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On the Role of Gender and Age in the Use of Digital Financial Services in Zimbabwe

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Abstract: Women and youth in developing countries remain unserved or underserved by formal financial services. The rise of digital financial services (DFS), including mobile money, provides a promise to accelerate financial and economic inclusion to these population segments. As a result, both academic researchers and policy makers are increasingly interested in understanding the role of gender and age in the use of DFS across use cases. To nuance this, the current study analyses data from a sample of 3000 respondents collected during the second quarter of 2022 from the ten provinces of Zimbabwe. Results from multivariate logit models, controlling for some socio-economic factors, show that in Zimbabwe, gender is not a significant predictor of receiving income through digital means, making payments for goods and services digitally, or for the frequency of DFS use. On the other hand, youth lag in the use of DFS, especially for making payments for goods and services, and in the frequency of use. Besides the findings on gender and age, the study reveals that the level of education, the source of income, locality, and the level of income are important determinants of how individuals use DFS in Zimbabwe.

Keywords: digital financial services; mobile money; gender; youth; financial inclusion

JEL Classification: E42; G21; G23; G29; O12



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1. Introduction

Even though theory suggests that financial market imperfections such as information asymmetries and transaction costs impede the marginalized from accessing formal financial services and hence denying them a chance to charter their way out of poverty, innovative digital financial services (DFS) such as mobile money are providing new opportunities to accelerate financial inclusion (Demir et al. 2022). If responsibly provided, such innovations have significant benefits to consumers (especially the unserved and underserved individuals), including giving them a range of financial products and services to choose from, possibly with better speed, convenience, accessibility, security, and cost (Chamboko et al. 2021). From a financial services provider's perspective, such innovations reduce operating costs, increase operating efficiency, and foster competitiveness (Manyika et al. 2016).

Evidence shows that the provisioning, adoption, and use of DFS leads to tremendous improvements in formal financial inclusion for both households and firms, as reflected by the growth in the propensities to save, borrow, and to receive and send remittances (Munyegera and Matsumoto 2018; Ky et al. 2018; Wieser et al. 2019; Gosavi 2018). A burgeoning body of literature also show that the use of DFS leads to consumption smoothing during financial and income shocks (Suri and Jack 2016), increases per capita consumption levels (Munyegera and Matsumoto 2016), reduces poverty and income inequality, and fosters inclusive growth (Omar and Inaba 2020; Demir et al. 2022; Cuéllar 2021; Riley 2018; Afawubo et al. 2020; Asongu and Odhiambo 2018; Zhang et al. 2020). Though at a limited scale, Chamboko and Guvuriro (2021) highlighted some unintended negative effects of

DFS, which include betting, mostly among young people due to the growing availability of digital credit in developing countries.

With increasing awareness of these benefits, expanding the provision of disruptive DFS such as mobile money has become a key policy intervention for many developing countries as they aim to advance financial and economic inclusion (AFI 2022). As a result, the past decade has witnessed a commendable increase in the use of DFS, especially digital payments, with the most rapid growth coming from developing countries. The 2017 Findex report revealed that the use of digital payments in developing countries increased by 12 percentage points (to 44 percent) between 2014 and 2017 (Demirguc-Kunt et al. 2018). Notwithstanding the progress, there is a nine-percentage-point gap in account ownership between men (35%) and women (26%) globally (Demirguc-Kunt et al. 2018). Evidence from many developing countries reveals that women's access to and use of DFS is lower compared to men's. Some of the reasons often mentioned for this gap include women's limited access to cell-phones and Internet (Demirguc-Kunt et al. 2018; GSM Association 2021), the persistent lack of funds among women (Chamboko et al. 2018), women's limited financial and digital literacy (Demirguc-Kunt et al. 2018; Schaner and Theys 2018; Pénicaud-Scharwatt and Minischetti 2014), the existence of social norms, attitudes, and laws which hinder women from accessing DFS (G20 GPMI 2020; Schaner and Theys 2018), etc. Similarly, youth form a greater part of the financially excluded. About half of the world's young people do not have accounts with formal financial institutions (OECD 2020). The principal reason for this exclusion, especially in developing and emerging markets, is the lack of jobs and opportunities to generate income (OECD 2020; National Banking and Securities Commission 2018) or operating in the informal economy (FinMark Trust 2018).

Financial and economic exclusion means lost opportunities and costs with significant negative consequences for individuals, families, governments, and the broader economy. Economies achieve their highest potential when all citizens participate fully and without discrimination (Chamboko et al. 2018). A growing strand of literature suggests that innovative DFS have significant effects on women's economic empowerment, increasing livelihood choices, and reducing inequality and poverty (Dorfleitner and Nguyen 2022; Sekabira and Qaim 2017; Suri and Jack 2016). Similarly, it is argued that financial inclusion positively empowers young people in several ways, including cultivating positive financial behaviors, fostering the accumulation of assets, providing opportunities for upward economic mobility (Cramer et al. 2009), and empowering youth to be in control of their money and work for their own saving goals (Financial Literacy and Education Commission 2017).

Given this background, it is imperative that policy makers, financial service providers, and development partners continue to advance their efforts to ensure that women and youth have access to and meaningfully make use of these transformative DFS. To effectively achieve this, it is essential to understand the role of gender and age in the use of DFS. This study thus asks the following key questions: (1) Do gender and age predict the use of DFS to receive income and to make payments for goods and services? (2) Do gender and age predict the frequency of DFS use? The contribution of this paper is therefore to reveal the extents to which gender and age affect the propensity to use DFS in a country which has severe economic and monetary challenges for a protracted period (Mazhazhate et al. 2020; Chamboko and Chamboko 2020) and which has a large and expanding informal sector (Dube and Casale 2019; Chamboko and Guvuriro 2022; Chamboko et al. 2017). The findings of the study may be of policy relevance, since closing the gender and youth vs. adults gaps in financial inclusion is a priority for governments and international organizations such as the United Nations, World Bank Group, G20, and the Alliance for Financial Inclusion (AFI).

The study findings show that in Zimbabwe, gender is not a significant predictor of DFS use across uses cases of receiving income, making payments for goods and services, or the frequency of DFS use. With respect to age, the study shows that youth lag in the use of DFS, especially for making payments for goods and services and in the frequency of use. Besides the findings on gender and age, the study shows that the level of education, the way individuals go about earning their incomes, locality, and the level of income are key

determinants of how individuals use DFS to receive income and make payments, and the frequency of DFS use.

The rest of the paper is structured as follows: Section 2 briefly describes the country's context. Section 3 reviews literature on the importance and drivers of DFS use among youth and women. Section 4 describes the data and empirical strategy. Section 5 presents the results. Section 6 discusses the findings, and Section 7 concludes.

2. Context

Currently, Zimbabwe faces severe macroeconomic challenges, and with the compounding effects of recurring droughts and COVID-19, the country saw extreme poverty rise from 23 percent in 2011 to 30 percent in 2017 and 49 percent in 2020. The financial sector suffers from a lack of trust by consumers due to a history of tumultuous currency changes and multi-tiering and policy inconsistency (Ngwenya et al. 2018; Zikhali 2022). Consumers have lost their savings due to runaway inflationary pressures (Ngoma 2019; Zikhali 2022). Cash is difficult to get, and if available, it is at a premium, and mobile money has become a major instrument with which to perform financial transactions (Zikhali 2022; Dzawanda et al. 2021).

The Zimbabwe national financial inclusion strategy (2016–2020) noted that women and youth lag on access to financial services and articulated measures aimed at promoting access to finance for these segments (Reserve Bank of Zimbabwe 2016). This study thus explores how gender and age impact the use of DFS, including mobile money and other bank-led digital services, given the macroeconomic peculiarities of the country.

3. Literature Review and Development of Hypotheses

Digital financial services refer to financial services which are delivered through digital means, including through phones, tablets, cards, personal computers, and the Internet (Manyika et al. 2016). For the past decade, DFS have been instrumental in facilitating formal financial inclusion for the marginalized, the majority of which are women and youth. A growing strand of research shows that the use of DFS has a significant and transformative impact on women's empowerment and welfare outcomes. Suri and Jack (2016) showed that the use of mobile money services helped to spur business creation and helped 185,000 women to leave employment in agriculture for jobs in business or retail. The same study also established that mobile money significantly helped reduce poverty whilst increasing consumption and savings, especially among women. In South Africa, Chloe et al. (2018) found that women who received their government social benefits through bank cards saw increased household bargaining power and ultimately increased their participation in the labor force.

In Niger, Aker et al. (2016) found that depositing safety net payments directly into women's mobile money accounts, instead of cash, gave women more privacy and control over their money, and increased spending on nutritious food. Similarly, experimental evidence from Ghana, India, and Sri Lanka showed that small loans taken by women tend to be diverted by their husbands, thereby advancing the argument that traditional financial products are more prone to misuse compared to digital products (Bernhardt et al. 2017). Leakages and corruption are often the major challenges for female cash transfers. Evidence from India shows that after digitizing social security payments, leakages reduced, and the beneficiaries, the majority of which are women, received larger payments due to savings related to administration (Muralidharan et al. 2016). Women are more reliant on remittances than men and spend most of their time doing unpaid work (United Nations Economic and Social Council 2019). As such, mobile money helps women save time in travelling to collect remittances. Thus, besides increasing the speed of remittances, DFS reduces both transaction and opportunity costs (Suri and Jack 2017). In rural Uganda, DFS increased the propensity to send and receive remittances (Wieser et al. 2019). Jack and Suri (2014) have shown that households using DFS did not reduce household spending during shocks, whilst non-users and those with limited mobile money network were more

likely to reduce consumption. In Chile, [Kast and Pomeranz \(2014\)](#) showed that women who received free microfinance accounts were more likely to rely on savings than credit and were more resilient to shocks.

Despite the above discussed benefits of DFS among women, it is key to highlight that women, especially in developing countries, continue to lag on access to and use of DFS ([Demirguc-Kunt et al. 2018](#)). Researchers and policy makers are increasingly seeking to understand the factors that drive the variations in DFS adoption and use between men and women. The literature shows that a number of structural barriers impede women from accessing DFS. Given that financial services are increasingly being accessed through phones, the persistent gap in access to mobile phones and Internet in developing countries hinders women from accessing financial services such as mobile money ([Rowntree and Shanahan 2020](#); [Chamboko et al. 2018](#)). Overall, 86 percent of men and 79 percent of women in developing countries have access to mobile phones, a gender gap of 7 percent ([Demirguc-Kunt et al. 2018](#)). Similarly, the [GSM Association \(2021\)](#) showed that women in middle-income countries are 37 percent less likely to have access to Internet services. The 2017 Findex revealed that even if women in many countries have access to digital technology, compared to men, they lack a good mix of digital skills and financial capability ([Demirguc-Kunt et al. 2018](#)). [Pénicaud-Scharwatt and Minischetti \(2014\)](#) and [Schaner and Theys \(2018\)](#) highlighted that the low levels of financial literacy among women hinder them from accessing DFS.

One of the reasons cited for not having an account by women in developing countries is the lack of funds. This is a manifestation of the limited participation of women in the paid labor force, limited control of household finances, limited education, and low social economic status compared to men ([Chamboko et al. 2018](#)). Social norms and restricting laws also impede women from accessing DFS the same way as men. For instance, in at least 167 countries around the world, there are laws that limit women's economic opportunities ([G20 GPMI 2020](#)). Research from India suggests that certain societal attitudes discourage young women from acquiring phones which allow access to mobile money due to fears that they may use the phones to interact with unrelated men and increase the risk of harassment, and potentially affect their focus on children and marriage ([Schaner and Theys 2018](#)).

Another key barrier which may hinder women from accessing and using financial services, including DFS, is the limited representation of women in financial institutions and access points ([G20 GPMI 2020](#)). [Chamboko et al. \(2021\)](#) highlighted that the persistent underrepresentation of women in agent networks (for banks, MFIs and mobile money) can potentially hinder women from optimally accessing and using DFS, as they may prefer to transact with agents of their gender. [Chamboko et al.](#) have shown that female clients have a robust preference to transact with female agents, especially when making high-value transactions. This finding can be linked to other evidence suggesting that women prioritize safety, trust, and confidentiality when performing financial transactions ([Bill & Melinda Gates Foundation and Ideas.org 2021](#); [Chamboko et al. 2018](#)).

Now, I turn to the importance of access to financial services, including DFS, by youth, and the factors that affect access and use of such. The [OECD \(2020\)](#), [Hopkins and Farr \(2019\)](#), and [SEEP \(2013\)](#) showed that young people at school-going-age in developed and developing countries receive money from parents and relatives in the form of pocket money or gifts. In a way, access to financial services contributes to the empowerment of young people according to their stages of life and needs. [Whitebread and Bingham \(2013\)](#) highlighted that financial habits are formed in children from an early age. As such, giving young people access to financial services helps to instill positive financial behaviors and enable young people to accumulate assets and improve their chances for better welfare outcomes ([Cramer et al. 2009](#)).

In many developing countries where most of the economic activities are concentrated in the informal sector, access to financial services can serve as a conduit to escaping poverty through the acquisition of human and physical capital and/or engaging in entrepreneurial activities ([Chamboko and Guvuriro 2022](#); [Msulwa et al. 2021](#)). DFS in particular are reported

to facilitate digitalization among thin file clients who traditionally could not access credit from commercial banks, and hence allow lenders to score them and avail credit (Gosavi 2018; Islam et al. 2018). In USA, evidence from youth employment programs suggest that young workers having their own accounts are empowered to manage their money and to save for their own life goals (Financial Literacy and Education Commission 2017).

In spite of the discussed benefits of financial services for young people, half of the world's young people do not have an account with a formal financial institution (OECD 2020). The rise of financial technology is providing a window of opportunity, as young people are fast adopting DFS such as mobile money (OECD 2020; Demirguc-Kunt et al. 2018). Nevertheless, for most developing countries, young people continue to be financially excluded chiefly because they suffer from precarious financial situations and unemployment (OECD 2020). For example, in Mexico and Nigeria, young people cite lack of income or money and not having a need for an account for opting out of financial services (OECD 2020; National Banking and Securities Commission 2018). Similarly, in South Africa, young people are more likely to be employed in the informal sector (23%), dependent on remittances (74%), or unemployed (FinMark Trust 2018; Statistics South Africa 2022).

Given the high unemployment levels and vulnerabilities among youth, it follows that most youth are likely not to have mobile devices or Internet which allow them access to mobile money or other DFS. In addition, the youth's financial exclusion across the world is also reported to be driven by low levels of financial literacy and skill and low awareness of financial services (CGAP 2011). For young women especially, cultural, religious, and societal norms continue to hinder access to financial services including DFS. Young women are likely to be double discriminated due to age and gender, as they are more likely to be restricted from phones or economic opportunities (OECD 2020). In many financial institutions, including microfinance institutions, loans targeted for business purposes are more likely not to be given to young people (below 30 years), as they are considered to have insufficient business experience and are thus deemed risky (Kodongo and Kendi 2013).

From the literature above, it is evident that promoting access and use of financial services, and DFS in particular, is essential for the betterment of youth and women in society. As such, it is imperative to understand the role of gender and age in the use of DFS across various use cases and proffer recommendations on how service providers and policy makers can close the gaps. Based on the literature discussed above, this study proffers the following hypotheses:

Hypothesis 1. *Women and youth in Zimbabwe are less likely to use DFS to receive income compared to their counterparts.*

Hypothesis 2. *Women and youth in Zimbabwe are less likely to use DFS to make payments for goods and services compared to their counterparts.*

Hypothesis 3. *Women and youth in Zimbabwe are less likely to use DFS (mobile money) frequently compared to their counterparts.*

4. Data and Methods

The study used data from a 2022 nationally representative financial inclusion survey of 3000 respondents collected across Zimbabwe. The survey used a multi-stage sampling approach based on probability proportional to size. The sample was drawn from the 10 provinces of Zimbabwe, and data were collected between April and May 2022.

4.1. Study Variables

Table 1 presents the key variables used for the analysis classified into outcomes, main explanatory, and control variables.

Table 1. Study variables.

| Variable Type | Variable | Variable Description |
|----------------------------|--|---|
| Outcome Variables | Received income digitally (bank) | Received income and/or salary through digital means (Bank) [yes = 1; no = 0] |
| | Received income digitally (mobile money) | Received income and/or salary through digital means (Mobile Money) [yes = 1; no = 0] |
| | Made payments digitally (bank) | Made payments for goods and services through digital means (bank instruments) [yes = 1; no = 0] |
| | Made payments digitally (mobile money) | Made payments for goods and services through digital means (mobile money) [yes = 1; no = 0] |
| | Frequent mobile money use | Frequency of mobile money use [Frequent (daily or weekly) = 1; infrequent (monthly or occasionally) = 0] |
| Main explanatory variables | Gender | Gender (male = 0; female = 1) |
| | Age | Age is classified into three categories of 18–35 years who are youth and two other categories of 36 to 65 and older than 65 years. |
| Control Variables | Level of Income | Income: divided income into three groups [US\$0–US\$100; US\$101–US\$300; US\$301–US\$500; US\$501+] |
| | Source of Income | Main source of income: formally employed in private or government, informally employed in private or government, unemployed/student/stay at home, self-employed in formal sector and self-employed informal sector) |
| | Level of Education | Level of education: primary or less, secondary and tertiary |
| | Locality | Locality: rural or urban. |

Notes: The table presents the variables used in the study and the levels of the categories for each variable. All variables and data are from the Zimbabwe’s 2022 National Financial Inclusion Survey. The correlation test results for these variables are presented in Table A1 in the Appendix A.

4.2. Empirical Strategy

To investigate the relationship between the use of DFS and gender and the relationship between the use of DFS and age, the following specifications were implemented using the binary logistic regression and model coefficients, odds ratios, and *p*-values.

$$\begin{aligned}
 \text{Received income digitally (bank)}_i &= \beta_0 + \beta_1 \text{Gender}_i + \beta_2 \text{Agegroup}_i + \beta_3 \text{Income group}_i \\
 &\quad + \beta_4 \text{Level of Education}_i + \beta_5 \text{Locality}_i + \beta_6 \text{Source of income}_i + \varepsilon_i \\
 \text{Received income digitally (mobile money)}_i &= \beta_0 + \beta_1 \text{Gender}_i + \beta_2 \text{Agegroup}_i + \beta_3 \text{Income group}_i \\
 &\quad + \beta_4 \text{Level of Education}_i + \beta_5 \text{Locality}_i + \beta_6 \text{Source of income}_i + \varepsilon_i \\
 \text{Made payments digitally (bank)}_i &= \beta_0 + \beta_1 \text{Gender}_i + \beta_2 \text{Agegroup}_i + \beta_3 \text{Income group}_i \\
 &\quad + \beta_4 \text{Level of Education}_i + \beta_5 \text{Locality}_i + \beta_6 \text{Source of income}_i + \varepsilon_i \\
 \text{Made payments digitally (mobile money)}_i &= \beta_0 + \beta_1 \text{Gender}_i + \beta_2 \text{Agegroup}_i + \beta_3 \text{Income group}_i \\
 &\quad + \beta_4 \text{Level of Education}_i + \beta_5 \text{Locality}_i + \beta_6 \text{Source of income}_i + \varepsilon_i \\
 \text{Frequency of mobile money use}_i &= \beta_0 + \beta_1 \text{Gender}_i + \beta_2 \text{Agegroup}_i + \beta_3 \text{Income group}_i + \\
 &\quad \beta_4 \text{Level of Education}_i + \beta_5 \text{Locality}_i + \beta_6 \text{Source of income}_i + \varepsilon_i
 \end{aligned}$$

5. Results

Table 2 presents the sample characteristics and the extent of DSF use across bank and mobile money channels, for purposes of receiving income and making payments for goods and services, along with the frequency of mobile money use. Overall, the sample comprised about 54 percent females and about 46 percent youth (18–35 years). About six in ten of the respondents stayed in rural areas. A third attained primary education or less, a tenth had a tertiary education, and the remainder (56%) had a secondary education. In terms of income

source, close to 18 percent were formally employed in the private sector or government; the rest were informally employed, self-employed, or unemployed or retired. On receiving income through digital means, about 24 percent of males and 16 percent of females used bank channels, whereas 16 percent of males and 18 percent of females used a mobile money channel. On making payments for goods and services, about a quarter of males and about a fifth of females used bank instruments, but they used mobile money equally (about 26%). On the frequency of mobile money use, about 18 percent males and 16 percent females had used it frequently (daily or weekly).

Table 2. Sample characteristics and descriptive statistics.

| Variable | Sample (Percent) | Received Income through Bank | Received Income through Mobile Money | Made Payments Digitally (Bank) | Made Payments Digitally (Mobile Money) | Frequent Mobile Money Use (Daily or Weekly) |
|--|------------------|------------------------------|--------------------------------------|--------------------------------|--|---|
| Male | 45.97 | 24.12 | 16.37 | 24.63 | 26.32 | 17.91 |
| Female | 54.03 | 15.86 | 17.72 | 20.34 | 26.49 | 16.29 |
| Age group | | | | | | |
| 18–35 | 45.8 | 14.01 | 15.92 | 17.98 | 24.58 | 15.85 |
| 36–65 | 44.22 | 25.68 | 18.77 | 27.51 | 29.48 | 19.98 |
| 66+ | 9.98 | 18.86 | 15.15 | 19.19 | 21.21 | 9.43 |
| Rural | 59.12 | 16.08 | 16.93 | 16.31 | 23.92 | 10.80 |
| Urban | 40.88 | 24.82 | 17.34 | 30.98 | 29.99 | 26.05 |
| Income | | | | | | |
| US\$0–US\$100 | 52.44 | 11.79 | 16.14 | 14.54 | 24.09 | 11.85 |
| US\$101–US\$300 | 20.22 | 23.59 | 18.94 | 28.24 | 27.57 | 24.25 |
| US\$301–US\$500 | 6.55 | 28.21 | 17.95 | 34.36 | 35.38 | 26.67 |
| US\$500+ | 20.79 | 32.96 | 17.45 | 32.31 | 28.27 | 20.03 |
| Level of education | | | | | | |
| Primary or less | 32.56 | 9.91 | 15.07 | 11.76 | 19.92 | 5.68 |
| Secondary | 56.25 | 17.92 | 18.28 | 22.04 | 28.32 | 18.28 |
| Tertiary | 11.19 | 56.76 | 17.12 | 54.35 | 35.74 | 43.84 |
| Source of income/livelihood | | | | | | |
| Formally employed in private or government | 17.9 | 75.00 | 14.25 | 63.79 | 40.19 | 36.45 |
| Informally employed in private or government | 8.49 | 16.26 | 17.73 | 19.70 | 23.15 | 12.81 |
| Unemployed/student/stay at home | 45.04 | 11.42 | 18.11 | 14.39 | 23.68 | 9.75 |
| Self-employed formally | 2.05 | 26.53 | 22.45 | 30.61 | 24.49 | 32.65 |
| Self-employed informally | 26.52 | 11.04 | 20.82 | 15.93 | 26.97 | 24.13 |

Notes: The table presents the sample characteristics and descriptive statistics. The second column shows the sample distribution against the demographic and socio-economic variables used in the study. Columns 3 to 7 show the extend of DFS use with respect to the different categories of the demographic and socio-economic characteristics of the sample studied.

With respect to age, about 14 percent of those aged 18 to 35 years, a quarter of those aged 36 to 65 years, and about 18 percent of those over 65 years used bank accounts to receive income. On receiving income through mobile money, all age groups used the channel in almost equal proportions (15 to 19 percent). Making digital payments for goods and services through bank instruments was highest (27.5%) for those aged between 36 and 65 years and was almost the same for those aged 18–36 (18%) and above 65 years (19.2%). Similarly, making payments for goods and services through mobile money was most common among those aged 36 to 65 years (29.5%) and stood at 24.6 percent and 21.2 percent for those aged 18 to 35 years and above 65 years, respectively. On the frequent use of mobile money (daily or weekly), this ranged from 9 percent for the elderly (66+) to 20 percent for those aged 36 to 65 years. Table 2 also summarizes the prevalence of the DFS use cases under study for the control variables (locality, source of income, level of education, and level of income).

Table 3 presents results from the multivariate analysis on the factors that affect receiving income through digital means (bank or mobile money). Starting with the role of gender, Model 1’s results show that after controlling for socio-economic factors, gender is not a significant predictor of receiving income through a bank. Similarly, Model 2’s results show that gender is not a predictor of receiving income through mobile money. Regarding age, Model 1’s results show that youth are significantly less likely to receive income through bank accounts compared to adults aged between 36 and 65 years (Coef = -0.635 , $p < 0.01$). However, adults aged more than 65 years are significantly more likely to receive income through a bank account than those between 36 and 65 years (Coef = 1.167 , $p < 0.01$). Model 2’s results also show that age is not a significant predictor of receiving income through mobile money.

Table 3. Factors associated with receiving income through digital means (bank or mobile money).

| Variable | Model 1: Received Income through the Bank | | | | Model 2: Received Income through Mobile Money | | | |
|---|---|----------------|-------------|----------------|---|----------------|-------------|----------------|
| | Odds Ratio | Standard Error | Coefficient | Standard Error | Odds Ratio | Standard Error | Coefficient | Standard Error |
| Female | 0.808 | 0.109 | −0.213 | 0.136 | 1.121 | 0.129 | 0.115 | 0.116 |
| Age group (ref = 36–65 years) | | | | | | | | |
| 18–35 | 0.529 *** | 0.078 | −0.635 *** | 0.148 | 0.824 | 0.101 | −0.194 | 0.123 |
| 66+ | 3.212 *** | 0.732 | 1.167 *** | 0.228 | 0.959 | 0.204 | −0.041 | 0.213 |
| Level of income (US\$) (ref = US\$101–US\$300) | | | | | | | | |
| US\$0–US\$100 | 0.863 | 0.146 | −0.147 | 0.169 | 0.754 * | 0.106 | −0.282 * | 0.141 |
| US\$301–US\$500 | 1.275 | 0.326 | 0.243 | 0.256 | 0.856 | 0.201 | −0.155 | 0.235 |
| US\$501+ | 2.905 *** | 0.626 | 1.067 *** | 0.216 | 0.851 | 0.175 | −0.162 | 0.206 |
| Level of education (ref = Secondary) | | | | | | | | |
| Primary | 0.540 *** | 0.1010 | −0.616 *** | 0.187 | 0.827 | 0.121 | −0.189 | 0.1464 |
| Tertiary | 2.281 *** | 0.439 | 0.824 *** | 0.193 | 0.841 | 0.169 | −0.173 | 0.201 |
| Urban | 0.932 | 0.138 | −0.070 | 0.148 | 0.9218 | 0.117 | −0.081 | 0.127 |
| Source of income (ref = Self-employed formally) | | | | | | | | |
| Formally employed in private or government | 8.306 *** | 3.29 | 2.117 *** | 0.396 | 0.4324 * | 0.1678 | −0.838 * | 0.388 |
| Informally employed in private or government | 0.795 | 0.342 | −0.229 | 0.431 | 0.536 | 0.220 | −0.623 | 0.411 |
| Unemployed/student/stay at home | 0.467 * | 0.184 | −0.761 * | 0.394 | 0.656 | 0.243 | −0.4212 | 0.370 |
| Self-employed informally | 0.331 *** | 0.135 | −1.105 *** | 0.406 | 0.650 | 0.243 | −0.431 | 0.374 |
| Constant | 0.188 | 0.082 | −1.671 | 0.438 | 0.182 | 0.043 | −1.69 | 0.234429 |
| R Squared | 0.3302 | | | | 0.0087 | | | |
| AUC | 0.8535 | | | | 0.5583 | | | |
| Sample (n) | 3000 | | | | 3000 | | | |

Notes: This table reports the results on the factors associated with receiving income through a bank (Model 1) or through mobile money (Model 2). For Model 1, the outcome variable is “received income digitally (bank)”. For Model 2, the outcome variable is “received income digitally (mobile money)”. The models’ coefficients, odds ratios, and corresponding standard errors are presented. * Significant at 10%, *** significant at 1%.

Turning to other variables, Model 1 showed that the level of education, level of income, and source of income were significant predictors of receiving income through a bank. Specifically, the results show that compared to those with secondary education, those who had a tertiary education were significantly more likely (Coef = 0.824 , $p < 0.01$) to receive income through a bank, whereas those with primary education were significantly less likely (Coef = -0.616 , $p < 0.01$). Compared to individuals who earned between US\$100 and US\$300, those who earned more than US\$500 were significantly more likely to receive income through a bank (Coef = 1.067 , $p < 0.01$), and everyone else was not different. With respect to source of income, the results show that those who were formally employed in the private sector or government were significantly more likely to receive income through a bank (Coef = 2.117 , $p < 0.01$) compared to those who were formally self-employed. Those who were unemployed, students, or stayed at home (Coef = -0.761 , $p < 0.1$), and those

who were self-employed informally (Coef = -1.105 , $p < 0.01$), were significantly less likely to receive income through a bank. Model 2 show that the level of education and locality were not significant predictors of receiving income through mobile money. The model also showed that compared to individuals who earned between US\$100 and US\$300, those who earned US\$100 or less were significantly less likely to receive income through mobile money (Coef = -0.282 , $p < 0.1$), whereas the rest were not statistically different from each other. Additionally, compared to those who were formally self-employed, those who were formally employed in the private sector or government were significantly less likely to receive their income through mobile money (Coef = -0.838 , $p < 0.1$).

Table 4 presents results on the factors associated with making day to day digital payments for goods and services (excluding remittances). Similar to results in Table 3, gender was not a significant predictor for making such payments, whether using digital bank instruments or mobile money. Additionally, consistent with results from Model 1, Model 3 showed that youth (18–35 years) were significantly less likely (Coef = -0.487 , $p < 0.01$) to make payments digitally using bank instruments compared to those aged between 36 and 65 years. Those aged above 65 years were significantly more likely to make digital payments using bank instruments (Coef = 0.768 , $p < 0.01$). Model 4’s results also show that those aged 36 to 65 years were not statistically different from those above 65 years, whereas youth (18–35 years) were significantly less likely to make payments for goods and services using mobile money (Coef = -0.218 , $p < 0.05$).

Table 4. Factors associated with making digital payments (bank or mobile money).

| Variable | Model 3: Payments Using Bank Instruments | | | | Model 4: Payments Using Mobile Money | | | |
|---|--|----------------|-------------|----------------|--------------------------------------|----------------|-------------|----------------|
| | Odds Ratio | Standard Error | Coefficient | Standard Error | Odds Ratio | Standard Error | Coefficient | Standard Error |
| Female | 0.962 | 0.114 | −0.038 | 0.118 | 1.072 | 0.108 | 0.069 | 0.100 |
| Age group (ref = 36–65 years) | | | | | | | | |
| 18–35 | 0.614 *** | 0.077 | −0.487 *** | 0.126 | 0.804 ** | 0.085 | −0.218 ** | 0.106 |
| 66+ | 2.157 *** | 0.456 | 0.768 *** | 0.212 | 1.189 | 0.225 | 0.173 | 0.189 |
| Level of income (US\$) (ref = US\$101–US\$300) | | | | | | | | |
| US\$0–US\$100 | 0.745 ** | 0.107 | −0.295 ** | 0.145 | 0.948 | 0.119 | −0.053 | 0.125 |
| US\$301–US\$500 | 1.348 | 0.293 | 0.298 | 0.218 | 1.315 | 0.257 | 0.274 | 0.195 |
| US\$501+ | 2.075 *** | 0.385 | 0.730 *** | 0.186 | 1.235 | 0.2108 | 0.211 | 0.171 |
| Level of education (ref = Secondary) | | | | | | | | |
| Primary | 0.651 *** | 0.106 | −0.429 *** | 0.163 | 0.689 *** | 0.091 | −0.371 *** | 0.132 |
| Tertiary | 1.705 *** | 0.286 | 0.533 *** | 0.168 | 0.854 | 0.137 | −0.157 | 0.159 |
| Urban | 1.403 *** | 0.177 | 0.338 *** | 0.127 | 1.091 | 0.119 | 0.088 | 0.109 |
| Source of income (ref = Self-employed formally) | | | | | | | | |
| Formally employed in private or government | 3.832 *** | 1.451 | 1.343 *** | 0.379 | 1.5936 | 0.581 | 0.466 | 0.365 |
| Informally employed in private or government | 0.850 | 0.347 | −0.163 | 0.40923 | 0.781 | 0.305 | −0.247 | 0.391 |
| Unemployed/student/stay at home | 0.578 | 0.217 | −0.549 | 0.377 | 0.885 | 0.317 | −0.122 | 0.359 |
| Self-employed informally | 0.544 | 0.207 | −0.608 | 0.382 | 0.9186 | 0.332 | −0.085 | 0.362 |
| Constant | 0.351 | 0.137 | −1.047 | 0.393 | 0.432 | 0.161 | −0.837 | 0.373 |
| R Squared | 0.1938 | | | | 0.0219 | | | |
| AUC | 0.7843 | | | | 0.6078 | | | |
| Sample (n) | 3000 | | | | 3000 | | | |

Notes: The table reports the factors associated with making digital payments through bank channels (Model 3) and through mobile money (Model 4). For Model 3, the outcome variable is “made payments digitally (bank)”. For model 4, the outcome is “made payments digitally (mobile money)”. ** significant at 5%, *** significant at 1%.

The results in Table 4 also show that the level of education, income, source of income, and locality predicted making digital payments for goods and services through bank instruments. Those with tertiary education were significantly more likely to make digital payments using bank instruments (Coef = 0.533, $p < 0.01$) compared to those with secondary education, whereas those with primary education were significantly less likely (Coef = -0.429 , $p < 0.01$). On income, those who earned above US\$500 (Coef = 0.730, $p < 0.01$) were significantly more likely to make digital payments using bank instruments compared to those who earned between US\$100 and US\$300, yet those who earned US\$100 or less (Coef = -0.295 , $p < 0.05$) were significantly less likely. With those who were formally self-employed as the reference group, those who were formally employed in the private sector or government (Coef = 1.343, $p < 0.01$) were significantly more likely to make digital payments using bank instruments, whilst the rest were not significantly different. Those who lived in urban areas were also more likely to make digital payments using bank instruments than those residing in rural areas (Coef = 0.338, $p < 0.01$). Turning to mobile money payments, Model 4 showed that the level of income, source of income, and locality (urban or rural) were not significant predictors of making payments for goods and services using mobile money. Education was a significant predictor of making day to day mobile money payments for goods and services. Those with primary education were significantly less likely (Coef = -0.371 , $p < 0.01$) to make such payments compared to those with secondary education. Those with secondary education were not statistically different from those with tertiary education.

Table 5 presents the factors associated with the frequency of mobile money use (Model 5). The results show that gender did not affect the frequency of mobile money use. Even though women were more likely to transact more frequently than men, the relationship was not statistically significant. Regarding age, youth were significantly less likely to use mobile money frequently compared to adults aged between 36 and 65 years (Coef = -0.208 , $p < 0.1$). With respect to the control variables, the level of income, source of income, level of education, and locality significantly predicted the frequency of mobile money use. Compared to those who were self-employed formally, the unemployed, students, those who stayed at home (Coef = -1.200 , $p < 0.01$), and the informally employed in the private sector or government (Coef = -1.206 , $p < 0.01$) were significantly less likely to use mobile money frequently. Those who had only attained primary education (Coef = -1.037 , $p < 0.01$) were significantly less likely to use mobile money frequently compared to those with secondary education. On the other hand, those who had a tertiary education (Coef = 0.679, $p < 0.01$) were significantly more likely to use the product frequently. Individuals who lived in urban areas (Coef = 0.426, $p < 0.01$) were more likely to use the mobile money service frequently compared to those who resided in rural areas. Compared to those who earned between US\$100 and US\$300, individuals who earned US\$100 or less (Coef = -0.301 , $p < 0.01$) were significantly less likely to use the mobile money services frequently, whilst the rest were not statistically different from each other.

Table 5. Factors associated with frequency of use of mobile money.

| Model 5: Mobile Money Frequency of Use | | | | |
|--|--|----------------|-------------|----------------|
| Variable | Odds Ratio | Standard Error | Coefficient | Standard Error |
| Female | 1.123 | 0.135 | 0.116 | 0.1201 |
| | Age group (ref = 36–65 years) | | | |
| 18–35 | 0.812 * | 0.101061 | -0.208 * | 0.124 |
| 66+ | 1.175 | 0.318589 | 0.161 | 0.271 |
| | Level of income (US\$) (ref = US\$101–US\$300) | | | |
| US\$0–US\$100 | 0.739 ** | 0.107 | -0.301 ** | 0.145 |
| US\$301–US\$500 | 1.225 | 0.261 | 0.203 | 0.213 |
| US\$501+ | 1.088 | 0.203 | 0.084 | 0.186 |

Table 5. Cont.

| Model 5: Mobile Money Frequency of Use | | | | |
|--|---|----------------|-------------|----------------|
| Variable | Odds Ratio | Standard Error | Coefficient | Standard Error |
| | Level of education (ref = Secondary) | | | |
| Primary | 0.354 *** | 0.068 | −1.037 *** | 0.194 |
| Tertiary | 1.972 *** | 0.312 | 0.679 *** | 0.158 |
| Urban | 1.531 *** | 0.196 | 0.426 *** | 0.128 |
| | Source of income (ref = Self-employed formally) | | | |
| Formally employed in private or government | 0.779 | 0.285 | −0.248 | 0.365 |
| Informally employed in private or government | 0.299 *** | 0.124 | −1.206 *** | 0.417 |
| Unemployed/student/stay at home | 0.301 *** | 0.110 | −1.200 *** | 0.367 |
| Self-employed informal sector | 0.697 | 0.2532 | −0.360 | 0.363 |
| Constant | 0.559 | 0.213 | −0.580 | 0.381 |
| R Squared | | 0.1371 | | |
| AUR | | 0.7512 | | |
| Sample (n) | | 1845 | | |

Notes: The table reports the results on the factors associated with making frequent (daily or weekly) mobile money transactions. The outcome variable is “frequent mobile money use”. * Significant at 10%, ** significant at 5%, *** significant at 1%.

6. Discussion

The study revealed that gender is not a significant predictor of DFS use to receive income or to make payments for goods and services, nor for the frequency of mobile money use, in Zimbabwe. This finding is of particular importance to the financial inclusion agenda in Zimbabwe, as it concludes that both men and women equally use digital financial services to perform their financial transactions. Globally, women lag by 9 percentage points on access to financial services (Demirguc-Kunt et al. 2018). For many developing countries, evidence shows that women’s access to and use of DFS is lower compared to their male counterparts’ due to women’s limited access to cellphones and Internet (Demirguc-Kunt et al. 2018; GSM Association 2021), their persistent lack of funds (Chamboko et al. 2018), limited financial and digital literacy and technological appropriation (Demirguc-Kunt et al. 2018; Schaner and Theys 2018; Pénicaud-Scharwatt and Minischetti 2014), the presence of social norms, attitudes, and laws which impede women from accessing DFS (G20 GPMI 2020; Schaner and Theys 2018), etc. Based on this finding, it is thus imperative that policy actions that seek to promote and accelerate the use of DFS in Zimbabwe should focus on factors other than gender. However, there is need to continue collecting gender-lensed financial inclusion data to enable gender-lensed data analytics to detect any changes and inform policy (Chamboko 2018).

The findings on age reveal that the use of bank-led digital instruments to receive income and to make payments for goods and services is the least likely of modes among youth and is more common among older adults. Similarly, the study found that youth are comparatively less likely to use mobile money to make payments for goods and services and are less likely to use the mobile money services frequently. This finding is particularly fitting for Zimbabwe, given the limited employment opportunities the country offers to young people (Maulani and Agwanda 2020). It therefore follows that young people are likely to lack the funds to be able to use DFS to make payments, and if they do, they will do so less frequently than older adults. This finding is supported by literature which documented that young people, for instance, in Mexico, Nigeria, and South Africa, lack money and thus opt out of financial services (OECD 2020; National Banking and Securities Commission 2018), or the majority are unemployed (FinMark Trust 2018; Statistics South Africa 2022).

Besides the findings on gender and age, the study also showed the importance of the level of education, source of income, locality, and the level of income on the use of DFS. Individuals who earn higher incomes, those with higher levels of education, and those employed formally in the private sector or government tend to use bank channels more

than others to receive their incomes and to make digital payments for goods and services. This can be attributed to the fact that most educated people get formal jobs and earn more than their counterparts and mostly get their salaries deposited into their bank accounts. This finding confirms the financial inclusion literature which shows that access and use of banking services is mostly by those with higher socioeconomic status (Akinyemi and Mushunje 2020; Senou et al. 2019). In relation to mobile money use, the key takeaway is that those who are formally employed in the private sector or government are less likely to use mobile money to receive their incomes, given that they mostly do so through bank accounts. The less educated, the unemployed, the lowest earners, and those in rural areas are likely to use mobile money less frequently, and are less likely to earn income or pay for goods and services through it. These findings can be explained by the precarious financial situation and possibly low financial literacy and technological appropriation of these population groups, which is supported by earlier studies on DFS use in Sub-Saharan Africa (Akinyemi and Mushunje 2020; Chamboko et al. 2018). The findings also collaborate the discussion above about the lack of funds and employment opportunities having implications for how individuals engage financial services, including DFS. Thus, policy initiatives that seek to create employment and income generating opportunities may serve as a major boost for the use of DFS and for financial inclusion in general.

7. Conclusions

Promoting DFS has become a key developmental policy tool to address the financial exclusion of women and youth in many developing countries. To achieve this objective, it is important to understand the role of gender and age in the use of DFS across use cases. This study thus sought to answer the following questions: (1) Do gender and age predict the use of DFS to receive income, and to make payments for goods and services? (2) Do gender and age predict the frequency of DFS use? To answer these questions, this study used data from a sample of 3000 respondents from Zimbabwe, a country that has experienced macroeconomic and monetary pressures for a prolonged period. Results from multivariate logit models, controlling for socio-economic factors, showed that in Zimbabwe, gender does not predict the use of DFS across uses cases of receiving income and making payments for goods and services, or the frequency of use. The study also found that youth lag in the use of DFS, especially for making payments for goods and services and their frequency of use. Besides the findings on gender and age, the study revealed that the level of education, the way one earns one's income, locality (which also have implications on earnings), and the level of income are important determinants of how individuals engage DFS for purposes of receiving income and making payments, and for their frequency of use.

Even though the study revealed that gender is not a significant predictor of DFS use, with consistency across urban and rural areas, further research may consider using smaller delineations and conduct spatial analyses to investigate possible variations in DFS use by gender. This may help to inform targeted interventions to ensure that both men and women in every part of the country have access to and meaningfully use DFS.

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Disclaimer: The paper has the details of the author. Thus, the findings of the study and the conclusions thereof are entirely those of the author. As such, they do not represent the views of the affiliated organizations.

Appendix A

Table A1. Spearman's correlations between the explanatory variables.

| | Locality (Rural/Urban) | Gender | Source of Income | Level of Education | Level of Income | Age |
|---------------------------|---------------------------|----------------------|----------------------|-----------------------|---------------------|-----|
| Locality (rural/urban) | 1 | | | | | |
| Gender | −0.0053 (0.7939) | 1 | | | | |
| Source of Income | −0.0720 * (0.0004) | −0.1021 * (0.000) | 1 | | | |
| Level of Education | 0.3768 * (0.000) | 0.1054 * (0.000) | −0.1826 * (0.000) | 1 | | |
| Level of Income | 0.0825 * (0.0001) | −0.0108 (0.5961) | −0.0959 * (0.000) | 0.1841 * (0.000) | 1 | |
| Age | −0.1223 * (0.000) | −0.0289 (0.1578) | 0.0338 (0.0984) | −0.2239 * (0.000) | −0.0191 (0.3502) | 1 |

Notes: The table presents the Spearman's correlations between the explanatory variables used in the study. In parentheses are the p-values corresponding to the test. * Significant at the 5% level.

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