercial Bank of Ethiopia and similar financial institutions:

1. **Enhance System Security:** Continuous investment in cybersecurity, data encryption, and fraud detection systems is essential to reinforce customer trust. Banks should also communicate security measures transparently to customers to build confidence in digital transactions.
2. **Improve Transaction Speed and System Uptime:** Since delivery time strongly affects satisfaction, banks should optimize system response times, upgrade network infrastructure, and minimize downtime during peak hours.
3. **Strengthen Reliability:** Technical glitches and transaction errors must be reduced through proactive monitoring and system maintenance. Regular system audits can help identify and resolve reliability gaps.
4. **Simplify User Interfaces:** Improving navigation and layout of mobile and internet banking platforms enhances perceived ease of use, encouraging wider adoption among less tech-savvy customers.
5. **Invest in Customer Support and Education:** Even in digital environments, responsive customer service and user education programs (e.g., online tutorials or chat support) are vital to improving overall service quality and satisfaction.

Policy Implications

At the policy level, the results provide evidence that can guide regulatory and developmental institutions such as the National Bank of Ethiopia and the Ministry of Innovation and Technology to:

- Promote digital literacy initiatives to enhance customer competence in using e-banking services.
- Encourage public-private partnerships to improve rural digital infrastructure.

- Develop standardized guidelines for service quality and cybersecurity compliance across financial institutions.

Limitations and Future Research Directions

While the study provides valuable empirical insights, several limitations should be acknowledged. First, the use of convenience sampling restricts the generalizability of findings beyond the sampled branches in Nekemte Town. Second, the research design was cross-sectional, capturing customer perceptions at a single point in time. Future studies could adopt longitudinal or mixed-method designs to explore changes in satisfaction over time and integrate qualitative insights.

Moreover, future research could:

- Include multiple banks or regions to enhance external validity.
- Employ structural equation modelling (SEM) to test causal pathways between service quality, trust, and loyalty.
- Examine moderating variables such as age, digital literacy, or perceived risk to provide deeper behavioural insights.

Overall Contribution

In conclusion, this study contributes to academic and managerial knowledge by empirically demonstrating that e-banking service quality—particularly security and delivery time—plays a pivotal role in shaping customer satisfaction in Ethiopia's public banking sector. By integrating SERVQUAL and TAM frameworks, the study extends traditional service quality theory into the domain of digital banking, providing a foundation for future comparative studies across developing economies.

The study underscores that customer satisfaction in digital banking depends not only on technological capabilities but also on the perceived service experience. As financial institutions continue their digital transformation, maintaining a balance between technology efficiency and human-centered service design will remain a key determinant of long-term customer loyalty.

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Credit Author Statement

- Dr. Manish Mittal (Corresponding Author): Conceptualization, Methodology, Supervision, writing – Review & Editing, Validation, Citation Management, Project Administration. Dr. Mittal contributed to the overall design of the study, reviewed and corrected the manuscript, ensured academic rigor and integrity, and managed the final submission process.
- Mr. Yadessa Olgira: Investigation, Data Curation, Formal Analysis, writing – Original Draft Preparation, Visualization. Mr. Olgira was primarily responsible for data collection, initial data analysis, interpretation, and drafting the original manuscript.
- Dr. Durga Prasad. T: Review & Editing, Validation, Methodology, Supervision. Dr. Prasad contributed through detailed review, critical feedback, methodological validation, and refinement of research content.
- Mr. Rupam Dhani: Project Administration, Resources, writing – Review & Editing, Visualization. Mr. Dhani assisted in document review, formatting, proofreading, reference alignment, and preparing the manuscript for submission.
- Dr. Kamal Kant Hiran: Data Curation, Resources, Visualization, writing – Review & Editing. Dr. Kamal supported in final formatting, layout consistency, figure and table arrangements, and ensuring overall presentation quality.
- Author Contribution Summary: All authors have read and approved the final manuscript and agree to be accountable for all aspects of the work.
- Ethical Approval Statement: This study involved human participants (customers of the Commercial Bank of Ethiopia) who voluntarily provided responses to a structured questionnaire. Formal approval for this research was obtained from the Research and Ethics Review Committee of the Department of Commerce, Wollega University, Nekemte, Ethiopia, prior to data collection.
- All participants were informed about the purpose of the study, assured of anonymity and confidentiality, and participated voluntarily.