

Research Article

Assessments of Factors Affecting Mobile Banking Adoption Among Bank Users in Tullu Bollo Town, Ethiopia, 2023

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Abstract

The most accessible gadget is the mobile phone. Researchers have defined mobile banking as a system that allows users to access financial services via their phones including making payments, viewing account summaries and conducting financial transactions. The primary objective of this study was to evaluate factors influencing the adoption mobile banking among banks' customers in Tullu Bollo Town, Ethiopia. The totals of 404 clients were required for this study. The study participants were chosen from all Banks using the convenient sampling technique. Data was entered into the Epi-data manager version 4.62 software application and exported to Statistical Package for Social Science version 25. Both descriptive analysis (such as frequencies, percentages, means, and standard deviation) and inferential analysis was done. The result of this study was presented using text, tables, and charts. A data for this study were collected from 404 study participants, and 391 banks customers were the interviewed and gave the response rate of 96.78%. This study was clearly indicated perceived usefulness, perceived trust and services qualities were significantly associated with mobile banking adoption. Managers and banks workers work hard on giving advice and information on usefulness trust, and services qualities of mobile banking to enhance mobile banking adoption.

Keywords

Factors Affecting, Mobile Banking Adoption, Banks' Users and Tullu Bollo Town

1. Introduction

Business is at the forefront of new innovations in banking and the wider financial markets because they are innovative, which is largely a result of severe. As a results regulation and supervision become more complex [1]. A bank is the financial institution that functions as middleman in the financial system, receiving deposits and utilizing them to finance lending activities, either directly through loans or indirectly through

capital markets. The intermediary between clients with financial deficits and those with surpluses is a bank [2].

Banks are the ones of the highest agencies of commerce. Thus the sound banking industry is extremely necessary to develop trade and industry, and it is very supportive to the economic activity and industrial progress of a country [3]. Bank has become a vital component of our lives and play

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significant role in our economy [4].

Mobile banking is a subset of electronic banking [5]. In addition to being used for banking transactions, mobile phones are also utilized for communication. Basic banking functions like checking balances, paying bills, and transferring money may now be performed by mobile users at any time, anyplace. An increasingly popular subset of online or electronic banking is mobile banking, or m-banking. It is a wireless network and mobile phone device-based application of mobile commerce. Due to its ability to facilitate banking transactions at any location or time, mobile banking offers a distinct advantage over traditional banking [4].

The most accessible device is a cell phone. According to researchers, mobile banking is a system that enables users to access financial services such as account summary viewing, financial transactions, and payment processing via a mobile device [6].

Banks and clients both benefit from mobile banking's ease of access from any location, financial control, round-the-clock availability, and lower transaction costs. All that is needed is a cellphone connection; an Internet connection is not necessary. Customers are not being charged by banks for using their mobile banking services. However, some costs for service are levied by wireless providers [4].

Prior studies have noted that the advantages of mobile banking stem from their increased coverage and accessibility compared to more conventional banking channels like retail branches and ATMs (Automated teller machines). Consumers lose a great deal of time traveling to ATMs or banks in order to complete their transactions. Mobile banking makes it possible to deliver services that are customized to each user's demands, including those related to time, location, and preference [3, 7].

The problems with mobile banking include perceived hazards, dependability of trust, and a lack of ICT infrastructure [8]. Users are being challenged regarding the value of SMS mobile banking by factors including service quality and awareness, which has an impact on their intention to use and adoption of the service [9, 10]. The ability to conduct transactions securely and privately on a mobile phone or a basic understanding of computers were important considerations in influencing customers to choose mobile banking [11]. Perceived usefulness, and Perceived ease to use were affecting consumer attitudes towards mobile banking [12, 13].

The finding of study done in Sri Lanka, Kurunegala District Diluxshy reported that perceived usefulness of the system, and perceived risk of the system have influence on Cell phone-banking usage [14]. Convenience of usage and effort expectancy were important factors which influence mobile payment usage intention among customers [15].

Utilizing M-banking services was hampered by perceptions of the system's service quality and long-term intention to use it [16]. Customers' acceptance of mobile banking is influenced by trust and transparency in a bank's service [17]. Relative advantage was an important factors in determining consumers' decision in mobile banking [18]. Factors such as

performance risk, security/privacy risk, time risk, social risk and financial risk are found to be negatively related with the usages of Mobile [19].

The result of the research indicated that, adoption of M-banking system in Ethiopia focusing on drivers of M-banking such as perceived ease of use and perceived usefulness while challenges are perceived risks [8].

The benefit of mobile banking was having an access to loans at competitive prices, get saved from the long queues in the bank that saves the time and energy and the individuals benefit from the personalized banking services [20].

Even though the penetration of mobile phones among the population continues to grow in significant numbers year after year and government give attention the customer's adoption of mobile banking service still remains low. Also many of study conducted on factors affecting mobile banking such as perceived risk, perceived usefulness, perceived risk, perceived trust and perceived ease and little study were done on services quality of mobile banking. Additionally, many studies were done on one bank, private or government bank but, this study will be done by including both private and government banks to assess factors affecting mobile bank adoption. Therefore, the aim of conducting this study was to fill these gaps.

1.1. Research Questions

Based on the above statement of the problem the research question is stated as follows:

- 1) To what extent does perceived usefulness of the system influences cell phone banking adoption in Tullu Bollo Town, Ethiopia?
- 2) To what extent does perceived trust of the system influences cell phone banking adoption in Tullu Bollo Town, Ethiopia?
- 3) To what extent does perceived risk of the system influences cell phone banking adoption in Tullu Bollo Town, Ethiopia?
- 4) To what extent does perceived services of the system influences cell phone banking adoption in Tullu Bollo Town, Ethiopia?
- 5) To what extent does perceived ease to use of the system influences cell phone adoption in Tullu Bollo Town, Ethiopia?

1.2. Objectives of the Study

1.2.1. General Objective

To examine factors influences cell phone adoption among banks' customers in Tullu Bollo town, Ethiopia.

1.2.2. Specific Objective

- 1) To examine the effect of perceived usefulness on cell phone banking adoption in Tullu Bollo Town, Ethiopia.

- 2) To examine the effect of perceived trust on cell phone adoption in Tullu Bollo Town, Ethiopia.
- 3) To examine the effect of perceived risk on cell phone adoption in Tullu Bollo Town, Ethiopia.
- 4) To examine the effect of perceived services quality on cell phone adoption in Tullu Bollo Town, Ethiopia.
- 5) To examine the effect of perceived ease to use on cell phone adoption in Tullu Bollo Town, Ethiopia.

1.3. Research Hypothesis

Based on a set of technological parameters and how they affect the uptake of mobile banking, the study was carried out. As a result, the following research hypotheses were developed based on the study's particular goals and examined.

Hypothesis one: - Perceived usefulness of the system has positive significant effect on cell phone banking adoption.

Hypothesis two: - Perceived risk of the system has positive significant effect on cell phone banking adoption.

Hypothesis three: - Perceived trust of the system has positive significant effect on cell phone banking adoption.

Hypothesis four: - Perceived services quality of the system has positive significant effect on cell phone banking adoption.

Hypothesis five: - Perceived ease to use of the system has positive significant effect on cell phone banking adoption.

2. Research Design and Methodology

Study Area: The study was carried out at all private and governments banks which found in Tullu Bollo, South West Shoa Zone, Ethiopia. It is located to 81km to the south of Addis Ababa.

2.1. Research Design and Approach

Measurements like statistical, mathematical, or numerical analysis of data gathered through surveys and interviews were conducted using a quantitative method. Because it discusses the study's methodology and attempts to establish a connection between the independent factors and the result, this research was explanatory. Multiple regression analysis was performed to see whether the variables had a direct impact on the adoption of mobile banking. The primary goal of this work was achieved through the use of a survey study design. While inferential research was utilized to demonstrate the influence of the explanatory variable on the uptake of mobile banking, descriptive research was utilized to characterize the population.

2.2. Source & Type of Data

This study used primary sources for data for data collection. Secondary data was used to increase the overall effectiveness of research made on all variables and their relationships. While the results to be noticed from the open-ended questions

were utilized to supplement the results found from the Likert scale type questions, the five Likert type questions were used to determine the factors and prospects of the subject matter. All banks located in Tullu Bollo Town received the questionnaire. When respondents needed further information when filling out the questionnaire, the researcher provided clarification on the question and the goal of the study.

2.3. Target Population

This study was aimed to collect data from all banks users in Tullu Bollo Town. For this study, the target population was comprises 39931 of bank users in Tullu Bollo Town. The population group was chosen from 9 banks found in the Town namely, CBE Bank, Awash Bank, Cooperative Bank, Oromia Bank, Dashen Bank, wegagan Bank, Nib Bank, Abysinia Bank and Sinke Bank. According to reports taken from banks CBE Bank had 17000 customers, Awash Bank had 1987 customers, Cooperative Bank had 15700 customers, Oromia Bank had 347 customers, Dashen Bank had 365 customers, wegagan Bank had 4000 customers, Nib Bank had 215 customers, Abysinia Bank had 205 customers and Sinke Bank had 102 customers. The customers were chosen based on their active appearance at branch for different reasons such as salary, transfer, frequent and appearing merchants.

2.4. Source Population

All banks customers at Tullu Bollo Town

Study population: -All banks customers in Tullu Bollo Town available during data collection period or all sampled banks customers.

2.5. Sample Size

Convenience sampling was employed to pick sample responses from the all banks in Tullu Bollo Town, then the data collector's interviews consumers of the bank. The sample size was calculated by using single proportion population formula by using the assumption of a 95% confidence level with a marginal error of 5%, by taking proportion of 50% (0.5).

$$n = \frac{Z^2 \alpha / 2^2 P (1-p)}{d^2}$$

Where n= number of the study subjects

Z is standardized normal distribution value for the 95% confidence interval (1.96).

P = p-value (50%)

q=1-p =1-0.5 =0.0.5, p=0.5 and q =0.5

d = the margin of error taken as 5% = 0.05

$$n = \frac{Z^2 \alpha / 2^2 P (1-p)}{d^2} = \frac{1.96^2 (0.45 \times 0.55)}{0.05^2} = 384$$

By considering 5% (20) non-response rates of th bank user the final sample size required for this research was 404.

Sampling procedure

After customer those have opened mobile banking at all in Tullu Bollo Town were identified. The number of study participants from each Banks were determined by proportional allocation to population size by using an average of one month's last year's customer services. To allocate sample size to each banks an average of one month last year customer services was used.

Proportional allocation: To allocate sample to each banks using proportional allocation was used. The formula: $n_i = N_i/N * n$, where n = total sample size to be chosen, N = total banks users, N_i = total population of each banks n_i = sample size from each banks.

After proportionally allocated 171 customers were selected from CBE Bank, 20 customers were selected from Awash Bank, 159 customers were selected from Cooperative Bank, 4 customers were selected from Oromia, 4 customers were selected from Dashen Bank, 40 customers were selected from wegagan Bank, 3 customers were selected from Nib Bank, 2 customers were selected from Abysinia Bank and 1 customers were selected from Sinke Bank. Then, convenient sampling technique (those available at the study period (data collection period)) was used to select study participant from each banks.

2.6. Data Collection Tools and Procedure

A Structured tool was adapted after reviewing various kinds of literature. The tool consisted of 6 items of Socio-demographic characteristics, 2 items of Mobile banking usage, 8 items of perceived usefulness, 9 items of perceived risk, 3 items of perceived trust, 6 items of perceived ease to use, 2 items of services quality and 4 items of external factors. The questionnaires contain 8 parts and 40 items.

The data was gathered by using a pre-tested structured frontal interview questionnaire prepared by Afan Oromo. The data was collected by four degree finance and accounting students who are fluent in the local language and supervised by two senior finances and accounting worker.

2.7. Data Quality Control (Assurance)

To make sure the quality of tools, tools were adapted from related articles, pre-tested on 5% of the study participants (20 customers) at woliso town. The collected data was entered and Cron bach alpha analysis by SPSS version 25 to assess the reliability of the questionnaires. The questionnaires contain 8 parts and 40 items.

Supervisors and data collectors were chosen from the study's workforce. To reduce bias and provided supervisors and data collectors with a one-day education on data gathering techniques, tools, study objectives, and ethical considerations. Data gatherers were under close supervision. The supervisors examined the questionnaire at the end of each day to make sure it was complete and made any necessary modifications.

Data were entered into Epi data version 4.62 software applications to minimize errors, to check double data entered

and design skipping pattern. The overall computed value of perceived risk of the system, perceived usefulness of the system, perceived trust of the system, services quality of the system, and perceived ease to use of the system were normally distributed. There were no outlier and missed data. In this research multi co-linearity was checked by using variance inflation factors, and tolerance. The model summary was checked by adjusted R-square.

2.8. Data Processing and Analysis

The consistency and completeness of the information gathered from study participants was verified against the collected data. After that, the information was imported into Epi-data management 4.62 and exported to SPSS version 25 for examination. It was done a descriptive analysis using statistics like means, frequencies, percentages, and standard deviation. In particular, statistical inference as well as descriptive analysis was conducted. The impact of the independent variable on the dependent variables was ascertained by regression analysis. The multiple linear regressions were deemed statistically significant when the p-value was less than 0.05. The outcome was displayed with the use of text, tables, and charts.

2.9. Ethical Consideration

An ethical clearance letter was taken from Ambo University, Woliso Campus college of Business and Economics. Next, each Bank provided a letter of consent for the data collection. After describing the goals, advantages, and dangers of the study, participants provided verbal informed permission to indicate their willingness to participate. The choice to participate in the study was entirely voluntary, and participants may withdraw from it at any moment. No personal information was included in the study's.

3. Results

In this study a data were collected from 404 study participants, and 391 banks customers were the interviewed and gave the response rate of 96.78%. The 13 questionnaires were incomplete and excluded from the analysis.

3.1. Socio-Demographic Characteristics of the Respondents

The minimum age of bank users were 17 years while the maximum was 78 years with a mean age of 34.22 ($SD \pm 13.956$). Among 391 of the study participants the majority, 330 (84.4%) of them were male. Greater than half of the study participants 234 (62.1%) were from rural. sixty one (15.6%) of respondents had diploma and above (table 1).

Table 1. Socio-demographics characteristics of banks' customers in Tullu Bollo town, 2023 (n= 391).

Variables	Variables Categories	Frequency	Percent
Sex	Male	330	84.4
	Female	61	15.6
Residency	Urban	148	37.9
	Rural	243	62.1
Marital status	Unmarried	58	14.8
	Married	333	85.2
Educational status	No formal education	79	20.2
	Primary education	132	33.8
	Secondary education	119	30.4
	Diploma and above	61	15.6
Occupational status	Farmer	112	28.6
	Merchant	99	25.3
	Government employee	101	25.8
	Self-employee	68	17.4
	Others	11	2.8

3.2. Usage of Mobile Banking

According to current study, 137 (35%) of respondents were strongly agreed on using the cell phone banking for a long time and had general knowledge in mobile banking while 26 (6.6%) of them were strongly disagreed (table 2).

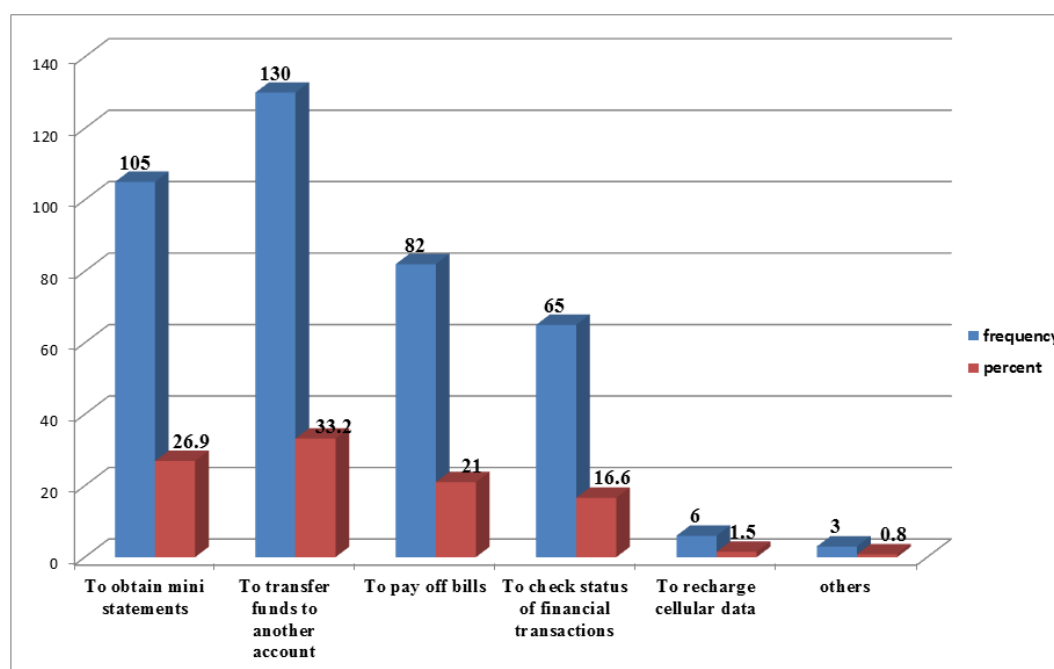
**Figure 1.** Purpose of usage mobile banking among banks' customers in Tullu Bollo Town, 2023 (n= 391).

Table 2. Usage of mobile banking among banks` customers in Tullu Bollo town, 2023 (n= 391).

Variables	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		Mean	SD
	N	%	N	%	N	%	N	%	N	%		
I have been using the cell phone banking for a long time and I have good knowledge in mobile banking	26	6.6	80	20.5	45	11.5	103	26.3	137	35	4	1.32

Perceived usefulness of the respondents

In this study among 391 respondents, 190 (48.6%) of them were agreed on mobile banking helps to make transactions.

Among 391 respondents, 143 (36.6%) of them were strongly agreed on mobile banking allows for bank to bank transfer (table 3).

Table 3. Perceived usefulness of the respondents of banks` customers in Tullu Bollo town, 2023 (n= 391).

Variables	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		Mean	SD
	N	%	N	%	N	%	N	%	N	%		
Mobile banking helps to make transactions	27	6.9	36	9.2	12	3.1	190	48.6	126	32.2	3.9	1.16
Mobile banking allows one to make payments	23	5.9	73	18.7	30	7.7	110	28.1	155	39.6	3.77	1.3
Mobile banking allows one to make withdrawals and deposits	13	3.3	44	11.3	28	7.2	142	36.3	164	41.9	4.02	1.12
Mobile banking is convenient to users	22	5.6	78	19.9	44	11.3	104	26.6	143	36.6	3.69	1.3
Mobile banking allows for bank to bank transfer	28	7.2	60	15.3	31	7.9	129	33.0	143	36.6	3.76	1.29
Mobile banking allows customers to check bank balances	16	4.1	44	11.3	34	8.7	128	32.7	169	43.2	4.00	1.16
Mobile banking minimizes visit to branches	20	5.1	44	11.3	37	9.5	126	32.2	164	41.9	3.95	1.2
Mobile banking is easily accessible	18	4.6	44	11.3	31	7.9	137	35.0	161	41.2	3.97	1.17

3.3. Perceived Risks of the Respondents

In this study among 391 respondents, 168 (43%) of them were strongly agreed on mobile banking provides sufficient security. One hundred fifty four (39.4%) of them were

strongly agreed existence of major security issues with mobile banking. Among 391 respondents, 178 (45.5%) of them were strongly agreed on Customers can lose money through mobile banking (see table 4).

Table 4. Perceived risk of respondents of banks customers in Tullu Bollo town, 2023 (n= 391).

Variables	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		Mean	SD
	N	%	N	%	N	%	N	%	N	%		
Customers can lose money through mobile banking	33	8.4	26	6.6	24	6.1	153	39.1	155	39.6	3.95	1.22
Mobile banking is less costly	30	7.7	37	9.5	15	3.8	156	39.9	153	39.1	3.93	1.22
Mobile banking provides sufficient security	27	6.9	50	12.8	21	5.4	125	32.0	168	43.0	3.91	1.27
Mobile banking have sufficient security	44	11.3	58	14.8	35	9.0	103	26.3	151	38.6	3.66	1.41
There are major security issues with mobile banking	37	9.5	51	13.0	37	9.5	112	28.6	154	39.4	3.75	1.34
Customers can lose money through mobile banking	14	3.6	46	11.8	36	9.2	117	29.9	178	45.5	4.02	1.16
There are several cases of privacy violation in mobile banking	48	12.3	71	18.2	47	12.0	98	25.1	127	32.5	3.47	1.42
Mobile banking meets customers' expectations	48	12.3	29	7.4	16	4.1	152	38.9	146	37.3	3.82	1.34
Mobile banking has major breakdowns	52	13.3	30	7.7	16	4.1	136	34.8	157	40.2	3.81	1.38

3.4. Perceived Trusts of the Respondents

In this study among 391 respondents, 182 (46.2%) of them were strongly agreed on using cell phone banking, I believe

my banking transactions were secured. One hundred forty two, 142 (36.3%) of them strongly agreed on using cell phone banking, I believe my information was kept confidentiality (see table 5).

Table 5. Perceived trusts of respondents of banks` customers in Tullu Bollo town, 2023 (n= 391).

Variables	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		Mean	SD
	N	%	N	%	N	%	N	%	N	%		
Using mobile banking, I believe my transactions are secured	32	8.2	58	14.8	13	3.3	106	27.1	182	46.5	3.89	1.35
Using cell phone banking, I believe my privacy was kept secured;	44	11.3	63	16.1	38	9.7	99	25.3	147	37.6	3.62	1.41
Using cell phone banking, I believe my information was kept confidential	52	13.3	51	13.0	39	10.0	107	27.4	142	36.3	3.60	1.43

3.5. Perceived Service Quality of the Respondents

In this study among 391 respondents, 191 (48.8%) of them were strongly agreed on mobile banking services. One hundred fifty five (39.6%) of them were agreed mobile banking services (see [table 6](#)).

Table 6. Perceived service quality of respondents of banks customers in Tullu Bollo town, 2023 (n= 391).

Variables	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		Mean	SD
	N	%	N	%	N	%	N	%	N	%		
My cell phone service has visually appealing such as graphic, appropriate colors and fonts, and good page layout In my cell phone banking menu	16	4.1	31	7.9	33	8.4	120	30.7	191	48.8	4.12	1.12
My cell phone banking service was always available without network and system frailer	34	8.7	42	10.7	23	5.9	155	39.6	137	35.0	3.82	1.26

Table 7. Perceived service ease to use of respondents of banks` customers in Tullu Bollo town, 2023 (n= 391).

Variables	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		Mean	SD
	N	%	N	%	N	%	N	%	N	%		
My cell phone banking menu was very easy to navigate	31	7.9	39	10.0	32	8.2	134	34.3	155	39.6	3.88	1.26
My cell phone banking menu was very easy to understand	36	9.2	39	10.0	8	2.0	102	26.1	206	52.7	4.03	1.33
It is easy to make a payment by cell phone	37	9.5	34	8.7	15	3.8	106	27.1	199	50.9	4.01	1.32
It is easy to make transfer money	27	6.9	42	10.7	21	5.4	129	33.0	172	44.0	3.96	1.24
It is easy to make a balance inquiry by cell phone banking	42	10.7	95	24.3	54	13.8	96	24.6	104	26.6	3.32	1.37
My cell phone banking menu was very easy to navigate while activate	68	17.4	94	24.0	46	11.8	81	20.7	102	26.1	3.14	1.47

3.6. Perceived Service Ease to Use the Respondents

In this study among 391 respondents, 206 (52.7%) of them

were strongly agreed on cell phone banking menu is very easy to understand. Greater than half of respondents, 199 (50.9%) of them were strongly agreed on easy to make a payment with mobile banking. Among 391 respondents, 104

(26.6%) of them were strongly agreed on easy to make a balance inquiry through mobile banking (see [table 7](#)).

3.7. Reliability Test

The degree to which a measurement yields consistent results and is primarily concerned with measure consistency is known as reliability. The internal consistency of a sample set, or how

closely linked they are to one another as a group, is measured by Cronbach's alpha. It is regarded as scale reliability metric. It is not implied that a measure is one-dimensional by a "high" alpha value. According to technical definitions, Cronbach's alpha is a coefficient of consistency or reliability. A value of α more than 0.7 indicates strong dependability; 0.5 is sufficient; while a value less than 0.3 indicate low reliability (see [table 8](#)).

Table 8. Reliability test of cronbach alpha value.

Variable	Cronbach's Alpha	N of Items
Perceived usefulness	0.863	8
Perceived risk	0.842	9
Perceived trust	0.714	3
Perceived service quality	0.578	2
Perceived ease to use	0.671	6
External factors	0.514	4
Overall Reliability	0.916	32

3.8. Multicollinearity and Out Correlation Test

Multicollinearity reduces unstable regression analysis coefficient estimations by suggesting that there is little redundant data in the model when testing regression analysis. All independent variables have an average correlation that is less than the maximum tolerance value of 0.9. Mult co-linearity

was checked by using variance inflation factors, variance inflation factors was ranged 1.01-1.553 and tolerance test was ranged 0.644-0.99. The findings were significant because the correlation regression between the variables does not undermine the statistical significance of an explanatory variable and the value of Durbin -was 1.71 this was showed that there is no out correlation (see [table 9](#)).

Table 9. Multicollinearity and Out correlation test.

Variable	Unstandardized Coefficients B	Std. Error	Standardized Coefficients B	% Confidence Interval for B		Collinearity Statistics	Durbin Watson
				Lower Bound	Upper Bound		
(Constant)	-0.453	0.435		-1.308	0.401	1.71	VIF
Perceived usefulness	0.093	0.009	.483	0.074	0.111	0.658	1.521
Perceived risk	0.006	0.007	.034	-0.008	0.019	0.934	1.071
Perceived trust	0.045	0.018	.116	0.009	0.081	0.700	1.429
Perceived service quality	0.079	0.033	.119	0.014	0.143	0.644	1.553
Perceived ease to use	0.006	0.010	.023	-0.014	0.025	0.990	1.010

Normality test:-A data set's suitability for a normal distribution was assessed using normality tests, which also calculated the likelihood that a random variable underlying the data set would also be normally distributed. In reality, every sample case has a unique random variable that includes variances between observed and anticipated values derived from a regression equation; this disturbance term, also known as noise, should have a normally distributed distribution over all sample instances. The value of P-P plot showed the relationship between the independent variables and outcome variables was normal, because its values follows straight-line and the value of Kolmogorov-smirnov and Shapiro wilkos was (p-value=0.056 and p=0.58) respectively this was greater than p-value of 0.05 therefore data set was normally distributed.

Correlation Analysis:-One handy way to condense the link

between two variables into a single number between -1 and +1 is to utilize a correlation coefficient. For every variable in this study, a correlation analysis using Pearson's correlation coefficient (r) was performed to investigate the links between the variables. We can square the correlation coefficient to get a more precise estimate of causation, even if it cannot draw any clear conclusions regarding it. The amount of variability in one variable that is explained by the other is measured by the correlation coefficient squared, or R^2 , also referred to as the coefficients of determination.

All the correlation coefficients were positive expect perceived risk of the system, with a maximum value of 0.359 and its minimum value of 0.011. Furthermore, they are all significant at the 0.05 level, thereby implying that the coefficients are significantly different from zero (see table 10).

Table 10. Correlation analysis of outcome variable with independent variables.

Pearson Correlations	Perceived usefulness	Perceived risk	Perceived trust	Perceived service quality	Perceived ease to use	Adoption of mobile banking
Perceived usefulness	1					
Perceived risk	-0.151**	1				
Perceived trust	0.293**	0.109*	1			
Perceived service quality	0.359*	0.121*	0.386*	1		
Perceived ease to use	0.019*	0.043*	0.058*	0.051*	1	
Adoption of mobile banking	0.753*	0.120*	0.395*	0.431	0.107*	1

**. Correlation is significant at the 0.05 level (2-tailed).

3.9. Multiple Linear Regression Analysis

When all other variables are held constant, linearity in multiple linear regression analysis enables us to estimate the relationship between a particular independent variable and the result. To determine whether there is a linear link, also known as a linear association and described as a straight line relationship between the variables, the linearity of the dependent and independent variables is assessed.

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$ become:

$Y = -0.453 + 0.093X_1 + 0.045X_2 + 0.079X_3$

Where: Y= Mobile banking adoption; X_1 = Perceived use-

fulness; X_2 = Perceived trust; X_3 = Service quality; e = error term, β_0 = constant, $\beta_1, 2, 3$, = coefficients.

3.10. Model of Regression

As indicated in the model summary above R square of 0.582 and adjusted R square of 0.575 with standard deviation of 0.862. It measured the proportion of the variation in the outcome variable (cell phone banking adoption) explained by the explanatory variables for a linear regression model used while the adjusted R-squared indicated the adjusted data based on the number of independent variables in the model (see table 11).

Table 11. Regression model summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.763 ^a	0.582	0.575	0.862

The ANOVA table indicated that the overall significance/acceptability of the model from a statistical perspective. As showed in the [table 13](#), the p-value is less < 0.05 i.e. 0.0001 which indicated that the variation explained by the

model is not due to chance. So, the ANOVA table showed that the acceptability of the model. Therefore, the regression model fit to a good degree of prediction for this study (see [table 12](#)).

Table 12. ANOVA table.

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	396.297	6	66.049	88.935	0.000 ^b
	Residual	285.187	384	0.743		
	Total	681.483	390			

a. Dependent Variable: Mobile banking adoption

b. Predictors: (Constant), perceived risk, perceived usefulness perceived trust, services quality, perceived ease to use and external factors

After controlling possible confounding variables by multiple linear analysis, perceived usefulness perceived trust, and services quality were significantly associated with cell phone bank adoption at a p-value < 0.05 .

According to the findings of current study revealed that, if the perception of customers to ward usefulness of mobile banking was increased by one units the adoption of cell phone

banking was increased by 0.093 unit ($B=0.093$, $P=0.0001$). If the perception of customers to ward trusts of mobile banking was increased by one units the adoption of cell phone banking was increased by 0.045 unit ($B=0.045$, $P=0.015$). In addition, if the service quality of cell phone banking was increased by one units the adoption of mobile banking was increased by 0.079 unit ($B=0.079$, $P=0.017$) (see [table 13](#) and [table 14](#)).

Table 13. Multiple linear regression analysis of factors affecting with mobile banking adoption among banks customers in Tullu Bollo, 2023 (n=391).

Variable	Unstandardized Coefficients B	Std. Error	Standardized Coefficients B	t	Sig.	95.0% Confidence Interval for B
(Constant)	-0.453	0.435		-1.043	0.298	-1.308-0.401
Perceived usefulness	0.093	0.009	.483	9.865	0.000	0.074-0.111
Perceived risk	0.006	0.007	.034	.832	0.406	-0.008-0.019
Perceived trust	0.045	0.018	.116	2.438	0.015	0.009-0.081
Perceived service quality	0.079	0.033	.119	2.401	0.017	0.014-0.143
Perceived ease to use	0.006	0.010	.023	0.580	0.562	-0.014-0.025

Table 14. Summary of Hypothesis.

Hypothesis	Findings
Hypothesis one: - Perceived usefulness of the system has positive significant effect on cell phone banking adoption.	$B=0.093$ $P < 0.05$ =Accepted
Hypothesis two:- Perceived risk of the system has positive significant effect on cell phone banking adoption	$B=0.006$ $P > 0.05$ =not accepted

Hypothesis	Findings
Hypothesis three:- Perceived trust of the system has positive significant effect on cell phone banking adoption	B=0.045 P< 0.05=Accepted
Hypothesis four:- Perceived services quality of the system has positive significant effect on cell phone banking adoption	B=0.079 P< 0.05=Accepted
Hypothesis five:- Perceived ease to use of the system has positive significant effect on cell phone banking adoption	B=0.006 P> 0.05=not accepted

4. Discussion

This research was to aimed assess perceived risk, perceived usefulness, perceived trust, services quality, and perceived ease to use influences adoption of cell phone banking. This result showed that perceived usefulness, perceived trust, and services quality were found factors that affecting adoption of mobile banking.

Accordingly, perceived trusts on mobile banking was associated with adoption of mobile banking. This was similar with study conducted in Pakistan [21], in Poland (Adamek, 2021), in Indonesia [22] and in Jimma, Ethiopia [23]. This might be due to customer who have believed and trust on transaction, privacy and confidentiality of mobile banking were had high probability to adopt mobile banking. The other possible reason might be due to bank improve services the sensation of transparency, confidentiality and safety of environment it will encourage customers to adopt the service.

Similarly, perceived usefulness on mobile banking was associated with adoption of mobile banking. This was similar with study done in India [15], in Kenya [24], and in Indonesia [22]. This might be the fact that customers who were understood and awared the usefulness of mobile baking for transfer, deposit to other banks, and to check bank balances were more adopted to use of it than customers who were not understood and awared the usefulness of mobile baking for transfer, deposit to other banks, and to check bank balances.

Moreover, services quality on mobile banking was associated with adoption of mobile banking. This was similar with study carried out in Sudan [25]. This might be due to customers who have better service quality on transfer, making transaction, checking balance, and easy to navigate mobile menu and were had better to adopt mobile banking.

Summary

This part summarized the core points and major findings which obtained from data analysis of the study.

In terms of the respondents' sociodemographic traits, of the total number of respondents, the majority were male (84.4%) and came from rural areas (62.1%). In terms of the instrument's reliability, all dimensions and constructs had Cronbach's Alpha values more than the cutoff value of 0.5,

indicating that the scales employed in the questionnaire either internally consistent or satisfactorily measured the constructs.

The Pearson correlation coefficient was done to determine the relationship between the independent and the outcome variables. As a result, all of the independent variables had positive association with adoption of mobile banking.

Finally, the findings of linear regression analysis revealed that three independent variables were statistically significant at $p<0.05$). Among the independent variables, perceived usefulness, perceived trust, and services qualities had positive significant effect on cell phone banking adoption. Among the independent variables, perceived usefulness (0.093) has the highest positive significant effect on mobile banking adoption.

The result of R square (R^2) was 0.572 which implies, 57.2% of the variability of overall adoption of mobile banking was explained by the six independent variables were investigated in this study. The other variables that were not considered in this study contributed 42.8% of the variability of adoption of mobile banking. Likewise, the Beta weight score indicated that three of the independent variables had positive significant effect on dependent variable (adoption of cell phone banking).

5. Conclusion

The scope of this study was to find out the factors affecting adopting m-banking among customers of in Tullu Bollo Town, Ethiopia banks. The empirical research presented in this paper reveals that perceived usefulness, perceived trust, and services qualities were significantly associated with cell phone banking adoption.

Perceived usefulness of the system was one of the factors affecting cell phone banking adoption. Customers who were understood and believed the usefulness of mobile baking for transfer, deposit to other banks were adopting mobile banking. Customers who believed and trust on transaction, privacy and confidentiality of mobile banking were more to adopt mobile banking. Customers who have better service quality on transfer, making transaction, checking balance, and easy to navigate mobile menu were had better to adopt mobile banking. This implies that improving customer perception on usefulness, trust, and services qualities to improving mobile adoption.

Banks managers work hard on giving advice and information on usefulness trust, and services qualities of mobile banking to enhance mobile banking adoption. Strength information desk team who work in banks to distribute promotion materials, and forward updated system services on mobile banking to improve mobile banking adoption. It is better to giving information and making the awareness on trust regarding transaction, privacy and confidentiality of mobile banking to improve mobile banking adoption. Work hard to create awareness on mobile banking utilization like for transfer, deposit to other banks, and to check bank balances to enhance mobile banking adoption. The banks workers focus on service quality rather than focusing only on number of customers that doesn't guarantee the banks digitalization strategy by giving important support for customers.

Abbreviations

ATM	Automated Teller Machine
CBE	Commercial Bank of Ethiopia

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Author Contributions

Bacha Merga Chuko: Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review.

Sisay Melaku: Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review, & editing.

Girum Takele: Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review.

Data Availability Statement

The corresponding author is willing to provide the dataset that was used in the this study based upon reasonable request using 'bachamerga11@gmail.com

Consent

Informed consent was taken from every study participant before the actual data collection started.

Conflicts of Interest

Authors declare that no conflicts of interest regarding to this study.

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