

Mobile Money Fraud in Ghana: The Influence of Selected Demographic Variables

Patrick Joel Turkson^{1*}, Joseph Gyamfi Yeboah², Doris Anim Yeboah³,
Paul Quaisie Eleke-Aboagye⁴

¹Methodist University Ghana, Department of Marketing and Supply Chain Management, Ghana,
pjturkson@mucg.edu.gh, ORCID: <https://orcid.org/0000-0002-9591-5320>, *Corresponding author

²Methodist University Ghana, Department of Marketing and Supply Chain Management, Ghana,
Josephyeboahmucg@gmail.com

³Ghana Christian University College, Department of Human Resource Management,
Dodowa, Armarhia Campus, Accra, Ghana, dorisanimyeboah@gmail.com

⁴Methodist University Ghana, Faculty of Business Administration,
Accra, Ghana, qelekea@mug.edu.gh

ABSTRACT: The study examined mobile money fraud by highlighting the differences in consumer profiles using selected variables (gender, age, educational level, financial status, and knowledge of mobile money fraud). Data was collected from selected parts of the Greater Accra Region and the Eastern Region of Ghana over the period of three months. A convenience sampling technique was employed to select a total of 408 respondents, which constituted the sample size of the study. A 100% response rate was attained. Descriptive statistics, comparing means, and the ANOVA test were employed to analyze the data collected. SPSS version 26 was the statistical tool used for the analysis. The study revealed that males, individuals aged 18–25, those with no formal education, those with poor financial status, and those unaware of mobile money fraud become easy targets for mobile money fraudsters in Ghana. The study concluded that differences in gender, age, educational level, financial status and knowledge of mobile money fraud influence mobile money fraud in Ghana.

KEYWORDS: Mobile money fraud, age, gender, financial status, educational level, Ghana

1. Introduction

The use of mobile money has grown to be an integral part of most Asian and African operators' overall income. At the end of 2018, more than 866 million accounts had been set up in more than 90 countries, handling more than US \$1.3 billion every day (Shetty 2022). With over 1 billion registered accounts across 290 mobile money deployments in 95 countries and daily transactions of over US \$1.9 billion, 2019 was a big year for the mobile money industry (Shetty 2022). In 2022, the value of 57% of digital transactions exceeded the cash-in/out values, resulting in the transfer of US \$22 billion globally (Shetty 2022). There has been a lot of growth in mobile money, especially during the COVID-19 pandemic. According to Subex Limited (2024), the industry's rapid growth shows how important it is on a global scale. During the pandemic, the adoption of mobile money increased by over 30%, leading to a surge in new users and a significant 40% increase in cross-border transactions. A study by the market research company, Imarc Group, according to Obour (2023), indicates that Ghana's mobile money market will grow to US \$590.7 billion by 2028, from US \$121.8 billion in 2022. Ghanaians prefer mobile money transfer services because of their low cost and accessibility across all economic strata (Mahama et al. 2024). At the end of the 2023 second quarter, MTN recorded 73.68% of the market share with 25.16 million subscriptions. Telecel followed with 6.19 million subscriptions (18.14%). AirtelTigo ended the quarter with a market share of 8.19% and a subscription base of 2.80 million (National Communication Authority 2024). MTN, Telecel and AirtelTigo are all involved in mobile money transfer, using MTN mobile money, Telecel cash and AirtelTigo cash respectively (Akomea-Frimpong et al. 2019). Mobile money is

easy for everyone in the country to use, including those who do not have formal education (Obour 2023). The reason for the ease of use is that mobile money transactions are quick, cheap and accessible in many places.

The development of better ways to send money has led to the rise of financial technology (FinTech); however, this can also have negative consequences (Whisker and Lokanan 2019). Money transfers have changed a lot thanks to mobile money. It gives millions of Ghanaians a safe and easy way to send and receive money, pay bills and keep track of their money. As more people use mobile money, a new threat has appeared: mobile money fraud (Akakpo 2023). Fraud is defined as intentionally lying to get something of value, like skillfully hiding something to get unfair or illegal money (Ng and Kwok 2017). The risk is linked to the quick growth of mobile technology that is meant to make it easier for people to get access to money and use new payment methods (Haffke, Fromberger and Zimmermann 2019).

Criminals take advantage of the fact that mobile devices can connect to the internet more easily to target and scam mobile users, especially those who are not familiar with technology and might not know about mobile fraud. Many people in the developing world have feature phones, and SMS is a simple and easy way for mobile money operators, banks and government agencies to communicate (for example, to confirm or alert people about financial transactions). Customers can easily mistake fake SMSs (smishing or fraud started by an SMS) and calls (vishing or fraud started by a phone call) for real ones (Razaq et al. 2021).

In recent times, Ghana has recorded higher numbers of mobile money fraud cases, probably because more people are using it and dealing with it more often (Subsex 2017). For example, customer data theft, technical attacks on mobile money services, internal fraud within the service provider environment, subscription fraud, and account hijacking or takeover are all types of cybercrime that can happen with mobile money (Subsex 2017). Fraudsters who use mobile money pose a threat to the huge benefits that people get from using it. For instance, the Bank of Ghana reported that a total of 12,166 cases of mobile money fraud were recorded in the year 2022 (Obour 2023).

Addae-Sakyi (2020) conducted a study to explore the experiences of Madina market traders who have been victims of mobile money fraud. Quantitative findings revealed that apart from gender that has an influence on mobile money fraud, educational background and telecommunication network do not influence mobile money fraud among the traders. In Addae Sakyi (2020), the focus was on all telecommunication networks in Ghana, and gender and educational background were used for the study. However, the present study introduced age, financial status and knowledge of mobile money to fill the empirical gap in order to get more insight into how the demographic profile differences influence mobile money fraud using MTN Ghana customers as the sample. The study specifically seeks to examine the influence of:

- gender difference on mobile money fraud
- age difference on mobile money fraud
- educational level difference on mobile money fraud
- financial status difference on mobile money fraud
- knowledge of mobile money fraud on mobile money fraud.

2. Literature Review

2.1. Routine Activity Theory

Cohen and Felson developed the Routine Activity Theory, which is based on three things: a "potential offender, a suitable target, and the absence of a capable guardian" (Bottoms and Wiles 1997). All three elements must be present for a crime to occur. Situational crime prevention techniques and Routine Activity Theory both use the rational choice approach. Of course, Routine Activity Theory, like any other theory, has its share of problems. One of the main points of criticism

is the belief that criminals make intelligent decisions. They might not have the same motivations as those implementing security measures. Not everyone is at the same risk of becoming a victim, even if they are close to the offenders physically, socially or virtually. Criminals choose certain people because of certain psychological, social, economic and behavioural traits, making them more likely to become victims (Yong et al. 2023).

Mauritsius, Alatas, Binsar, Jayadi and Legowo (2020) indicate that motivated offenders are difficult to avoid because they hang out in the same online communities as their victims. A lot of undesirable things happen on the internet, and thieves are always looking for someone to steal from. As a result of how technology works, criminals who want to do harm have a chance. The internet does not care about victim-criminal distance. Criminals look for a good place to attack a victim in the real world, but the internet is a good choice for them. The attacker has the ability to reach the target from a considerable distance. The internet provides tools for attackers to target someone. They pick a victim based on how that person usually acts online. Anuar, Ravintharan, Rosli and Xuan (2023) argue that being careful to think about how one action will affect other things and paying close attention to details are signs of being careful. Operating on the spur of the moment, bad people do not like to plan ahead. People who are experiencing a decline in their executive functioning may find it challenging to think about the repercussions of their actions and to pay attention to details. People who already lack this trait may be more susceptible to falling for scams. The paper applies this theory to identify the most vulnerable groups that mobile money fraudsters target.

2.2. Empirical Review and Hypothesis Development

The most recent Great British Retirement Survey 2020 by Interactive Investor (Harrison 2021), which polled over 12,000 adults in the UK, found that men and women are more or less likely, respectively, to fall for financial fraud. A total of 13% of the respondents reported experiencing financial fraud. That number rises to 18% for people aged 72 to 77 and 20% for people over 77. Women (9%) are less likely than men (15%) to have been a victim of a financial scam. Also, 35% of men admitted to having been victims of investment fraud, while only 22% of women said the same. When it came to current account fraud, however, more women than men (27% vs. 21%) said they had been a victim. Also, 42% of women and 43% of men said they got their money back, but 17% of women said they would not try to fix their finances because they were afraid of being scammed again, while only 9% of men said the same thing. The Consultative Group to Assist the Poor (2023) discovered that 90% of individuals utilizing digital financial services (DFS) encountered at least one risk. While 44% of people mentioned a bad network as the most common risk, 43% mentioned fraud attempts. 32% said they had lost money because they responded to a fake message, paid more than they meant to, or something went wrong during the transaction.

According to the National Poll on Healthy Ageing (2023), 75% of adults aged 50 to 80 reported experiencing online, phone, text, email or mail scams in the last two years. Men (78% vs. 73% women), individuals with a bachelor's degree or higher (79% vs. 71% some college or less), and individuals with fair or poor memory (83% vs. 74% of those who said their memory was better) were more likely to report scam attempts. Three out of five people who reported a scam said they had at least one of the following types of fraud happen to them: 15% had other accounts hacked, 9% had money stolen, and 3% had their identity stolen. Twenty-five percent had their credit card or bank account hacked. Thirty percent of adults aged 50 to 80 said they had been a victim of fraud.

Kemp and Erades Pérez (2023) found that older adults are more likely to fall victim to fraud in general, but not online fraud. People over 65 are more likely to be victims of identity theft, where the criminal tries to trick them by pretending to be a legitimate organization. It is less likely that fraud will cost older people money, but it is more probable that theft will make

them angry, annoyed, embarrassed, and hurt their health. This is true for both traditional and online fraud.

The Federal Trade Commission reported in 2022 that young adults in Gen X, Millennials and Gen Z (ages 18–59) were 34% more likely than adults aged 60 and up to say they had lost money to fraud in 2021. More young adults than any other age group said they lost money to online shopping fraud, which usually began with an ad on social media. Most of them said they just did not get the things they ordered. Adults under 30 were more than four times more likely than adults over 30 to say they lost money on an investment scam. The majority of these scams involved fraudulent opportunities to invest in cryptocurrency. More than five times as many people in this age group said they lost money to job scams than older adults. Many college students reported falling victim to scams after receiving an email offering a job through their student email address. Fraudsters mostly went after people between the ages of 30 and 39 in 2022. The Federal Trade Commission (FTC) received reports of 205,154 fraud cases involving this age group in the US. In the same year, the Federal Trade Commission (FTC) received 216 reports of fraud against people aged 60 to 69.

Researchers have shown that being older (DeLiema 2018) and not knowing much about money (Engels, Kumar, and Philip 2020) are two things that make people more likely to fall victim to fraud. DeLiema, Deevy, Lusardi and Mitchell (2020) demonstrate that financial predators are more likely to scam older adults who lack financial literacy because they are either near or past the peak of their wealth accumulation. Akomea-Frimpong et al (2019) investigated the primary causes of fraud in Ghana's mobile money services, as well as the measures taken by the key players in these services to prevent it. It was found that fraud in mobile money services is caused by weak internal controls and systems, a lack of advanced IT tools to find the problem, employees who are not properly educated or trained, and low remuneration from employers.

3. Methodology

The study conducted a poll of selected parts of Greater Accra and the Eastern Region of Ghana to gather information on mobile money fraud and demographic characteristics. We selected 408 respondents using a method known as "convenience sampling." The first part of the questionnaire asked about five consumer profile variables: gender, age, highest level of education, current financial situation, and knowledge of mobile money fraud. We adapted the Akakpo (2023) report which revealed the mobile money fraud techniques: "I get SMS messages on reversal of erroneous transactions, I have been engaged in fake delivery scams, I have received fake promotions, I have experienced SIM card swapping, I have received emails or messages requesting me to enter my personal information, and I received a call from an unfamiliar individual who took my mobile money details in the name of retrieving money sent to unknown people", to measure mobile money fraud in Ghana. The study used a 5-point Likert scale to measure mobile money fraud. A score of 1 meant "strongly disagree" and a score of 5 meant "strongly agree." We analyzed the data using descriptive statistics and a test known as ANOVA to compare the means. We used frequency and percentages for the descriptive statistics and used means, standard deviations, and the significance value from the ANOVA table for the comparison of means. Statistical software, SPSS version 26, was used for all of the analysis.

4. Results and Discussion

4.1. Descriptive Analysis

Table 1: Consumer Profile of Respondents

		Frequency	Percent
Gender	Male	232	56.9
	Female	176	43.1
	Total	408	100.0
	18-25 years	100	24.5
	26-33 years	148	36.3
	34-41 years	132	32.4
	42 years and above	28	6.9
	Total	408	100.0
Education level	No formal education	112	27.5
	JHS/ SHS	172	42.2
	Diploma	96	23.5
	1st Degree and above	28	6.9
	Total	408	100.0
Financial Status	Good financially	132	32.4
	Poor financially	276	67.6
	Total	408	100.0
Knowledge on mobile money fraud	Less knowledge	236	57.8
	More knowledge	172	42.2
	Total	408	100.0

Source: Researchers' compilation from statistical data analysis

Table 1 revealed that a higher percentage (56.9%) of those who participated in the survey were males, while a lower percentage (43.1%) were females. Concerning the age ranges, the majority of the respondents were in the age range 26-33 years which constitutes 36.3% of the sample size. It was followed by ages between 34-41 years (32.4%) and then those ages between 18-25 years constituted 24.5% while the least respondents were from the age range 42 years and above (6.9%). In terms of their educational level, JHS/ SHS (42.2%) had a higher percentage, followed by no formal education (27.5%), diploma (23.5%) and finally 1st Degree and above (6.9%). With regards to financial status, a higher percentage (67.6%) were poor financially while a lower percentage (32.4%) were good financially. Finally, with regard to knowledge of mobile money fraud, a higher percentage (57.8%) had less knowledge of mobile money fraud while a lower percentage (42.2%) had more knowledge on mobile money fraud.

4.2. T-Test

A t-test is a type of statistical test that is used to compare the means of two groups (Yim et al. 2010). In this section, the study examined the demographic profile differences on mobile money fraud using the t-test; the significance level (0.05) was determined using Anova. Mobile money fraud was measured using the mobile money fraud techniques as indicated in the methodology section. In addition, the highest mean indicates the group that is more exposed to mobile money fraud and the group with the lowest mean indicates the group that is least targeted by mobile money fraudsters.

4.2.1. Examining the gender differences on Mobile Money Fraud

Table 2 illustrates the link between gender and mobile money fraud. Compared to the mean and standard deviation of males ($M = 2.2615$; $SD = 0.67464$), the study showed that the mean and standard deviation of females are higher ($M = 2.3939$; $SD = 0.67339$).

Table 2: Gender differences in mobile money fraud

	Mean	Std. Deviation	Sig
Gender			0.050
Male	2.2615	.67464	
Female	2.3939	.67339	

Source: Researchers' compilation (2024)

A statistically significant difference exists between gender groups and mobile money fraud, as shown in Table 2 ($sig = 0.050$). It follows that differences between men and women affect mobile money fraud. The study's results suggest that males are less likely to be victims of mobile money fraud than females in Ghana. On the other hand, the report of the National Poll on Healthy Ageing (2023) found that the percentage of men (78% vs. 73% women) who reported scam attempts was higher.

4.2.2. Examining the age differences on mobile money fraud

Table 3 illustrates the relationship between age and mobile money fraud. The study showed in Table 3 that the range of ages was 18 to 25 years ($M = 2.7400$; $SD = 0.67350$), which is the highest compared to 26 to 33 years ($M = 2.3919$; $SD = 0.70439$), 34 to 41 years ($M = 2.0152$; $SD = 0.43072$), and finally 42 years and above ($M = 1.8571$; $SD = 0.52453$).

Table 3: Age differences in mobile money fraud

	Mean	Std. Deviation	Sig
Age			0.000
18-25 years	2.7400	.67350	
26-33 years	2.3919	.70439	
34-41 years	2.0152	.43072	
42 years and above	1.	.52453	

Source: Researchers' compilation (2024)

Table 3 also shows that the 0.000 level of significance means that there is a statistically significant difference between the age group and mobile money fraud. In this way, age differences affect mobile money fraud. Based on the study's results, mobile money fraudsters are most likely to target people between the ages of 18 to 25. The results of the study agree with what the Federal Trade Commission said in 2022: that in 2021, Gen X, Millennials and Gen Z young adults (ages 18–59) were 34% more likely than older adults (ages 60 and up) to say they had lost money to fraud. However, Kemp and Erades Pérez (2023) found that fraud is more likely to happen to older adults in general.

4.2.3. Examining the educational level differences on mobile money fraud

Table 4 shows a difference in mobile money fraud based on the highest level of education. According to Table 4, the group with the highest mean and standard deviation had no formal

education ($M = 2.7083$; $SD = 0.72234$). Those with a first degree or higher ($M = 2.6190$; $SD = 1.08379$), a diploma ($M = 2.1806$; $SD = 0.52742$), and a JHS or SHS diploma ($M = 2.0930$; $SD = 0.48406$) came next.

Table 4: Education differences in mobile money fraud

	<i>Mean</i>	<i>Std. Deviation</i>	<i>Sig</i>
Education			0.000
No formal education	2.7083	.72234	
JHS/ SHS	2.0930	.48406	
Diploma	2.1806	.52742	
1st Degree and above	2.6190	1.08379	

Source: Researchers' compilation (2024)

Table 4 also shows that the significance level is 0.000, which means that there is statistically significant evidence of a link between level of education and mobile money fraud. This implies that substantial variations in educational attainment have an impact on mobile money fraud. This means that mobile money fraudsters in Ghana are most interested in people who have not gone to school, followed by those with bachelor's degrees or higher. As the study showed, fraud in mobile money services is caused by not having enough education and training (Akomea-Frimpong et al, 2019). Also, the National Poll on Healthy Ageing (2023) found that people with a bachelor's degree or higher were more likely to report fraud attempts (79% vs. 71% of people with some college or less). This study confirms this finding, showing that those with a first degree or higher were the second highest, reporting that they had been defrauded.

4.2.4. Examining the financial status difference on mobile money fraud

Table 5 shows the link between financial status and mobile money fraud. The study's results, shown in Table 5, show that the mean and standard deviation of people who are poor financially ($M = 2.3696$; $SD = 0.73793$) are higher than those who are good (wealthy) financially ($M = 2.2121$; $SD = 0.51157$).

Table 5: Financial status differences in mobile money fraud

	<i>Mean</i>	<i>Std. Deviation</i>	<i>Sig</i>
Financial Status			0.028
Good financially	2.2121	.51157	
Poor financially	2.3696	.73793	

Source: Researchers' compilation (2024)

The significance level in Table 5 is 0.028, which means there is evidence of a statistically significant difference between financial status and mobile money fraud. In this way, differences in financial status affecting mobile money fraud are evident. The study results indicate that individuals experiencing financial difficulties are more susceptible to fraud, as they may listen to con artists seeking to increase their wealth, secure an award or safeguard their Ghana mobile money wallet. Although not indicated in this study, DeLiema et al. (2020) found that financial predators often target older adults who struggle with money management, particularly those who have reached or exceeded their peak wealth accumulation.

4.2.5. Examining the knowledge of mobile money fraud difference on mobile money fraud

Table 6 shows the connection between knowledge of mobile money fraud and mobile money fraud. As displayed in Table 6, the study found that the mean and standard deviation of people with less knowledge (M = 2.3927; SD = 0.73979) are higher than those with more knowledge (M = 2.2171; SD = 0.56487).

Table 6: Knowledge of mobile money fraud differences in mobile money fraud

	Mean	Std. Deviation	Sig
Knowledge of mobile money fraud			0.009
Less knowledge	2.3927	.73979	
More knowledge	2.2171	.56487	

Source: Researchers' compilation (2024)

There is also evidence for a statistically significant difference between knowledge of mobile money fraud and mobile money fraud (0.009). It follows that knowledge about mobile money fraud affects mobile money fraud. As a result of believing fraudsters, people who do not know much about mobile money fraud become easy targets for them. Findings from the study agree with previous research that shows some traits, like not knowing much about money, can make someone more likely to fall victim to fraud (Engels et al. 2020).

5. Conclusion and Recommendation

Mobile money has become a significant income source for Asian and African operators, with over 866 million accounts in over 90 countries by 2018. However, mobile money fraud has emerged due to its accessibility and ease of use. Criminals exploit internet connections on mobile devices to scam users, especially those not tech-savvy. This paper aims to examine how demographic profile differences influence mobile money fraud and uses the Routine Activity Theory to analyze the issue. Critics argue that criminals make intelligent decisions and not everyone is at the same risk. The study reveals that males in Ghana are less likely to be victims of mobile money fraud than females, with fraudsters targeting individuals aged 18–25 and those who have not been to school. Financial difficulties make individuals more susceptible to fraud, and those unaware of mobile money fraud become easy targets due to their lack of awareness. The study concluded that gender differences, age differences, educational differences, financial status differences and differences in knowledge of mobile money fraud influence mobile money fraud in Ghana. The study recommends that a lot of education should be given to the citizens on mobile money fraud by the Ministry of Communication and Telecommunication in Ghana in collaboration with the National Commission of Civic Education.

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