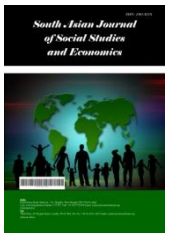

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The Moderation Effects of Demographic Variables on Trust of Mobile Phone Banking Services; a Case Study of Smallholder Farmers in Dodoma Region, Tanzania

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Authors' contributions

This work was carried out in collaboration among all authors. Author AAR designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors BLC and EMT managed the analyses of the study. Author EMT managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

This study analyzed the moderation effect of demographic variables on the trust in mobile phone banking services among smallholder farmers in the Dodoma Region. The study employed a quantitative research design with cross-sectional field surveys and structured questionnaires were employed as the research methods. The study employed a sample size of 355 smallholder farmers who were drawn by simple random sampling from grapes farmers. SPSS was used as an analytical tool for quantitative data analysis. Multiple linear regressions and Fisher's Z-transformation were involved to test the moderating effect of demographic variables.

Results show that demographic factors namely sex, age, experience, level of income, level of education, and marital status were significant moderating variables. However, the level of education did not show any moderating effect. Our results suggest that by integrating the accessibility and ease of use from the Technology Acceptance Model (TAM), age, sex, and experience from the Unified Theory of Acceptance and Use of Technology (UTAUT), and security and privacy from the Protection Motivation Theory (PMT), the research provides insights into the factors influencing consumers' trust in mobile phone banking services. Besides, the results of

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moderating effect improve our understanding of the demographic differences, which influence the degree of mobile banking adoption. Besides, the results of moderating effect improve our understanding of the demographic differences, which influence the degree of mobile banking adoption. This study will help researchers and service providers to come up with improved mobile phone trust frameworks with a greater understanding of the influence of demographic variables.
No similar study had been done in sub-Saharan African countries. Therefore, the study provides new knowledge and insight into the influence of demographic variables on the trust in mobile phone banking services.

Keywords: Mobile phone banking services; demographic variables; trust; privacy; accessibility; ease of use; security; regression analysis.

1. INTRODUCTION

Several studies have used the Technology Acceptance Model (TAM), the Unified Theory of Acceptance and Use of Technology (UTAUT), and Protection Motivation Theory (PMT) to describe user behavior and intention to adopt new technology. Moreover, many research studies have been done to examine the moderating result of demographic variables on user trust in technology. In this study, we integrated several variables to form a study model. The integrated variables (moderators) are gender (sex), age, and experience from UTAUT added with education level, income level, and marital status; ease of use and accessibility from TAM and privacy and security from PMT. The study model was explained by the ease of use, accessibility, privacy, and security moderated by demographic variables (sex, age, experience, education level, income level, and marital status) to explain trust in mobile phone banking services.

Ease of use of technology is noted when someone believes that using technology will not feel overwhelmed [1]. Technology users build on trust if that technology is simple and accessible at all times [2]. Security refers to a measure of a person's sense of safety when accessing or providing sensitive information on the web [3]. Similarly, Singh et al [1] defined security as a danger that creates conditions, environments, or events with the potential to cause data or network resources in the form of damage, or denial of service. Service users need a sense of safety when doing financial businesses and it is still the major barrier to electronic business growth [4]. Since personal and financial information can be used for fake purposes, virtual services need to involve greater security concerns than conventional trading to influence the acceptance of the service [5]. Privacy is defined as the possibility that online business operators collect data about service users and use those data for predetermined purposes [6]. Mobile phone banking service users are unwilling to disclose their financial information to service providers because they feel that service providers could make unauthorized use [7]. The privacy concerns are considered into two dimensions where the first is related to concern for data collection and the other is an inappropriate use of the information [8]. Within the electronic environment, privacy refers to the safety and protection of data, information, and transactions from disclosure, abuse, or fraud. The absence of privacy leads to influences attitudes toward trust in technology [5] or vacates adoption intentions such as m-banking usage [1].

While customer adoption of online banking has been studied broadly, insufficient studies exist which discover the factors that impact the trust in mobile banking services moderated by demographic variables in the Tanzanian context. Furthermore, the moderating effect of demographic variables on the trust in mobile banking has been limited to gender, age, and income. This study, therefore, intends to analyze the influence of demographic variables (sex, age, experience, education level, income level, and marital status) on ease of use, accessibility, privacy, and security when explaining trust in mobile phone banking services. By including the moderator variables, we hope to reduce the discrepancies found in past research. According to Abayomi et al [9], demographic factors such as age, gender, income level, and occupational level do influence the adoption of mobile banking services in Benin City. The second part of this study reviews the literature around moderating the influence of various demographic variables followed by research gaps and objectives of the study.

1.1 The Moderation Effect

1.1.1 The moderation effect of age

The research on trust in technology was used to establish that younger users act differently as equated to their counterparts. The aged ones tend to be relatively left behind in terms of technology used for conducting businesses as they are skeptical about the technology where they trust more direct businesses. Rajaobelina et al [10] found "age to be a robust predictor of trust in new product ownership in the customer electronics group". "Age is determined to have a moderating influence on technology use and insights" [11]. Technology concern appears to affect the level of trust amongst varying age groups with aged consumers requiring more technology concerns. Age stresses ease of use and privacy concerns and in turn moderates trust to accept the use of mobile banking. Trabelsi-Zoghlami et al [12] found that "demographic variables of age and gender had an adequate moderating effect on the acceptance of mobile technologies in healthcare". "Consumer behavior was significantly moderated by age through its association with facilitating conditions and trust amongst Lebanese respondents" [13]. Samsudeen et al [14] in "the setting of mobile learning in Sri Lanka found age to have a moderating influence on effort expectancy and social influence". "Concerning age, security and comfortability are found to be sophisticated in older respondents as compared to younger ones" [10]. "Aged people tend to have higher technology worry and are less technologically inventive compared to young customers. The younger people are comparatively early adopters of new technologies" [15]. However, some studies contend that the age of the user does not have a significant influence on their trust behavior. Furthermost the technologies nowadays regardless of age and social class are accessible and cheap to a larger population. According to Hernandez et al [16] "in the early stages of technology introduction, there was a clear unfairness in the profile of customers but with time, the dissimilarities in terms of the demographic profile are lessening".

Among the Chinese respondents, age was found to have a significant effect on the relationship with mobile commerce-related businesses [17]. Martins et al [18] revealed age to explain the behavioral intention of the acceptance of internet banking and the aged respondents had more intention to internet banking. Older respondents are unwilling to accept new technology as revealed by Merhi et al [19]. The authors also, revealed age has a moderation effect on aged gameplay intention. The moderating influence of age on accessibility, security, privacy, and ease of use on trust in technology are true explanatory only in the situation of the variable ease of use [20].

1.1.2 The moderation effect of sex

The models that influence trust in mobile technology are used by researchers to state the acceptance of various technologies. Merhi et al [13] conducted a study analyzing customer mobile banking use by combining security, trust, and privacy on the influence of age and gender. The author revealed that sex is a vital moderation variable. Males are more motivated to trust mobile technology [21] and mobile banking [22] than females. De Leon [23] found gender and innovativeness to be more significant to males than females. Siadat et al. [24] confirmed demographic variables indirectly influence personal characteristics in the use of banking services in Iranian banks, and those characteristics in consumer behavior arise from demographic variations. The authors further revealed that women incline to demonstrate a higher level of technology. A study conducted by Suki [25] "in Malaysia examined the effect of gender, age, and education on moderate online music receipts. The authors also, revealed that younger people aged below 25 years, male and highly educated were more strongly affected by perceived playfulness and perceived ease of use concerning online music".

China revealed innovativeness in information technology use has a more positive influence on the intention of males than females [26]. In investigating the moderating effects, gender has a moderating effect on trust in mobile technology [3]. A study conducted by Nysveen et al [27] revealed that ease of use and attitudes had no alterations in moderating influence across gender. The authors added that the moderation effect of gender is insignificant in the case of knowledgeable users. Balogun et al [28] concluded that sex moderates the association between perceived ease of use, perceived enjoyment, and intention to use. Gender disparities were revealed to emerge as a significant feature in explaining trust in mobile banking apps in Pakistan [29].

1.1.3 The moderation effect of income level

Income is well-defined as the money received by individuals in exchange for offering goods or services. Previous studies have observed the way income may inspire or disappoint the consumer from the usage of technology. Purohit et al [30] show that lower-income customers are worried about the cost especially when they believe the cost to be high relative to efficacy. As opposed, high-income customers can have enough money to afford high-quality up-to-date technology.

"The gap in contact with technology marks varying stages of concerns among consumers, with low-income having high concerns. Thus, income levels affect the timing and the level of technology acceptance. High-income earners perceive lower risks while making online procurements unlike low-income earners" [16]. It is logical to believe that rising earnings relate to ease of use, privacy, accessibility, and security with technology use moderate user trust. This is evidenced by Thaker et al [31] who stated that income level has a moderation effect on the acceptance of Islamic mobile banking services. If mobile banking is to be accepted by customers, then they must be confident that customers in the high-income group are active users of communication technologies.

1.1.4 The moderating effect of marital status

Marital status is explained as a person being in relation, not married, married, or separated. This study defines marital status as either the person being single or married. Some studies indicate that married customers favor electronic banking businesses [32]. A study by Rwezaula et al [33] on social influence on the acceptance of mobile phone banking services concluded that married family members influence acceptance of mobile phone banking services. Similarly, a significant relationship between married individuals and levels of acceptance of mobile communication services [34]. Customers who are in firm relations tend to make less use of mobile communications as equated to those in less stable relations. On contrary, it was concluded by Gan et al [35] that marital status does not affect the trust in mobile phone banking.

1.1.5 The moderation effect of experience

According to Sun and Zhang [36] experience in previous studies referred to more familiar technology curiosity. For this study, the experience is the cumulative personal gains while using mobile phone banking services. It was concluded by Taylor and Todd [37] that technology use is further significant for users with experience than those without experience. The studies by Venkatesh and Davis [38], [39] concluded that the impact of perceived ease of use, perceived usefulness, and subjective norm on the attitude of experienced users differs from non-experienced service users. The more the users are experienced, the more trust in the technology as fewer efforts are required to use the technology [40].

1.1.6 The moderating effect of education level

Education level refers to the area of highest academic training attained. The highest level of education as a classification is important as higher education level streams have more trust in nature as compared to others. The higher the level of education of tourists**,** the more they perceive the usefulness of technology adoption in hotels [41]. Similarly, the level of education is significant to the adoption of mobile government services implying that the higher the level of education the more there is trust in technology [42]. Studies on the association between education level and trust in technology adoption are limited.

1.2 Research Gaps and Objectives of the Study

The reviewed literature on trust in acceptance of mobile phone banking services indicate to be explained by the ease of use, privacy, security, and accessibility. The demographic variables, such as sex, age, education level, income level, experience, and marital status, moderate the association between the mentioned variables on trust. No study integrated ease of use and accessibility from TAM; privacy and security from PMT; and sex, age, and experience from UTAUT added with education level, income level, and marital status to examine the moderation effect on trust of mobile phone banking services. Therefore the primary purpose of the study is to analyze the moderation effect of demographic variables on the trust in mobile phone banking services among smallholder farmers. Specifically, the study tested the moderating effect of age, sex, education level, experience, income level, and marital status when accessibility, ease of use, security, and privacy

are explaining the trust in mobile phone banking services.

1.3 The Rationale of the Study and Study Model

There is an adequate amount of literature determining the effect of demographic variables on user acceptance of technologies. To determine the moderation effect of demographic variables on the trust in mobile phone banking services the study developed a model as Fig. 1 indicates. Combining accessibility and ease of use from the TAM model, security and privacy from PMT; and age, sex, and experience from UTAUT added with income level, educational level, and marital status as a reference for explaining user trust for mobile banking services. Ease of use is the degree to which a technology is perceived as easy to understand, learn or operate. Privacy refers to the safety and protection of transaction information from disclosure. Security is a measure of a person's sense of safety in accessing or providing sensitive information on the web. Accessibility is the degree to which service users access mobile phone banking services once needed. Meanwhile, trust is the expectation by the service users' belief that the technology will do good when using mobile phone banking services. From the literature, the following hypotheses were developed:

- **H_1:** Marital status, experience, age, income level, educational level, and sex moderate ease of use when explaining the trust in mobile phone banking services.
- **H_2:** Marital status, experience, age, income level, educational level, and sex moderate privacy when explaining the trust in mobile phone banking services.
- **H_3:** Marital status, experience, age, income level, educational level, and sex moderate accessibility is explaining the trust in mobile phone banking services.
- **H_4:** Marital status, experience, age, income level, educational level, and sex moderate effect when security is explaining the trust in mobile phone banking services.

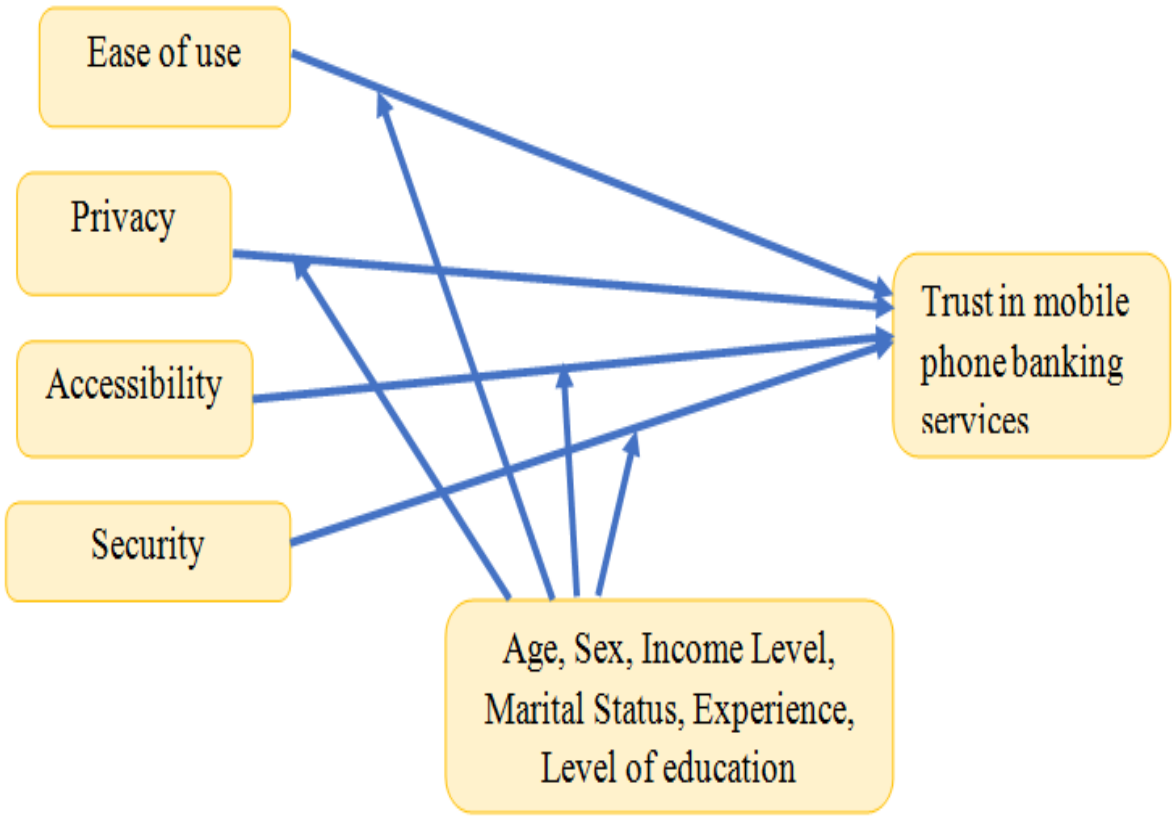

Fig. 1. Research model

2. METHODOLOGY

The study employed a simple random sampling method to obtain a sample of 355 smallholder farmers engaged in grapes from a population of 2167 smallholder farmers. A sample was determined by Kothari [43] formula given:-

$$n = \frac{NX^2pq}{(N-1)e^2 + X^2pq}$$

Where: n = required sample size, X = 1.96 for a confidence level (α) of 95 percent, *p* = proportion (50 percent of population), *q* = 1- *p*, N = population size, *e* = margin of error.

The study provided smallholder farmers with statements to indicate their level of agreement with those statements. A total of 25 statements were subjected to an exploratory factor analysis with Varimax rotation. The analysis satisfied the conditions for KMO being larger than 0.5 (KMO = 0.947) and Bartlett's Test of Sphericity being significant as shown by a p-value less than 0.05. This emerged five factors which were labelled as Factor 1 = Security (S); Factor 2 = Accessibility (AC); Factor 3 = Privacy (P), Factor 4 = Ease of Use (EOU); Factor 5 = Trust (TR) of which together explained the total variance of 76 per cent.

Out of the sample size (355 smallholder farmers), 274 respondents (77 percent) were males, 62 percent were older than 36 years and less than 55 years, 69 percent were married, and 36 percent had secondary as the highest education level. The highest income earned from grapes farming was TZS 3,000,000 the income of the majority (44 percent) was ranging between TZS 1,500,001 to 2,500,000. And, about 62 percent had the experience of using mobile phone banking services for a period ranging between 4 to 6 years. The demographic distribution of respondents is presented in Table 1.

The study conducted a confirmatory factor analysis to confirm the results obtained in the exploratory factor analysis. The conditions for confirmatory factor analysis were met. During the survey, no incentives were provided for filling the survey questionnaire. A cross-section survey was used for data collection over 2 months. Similarly, the Multivariate normality test using Mardia's coefficient was pleased. The values of normed chi-square = 2.037; CFI = 0.934; NFI = 0.876; TLI = 0.949 and RMSEA = 0.054 were in an acceptable range [44]. Also, the conditions of convergent and discriminant validity were in the satisfactory range.

The moderation effect of the demographic variables (sex, age, education level, experience, income level, and marital status) and factors of acceptance of mobile phone banking services in line with trust was considered. The demographic variables were categorized into two groups. Group one comprised male, respondents with age less than or equal to 30 years, education level up to primary education, and those experience of fewer than 4 years, with income less than or equal to TZS 1,500,000 annually and marital status being single. Group two comprised female, respondents with age greater than 30 years, with the highest education level secondary to college education, with experience of using mobile phone banking services greater than or equal to 4 years, and having an income of greater than TZS 1,500,000 per month and for marital status, a respondent being married.

Group one was coded as 0 and Group two as 1 and the above explanation of the demographic characteristics is shown in Table 2. To determine the moderation effect of demographic variables, the study used multiple linear regressions [45].

$$Y = a + bH + cZ + d(HZ) + u \qquad \text{(Equation 1)}$$

where Y = dependent variable (trust in mobile phone banking services); H = independent variable (in the presence of security or accessibility or privacy or ease of use); Z = dichotomous moderator variable with a value of 1 and 0 (e.g., Z = 1 for female and Z = 0 for male and similarly for other variables); and *HZ* = the interaction term between independent and moderator variable.

For Z to be a real moderating variable, the coefficient *d* should be significant, whereas *b* and *c* should be statistically insignificant. Z will be a quasi-moderator variable if both coefficients *c* and *d* are statistically significant. Another method for testing moderation is over Fisher's Z-transformation. To determine the moderation effect using Fisher's Z-transformations, the sample for each of the demographic characteristics is divided into two groups [46]. The correlation coefficient between the dependent and independent variable are computed for Group one and signified as r1. Likewise, the correlation coefficient between the

dependent and the independent variable is calculated for Group two and signified by r2. The hypothesis to be confirmed for examining the moderation consequence is as follows:

H_0: $p_1 = p_2$ (There is no moderation effect)
H_1: $p_1 \neq p_2$ (There is a moderation effect)

Where p_1 and p_2 indicate the population correlation coefficients for Group one and Group two respectively. As per the Fisher's Z-transformation, we define

$Z_1 = 0.5[\ln (1 + r1) - \ln (1 - r1)]$ and
$Z_2 = 0.5[\ln (1 + r2) - \ln (1 - r2)]$

Now, Z1–Z2 follows a normal distribution with mean zero and variance

$$Z_1 - Z_2 = \frac{1}{n1-3} + \frac{1}{n2-3}$$

Then Z is defined as

$$Z = \frac{Z1-Z2}{\sqrt{([1/(n1-3)][1/(n2-3)]}} \quad \text{(Equation 2)}$$

Table 1. The demographic characteristics of respondents (N= 355)

	Variable	Frequency	%
Gender	Male	274	77.2
	Female	81	22.8
Age of respondents (Years)	< 35	96	27.0
	36 –55	220	62.0
	56+	39	11.0
Marital Status	Single	25	7.0
	In relationship	57	16.1
	Married	245	69.0
	Separated	28	7.9
Education Level	Not attended	9	2.5
	Primary Education	119	33.5
	Secondary Education	129	36.4
	College Education	98	27.6
Income Level	Below TZS 500,000	16	4.5
	TZS 500,001 - 1,000,000	29	8.1
	TZS 1,000,001 - 1,500,000	55	15.4
	TZS 1,500,001 - 2,000,000	78	21.9
	TZS 2,000,001 - 2,500,000	78	21.9
	TZS 2,500,001 - 3,000,000	63	17.7
	TZS 3,000,000 Above	24	6.7
	No Response	13	3.7
Experience in using mobile baking services (years)	< 3	59	16.6
	4 –6	220	62.0
	7 –10	76	21.4
Time spent walking to access the	< 11	248	70.0
Mobile banking service (minutes)	11 –20	39	11.0
	21 –30	43	12.0
	31 +	25	7.0

Table 2. Demographic description of two groups

Demographic Variable	Group one	Group two
Sex	Male (0)	Female (1)
Age	<=30 years (0)	> 30 years (1)
Level of education	Up to primary education (0)	Secondary education and above (1)
Experience	< 3 years (0)	>= 3 years (1)
Level of Income	<= 1,500,000 (0)	> 1,500,000 (1)
Marital Status	Single (0)	Married (1)

For a given level of significance, if the calculated value of absolute Z is larger than the absolute tabulated value, the null hypothesis is rejected which implies that there is a moderation effect. In Fisher's Z-test, the correlation coefficient between independent and dependent variables across the two groups is equated. In the case of the regression method, we observe whether the regression coefficients are different in the two groups or other words, whether the interaction effect is significant or not.

3. DATA ANALYSIS, RESULTS AND DISCUSSION

3.1 Data Analysis

3.1.1 Sex as moderator

Table 3 present the linear regression results with sex as a moderator variable. The results show that sex does not moderate the association among each of the independent variables (security, accessibility, privacy, and ease of use) with the dependent variable of mobile phone banking services. This is because the interaction results in each of the cases are insignificant. It can be concluded that each of the independent variables significantly affects the trust in mobile phone banking services.

3.1.2 Age as moderator

Age is another moderator variable that was considered. The result as indicated in Table 4 shows that age moderates the relationship between accessibility and trust. It is noted that for respondents who are in the age group greater than 30, the influence of accessibility on the trust of mobile phone banking is greater as equated to those who are 30 years or below. One possible reason for this could be that aged consumers might have used the services for a long time hence their experience might be positive.

3.1.3 Level of education as moderator

It is seen from Table 5 that level of education does not moderate the relationship between any of the independent variables and trust in mobile phone banking. This implies that the influence of individual independent variables on trust in mobile phone banking services is the same regardless of the level of education of respondents.

3.1.4 Level of income as moderator

As evidenced in Table 6, in the case of level of income as a moderator variable, the effect of privacy on trust in mobile banking services is more in for the higher income group (greater than TZS 1,500,000) than for the low-income group (less than or equal to TZS 1,500,000).

3.1.5 Marital status as moderator

The results of marital status as a moderator variable are shown in Table 7. The effect of accessibility on trust in mobile phone banking is more in married respondents than in single respondents.

Table 3. Sex as moderator

	Regression results with Sex as a Moderator variable and Independent variables as			
Variable/Statistic	**S**	**AC**	**P**	**EOU**
Security (S)	0.489*			
Accessibility (AC)		0.296*		
Privacy (P)			0.500*	
Perceived ease of use (EOU)				0.465*
Sex (Se)	0.133	0.103	0.020	0.772
SexS	-0.038			
SexAC		-0.037		
SexP			-0.007	
SexEOU				0.811
Constant	3.225*	4.480*	3.181*	3.299*
R Square	0.448	0.271	0.324	0.313
Adjusted R Square	0.443	0.265	0.319	0.307

Source: Authors' computation
*Notes: * Significant at 1 per cent*
*** Significant at 5 per cent*
**** Significant at 10 percent*

Table 4. Age as moderator

	Regression results with Age as a Moderator variable and Independent variables as			
Variable/Statistic	**S**	**AC**	**P**	**EOU**
Security (S)	0.518*			
Accessibility (AC)		0.238*		
Privacy (P)			0.483*	
Perceived ease of use (EOU)				0.471*
Age (A)	0.332	-0.452***	-0.240	-0.026
AxS	-0.061			
AxAC		0.085**		
AxP			0.023	
AxEOU				-0.007
Constant	3.043*	4.773*	3.449*	3.288*
R Square	0.447	0.274	0.330	0.314
Adjusted R Square	0.443	0.268	0.325	0.308

Source: Authors' Computation
*Notes: * significant at 1 per cent*
*** Significant at 5 per cent*
**** Significant at 10 percent*

Table 5. Level of education as moderator

	Regression results with Level of Education as a Moderator variable and Independent variables as			
Variable/Statistic	**S**	**AC**	**P**	**EOU**
Security (S)	0.574*			
Accessibility (AC)		0.284*		
Privacy (P)			0.595*	
Perceived ease of use (EOU)				0.518*
Level of Education (LE)	0.684	0.044	0.699	0.358
LExS	-0.112			
LExAC		0.006		
LExP			-0.122	
LExEOU				-0.064
Constant	2.687*	4.464*	2.634*	2.996*
R Square	0.451	0.270	0.328	0.314
Adjusted R Square	0.446	0.264	0.322	0.308

Source: Authors' Computation
*Notes: * significant at 1 percent*
*** Significant at 5 percent*
**** Significant at 10 percent*

3.1.6 Experience as moderator

Concerning experience, it is noted that the effect of accessibility on the trust of mobile phone banking services is more for people with above 3 years of experience in using the services than those with less than 3 years of experience. The summary of the results is indicated in Table 8.

3.1.7 Regression results of trust on its variables

The results in Table 9 show that all independent variables have a positive and significant effect on the trust in mobile phone banking services. For example, the variable ease of use has a positive slope coefficient which means that with an increase in ease of use the trust in mobile phone banking services would increase. Similarly, the results for the other variables can be interpreted. The four regression equations have an R^2 value ranging between 0.268 and 0.446. Although the R^2 values are not very high but are statistically significant as shown by the F-statistic. This implies that these regression equations have significant goodness of fit.

Table 6. Level of income as moderator

	Regression results with Level of Income as a Moderator variable and Independent variables as			
Variable/Statistic	**S**	**AC**	**P**	**EOU**
Security (S)	0.516*			
Accessibility (AC)		0.272*		
Privacy (P)			0.355*	
Perceived ease of use (EOU)				0.452*
Level of Income(LI)	0.289	-0.099	-1.254*	-0.122
LIxS	-0.048			
LIxAC		0.024		
LIxP			0.219*	
LIxEOU				0.027
Constant	3.040*	4.568*	4.003*	3.346*
R Square	0.477	0.268	0.340	0.313
Adjusted R Square	0.442	0.262	0.335	0.307

Source: Authors' Computation
*Notes: * significant at 1 per cent*
*** Significant at 5 per cent*
**** Significant at 10 percent*

Table 7. Marital status as moderator

	Regression results with Marital Status as a Moderator variable and Independent variables as			
Variable/Statistic	**S**	**AC**	**P**	**EOU**
Security (S)	0.467*			
Accessibility (AC)		0.226*		
Privacy (P)			0.492*	
Perceived ease of use (EOU)				0.481*
Marital Status (MS)	-0.168	-0.581**	-0.112	0.054
MSxS	0.024			
MSxAC		0.108**		
MSxP			0.007	
MSxEOU				0.022
Constant	3.348*	4.839*	3.260*	3.236*
R Square	0.446	0.279	0.327	0.315
Adjusted R Square	0.442	0.273	0.321	0.309

Source: Authors' Computation
*Notes: * significant at 1 per cent*
*** Significant at 5 per cent*
**** Significant at 10 percent*

3.1.8 Results of fisher Z- statistics

Using Fisher's Z-transformations, the moderation influence of demographic variables on the relationship between variables to trust in mobile phone banking services is tested.

Table 10 summarizes the results.

3.2 Summary of Results

Sex has a moderating influence on the ease of use and trust in mobile phone banking services. This means that influence is higher for women than for men. These results are consistent with previous studies [20,38,47,48] which revealed the moderating effect of ease of use on the trust in mobile phone banking was marginally higher for women compared to men. On contrary, Amin et al [22] found the direction of the moderating effect to be opposite when comparing female and male students.

Accessibility has a positive effect on the trust in mobile phone banking services moderated by being more for the older respondents (above 30

Table 8. Experience as moderator

	Regression results with Experience as a Moderator variable and Independent variables as			
Variable/Statistic	**S**	**AC**	**P**	**EOU**
Security (S)	0.545*			
Accessibility (AC)		0.201*		
Privacy (P)			0.581*	
Perceived ease of use (EOU)				0.558*
Experience (E)	0.488	-0.515	0.591	0.611
ExS	-0.073			
ExAC		0.110***		
ExP			-0.096	
ExEOU				-0.111
Constant	2.34*	4.913*	2.682*	2.774*
R Square	0.449	0.275	0.327	0.315
Adjusted R Square	0.444	0.269	0.321	0.310

Source: Authors' Computation
*Notes: * significant at 1 per cent*
*** Significant at 5 per cent*
**** Significant at 10 percent*

Table 9. Regression results of trust on its variables

Variable	Intercept	Slope	R^2	F
Ease of Use	3.256*	0.471*	0.312	165.832*
Privacy	3.183*	0.499*	0.324	175.073*
Accessibility	4.498*	0.289*	0.268	133.635*
Security	3.247*	0.481*	0.446	293.396*

Source: Authors' Computation
*Notes: * significant at 5 percent level*

Table 10. Results of fisher Z- statistics

Mediator	Security	Accessibility	Privacy	EOU
Sex	0.859	0.661	-0.421	-1.796**
Age	1.109	-1.646**	-0.081	0.413
Education Level	-0.115	-0.563	0.762	1.303
Experience	0.266	-2.183*	0.626	1.717**
Income Level	0.625	-0.677	-2.895*	-1.427
Marital Status	0.609	-1.509	0.274	0.437

Source: Authors' Computation
*Notes: * significant at 5 percent*
*** Significant at 10 percent*

years) than the younger ones. These results corroborate the conclusion by Rajaobelina et al [10] that age has a moderation effect on technology use. Hence, new technology is perceived as trustworthy by aged users.

The study found that experience moderates the accessibility and trust in mobile phone banking services. The influence of accessibility on the trust of mobile phone banking services is more for more experienced service users than less experienced ones. A possible reason for this could be that it takes time to build up trust in mobile phone banking services. On the contrary, Elhajjar et al [20] concluded that experience does not moderate the relationship between ease of use and intention.

The income level has a moderating influence when assessing the relationship between privacy and trust in mobile phone banking services. It is noted that the efficiency of the higher-income earners is more than those of lower-income earners. The reason could be that people with

higher income are busy and hence do not have time to visit a branch for banking services. They opt for mobile phone banking services to perform transactions.

The education level and marital status of the respondent have no moderation influence on either ease of use, privacy, security, or accessibility in trust of mobile banking services. Concerning education level, these results corroborate the results of Wang et al [47] who found that education level has no moderation effect on the user intention. These results contradict the findings by Weinberg [49] that people with high education tend to accept new technology more quickly than people with a low level of education.

4. CONCLUSION AND STUDY IMPLICATIONS

The study uses variables from TAM, UTAUT, and PMT to explain the effect of ease of use, privacy, accessibility, and security on the trust in mobile phone banking services. The study formulated a model by including additional demographic variables which have not been assessed before. The independent variables on which demographic variables have shown a moderating effect are accessibility and ease of use. This is because the acceptance rate of mobile banking is still marginal; this study reveals that sex, age, income level, experience, and marital status are the salient demographic variables, which moderate the impact of independent factors (ease of use, accessibility, security, and privacy) on user trust to mobile phone banking services.

This study differs from other literature in the following ways. First, most of the available literature on mobile phone banking resulted from studies conducted outside Tanzania and hence cannot reflect the characteristics of smallholder farmers in rural areas of Tanzania. Second, no study on the trust in mobile phone banking services has been conducted on smallholder farmers engaged in grapes farming in rural areas of Tanzania. Third, no study integrated accessibility, ease of use, security, and privacy moderated by marital status, experience, education level, income level, sex, and age when explaining trust in mobile phone banking services. Previous studies [50, 11, 9, 28, and 51] have looked into the effect of demographic variables on technology acceptance without considering all the variables considered by this study. Generally, the use of mobile phone banking services is built on the trust of the service itself.

This study has contributions and implications in the following ways. First, farmers who grow grapes are more likely to use mobile phone banking services to pay for agricultural inputs and labor. Secondly, grapes farmers interact with buyers who normally use mobile phone banking services to effect payments. Third, the findings of this study benefit society considering that it explains the factors that influence trust in mobile phone banking services in Tanzania. Fourth, the study helps mobile phone banking services providers to recognize the effect of demographic variables when explaining trust in mobile phone banking services to the unbanked population. The service providers can formulate strategies with customized services that would increase the use of mobile phone banking services hence developing agenda for growth. Finally, the knowledge generated in this study serves as a data source for policymakers during policy reviews to enhance the trust in mobile phone banking services by smallholder farmers.

CONSENT

As per international standards or university standards, respondents' written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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