

The Influence of Agency Banking and Mobile Money Services on Farmers' Welfare in Mvomero District, Tanzania

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Abstract

In many developing countries inadequate and poor access to appropriate financial services has been one of the major challenges facing smallholder farmers particularly in rural areas. The limited access to financial services make rural farmers confine themselves to poor low-risk crops and sub-optimal inputs, which results in lower yield and poor household livelihoods. In recent years agency banking and mobile money services have emerged as one of the major means of financial services among many rural communities in Tanzania. The growing literature on the role of agency banking and mobile money in promoting financial inclusion in Tanzania has been widely reported, with a less focus on farmers' livelihoods. This paper examines the influence of agency banking and mobile money services on farmers welfare with the case of Mvomero districts, Morogoro region, Tanzania. A mixed approach of qualitative and quantitative methods was applied in this study. Major techniques used in data collection included documentary review, household questionnaire, Key Informant Interviews (KII), Focus Group Discussions (FGD) and field observation. Data were analysed by descriptive statistics and content analysis techniques. The results show that the presence of agency banking and mobile money services has promoted improved saving and enhanced agricultural investments among rural farmers which contributes to improvement of farmers' welfare in Mvomero district. The study recommends that the government should promote the availability of agency banking to various rural communities because they stimulate agricultural investment and improved household welfare which consequently promotes rural transformation in general.

Keywords: Agency banking, mobile money, farmers' welfare, Mvomero district.

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1. Introduction

It is acknowledged that worldwide, about 1.7 billion adults lack financial access and do not own any kind of financial account. In many developing countries smallholder farmers have been facing various challenges including lack of access to financial services, limited knowledge of high-quality inputs, low usage of technology and poor linkages on markets across the value chain for various crops. There is poor access to appropriate and adequate financial services, particularly credit which causes rural farmers to confine themselves to low-risk crops and sub-optimal inputs, which lead to lower yield (Demirgüç-Kunt et al., 2020). Inadequate access to finance make smallholder farmers end up with lower yield and make their produce less competitive in the market while increasing the risk of falling into a debt cycle and compel them to seek credit for repaying previous loans (Tinsley & Agapitova, 2018). Therefore, introduction of agency banking and mobile money services is a promising solution to for easier and cheaper access to financial services among rural societies (Aron, 2018; Suri, 2017; Hamdan et al., 2022).

The agency banking and mobile money services have been increasingly performed in various parts of the world (Nyaga, 2014). Africa has emerged to be the leader in mobile money services and gained a popularity as an important element of Africa's daily life and became one of the drivers of domestic economic growth (Mitręga-Niestrój et al., 2019). Many African countries including Tanzania, South Africa, Kenya and Uganda have expanded the digital financial services to remote areas as part and parcel of their licensing conditions. While banking infrastructures remain a challenge in Africa, agency banking and mobile money systems have developed at a rapid rate which promoted improved mobile phone ownership which increases the potentials for using agency banking and mobile money services (Brien et al., 2013). The mobile money transfers and its further linkages to bank savings accounts have implication on households and businesses because they have potentials that helps to reduce the problem of market failure in some remote parts of developing countries (Aron, 2018).

Traditional financing has not been directly focused on addressing smallholder farmers' needs for financial services. This is due to their specific location in urban areas and their perceived high credit risk and incompatible financial products. Extending banking services to underserved population, possibly through bank branches which are normally situated at district levels have been costly to customers who are required to travel to reach those bank branches. The provision of conventional banking services to remote areas or rural areas, mainly comprised of low value accounts, held by poor rural population, is considered significantly costly to banks (World Bank, 2014). This increases the limitations of financial inclusion which needs to be solved via a financial innovation like banking and mobile money agents that will drastically reduce the cost of getting financial services to all

customers who live in remote areas not easily covered by traditional banking services (Lotto, 2016). Currently, various commercial institutions have implemented innovative solutions to close these gaps and help smallholder farmers thrive well in their agriculture activities. Social enterprises including finance providers, specialized financial intermediaries, and index-based agricultural micro insurance are planning more efficient, cost-effective financial solutions in order to unlock credit and manage risk among farming households. Therefore, agency banking and mobile money services have emerged as one of the user-friendly means of overcoming various financial challenges among rural communities (Tinsley & Agapitova, 2018).

Despite the growing literature on the role of agency banking and mobile money services in promoting financial inclusion in Tanzania, (Nyaga, 2014; Lotto, 2016; Nkrumah et al., 2018; Mitreġa-Niestrój et al., 2019), there is a knowledge gap on how farmers benefit from agency banking and mobile money services. This study is an attempt to fill that gap. Specifically, the study intended to gain specific knowledge on the local community's perception on the availability of agency banking and mobile money services and their benefits to their welfare improvement. Therefore, this study tells how farmers' welfare have been promoted through the use of banking agents and mobile money agents in Mvomero district, Morogoro region, Tanzania.

Theoretical framework

The study is guided by the Technology Acceptance Model (TAM) by Davis (1989) which is an information systems theory that explains how users accept and use a new technology. The theory suggests that when users are presented with a new technology two specific factors influence their decision on how and when to use it. These are 'perceived usefulness' and 'perceived ease of use'. The 'perceived usefulness' refers to a degree to which a person believes that through the use of a particular system his or her job performance would be enhanced; while 'perceived ease of use', concerns with the degree to which a person believes that the use of a particular system would be free from effort. The TAM model was adopted in this study as a reference point in explaining how users accept and use agency banking and mobile money services. The technology acceptance model (TAM) has been considered as a powerful theory which is widely used to determine the acceptance and usefulness of technology across the world (Goh & Wen, 2020; Rafique, Almagrabi, Shamim, Anwar, & Bashir, 2020) and in various fields like m-shopping (Hubert, Blut, Brock, Backhaus & Eberhardt, 2017), e-learning (Jeong, 2011), online libraries (Zhao et al., 2015) and mobile library applications (Rafique et al., 2018). The theory indicates that technology is more likely to be adopted if it has positive impact to individuals or organizations and show that various people adopt technology at different levels.

2. Methodology

The study was carried out in Wami Dakawa and Wami Sokoine villages of Mvomero district, Morogoro, region, Tanzania. Mvomero district was selected because is one of the districts where agency banking and mobile money services are experienced and residents have responded differently towards those services. Also, Mvomero district was selected due to its pattern of distribution of villages where some villages have good access to both agency banking and mobile money services than others. Through purposive sampling the district officials helped to select two villages. Wami Dakawa village was selected due to its good access to both agency banking and mobile money services while Wami Sokoine was selected due to its good access to mobile money services but with poor access to agency banking. Following the recommendation by Boyd et al. (1981) it is recognized that a sampling intensity of 5% of the total number of households in a study site is a reasonable proportion of the study population. Therefore, this study adopted a sampling intensity of 5% of household size, where by a total of 201 respondents with 151 and 50 households were interviewed from Wami Dakawa and Wami Sokoine villages, respectively (Table 1).

Table 1: Sample size in the study villages

Village	Total number of households	5% of Sample households	Sampled households
Wami Dakawa	3006	150.3	151
Wami Sokoine	992	49.6	50
Total	3998	199.9	201

Source: Field Survey (2022)

Data was collected from households of Wami Dakawa and Wami Sokoikne villages in Mvomero district, Morogoro region. A structured questionnaire was administered to 201 household respondents. Both primary and secondary data were collected. Secondary data were obtained through documentary review while primary data were collected through structured questionnaires, KIIs, FGDs and field observation. A questionnaire was administered to households in the sampled villages. Most of the items in questionnaire was quantified to gather data on variables such as the benefits of agency banking and mobile money services, ownership of mobile phones, ownership of bank accounts, types of agency banking and mobile money services existing in the area

and the benefits obtained from those services. The researcher conducted a documentary review to generate secondary data. This involved the review of various publications, including books, journals, official government reports and other published and unpublished materials as well as websites and other sources of information on the study subject. The three FGDs were conducted separately for youth, women and men in each study village. The FGDs provided additional information about the contribution of agency banking and mobile services to welfare improvement in the area. In-depth interviews with key informant were conducted to officials from the study villages, wards, and district as well as agents of banking and mobile phone companies offering services in the area. Further, Field observation was useful in identifying and confirming information reported by other methods of data collection such as the household questionnaire, FGDs and KIIs. Descriptive statistics was applied in analysing quantitative data which was successfully done through Statistical Package for Social Sciences (SPSS) version 20 and Excel spreadsheet. Content analysis was used to analyse the qualitative data.

3. Results and Discussion

3.1 Perception of the local community on availability of agency banking and mobile money services in the study villages

The study revealed that agency banking services were available in the area with uneven distribution in Mvomero district. The findings show that banking services are sufficiently available in Wami Dakawa as indicated by 81.5% than in Wami Sokoine. The majority of respondents (72%) in Wami Sokoine village declared that the agency banking services are extremely unavailable in the area (Figure 1).

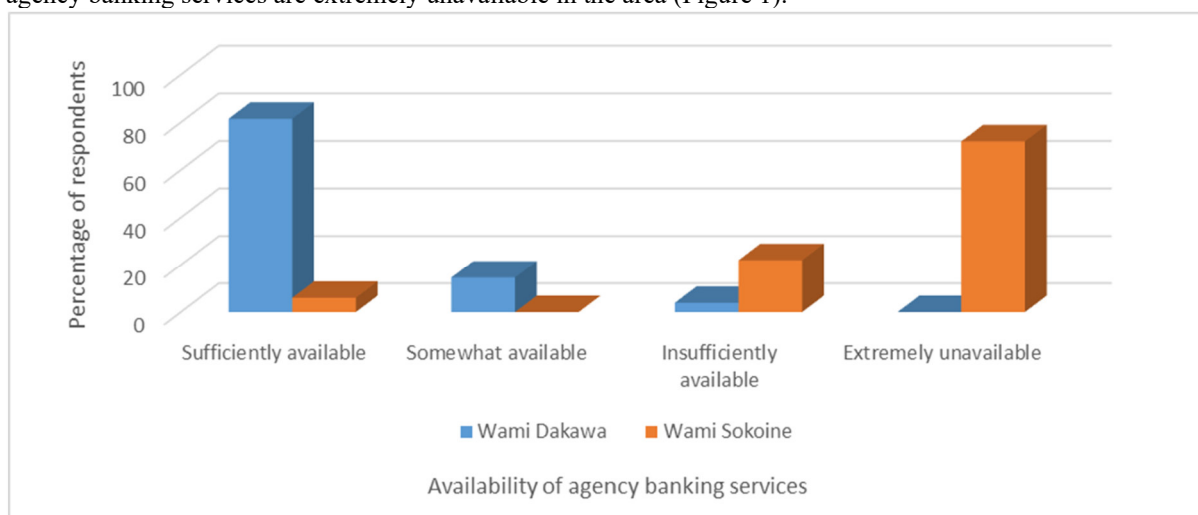


Figure 1: Local community’s perception on the availability of agency banking services in the study villages
 Source: Field Data (2022)

As shown in Figure 1, drawing from local community’s perception, it is clear that agent banking services were unevenly distributed in the study area. There were variations in response from the two villages where Wami Dakawa had high percentage (81.5%) of those who showed that the agency banking services are sufficiently available while Wami Sokoine had very low percentage (6%). There were no active banking services in Wami Sokoine, hence, households in Wami Dakawa benefited more from the agency banking services than those of Wami Sokoine village. This indicates that the services of banking agents are not equally distributed which creates unequal opportunities between and among local communities in Mvomero district.

The FGDs were asked to rank the types of bank agents that exist in the area. It was revealed that in Wami Dakawa various banks have practised agency banking including NMB, CRDB, NBC and EQUITY bank, with CRDB and NMB dominating the area. In Wami Sokoine village there were no active bank agents, there were only bank banners and advertisements for CRDB and NMB banks without active services. Through discussion with key informants and FGDs it was realised that in Wami Sokoine village the process of introducing and delivering agency banking services are on progress. This was also verified by field observation where the offices and banners for CRDB and NMB bank agents were there but no agent banking services offered, only mobile money services like Tigopes, M-pesa, Airtel money and Halopesa were available in the area.

Through an interview with a mobile money agents in Wami Sokoine village it was revealed that it takes several months to accomplish the process of becoming bank agents than mobile money agents. This is because the authorities of bank branches follow some procedures to satisfy themselves whether or not to provide the permit and the device for someone to run banking business.

When asked about how many have owned bank accounts, 37.1% and 14% of respondents from Wami Dakawa and Wami Sokoine respectively, have owned bank accounts. The FGDs and KIIs reported that

households in Wami Dakawa are motivated to have bank account because it is one of the conditions to access loan from banks which are easily being withdrawn and paid through bank agents in the area. Households in Wami Dakawa village use loans for various agricultural activities such as to incur various cost related to paddy production including renting land, paying labourers, buying farm inputs as well as buying or hiring farm implements. The FGDs and KIIs revealed that unlike wami Dakawa, households in Wami Sokoine village do not participate fully in agricultural activities particularly paddy farming which is considered as one of the major cash crop in the area due to shortage of land. Therefore, they are not motivated to have bank accounts because they believe that ownership of bank accounts are important for accessing loans for agriculture. Hence, being constrained by the problem of shortage of land which limit them to engage fully in agricultural activities they see no reason to own bank accounts.

One of the male participants in FGD complained that,

“Our land has been given to a private investor who use it for livestock farming therefore all the land around our residence are claimed to be owned by him, we remain to be only the owners houses not the surroundings. This made us landless and guests in our own land, which consequently lead to inadequate participation in agriculture.” (A male respondent aged 48 at Wami Sokoine village, December, 2022).

Also, the KIIS and FGDs reported that unlike Wami Dakawa which has an opportunity of Dakawa irrigation scheme in the village, households in Wami Sokoine lack such an opportunity. About 62% of households in Wami Dakawa and 17% of households in Wami Sokoine village indicated to have rented land for paddy farming in the scheme area. Renting land in scheme area was expensive but guarantees higher harvest rather than non-scheme areas. Renting charges in scheme areas was 400,000 per acre while in non-scheme areas renting charges ranges from 70,000 to 150,000 depending on the location and fertility of the available land for renting. Therefore, only those who had access to income for payment of renting charges could engage in paddy production in Dakawa scheme.

With regard to availability of mobile money services, the majority of respondents perceived that mobile money agents are sufficiently available in both Wami Dakawa and Wami Sokoine villages as indicated by 92% and 86% of respondents, respectively (Figure 2).

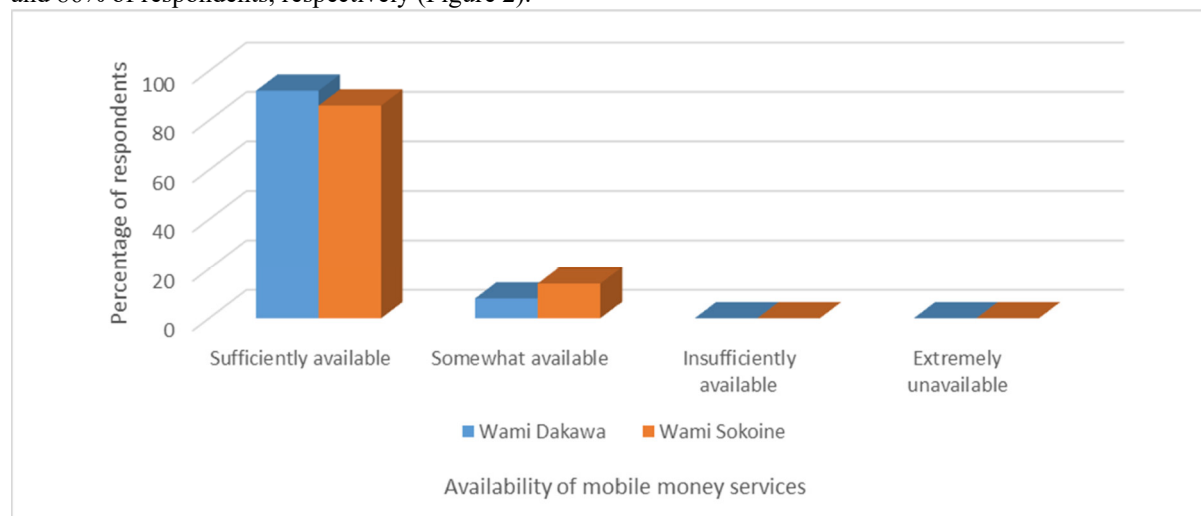


Figure 2: Local community’s perception on the availability of mobile money services in the study villages
 Source: Field Data (2022)

It is evident from Figure 2 that mobile money services were sufficiently available in both Wami Dakawa and Wami Sokoine villages. This implies that households in both villages benefit from the mobile money services. It was revealed that in both Wami Dakawa and Wami Sokoine villages various mobile network companies have practised mobile money services such as Tigopesa, Mpesa, Airtel money and Halopesa. This was confirmed by field observation where various offices were actively operating and each office has a combination of different mobile network operators.

3.2 The percentage of respondents on the use of agency banking services and mobile money services

The researcher wanted to understand the percentage of those who have benefited from bank agents and mobile money agents in the study area. It was revealed that there were more users of mobile money services than those of agency banking services in both Wami Dakawa and Wami Sokoine villages (Figure 3).

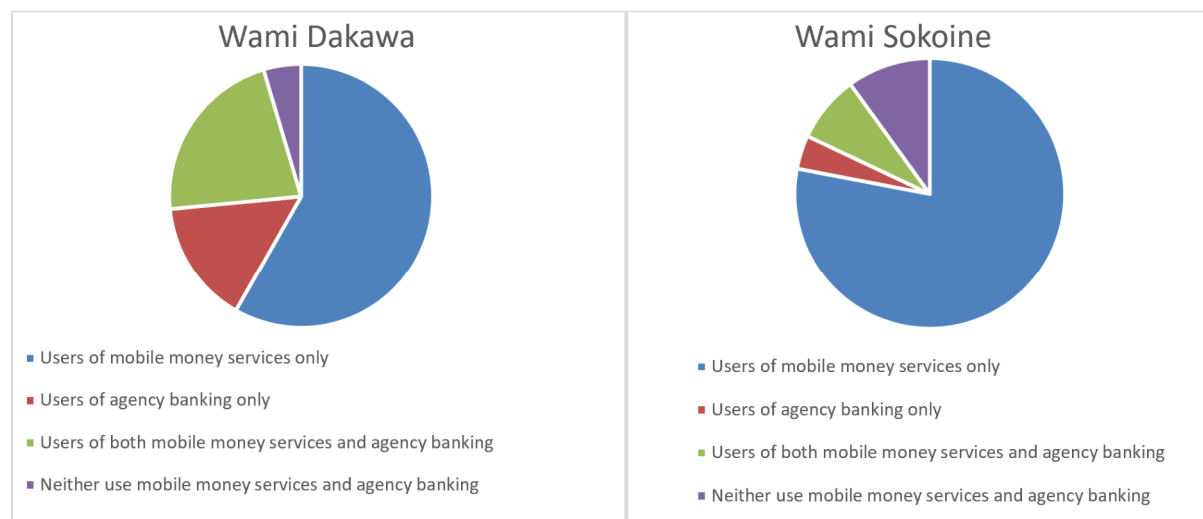


Figure 3: Percentage of users of agency banking and mobile money services in the study area
 Source: Field data (2022)

Figure 3 illustrates that the majority of respondents have used mobile money services than agency banking services in both Wami Dakawa and Wami Sokoine villages. A high percentage of users of mobile money services was from Wami Sokoine (78%) village because the area has inadequate access to agency banking hence mobile money services was their major option which is sufficiently available in their village. The FGDs and KIIs revealed that the low usage of agency banking services was due to the fact that agency banking services requires the ownership of bank accounts while with mobile money services the mobile money accounts are provided automatically during registration of mobile phone number. Also, the services of mobile money agents are easily accessed in their village rather than banking agents. The ownership of mobile phones accounts allow them to access mobile money services which implies that the use of mobile money services dominates the area rather than the agency banking services.

One of the female FGD argued that,

“Almost every household has accessed mobile money services because unlike the bank account there is free entry into the service with no opening charges. After being registered with any phone number for any mobile company you only need to create password to access mobile account then get the mobile account automatically. Hence, everyone is free to access and use the service.” (A female farmer aged 34 at Wami Dakawa village, December, 2022).

This indicates that free entry into mobile money account and its accessibility promotes the usefulness of mobile money services. This allows farmers to perform various transactions with their mobile phones. Also, the ownership of mobile phones provides access to mobile banking for those who held bank accounts who could benefit from both agency banking and mobile money services as they could transfer money from their accounts to their mobile phones and withdraw their money from agents of mobile money services. Also, they could transfer money from their mobile phones to their bank accounts and withdraw their money through agents of banking services.

The findings on the higher percentage of owning mobile money services than agency banking services was also reported by Muya (2015) that in African countries like Tanzania, Kenya and Uganda the users of mobile money accounts are more than those of bank accounts. Mobile money is considered to be a very convenient tool in daily life because it allows people to use their phones to deposit, withdraw and transfer their money and pay various utility bills without having bank accounts. The users of mobile phone have been increasing over time which adds to popularity of mobile money services (Nyaga, 2014). Also, the mobile phones were used for mobile banking that enable customers who hold a formal bank account to have access to their available money through their mobile phones. They could perform mobile payment that allow the unbanked to pay or be paid for goods and services using their mobile phone; and mobile transfer which involve the transfer of money from one person to another across the country as well as across international borders (Mitręga-Nieśtrój et al., 2019). These results agrees with Lashitew et al. (2019) that the majority of households use mobile money services rather than the agency banking services because they are easily accessed in rural areas which allow farmers to be served after their farm works. Also, the results on free access to mobile money services was observed in Uganda by Hamdan et al. (2022) that the ownership of mobile money account is automatically provided because it is a by-product of having a registered mobile telephone number.

While this study found that there were many users of mobile money services, in contrast to these findings a study by Hamdan et al. (2022) reported that in Uganda it was observed that only 49% of households were

actively using the mobile money services. This was resulted from insufficient physical infrastructure such as the inadequate number of bank agents and those of mobile money agents which limits their use.

3.3 Benefits of agency banking and mobile money services to rural farmers in Mvomero district

When compared to bank branches, the agency banking and mobile money services were found to be more beneficial to rural farmers in the study villages. Various criteria were used to assess the benefits and worthiness of the services provided by bank agents and mobile money agents. The criteria used included saving ability, agricultural investment ability, time consumed, transport cost incurred and convenience in accessing agency banking and mobile money services (Table 2).

Table 2: Percentage of respondents on the benefits of agency banking and mobile money services to farmers welfare

Benefits of agency banking and mobile money services	Response from respondents	Wami Dakawa (n=151)		Wami Sokoine (n=50)		Total
		Number of respondents	%	Frequency	%	
Higher saving ability	Strongly Agree	141	93.4	28	56	70.1
	Agree	10	6.6	19	38	14.4
	Disagree	0	0	3	6	1.5
	Strongly Disagree	0	0	0	0	0
	Total	151	100	50	100	100
Promote agricultural investment	Strongly Agree	118	78.1	17	34	67.2
	Agree	33	21.9	14	28	23.4
	Disagree	0	0	19	38	9.4
	Strongly Disagree	0	0	0	0	0
	Total	151	100	50	100	100
Ability to save time	Strongly Agree	132	87.4	39	78	85.1
	Agree	19	12.4	11	22	14.9
	Disagree	0	0	0	0	0
	Strongly Disagree	0	0	0	0	0
	Total	151	100	50	100	100
Ability to reduce transport cost	Strongly Agree	129	85.4	36	72	82.1
	Agree	22	14.6	12	24	16.9
	Disagree	0	0	2	4	1
	Strongly Disagree	0	0	0	0	0
	Total	151	100	50	100	100
Highly convenient	Strongly Agree	143	94.7	46	92	94
	Agree	8	5.3	4	8	6
	Disagree	0	0	0	0	0
	Strongly Disagree	0	0	0	0	0
	Total	151	100	50	100	100

Source: Field Survey (2022)

As depicted in Table 2, it was established that agency banking and mobile money services promoted saving ability among farmers in the study area. There were variation in response where Wami Dakawa had higher response (93.4%) than Wami Sokoine (56%). The higher response from Wami Dakawa was due to higher participation in agricultural activities particularly paddy farming than Wami Sokoine which encouraged more farmers to save part of their income earned from paddy farming. Also, Wami Dakawa village has access to Dakawa irrigation scheme which promoted high participation in paddy farming which promote improved savings among farmers in the area. The location of agency banking and mobile money services close to farming households, allow improved saving because whatever they obtain income they are motivated by bank agents and mobile money agents available in their village to save their income regardless of their income sizes. It was reported that sometimes traders are making payments at the bank agents hence no need of going to bank branches for saving because the services are available within their residence areas. Further, the FGDs and KIIs emphasized that the presence of agency banking and mobile money services reduces the risk of carrying physical money and related documents to bank branches which also reduces the likelihood of occurrence of fraud or of

being cheated by conmen. This indicates that through agency banking farmers have accessed safe and quick storage of their money which promote savings for various social and economic developments such as paying school fees and agricultural investment. Hence, the presence of agency banking helps to modernise the agricultural value chain and solve theft and fraud related cases while forming a safe payment option for rural farmers rather than cash payments without travelling to banks, which consequently improves the prosperity of rural households in Mvomero district.

Further, the use of agency banking and mobile money services were observed to be important in promoting agricultural investment as indicated by 78% and 34% of respondents from Wami Dakawa and Wami Sokoine village, respectively (Table 2). This resulted from the fact that agents of banks and of mobile money are located within farmers residence hence it is easier to receive loans and remittances. The FGDs and KIIS reported that received loans and remittances were invested in their farming activities such as buying farm inputs like fertilisers, herbicides and farm implements as well as pay wage labourers which help to transform their agriculture. Also, farmers repay their loan to various banks such as NMB and CRDB banks through bank agents. It was also reported by FGDs and KIIs that some Micro financial institutions provided loan to farmers that could be repaid through mobile money accounts. This implies that the presence of financial services close to farming households allows farmers to receive money and repay them on time through bank agents and mobile money agents depending on their agreement. This reduces both the pre and post-harvest crop losses or damages caused by delayed access to financial services which improves agricultural production and prosperous life among rural communities.

The FGDs and KIIs reported that the agency banking and mobile money services are provided all the time throughout the day which allows to invest more active time on agricultural activities and spent extra time for accessing financial services. This simplifies financial needs among rural households because they can access them on time when required. The bank branches normally offer services from 0830 to 1600 hours only, which is a tight time for farming activities that compel farmers to ignore their farming activities so as to attend financial services to bank branches, hence disturbing farmers' agricultural time. But with agency banking and mobile money services farmers plan to attend financial services without disturbing their farming schedules.

Furthermore, it was revealed that agency banking and mobile money services saves time and energy that could be used for agricultural activities. The majority of respondents strongly agreed that agency banking and mobile money services helps to save time as indicated by 87.4% and 78% of respondent in Wami Dakawa and Wami Sokoine villages, respectively (Table 2).

One of the female FGDs declared that,

"I normally use the agency banking offices for marketing of my rice. When a trader is satisfied with the product and is ready to make payment, we just go to bank agent in our village to accomplish the payment process, I just give the account number and tell him/her to deposit the money, and withdraw it later when required, hence be on safe side". (A male farmer aged 50 at Wami Dakawa village, December, 2022).

This indicates that the presence of agency banking services and mobile money services are essential not only for saving time and energy to be spent on agricultural activities but also for security purposes as they reduce the risk of theft to rural framers. This creates potentials for increasing farm output and improving household welfare while promoting resilient household welfare and economic growth in the district.

Also, the provision of financial services by bank agents and mobile money agents were observed to be important in reducing transport cost. Being located in rural and more remote areas where the majority of farming households are found, bank agents and mobile money agents help to reduce the cost of travelling from rural areas to bank centres. This is because travelling to bank branches requires farmers to incur some expenses of paying for travelling costs which reduce the income that could be invested in farming activities as well as meeting various family requirements particularly food or be saved for payment of school fees and medical treatment.

Moreover, it was found that the services by banking and mobile money agents are more convenient to farmers than conventional banks because they favour their agricultural activities. This is because farmers can access financial service at any time from morning to evening as well as during night time. This is convenient for farmers who spend most of the day time for farm works as it becomes easier to use extra time to perform various financial transactions. The FGDs and KIIs also reported that normally bank branches are located at the District council and to Morogoro town while bank agents and mobile money agents are located close to their household. This makes them more safer, accessible and are provided on time with neither queues nor risk of theft hence enjoying the prosperity and transformation of their rural life rather than the conventional banks.

Various scholars have reported on the importance of banking and mobile money agents on farmers' livelihoods. For example, in Uganda it was reported by Riley (2020) that digital financial services promoted agricultural production and improved business profits. This is because they allow safe storage of savings while improving efficiency of withdrawing and transferring money from person-to-person while reducing theft risks

(Suri, 2017). A study in Mozambique reported that access to agency banking services and mobile money enabled smallholder farmers to increase their savings and invest in their agricultural production through intensifying and mechanising their agriculture to improve crop productivity (Batista & Vicente, 2020). In Kenya, it was observed that agency banking have significant impact on increasing saving and improved ability to manage various risks and uncertainties resulting from various shocks including theft and climate change (Dizon et al., 2020). Similar findings from Ghana reports that access to agents of financial services promotes saving which helps to break the cycle of low agricultural investment and productivity among rural farmers (Batista & Vicente, 2020). Access to financial services provides conducive opportunities for savings which forms part of the solution to developmental challenges faced by rural farmers (Demirgüç-Kunt et al., 2020). These results agrees with Kirui et al., (2012) that access to digital money services stimulates increased investment in agriculture and high productivity which enhances livelihoods and financial resilience among rural households. These services allow rural farmers to access financial services without going to bank branches. The mobile money services allow rural farmers to perform payments for various inputs, household expenditures as well as the sale of produce and credit with potentials to increase their crop productivity (Cobla & Osei-Assibey, 2018). With agency banking practices farmers can be connected to agro dealers who have agreements with conventional banks to allow smooth running of agricultural activities through accessing farm inputs. Hence, the organisation and repayment will be easier because input suppliers will easily collect and manage payments from smallholder farmers which could be repaid through bank agents or mobile money accounts. This consequently lead to improved investments in agricultural productivity and reduced pre and post-harvest losses while promoting better risk management practices which is critical for prosperity of smallholder farmers (Asia-Pacific Economic Cooperation (APEC), 2017).

Similar results on improved ability to save was highlighted by Kikulwe, Fischer & Qaim (2014) that access to bank agents and mobile money services in rural area is useful in improving savings and investments in agricultural production. These results concur with Ggombe & Matsumoto (2017) who established that in Uganda, agency banking services improves the ability of people to save, borrow and receive remittances through their mobile phones. In Tanzania, a study by Riley (2018) highlighted that agency banking and mobile money services increase the risk-sharing for households as well as increasing remittances received especially after any climatic hazard such as flood and drought. Evidence from Bangladesh suggests that the poor and rural households benefit from mobile money services because they become better insured against various shocks due to receiving remittances more easily than in previous years (Lee, 2021). These results coincide with the finding in Uganda by Hamdan et al. (2022) and Beck et al. (2018) that the mobile money services allow farmers to improve investment in agriculture and promote business growth due to new savings and money transfer opportunities while reducing the risk of theft when compared to cash holdings.

A study by Lotto (2016) reported that agency banking simplifies banking service through reducing distance to reach service points and that the agency banking costs are relatively lower when compared to those of traditional banking services. The services provided by bank agents follow people closer to their households which led to reduced travelling costs and time wasted in long queues at the bank branches. Through offering financial services the mobile money has created great potentials for people without bank accounts including both the rich and the poor (Ngaruiya et al., 2014). Also, Batista & Vicente (2018) and Batista & Vicente (2020) highlighted that in Mozambique, the introduction of electronic money services in rural areas decreased the transaction costs of migrant remittances and improved insurance to shocks among rural societies. Moreover, the Global System for Mobile communications Association (GSMA) (2017) approves that agents of banks and of mobile money transactions contributes to Sustainable Development Goals (SDGs) through uplifting the rural poor out of poverty while empowering the underserved parts of rural populations, particularly through remittances from urban centres (Kikulwe et al., 2014). The agency banking and mobile money services are significant in addressing the financial needs of smallholder rural farmers as they help to facilitate the provision of immediate, safe access to government subsidies, as well as cash transfers and remittances (Lotto, 2016). The agency banking and mobile money services reduce transaction costs and risks of loss when handling cash and has led to increased savings opportunities among rural communities. Moreover, the services are significant in improving the flow of cash income which promotes improved investments in agricultural activities (APEC, 2017).

Furthermore, the provision of access to digital financial services have become a powerful tool for development of rural areas as they help smallholder farmers reduce their financial vulnerability and manage their agricultural practices. In Zambia, the agency banking and mobile money services were observed to be important as they have revolutionised their agricultural production which gave them greater access to financial services and reduces the supply chain credit risk. This make it easier and safer for traders to manage transactions and for large buyers to pay many producers more rapidly rather than through bank branches (APEC, 2017).

For sustainable provision of financial services among rural farmers, the provision of financial services should be associated with non-financial services such as financial education, business development as well as agricultural extension services. This will enhance the benefit from accessing financial services and help to avoid

falling into more vulnerable situation with higher risk of becoming over-indebtedness. Efforts should be made to increase the number of agency banking services in order to achieve a greater geographical coverage. Relevant education on digital financial services should be provided to help customers understand the operations of the services to ensure their money security (Lotto, 2016).

This study show that those with bank accounts were also using the mobile money services depending on the nature of the transaction to be done. Similarly, a study in Uganda by Hamdan et al. (2022) reported that about two-thirds of those who use bank account were also actively using mobile money accounts. In contrast to this finding, a study by Akinyemi & Mushunje (2020) reported that individuals that have access to bank accounts have low likelihood of using mobile money services. Also a study by Fanta et al. (2016) pointed out that bank account ownership, mobile banking, and internet banking are inversely related to mobile money services. The use of mobile money services is lower among those who own a bank account and who use mobile banking to access their bank account.

Despite the observed benefits of agency banking and mobile money services on agricultural development (Kikulwe et al., 2014; Ngaruiya et al., 2014; Ggombe & Matsumoto, 2017; Cobla & Osei-Assibey, 2018; Dizon et al., 2020; Hamdan et al., 2022), other studies indicate that agency banking and mobile money services led to declining investment in agriculture. For instance, Batista & Vicente (2018) pointed out that in areas with mobile money, households were less likely to participate fully in farming activities because they became interested in non-farm activities such as trade and wage labour. This is similar to Suri & Jack (2016) who emphasised that agency banking and mobile money services have agricultural disinvestment effect as it made some household members emigrate out of their rural areas. The migration treatment effect of digital financial services is in line with the suggestion that introduction of mobile money transfers lead to reduced transaction costs that are associated with long distance transfers while improving households' insurance possibilities, which consequently, motivate migration. The agency banking and mobile money services provides access to nonfarm activities which discourage participation in agricultural activities which has implication on food security for both rural and urban populations (Nkrumah et al., 2018). This indicates that the availability of unsustainable practices of agency banking and mobile money services can promote emigration of rural population and ignoring agricultural activities which consequently may lead to reduced agricultural labour power among farming households that can contribute to likelihood of experiencing food insecurity.

The TAM model developed by Davis (1989) was adopted in this study because it is relevant in explaining how users accept and use the technology of digital financial services. This model guided the study in understanding the perceived usefulness and perceived ease of use of bank agents and mobile money agents. The study revealed that the use of bank agents and mobile money services were perceived to be important in improving savings and agricultural investment in the study area. Further, the services were observed to be convenient and saves time and transport cost when compared to conventional banking systems. The theory indicates that technology is more likely to be adopted if it has positive impact to individuals or to the society (Venkatesh & Davis, 2000). Relevant to this theory, the study found that farmers were encouraged to use agency banking and mobile money services because of their benefits in terms of agricultural development because they promote savings and agricultural investment and reduce transport cost, save time and energy and are accessed all the time within their localities. Moreover, the mobile money services were considered to be more useful rather than the agency banking services because mobile money operations are freely accessed through their mobile phones without having bank accounts.

4. Conclusion and Recommendations

The study examined the influence of agency banking and mobile money services on farmers welfare in Mvomero district. There are various benefits of agency banking and mobile money services including higher saving ability, improved agricultural investment, and reduced cost and time consumed when travelling to bank branches which create potentials for increasing farm output and improved household welfare. Through improvements in savings and agricultural investments, the banking and mobile money agents promote resilient household wellbeing and agricultural transformation among rural communities as well as economic growth in the country. Inadequate education on digital financial services and agricultural extension services were observed to be one of the challenges facing rural farmers in Mvomero district.

The government is encouraged to promote expansion of agency banking services to smallholder farmers in various rural areas to promote improved access to financial services among rural societies which contributes to agricultural investment and rural transformation among unbanked and underserved rural communities. It is recommended that farmers should be provided with non-financial services such as financial education and agricultural extension services to enhance the available opportunities from existing financial services while avoiding to fall into more vulnerable situation with higher risk of becoming indebtedness.

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