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Financial Inclusion: How do you know that you are there?

By Jared Osoro* and David Muriithi*

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Financial Inclusion: How do you know that you are there?

By Jared Osoro* and David Muriithi*

August 2018

Abstract

At what point do you consider yourself financially included? This question, which is this paper's objective, is considered mundane and therefore seldom asked and consequently hardly answered. The paper anchors its assessment on the distinction between access and usage of financial services and contend that the former is a necessary but not sufficient condition without the latter for one to be considered to be financially included in an impactful way. Using a multinomial logit model, the paper makes two key inferences. First, the globally acknowledged financial innovation largely riding on mobile telephony seeks to address the inefficiencies of the dominance of cash payments. While this is a necessary step, it can only be seen as an input to the utilisation of services by financial service providers such as banks, insurance companies, MFIs and Saccos.

Second, financial inclusion is income sensitive, with the probability of being included through usage of banking, insurance, MFI and Sacco services increasing as income levels rise. This is confirmed by the income parameters in the model being statistically significant and the marginal effects rising in every higher income quartile. The consideration of financial inclusion only from the access dimension and not supplementing it with the usage dimension limits the analytical ability on breaking the poverty trap using finance. This by no means discounts the relationship established by other studies between long-run poverty reduction and mobile money. It nonetheless points to the possibility that such gains in poverty reduction do not necessarily lead to a reduction in informality, in which case the ability to access a cross range of financial services is limited.

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1.0 Introduction

Background of the Study

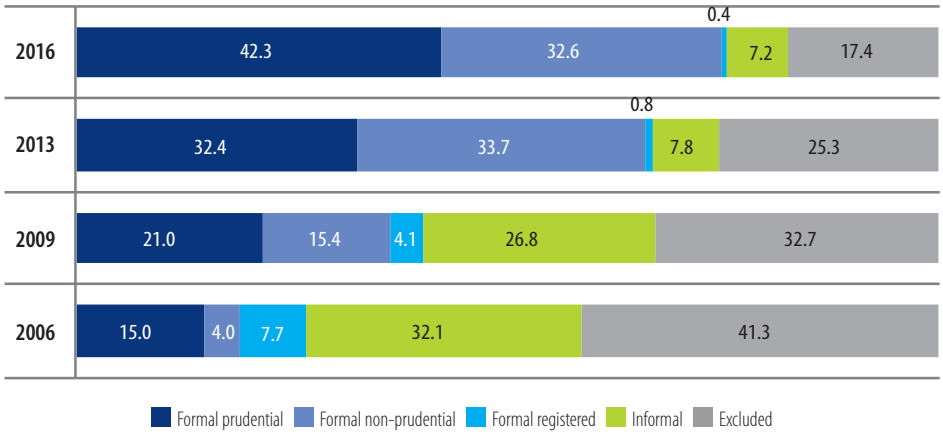
This paper seeks to answer a question often considered mundane, therefore seldom satisfactorily answered: at what point do you consider yourself financially included?

The question is asked in the Kenyan context where substantial work by Financial Sector Deepening (FSD) Kenya has helped draw attention to the country's financial inclusion agenda (FSD Kenya 2006, FSD Kenya 2009, KSD Kenya 2013 and FSD Kenya 2016). Through this work, a spotlight has been shone on the Kenyan financial system on account of two related developments.

First, there has been the harnessing of the novelty of technology – especially mobile telephony – in a manner that has revolutionised payments. This has enabled the management of households' income-consumption volatility (FSD Kenya, 2014). Second, such novelty has stretched beyond the payments arena, getting to the intermediation space where technology is a platform for savings mobilisation and credit extension (FSD Kenya 2016).

These two developments have largely, but not exclusively, been credited for the strides that the economy has made in the financial inclusion agenda. As **Figure 1** shows, over the past decade the proportion of the financially excluded is estimated to have declined significantly from 41 percent to 17 percent (FSD Kenya, 2016). By the same estimates, the share of formal prudentially regulated as well as the formal non-prudentially regulated institutions to financial inclusion has increased, the desirable consequence being the shrinking of informal finance whose proportion has decreased from 32 percent to 7 percent.

Figure 1: Financial Access (2006 – 2016)



Source: FSD Kenya (2016)

A cursory consideration of the outlined financial inclusion agenda as much underpins the ensuing accolades on the progress as it motivates the need for a deeper reflection on whether such inclusion is deep enough as to have meaningful impact at household and firm level. Consequently, the case for examining critically what financial inclusion really entails needs to be argued considering that the adequacy or lack thereof of its depth is a function of whether mere contact with a financial institution is a sufficient enough an attribute or is only necessary but requires enhancement.

If the sufficient condition is that the households' and firms' contact with a financial institution should lead to either enhanced savings or access to credit, then there is need to interrogate in a broader sense the question of Kenya's wide acclaim to financial inclusion being on the back of stagnating levels of savings and constrained credit access. The acclaim would a priori be a pointer to a less ambitious definition of what financial inclusion entails. For instance, Bank for International Settlement (2016) indicates that at the very basic financial inclusion may be taken as merely having access to and using the type of financial services that meet the user's needs.

This definition stretches between two extremes. On the one hand is a household that finds the services of a money transfer services or a mobile money account for person-to-person funds transfer to access sufficient financial resources for a specific need at a specific point. On the other hand is a household operating a small enterprise thus needing a wider variety of financial services – depository, savings and credit

– therefore requiring more of the service provider in terms of variety of services and even amount of funds. In the Bank for International Settlement (2016) simple conceptualization of financial inclusion, both of these households are "financially included".

Important as the simpler version of inclusion that basically constitutes payments and payment services remains, it need to be seen merely as part of a package. That is why some studies (for instance World Bank 2014) argue that while critical in enhancing efficiency, payment and payment are only facilitative of access and therefore need not be seen as an end in themselves. Indeed the Demirgüç-Kunt, Beck and Honohan (2008) and World Bank (2014) definition of financial inclusion is two dimensional. The first is that it represents the proportion of the population, both individuals and firms, which use financial services. The second is that such usage needs to be multifaceted, from payment services to savings and credit, insurance, pensions and securities market.

The common thread between the Demirgüç-Kunt, Beck and Honohan (2008) World Bank (2014) and Bank for International Settlement (2016) there are two connected parts that constitute financial inclusion. One part is the access to financial services. The other is the usage of financial services of financial services. To the extent that access is enabled, the full usage of the whole range of financial services is what will constitute financial inclusion. In essence access facilitates usage, which consequently reflects financial inclusion.

At the core of this paper's objective of determining how to know when you are truly financially included is the critical distinction between access and usage. The paper pursues this objective by setting the contextual framework in Chapter 2. Chapter 3 presents a brief a review of the relevant literature, followed by the methodology specification in Chapter 4 and the core findings in Chapter 5. Conclusions are drawn in Chapter 6.

02
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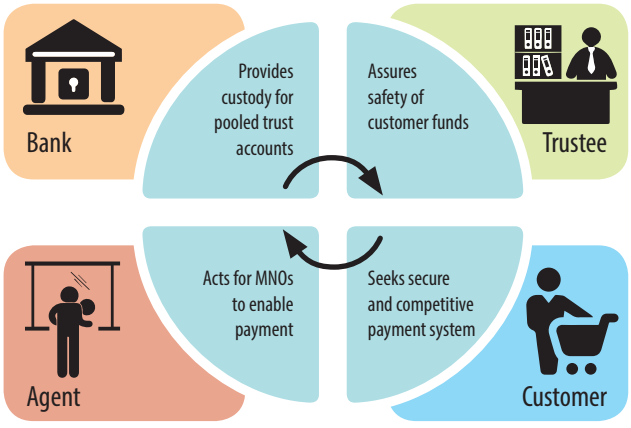
2.0 Context

Perspectives of the strides that Kenya has made in financial inclusion have a leaning towards payments that are substantially mobile technology enabled. By their very nature, such payments have necessitated the opening of transaction accounts that would presumably enable individuals gain financial access.

As Osoro and Olaka (2016) indicate, Kenya's payment novelty has seen a dynamic interaction between banks and mobile network operators (MNOS) in such a manner that liquidity amongst household flows in the economy in manner that safeguards customers' funds.

The simplified mobile payment model entails a four-level institutional arrangement – namely the customer, the MNO agent, a trustee and a commercial bank – as illustrated by **Figure 2**. The model entails the design of a

Figure 2: Mobile-Enabled Payment Model



Source: Osoro and Olaka (2016)

liquidity management tool to service the web of agents and their customers. The key is that the actual liquidity is provided by the banks' cash management systems.

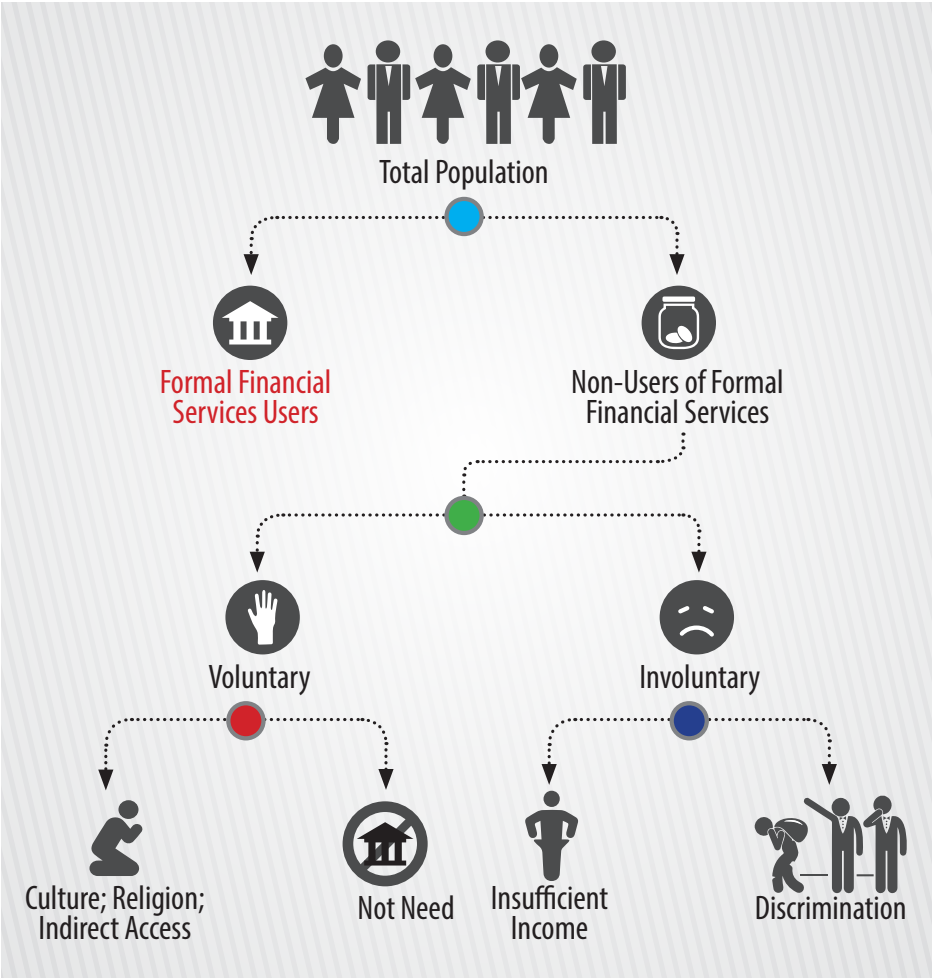
The outlined business model has the obvious effect of enabling individuals and businesses manage their regular financial affairs. In that respect, transaction accounts form a crucial part of financial services given that they enable access. As Bank for International Settlement (2016) notes, having an active transaction account and therefore reflecting access to financial services can only be a precondition to but not a guarantee of actual usage.

It is in the actual usage through physical or remote accessibility that customers' needs insofar as pricing and product features are fulfilled. Therefore access is only an initial step toward becoming fully financially included, an attribute only achievable through actual usage of the range of financial services.

A deeper appreciation of the user/non-user dichotomy provides a basis for determining the depth of financial inclusion, particularly if the financial system enables the transitioning of the involuntary non-users as illustrated in **Figure 3** that we adapt from Demirgüç-Kunt, Beck and Honohan (2008).

The transitioning to the financially included gory the involuntary non-users, is not just a function of policy initiatives. It crucially depends on the nature of the financial system and how amenable it is to the dynamism of market demands. The Kenyan financial system is dominated by commercial banks (Osoro and Osano 2015) and therefore any developments of either market or policy nature that adversely influence the banking industry will likely harm the financial inclusion agenda. Even with bank dominance the financial system is interlinked such that shocks in the dominant segment quickly filter into the other segments – insurance, capital markets, pensions and cooperatives.

Figure 3: The Financial Services Users – Non-users Dichotomy



Source: Demirgüç-Kunt, Beck and Honohan (2008)

3.0 Relevant Literature Overview

Literature on financial inclusion draws its grounding from the appreciation of the role of a well-functioning financial in offering savings, payments, credit and risk management to both households and firms. From the simple context of taking financial inclusion merely as the share of individuals and firm with access to finance, development theory pitches financial exclusion at the heart of breaking the poverty trap (Galor and Zeira, 1993; Banerjee and Newman, 1993; and Aghion and Bolton, 1997).

One of the prominent perspective of this strand of literature is the argument that individuals' choices between entrepreneurship and wage earning are shaped by the extent of their initial endowment. As can be inferred from Demirgüç-Kunt and Levine (2008), endowment influences the extent of individuals' savings as well as their risk bearing behaviour, consequently having a long-run influence on growth and income distribution. Stemming from this argument is the conclusion that lack of access to finance is key in engendering persistent income inequality, poverty trap and lower growth.

While the high level analytical work on financial access and how it relates to growth, income inequality and poverty makes an important contribution to the financial inclusion debate, it can only be seen as a starting point towards appreciating that the depth of inclusion matters. With that recognition, cross section analyses such as Zins and Weill (2016) are seeking to establish the determinants of financial inclusion in Africa. Building on the earlier literature that focused more on measurement issues (as for instance comprehensively reviewed in Demirgüç-Kunt and Klapper (2012)) this thread of work put a special focus on measurement issues, cognisant that high level analysis based on composite macro data has a disguising effect.

With a focus on relatively more granular data, it has become imperative to distinguish between access to finance and use of finance for the full appreciation of the depth of inclusion (Demirgüç-Kunt, Beck and Honohan, 2008 and World Bank, 2014). With the thrust being usage as oppose to mere access, there is

opportunity to see the quality of financial inclusion. Such quality is to be seen in the ability or lack thereof of the financial system to reduce voluntary non-use based on religious grounds (Demirgüç-Kunt, Klapper and Singer, 2013), unravel the involuntary use of financial services based on low income that could be a sign of poverty trap as well as discrimination based on market friction that punishes informality.

More recent studies on financial inclusion are evidently keen on drilling down on household and business behaviour, basing their analytics on detailed primary data. In the Kenyan case, mobile money has drawn empirical interest towards long-run relationships. Suri and Jack (2016) for example studies long-run poverty and gender impact of mobile money. This analysis advances earlier studies such as Demombynes and Thegeya (2012) that has a narrow focus of the promise of mobile revolution in Kenya on mobile savings.

These studies, especially Suri and Jack (2016), make important contributions toward the understanding of the strides Kenya has made in financial inclusion. Its core finding is that Kenya's mobile money system has uplifted nearly 2 million of the country's population out of poverty. The positive impact leans more towards female-headed households particularly those moving out of agriculture to business. In this paper, we contend that to the extent that these studies hinge their analyses on mobile technology as well as the benefits of access as would arise from proximity to a financial service, there is a clearly leaning towards the payment and access aspects. This raises the possibility of finance helping the scaling out of the poverty trap but now out if the informality trap.

The Informality trap, just like the poverty trap, would mean that some households could be considered to be sufficiently included in the financial context while all they have is mere access as enabled by mobile technology while they still remaining involuntary non-users. As the IMF (2017) establishes, an efficiency financial market is strongly associated with a reduction in informality. Our contribution in this paper stems from the consideration of financial inclusion from a usage standpoint and from the various channels of the system as opposed to the popular but narrow, payments leaning, assessment.

5.0 Methodology

The paper utilises the FinAccess database for year 2016 in its analysis. The database covers 8,665 households interviewed during the 2016 FinAccess. For the analysis, the paper adopts a multinomial Logit model. This is supported by the fact that the usage of a certain financial provider at any point in time by the household take three possible outcome.

The multinomial Logit model is specified as follows:

$$\eta_{ij} = Log \pi_{ij} / \pi_{ij} = \alpha_j + x_i' \beta_j \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where αj is a constant and βj is a vector of regression coefficients, for $j=1, 2,\ldots, J-1$. Note that we have written the constant explicitly, so we will assume henceforth that the model matrix X does not include a column of ones.

Alternatively, the multinomial logit model can also be presented in probability form as follows:

$$\pi_{ij} = \exp\{\eta_{ij}\} / \sum_{k=1}^{j} \exp\{\eta_{ik}\} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

For $j=1,\ldots, J$.

From the database a number of models are ran with regard to the usage of different modes of financial services from different financial service providers by the households. These models are defines as follows:

Model 1 = Bank Usage model

Model 2 = Insurance Usage Models

Model 3 = Mobile Services Usage

Model 4 = Micro Finance Institution Usage model

Model 5 = Sacco Usage Model

For all the model, the vector of the independent variables comprises of: the Wealth index for the household's derived from the income bracket for the household, the distance the household covers to the nearest financial service provider, the age group of the household respondent to the questionnaire, the cost of travelling to the nearest financial service provider and the industry interaction.

In modelling the multinomial Logit, the dependent variable for each model takes three possible outcome namely: the household is currently using the mentioned financial channel ($y=1$), the household used to have the mentioned financial channel ($y=2$) and lastly, the household has never had the mentioned financial channel ($y=3$).

For the independent variables a number of dummies are generated for every category. For the wealth index variable, five dummies are created: poorest (Lower quantile), poor, middle, rich and richest (Highest quantile). For the age groups, seven age groups are generated namely: Age group1 (16 to 19 years), age group2 (20 to 24 years), Age group3 (25 to 29 years), Age group4 (30 to 38 years), Age group5 (39 to 44 years), Age group6 (45 to 49 years) and Age group7 (Over 50 years). Regarding the distance to the nearest financial service provider four dummies are generated namely: distance 1 (between 0 and 60 minutes), distance 2 (between 61 and 120 minutes), distance 3 (between 121 and 180 minutes) and distance 4 (more than 180 minutes).

On the average cost by the household to the nearest financial service provider via public means, five average travel costs dummies are generated namely: travelcost1 (Close enough to walk – no need to spend), travel cost 2 (Less than KES 50), travel cost 3 (About KES 51-100), travel cost 4 (About KES101 – 200) and travel cost 5 (More than KES 200).

Finally, for the financial sector industry interaction, Bank Usage, Insurance Usage, Mobile Bank Usage, MFI usage and Sacco usage. We however note that in including the industry interactions the dummy variables for the respective usage are collapsed into a binary dummy such that if the household is currently using the channel of had one before takes value of 1. However, if the household has never had the channel at hand, it takes value of 0.

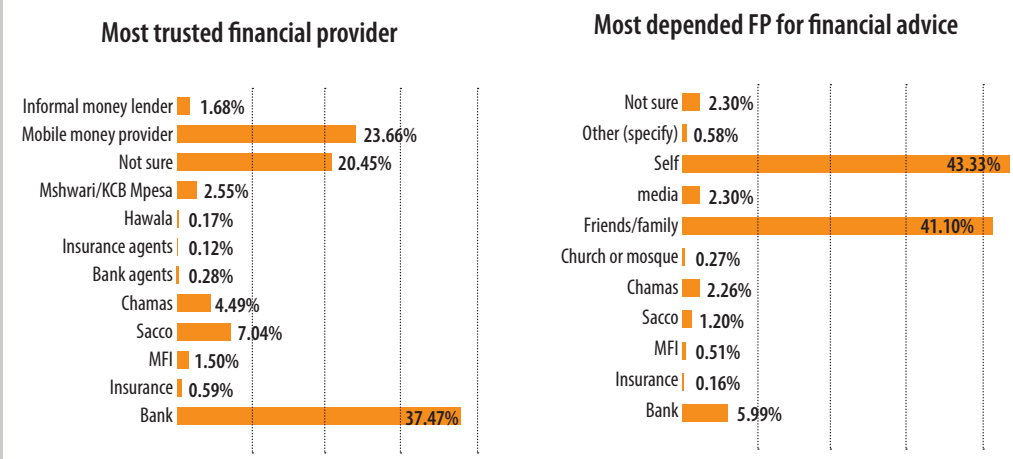
5.0 Results and Discussions

5.1 Descriptive Analysis

Prior to running the multinomial Logit models, a descriptive analysis is undertaken with regard to the access and usage of financial services by the households. To distinguish between access and usage, the analysis on the most trusted verse the most relied upon financial provider for financial advice is conducted.

Results indicate that on the most trusted financial prodder are the banks at 37.47% (**Figure 4**). However, when it comes to the most depended institution for financial advice, self-reliance and family/friends dependence overwhelmingly take position 1 and 2. This implies that the access to banks in this case would be as a result of households trusting banks in holding their cash deposits and not to transact any business with the banks. Households do not readily resort to banks when it comes to seeking for financial advice

Figure 4: Most trusted financial provider and most depended financial provider for financial advice.



whish speaks a lot with regard to usage of banking services by the households.

Looking at different ways through which the households receive payment in different sectors, it's evident that cash payments dominate all the sectors sampled (**Figure 5**). This informs the previous findings with regard to the most trusted financial provider. Households perhaps received cash payments and deposit the cash in the banks for the fact that they trust the banks as safe custodians for their cash.

On usage of the financial services, we combine the access and usage in the same analysis and examine as to whether the access to a financial service provider implies usage. We obtain a cross tabulation of the households with read to various access the have to financial service providers and whether they have an existing, or used to have or have never had a financial product/facility with the respective financial service provider that they have access to. The results reveal that having an access to a financial provider does not necessarily imply usage. As such access to a financial service provider is necessary but not sufficient condition for financial inclusion from the usage point of view. From the results in **Table 1** a big proportion of households have accounts with either the banks, MFIs, Saccos and Mshwari/ KCB/ Mpesa but they have never had a financial product / facility with them at all.

Figure 5: Mode of receiving payment by households from different activities

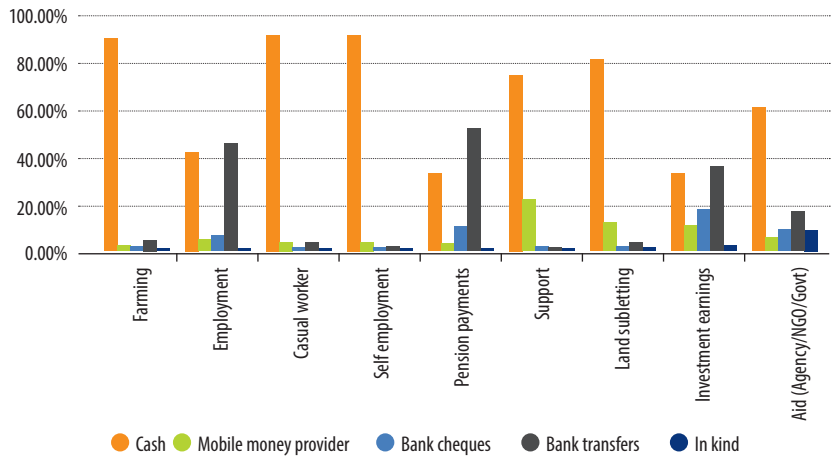


Table 1: Loan facilities by various financial service providers

	Personal Loan / business Loans					
	Bank	**Saccos**	**MFI**	**Family/ Friends**	**Mshwari/ KCB/Mpesa**	**Employer**
Currently	3.79	4.40	1.59	5.83	4.88	0.59
Used to	3.54	3.08	2.49	15.36	4.71	2.57
Never	92.67	92.52	95.91	78.81	90.41	96.84
Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.10**	**100.00**

Given that the fincial sector in Kenya is bank dominated, an analysis for the households access to bank accounts and having a financial product reveals the a large proportion of the households who have bank account have never had any facility with the bank at all.

Given the interconnectedness among the industries in the financial sector, we analyse the spill overs of usage of the financial products in more than one industry within the sector and establish as to whether usage of financial products from different industries within the financial sector makes a household more financially included as opposed to having financial product from one industry.

The results (**Table 3**) indicate that consumption of bank and insurance product makes a household statistically financially included at 1 percent significance level (Probability of the Chi2 - Pr = 0.000). Similar findings are reported for households with the Sacco product and insurance product (**Table 4**), and for households with MFI product and insurance product (**Table 5**). These findings support the evidence that the strong linkages among the industries within the financial sector. As such financial inclusion by way of usage in one industry will definitely lead to inclusion in other industries within the sector.

Table 2: Loan facilities from commercial banks

	Personal / business account with a bank			
	Currently	**Used to Have**	**Never had**	**Total**
Has a bank Account	328	245	2,454	**3,027**
Doesn't have a bank account	0	62	5,576	**5,638**
Total	**328**	**307**	**8,030**	**8,665**

Table 3: Bank facility and Insurance product consumption by the household.

Bank and insurance product			
	Bank Product		
Insurance Product	yes	no	Total
yes	1,436	1,591	3,027
	(47.33)	(52.56)	(100.00)
no	422	5,216	5,638
	(7.48)	(92.52)	(100.00)
Total	1,858	6,807	8,665
	(21.44)	(78.56)	(100.00)
Pearson chi2(1) = 1.9e+03 Pr = 0.000			

Note: Frequencies in percentage are in parenthesis

Table 4: Bank facility and Insurance product consumption by the household.

Sacco product and insurance product			
	Bank Product		
Insurance Product	yes	no	Total
yes	651	346	997
	(65.30)	(34.70)	(100.00)
no	1,207	6,461	7,668
	(15.74)	(84.26)	(100.00)
Total	1,858	6,807	8,665
	(21.44)	(78.56)	(100.00)
Pearson chi2(1) = 1.3e+03 Pr = 0.000			

Note: Frequencies in percentage are in parenthesisBank Product

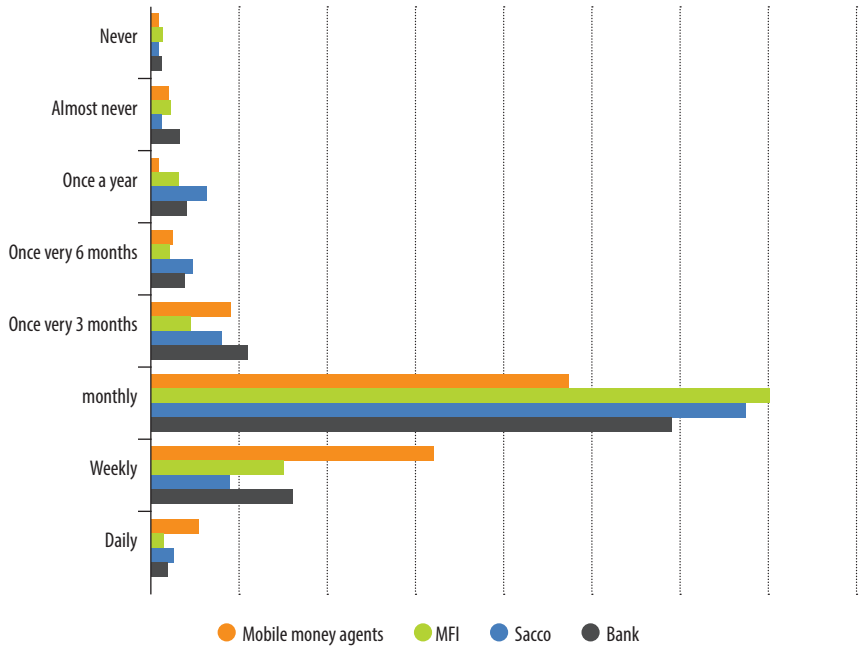
Table 5: MFI product and Insurance product consumption by the household.

MFI product and insurance product			
	MFI Product		
Insurance Product	yes	no	Total
yes	122	163	285
	(42.81)	(57.19)	(100.00)
no	1,736	6,644	8,380
	(20.72)	(79.28)	(100.00)
Total	1,858	6,807	8,665
	(21.44)	(78.56)	(100.00)
Pearson chi2(1) = 79.8524 Pr = 0.000			

Note: Frequencies in percentage are in parenthesis

Finally, on the frequency of usage of different financial sector channels, it is clearly evident from the results that monthly usage take the lead in all the industries; - banking industry, insurance and Saccos. We note that the mobile banking usage posts a higher daily usage compared to bank, insurance and Saccos usage for the simple fact that it is at hand and at comfort of the user at any time (**Figure 6**).

Figure 6: Frequency of Usage of different financial service providers



5.2 Multinomial logit model

Five multinomial logit models are estimated separately are results reported in **Tables 6, 7, 8, 9** and 10. These are the bank usage model, the insurance usage model, the mobile financial services usage (other than mobile banking) model, the MFI usage model and the Sacco usage model. Prior to running the models, benchmark dummies are set for different categories of the variables. Under the wealth index, the poorest category is set as the benchmark category. For age group category, over 50 years' age group is the benchmark category. For the distance to the nearest financial provider, a distance of over 180 minutes coverage is set to be the benchmark category. For the cost of travel by public transport to the financial service provider, a cost more that KES 200 is set as the bench mark dummy.

Table 6 reports the results of the bank usage multinomial logit model. The results indicate financial inclusion is income sensitive, with the probability of being included through usage of banking services increasing as income levels rise. As income levels increase, so do expenditure patterns that are linked to wealth quartiles. The model indicates too that financial inclusion through bank usage is age sensitive, with young individuals of the 19 years to 29 years age bracket being less likely to be financially included through bank usage compared to individual over 50 years.

The results present interesting insights regarding the influence of an individual's the distance to the bank on that individual being financially included. We find that those covering short distance are more likely to be financial included by way of bank usage compared to those covering more than 3 hours to access banking services. Evidently, the results challenge the superficial assumption that distance to the bank is related to the cost that one incurs by public means to reach the nearest banking service. With that assumption, households close enough to walk to the point where banking services are availed will likely use the services.

On the contrary, we find that households close enough to walk to the bank are currently less likely to use that bank compare to household spending more that KES 200 using public transport to seek for bank services; those spending less than KES 50 seem to be more likely to use bank services compare to those spending more that KES 200 to seek for bank services. This reinforces the link between income and the probability of being financially included being more important than the convenience associated with proximity. It also points to the possibility that an individual could indicate having no cost to incur to reach banking services while that individual walks to the point of service however far.

The model provides interesting findings on the interaction of bank usage with the usage of other financial service to individuals either one or more of other these services as provided insurance companies, Micro Finance Institutions (MFI) and Savings, Credit Cooperative Organisations (Saccos) and mobile services besides mobile banking. We find that by individuals holding insurance policies, MFI loans or a Sacco loans are more likely to utilise banking services compared to those without, with the marginal effect being descending in magnitude from insurance to MFIs and then Saccos. This interaction points to the possibility of enhanced financial inclusion compared to a one-institution relationship. Interestingly, the interaction between mobile financial services usage and banking services is statistically insignificant, indicating the strong leaning of the former to payments than intermediation.

Table 6: Bank Usage Model

Variables	y = 1 (Currently using bank services)	Marginal Effect (dy/dx)	y =2 (Used to use bank services)	Marginal Effect (dy/dx)
Poor	0.607***	0.0479	0.426***	0.0296
	(-0.124)		(-0.138)	
Middle	1.067***	0.0743	0.781***	0.0451
	(-0.119)		(-0.133)	
Rich	1.826***	0.1667	1.036***	0.1250
	(-0.120)		(-0.142)	
Richest	2.839***	0.2609	1.413***	0.2060
	(-0.131)		(-0.165)	
Age group1 - 16 to 19 years	-2.689***	-0.2318	-2.488***	-0.0462
	(-0.202)		(-0.241)	
Age group 2 - 20 to 24 years	-1.013***	-0.0276	-1.092***	-0.0298
	(-0.126)		(-0.152)	
Age group 3 - 25 to 29 years	-0.288***	0.0789	-0.821***	-0.0965
	(-0.110)		(-0.145)	
Age group4 - 30 to 38 years	-0.00577	0.0735	-0.424***	-0.0765
	(-0.0953)		(-0.118)	
Age group 5 - 39 to 44 years	-0.0173	0.0251	-0.159	-0.0262
	(-0.121)		(-0.144)	
Age group 6 - 45 to 49 years	0.112	0.0092	0.081	-0.0055
	(0.143)		(0.165)	
Distance1: Between 0 and 60 min	1.156***	0.1191	0.735***	0.0672
	(0.170)		(0.187)	

Variables	y = 1 (Currently using bank services)	Marginal Effect (dy/dx)	y =2 (Used to use bank services)	Marginal Effect (dy/dx)
Distance2: Between 61 and 120 min	0.973***	0.1012	0.489**	0.0781
	(0.208)		(0.236)	
Distance3: Between 121 and 180 min	1.266***	0.1006	0.262	0.1453
	(0.261)		(0.360)	
Travelcost1: Close enough to walk	-0.0862	0.1006	0.276	0.0741
	(-0.540)		(-0.635)	
Travelcost2: Less than KES 50	0.106*	0.0640	0.455***	0.0721
	(0.0962)		(0.119)	
Travel cost3: About KES 51-100	-0.183**	-0.0608	0.114	0.0579
	(-0.0912)		(-0.113)	
Travel Cost4: About KES 101 - 200	-0.065	-0.0754	0.322**	0.0782
	(-0.110)		(-0.128)	
Insurance Usage	1.407***	0.1384	0.705***	-0.1093
	(0.168)		(0.225)	
Mobile Financial Services Usage	22.08	0.6625	21.09	0.0560
	(810.7)		(810.7)	
MFI usage	0.977***	0.1183	0.981***	-0.0914
	(0.140)		(0.163)	
Sacco Usage	1.094***	0.0281	0.534***	0.0914
	(0.0931)		(-0.122)	
Constant	-3.412***		-3.123***	
	(-0.180)		(-0.190)	
Observations	**8,665**		**8,665**	

Note: Standard errors are in parenthesis, *** significance level at 1%, ** significance level at 5%, * significance level at 10%.

Table 7 reports the insurance usage model. Just like tin he banking usage mode, the wealth index of the household indicate that poor households are more likely to be financially included by way of insurance usage compared to poorest households. Similarly, middle income, rich and richest households are more likely to be financially included via insurance usage compared to poorest households. The marginal effect is insurance usage, just like that of usage of banking services, increases as an individual moves up the income cohort.

When it comes to age, young individuals are less likely to have insurance uptake compared to individual with over 50 years. Individual with 39 – 49 years are more likely to have insurance uptake currently compared to those with over 50 years. The middle age quartile is the most economically active; associated with active economic life is increased income and expenditure patterns that are linked to wealth quartiles that necessitates demand for insurance services. All the all the distance dummies under the insurance usage model, just like that of public transport costs to service providers, are not statistically significant.

Use of bank sand Saccos and MFIs are likely to influence insurance usage, although MFIs usage is not statistically significant in its influence. Use of mobile banking is less likely to influence insurance uptake. This can be supported by the fact that banks and Saccos advance facilities that are likely to require an insurance tagged as opposed to products under mobile money banking which may not call for uptake of any insurance.

Table 7: Insurance Usage Model

Variables	y = 1 (Currently use Insurance services)	Marginal Effect (dy/dx)	y =2 (Used to use Insurance services)	Marginal Effect (dy/dx)
Poor	0.835**	0.0168	0.0657	0.0004
	(0.416)		(0.410)	
Rich	1.089***	0.0237	0.272	0.0020
	(0.398)		(0.386)	
Rich	1.110***	0.0245	0.308	0.0023
	(0.396)		(0.388)	
Richest	2.492***	0.0951	0.608	0.0045
	(0.385)		(0.395)	

Variables	y = 1 (Currently use Insurance services)	Marginal Effect (dy/dx)	y =2 (Used to use Insurance services)	Marginal Effect (dy/dx)
Age group1 - 16 to 19 years	-0.488	-0.0061	-1.310**	-0.0063
	(0.362)		(0.617)	
Age group2 - 20 to 24 years	-0.832***	-0.0097	-1.132***	-0.0060
	(0.250)		(0.387)	
Age group3 - 25 to 29 years	-0.373*	-0.0050	-1.325***	-0.0069
	(0.194)		(0.366)	
Age group4 - 30 to 38 years	-0.0716	-0.0010	-1.149***	-0.0068
	(0.165)		(0.290)	
Age group5 - 39 to 44 years	0.0235	0.0004	-0.568*	-0.0035
	(0.198)		(0.314)	
Age group6 - 45 to 49 years	0.196	0.0033	-0.00496	-0.0001
	(0.224)		(0.308)	
Distance1: between 0 and 60 min	0.426	0.0057	0.928	0.0055
	(0.440)		(0.614)	
Distance2: between 61 and 120 min	0.392	0.0070	0.428	0.0038
	(0.521)		(0.748)	
Distance3: between 121 and 180 min	-0.719	-0.0080	0.0355	0.0003
	(1.106)		(1.166)	
Travelcost1: Close enough to walk	0.955*	0.0237	0.239	0.0018
	(0.555)		(1.055)	
Travelcost2: Less than KES 50	-0.105	-0.0015	-0.382	-0.0026
	(0.145)		(0.273)	
Travel cost3: About KES 51-100	-0.148	-0.0021	-0.407	-0.0027
	(0.160)		(0.271)	

Variables	y = 1 (Currently use Insurance services)	Marginal Effect (dy/dx)	y =2 (Used to use Insurance services)	Marginal Effect (dy/dx)
Travel Cost4: About KES 101 – 200	-0.0321	-0.0005	0.0803	0.0006
	(0.212)		(0.288)	
Bank Usage	1.214***	0.0208	1.375***	0.0119
	(0.191)		(0.270)	
Mobile Financial Services Usage	-0.0274	-0.0004	-0.366	-0.0025
	(0.126)		(0.242)	
MFI Usage	0.165	0.0027	0.0922	0.0007
	(0.160)		(0.300)	
Sacco Usage	1.448***	0.0379	0.896***	0.0089
	(0.121)		(0.207)	
Constant	-6.063***		-5.604***	
	(0.522)		(0.621)	
Observations	**8,665**		**8,665**	

Note: Standard errors are in parenthesis, *** significance level at 1%, ** significance level at 5%, * significance level at 10%.

The results of the mobile financial services usage model that we report in **Table 8** have similar characteristics as insurance and banking services usage when it comes to the income attribute. The marginal effect in mobile financial services usage insurance usage, just like that of usage of banking services, increases as an individual moves up the income quartile.

However, when it comes to age group, the results contradict the banking and insurance usage models. Young individual are more likely to be financially included in terms of mobile banking usage compared to those over 50 years, with both the coefficients and the magnitudes of the marginal effect under the age group variable reduce as the age increases. This is to be expected given that the youth are quick adopters of financial technology usage.

As would be expected too, the effects of distance on mobile financial services usage is muted. Interestingly, the connections between other mobile financial services to banking and insurance is statistically

insignificant even as mobile usage to offer banking and insurance products seems to be picking. Instead the use of MFIs and Saccos is significantly more likely to influence mobile banking usage, implying that the population that use MFI and Sacco products and use mobile banking platform to make their repayments.

Table 8: Mobile Financial Services Usage Model

Variables	y = 1 (Currently using mobile services)	Marginal Effect (dy/dx)	y =2 (Used to use mobile financial services)	Marginal Effect (dy/dx)
Poor	0.690***	2.37E-06	0.504*	4.94E-07
	(0.225)		(0.279)	
Middle	0.951***	3.57E-06	0.287	2.60E-07
	(0.211)		(0.273)	
Rich	1.188***	4.90E-06	0.456*	4.38E-07
	(0.207)		(0.264)	
Richest	1.411***	6.40E-06	0.471*	4.55E-07
	(0.206)		(0.266)	
Age group1 16 to 19 years	2.275***	0.000019	1.819***	3.58E-06
	(0.241)		(0.343)	
Age group2 - 20 to 24 years	2.189***	1.58E-05	1.797***	3.24E-06
	(0.152)		(0.220)	
Age group3 - 25 to 29 years	1.631***	8.64E-06	1.397***	2.03E-06
	(0.141)		(0.208)	
Age group4 - 30 to 38 years	1.341***	5.61E-06	0.909***	9.95E-07
	(0.129)		(0.197)	
Age group5 - 39 to 44 years	1.041***	4.50E-06	0.485*	4.94E-07
	(0.154)		(0.253)	
Age group6 - 45 to 49 years	0.683***	2.55E-06	0.361	3.53E-07
	(0.184)		(0.294)	

Variables	y = 1 (Currently using mobile services)	Marginal Effect (dy/dx)	y =2 (Used to use mobile financial services)	Marginal Effect (dy/dx)
Distance1: between 0 and 60 minutes	0.443	1.06E-06	-0.151	-1.31E-07
	(0.288)		(0.350)	
Distance2: between 61 and 120 minutes	0.461	1.54E-06	-0.0505	-4.10E-08
	(0.337)		(0.425)	
Distance3: between 121 and 180 minutes	-0.610	-1.26E-06	-0.803	-4.67E-07
	(0.567)		(0.693)	
Travelcost1: Close enough to walk	0.0520	1.45E-07	0.881	1.17E-06
	(0.563)		(0.669)	
Travelcost2: Less than KES 50	0.0362	9.94E-08	0.0399	3.35E-08
	(0.0967)		(0.157)	
Travel cost3: About KES 51-100	-0.108	-2.83E-07	0.0748	6.34E-08
	(0.106)		(0.164)	
Travel Cost4: About KES 101 – 200	-0.0157	-4.23E-08	0.385**	3.71E-07
	(0.135)		(0.190)	
Bank usage	21.25	0.263211	21.65	0.100515
	(791.4)		(1,598)	
Insurance usage	-0.0796	-2.09E-07	0.0736	6.30E-08
	(0.122)		(0.196)	
MFI usage	0.541***	1.88E-06	0.209	1.89E-07
	(0.112)		(0.189)	
Sacco usage	0.165*	4.74E-07	-0.00969	-8.00E-09
	(0.0897)		(0.147)	
Constant	-24.61		-24.70	
	(791.4)		(1,598)	
Observations	**8,665**		**8,665**	

Note: standard errors are in parenthesis, *** significance level at 1%, ** significance level at 5%, * significance level at 10%.

Table 9, which reports the MFI usage model, shows similar findings are reported for as for the bank usage and insurance usage models for household wealth index, age group, distance and cost of public transport travel. However, for the when it comes to interaction amongst financial service providers, the use of insurance and Saccos are more likely to influence a household using MFI services but are statistically insignificant.

Table 9: MFI Usage

Variables	y = 1 (Currently using MFI services)	Marginal Effect (dy/dx)	y =2 (Used to use MFI services)	Marginal Effect (dy/dx)
Poor	0.928***	0.0275	0.372	0.0100
	(0.318)		(0.276)	
Middle	0.921***	0.0269	0.565**	0.0163
	(0.312)		(0.263)	
Rich	1.086***	0.0315	0.753***	0.0220
	(0.314)		(0.263)	
Richest	1.147***	0.0331	0.887***	0.0262
	(0.320)		(0.270)	
Age group 1 16 to 19 Years	-15.13	-0.4562	-2.517***	-0.0484
	(452.5)		(0.724)	
Age group 2 20 to 24 Years	-1.201***	-0.0336	-1.390***	-0.0424
	(0.326)		(0.297)	
Age group3 25 to 29 Years	-0.0587	-0.0004	-0.640***	-0.0206
	(0.220)		(0.215)	
Age group 4 30 to 38 Years	0.473**	0.0142	0.106	0.0024
	(0.184)		(0.164)	
Age group 5 39 to 44 Years	0.672***	0.0205	-0.0107	-0.0018
	(0.210)		(0.210)	

Variables	y = 1 (Currently using MFI services)	Marginal Effect (dy/dx)	y =2 (Used to use MFI services)	Marginal Effect (dy/dx)
Age group 6 45 to 49 years	0.0169	0.0003	0.0971	0.0031
	(0.291)		(0.236)	
Distance 1: between 0 and 60 min	0.966*	0.0287	0.364	0.0097
	(0.521)		(0.362)	
Distance2: between 61 and 120 min	1.067*	0.0316	0.436	0.0118
	(0.571)		(0.433)	
Distance3: between 121 and 180 min	0.717	0.0206	0.592	0.0176
	(0.775)		(0.570)	
Travelcost 1: Close enough to walk	0.279	0.0434	-15.93	-0.5166
	(0.760)		(2,187)	
Travelcost 2: Less than KES 50	0.403**	0.0117	0.293*	0.0086
	(0.159)		(0.156)	
Travel cost3: About KES 51-100	0.0150	0.0000	0.193	0.0062
	(0.180)		(0.161)	
Travel Cost4: About KES 101 – 200	0.528***	0.0162	-0.0429	-0.0025
	(0.191)		(0.216)	
Bank usage	0.914***	0.0257	1.024***	0.0312
	(0.182)		(0.173)	
Insurance usage	0.265	0.0080	0.0273	0.0003
	(0.194)		(0.197)	
Mobile financial services usage	0.547***	0.0160	0.309**	0.0088
	(0.144)		(0.141)	

Variables	y = 1 (Currently using MFI services)	Marginal Effect (dy/dx)	y =2 (Used to use MFI services)	Marginal Effect (dy/dx)
Sacco usage	0.146	0.0037	0.328**	0.0103
	(0.147)		(0.140)	
Constant	-6.171***		-4.835***	
	(0.555)		(0.377)	
Observations	**8,665**		**8,665**	

Note: standard errors are in parenthesis, *** significance level at 1%, ** significance level at 5%, * significance level at 10%.

Finally **Table 10** reports the result of the Sacco usage model. It reports similar findings are for the bank usage, insurance usage models and the MFIs for household wealth index, age group, distance and cost of travelling to the Sacco to seek for financial services. Usage of banking and insurance services is likely to influence Sacco services; the MFI – Sacco usage connection is however weak.

Table 10: Sacco Usage Model

Variables	y = 1 (Currently using Sacco services)	Marginal Effect (dy/dx)	y =2 (Used to use Sacco services)	Marginal Effect (dy/dx)
Poor	0.861***	0.0568	0.732***	0.0199
	(0.188)		(0.238)	
Middle	1.075***	0.0759	0.565**	0.0133
	(0.181)		(0.240)	
Rich	1.510***	0.1194	1.108***	0.0314
	(0.180)		(0.234)	
Richest	1.979***	0.1797	1.305***	0.0363
	(0.183)		(0.243)	

Variables	y = 1 (Currently using Sacco services)	Marginal Effect (dy/dx)	y =2 (Used to use Sacco services)	Marginal Effect (dy/dx)
Age group 1 16 to 19 years	-3.681***	-0.0756	-4.137***	-0.0352
	(0.511)		(1.008)	
Age group 2 20 to 24 years	-1.852***	-0.0591	-1.773***	-0.0253
	(0.166)		(0.241)	
Age group 3 25 to 29 years	-1.102***	-0.0424	-1.307***	-0.0213
	(0.127)		(0.190)	
Age group 4 30 to 38 years	-0.693***	-0.0309	-0.865***	-0.0166
	(0.107)		(0.149)	
Age group 5 39 to 44 years	-0.0533	-0.0022	-0.506***	-0.0101
	(0.124)		(0.185)	
Age group 6 45 to 49 years	0.0613	0.0037	-0.320	-0.0069
	(0.145)		(0.213)	
Distance 1: between 0 and 60 min	1.347***	0.0520	0.710**	0.0132
	(0.307)		(0.327)	
Distance 2: between 61 and 120 min	1.319***	0.1145	0.551	0.0119
	(0.344)		(0.396)	
Distance 3: between 121 and 180 min	0.651	0.0444	0.422	0.0107
	(0.518)		(0.556)	
Travelcost 1: Close enough to walk	-0.146	-0.0083	0.609	0.0202
	(0.551)		(0.602)	
Travelcost 2: Less than KES 50	0.296***	0.0171	0.0394	0.0005
	(0.100)		(0.153)	
Travel cost 3: About KES 51-100	0.420***	0.0247	0.205	0.0045
	(0.0993)		(0.148)	

Variables	y = 1 (Currently using Sacco services)	Marginal Effect (dy/dx)	y =2 (Used to use Sacco services)	Marginal Effect (dy/dx)
Travel Cost 4: About KES 101 – 200	-0.0253	-0.0015	0.130	0.0033
	(0.134)		(0.178)	
Bank usage	0.849***	0.0461	1.054***	0.0265
	(0.0995)		(0.146)	
Insurance usage	1.470***	0.1354	0.859***	0.0227
	(0.113)		(0.176)	
Mobile financial services usage	0.177*	0.0099	0.00209	-0.0002
	(0.0930)		(0.137)	
MFI usage	-0.00513	-0.0017	0.731***	0.0242
	(0.123)		(0.149)	
Constant	-4.706***		-4.454***	
	(0.324)		(0.342)	
Observations	**8,665**		**8,665**	

Note: standard errors are in parenthesis, *** significance level at 1%, ** significance level at 5%, * significance level at 10%.

The results we report on the multinomial logit models present an empirical reinforcement of the descriptive analysis in a number of respects. The financial innovation largely riding on mobile telephony seeks to address the inefficiencies of the dominance of cash payments. While this is a necessary step, it can only be seen as an input to the utilisation of services by financial service providers such as banks, insurance companies, MFIs and Saccos.

We find that financial inclusion is income sensitive, with the probability of being included through usage of banking, insurance, MFI and Sacco services increasing as income levels rise. Two linked inferences stem out of this finding. One, the consideration of financial inclusion only from the access dimension and not supplementing it with the usage dimension limits the analytical ability on breaking the poverty trap using finance. While significant contributions to this debate such as Suri

and Jack (2016) establish a relationship between long-run poverty reduction and mobile money, such nexus has less to do with intensive use financial services and more about increased consumption and labour allocation efficiencies.

Two, it is possible that such gains in poverty reduction do not necessarily led to a reduction in informality, in which case the ability to access a cross range of financial services is limited (IMF 2017). This implies therefore that the potential for enhancing financial inclusion by tapping on the linkages among financial service providers that we empirically establish is far from being meaningfully realised.

6.0 Conclusion

This paper seeks to critically examine the point at which one could be considered to me financially included. It anchors its assessment on the distinction between access and usage of financial services and contend that the former is a necessary but not sufficient condition without the latter for one to be considered to be financially included in an impactful way.

Using a multinomial logit model, the paper makes two key inferences. First, the globally acknowledged financial innovation largely riding on mobile telephony seeks to address the inefficiencies of the dominance of cash payments. While this is a necessary step, it can only be seen as an input to the utilisation of services by financial service providers such as banks, insurance companies, MFIs and Saccos.

Second, financial inclusion is income sensitive, with the probability of being included through usage of banking, insurance, MFI and Sacco services increasing as income levels rise. This is confirmed by the income parameters in the model being statistically significant and the marginal effects rising in every higher income quartile.

The consideration of financial inclusion only from the access dimension and not supplementing it with the usage dimension limits the analytical ability on breaking the poverty trap using finance. This by no means discounts the relationship established by other studies between long-run poverty reduction and mobile money. It nonetheless points to the possibility that such gains in poverty reduction do not necessarily lead to a reduction in informality, in which case the ability to access a cross range of financial services is limited.

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Notes

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