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Assessing the Effects of M-Shwari on Financial Inclusion among Muhoroni Factory Sugarcane out - Growers' Households in Muhoroni Sub-County, Kenya

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Abstract
In Kenya today the decline in cane production per given unit area has led to a domestic sugar consumption deficit that averages 200,000 tonnes of sugar annually. An aggressive financial inclusion strategy in the sugar sub-sector can sealing this deficit and create employment for up to 6 million Kenyans, whilst saving foreign exchange annually. The study was guided by the following specific objectives; to assess the effect of access to *M-Shwari* transactions on financial inclusion among cane out-growers' households in Muhoroni sub-county, Kenya. to assess the effect of suitability of *M-Shwari* on financial inclusion amongst cane out-growers' households in Muhoroni Sub-County, Kenya. to assess the effects of procedural formality of *M-Shwari* on financial inclusion amongst cane out-growers' households in Muhoroni sub-county, Kenya, to assess the effects of moderating variable; poverty level, cane income, fiscal and monetary mix on financial inclusion among cane out-growers' households in Muhoroni Sub-County, Kenya. Based on comprehensive literature review on same area of study, a suitable conceptual framework which dramatically depicts the key areas of study was developed. This conceptual framework outlines the independent variables (access to transactions, suitability of m-shwari, procedural formalities and moderating variables) and dependent variables (financial inclusion among Muhoroni sugar factory out-growers'; households). The study population was all the 5,000 Muhoroni Sugar factory Out-Growers' Households within Muhoroni sub-county, Kisumu county. The study adopted Stratified proportionate random sampling technique that allowed construction of error estimates. A total of 366 questionnaires were completed successfully. This is a 98.9% response rate. The study collected data from the respondent using open-ended and closed questionnaires. Data was collected, cleaned, coded and analysed with the aid of statistical package for social sciences (SPSS) package. The gathered data was analysed using descriptive statistics.
Keywords: Financial Inclusion, sugar cane out-growers' households, *M-Shwari* effects.

1. Introduction

In Kenya today the decline in cane production per given unit area has led to a domestic sugar consumption deficit that averages 200,000 tonnes of sugar annually, ((Hamisi, 2015); Kenya Sugar Board, 2011). An aggressive financial inclusion strategy in the sugar sub-sector can sealing this deficit and create employment for up to 6 million Kenyans, whilst saving foreign exchange annually, KSB (2011). Furthermore financial inclusion reach as earmarked in policies should be assessed, Yojana, (2016).

Financial inclusion or banking sector outreach is the process of availing a range of required financial services, at a fair price, at the right place, form and time, through formal means and without any form of discrimination to the populace, Parada and Gretabull, (2014). Access to a sustainable tailor made rural agricultural financial system has a potential to enhance resource poor smallholders to operate at capacity and increase agricultural productivity, food security and poverty reduction, (Nyikal, 2000; Kalunda, 2014).

A research conducted by Mol, (2014), on extent of financial inclusion among rural households in Kerala, India established that Income and savings habit of rural Kerala households are related, wealth leads to increase in the savings habit of the rural households. While most of the respondents' access to formal credit indicated that low income households are dependents on formal financial system for credit.

A research conducted by Matoke, (2012), established that agent banking has had a significant impact in including the low income households in the financial mainstream: There was no significant effect of agent banking on the savings of the low income households; Mere opening of a bank account does not have an automatic effect on the access to micro-credit among the low income households: Access to bank deposits and withdrawals for low income households was not sufficient to positively impact the finances of the low income households.

A research conducted by Afande, (2015), established that the use of specific credit sources, either formal or informal, depends on access. In both formal and informal markets, personal savings is the dominant source of finance, especially for initial capital due to an inadequate credit market as a result of supply-side constraints. The credit gap captures those enterprises too big for the informal market, confined to specific activities and at lower levels of income, but not served by the formal market. While research conducted by Kalunda, (2014), established that on financial inclusion initiatives in terms of access and usage, established that the relationship between gender and age on the demand and use of financial services is high and usage in terms of credit access is also high but are

statistically insignificant.

A research conducted by Hoope, (2013), established that, *M-Pesa* financial service, Vodacom is the leader in the money market services since it is 100% accessible at the village centres and small sub-centres. Vodacom's transaction costs as compared to other non-mobile services is lower, is user friendly as compared to other microfinance services. Digital means is the most effective way to significantly expand poor people's access to formal financial services. In addition to cost savings, digital financial services offer a wide array of benefits: They connect poor people to the formal financial sector and enable them to become customers and suppliers within the wider economy, allowing financial flows to be accurately tracked, resulting in safer and speedier transactions and less corruption and theft.

A research conducted by Lundqvist, (2014), established that since the absolute incomes at the bottom of the pyramid in many of the world's poorest countries policy promotions and regulations should be targeted towards further utilization of the great potential for inclusive growth that higher mobile phone penetration reveals. While Kimani, (2013), established that the higher the banks' reserve requirement is set means less funds will be loaned out by commercial banks in Kenya.

According to Thorsten, Demirgüç-Kunt and Honohan, (2008), in many developing countries less than half the population have access to formal financial services, and in most of Africa less than one in five households do. Lack of access to finance is often the critical mechanism for generating persistent income inequality, as well as slower growth. Ideally financial reforms and free market should spur the adoption of innovations that improve efficiency and provide a healthy balance between lending and deposit rates, (CBK, 2014). The launching of a number of value-added services through its M-PESA product in Kenya, SafariCom has moved to expand its customer base. *M-Shwari,* a savings and loan product launched in November 2012.

But as at 10 April 2014, disparities exists with up to 72 percent, an aggregate of KSh24 billion (US$278 million), depositing money into *M-Shwari* accounts compared to 45 percent, an aggregate of KSh7.8 billion (US$92 million), has been loaned out, safariCom, (2014). As a fundamental branch of management in agribusiness, financial reporting will never fall behind the times, Prathap, (2011). While copious data are available on many aspects of the financial sector, systematic indicators of the inclusiveness of the financial sector are not, (Thorsten, *et al*., 2008). The best data would be generated by a census or survey of users, which would allow researchers to measure financial access across sub-groups, (Thorsten, *et al*., 2008).

Three main approaches to measuring, formal financial sector, access and usage have produced promising results, (Thorsten, *et al*., 2008). One seeks to count the number of users of basic financial services; the second relies on the subjective assessments of firms as to the quality of the financial services that they obtain and the third looks at physical and cost barriers to access, (Thorsten, *et al*., 2008). Therefore, it is worth an attempt to incorporate a hierarchical regression, on a baseline survey of the sugar sub-sector, cane out-growers' households in Muhoroni sub-county in Kenya.

Kenya has 4 sugar belts serviced by more than 10 sugar factories, the Nyando Sugar belt is the oldest and has 5 Sugar factories out of which two, Chemelil and Muhoroni are state owned factories. Given that cane out-growers supply 90% of the total sugar cane to the Kenyan sugar factories. Currently despite the wide and established branch network of commercial banks in Kenya, their lending terms and conditions don't favour significantly out-growers' accessibility to credit and would not consider extending credit to individual farmers unless they went through cooperative societies that kept financial records.

More so the banking crises of between; 1986 - 1989, 1993/1994 and 1998 most mainstream commercial banks closed down some rural branches in order to cut costs and improve profits. The non-traditional financial institutions, extension agencies such as Muhoroni Sugarcane Out-growers Company and Chemelil Out-growers Company, that emerged have locked out low income and irregular earners. In supplying up to 82.6% of cane out-growers credit facility, extension agencies have monopolized the sugar subsector.

Licensing of financial institutions in Kenya is done by the cabinet secretary of finance through the central bank of Kenya. The Companies Act, The Banking Act 2009, The Guideline on Agent Banking and CBK govern the banking industry, Republic of Kenya, (2014). Agency banking allows banks to use various outlets like mobile Telco agents and other CBK approved business. Banking agency is an effort to expand financial access to low income households on fair and equitable terms. This allows both customers and non-customers to transact even without locating the bank's branches, CBK, (2014). The CBK has licensed three credit reference bureaus to date allowing changes in the collateral technology so as to reduce cost of doing business by building information capital, (Central Bank of Kenya, 2014).

The study area focused on Muhoroni sugar factory's cane out-growers' households among the four administrative wards in Muhoroni sub-county in Kenya. Muhoroni sugar factory was selected purposely being the oldest and closest to the lands records registry. In the first stage the sub-county was divided into four strata based on administrative boundaries. Samples were selected based on the proportion of numbers of the factory's out-growers' households.

Specifically, the research aims to fulfil the following specific objectives;

I. To assess the effect of access to *M-Shwari* transactions on financial inclusion among cane out-growers' households in Muhoroni sub-county, Kenya.
II. To assess the effect of suitability of *M-Shwari* on financial inclusion amongst cane out-growers' households in Muhoroni Sub-County, Kenya.
III. To assess the effects of procedural formality of *M-Shwari* on financial inclusion amongst cane out-growers' households in Muhoroni sub-county, Kenya.
IV. To assess the effects of moderating variable; poverty level, cane income, fiscal and monetary mix on financial inclusion among cane out-growers' households in Muhoroni Sub-County, Kenya.

2. Theoretical Review

The theoretical framework introduces and describes the theory which explains why research problem under study exists. Measurements of concepts, together with their definitions, and existing theory/theories set out principles for effective government policy on broadening formal financial sector access, drawing on the available evidence, (Thorsten, *et al*., 2008).

Financial Intermediation Theory

Fama, (1980), developed the financial intermediation theory based on the premise that Banks are financial intermediaries that issue deposits and use the proceeds to purchase securities. When banking is competitive, these portfolio management activities in principle fall under the Modigliani-Miller theorem on the irrelevance of pure financing decisions. It follows that there is no need to control the deposit creation or security purchasing activities of banks to obtain a stable general equilibrium with respect to prices and real activity. In practice, however, banks are forcibly involved in the process by which a pure nominal commodity or unit of account is made to play the role of numeraire in a monetary system. This theory guides in assessing the suitability of such a nominal commodity and whether by hedging appropriately such intermediary have created products that are particularly valuable to some intermediaries' customers.

Finance Growth Theory

King, (1993), developed a finance growth theory on the premise that financial systems evaluate prospective entrepreneurs, mobilize savings to finance the most promising productivity-enhancing activities, diversify the risks associated with these innovative activities, and reveal the expected profits from engaging in innovation rather than the production of existing goods using existing methods. Better financial systems improve the probability of successful innovation and thereby accelerate economic growth. Similarly, financial sector distortions reduce the rate of economic growth by reducing the rate of innovation. This theory guides in assessing whether access to safe, easy and affordable finance is a pre-condition for enabling economically and socially excluded people to integrate better into the economy and protects themselves against economic shocks.

Modern development theory

Merton, (1977), developed the modern development theory on the observation that it was common to include as part of the financial package a guarantee of the loan by a third party, in the arrangement of a loan. The theory states that "The issuing of a guarantee imposes a liability or cost on the guarantor." It guides in assessing whether provision of basic services through more efficient product to those who are completely excluded is a means to improve access and the importance of effects on financial development.

3. Conceptual Framework

The Conceptual Framework

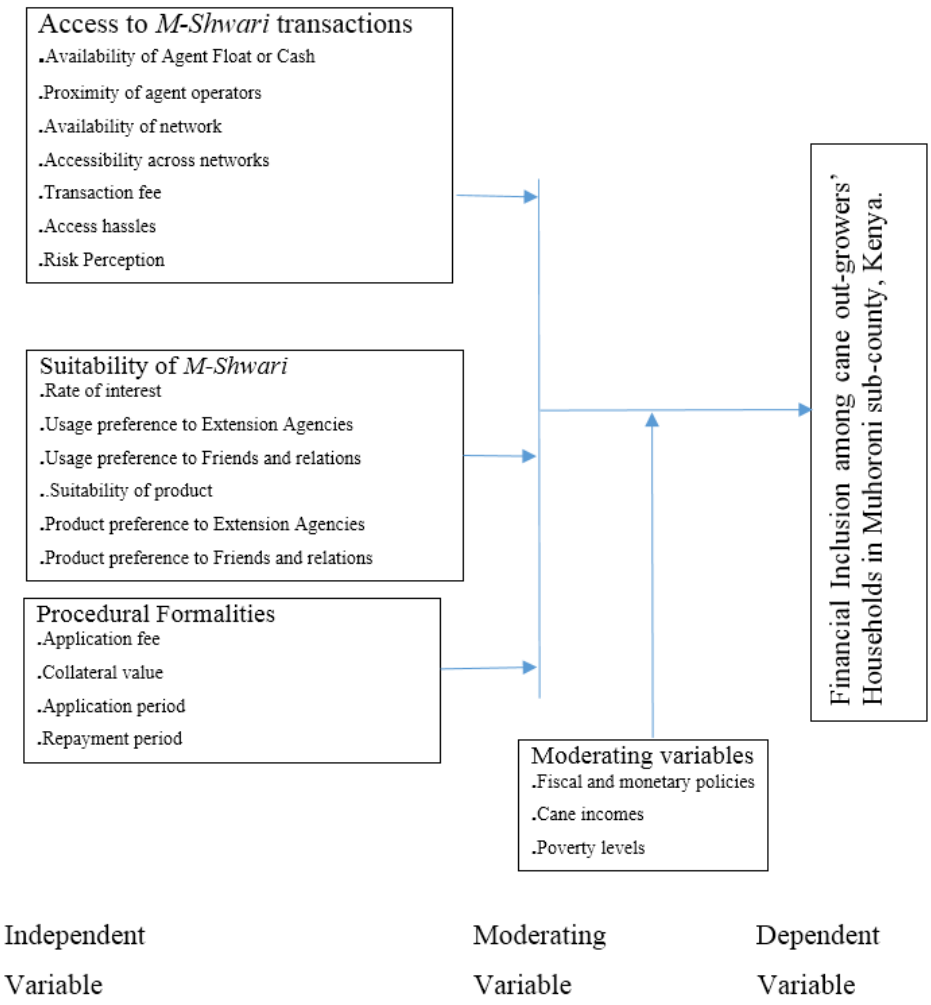

Figure 1
Source; Author 2016

4. Research Gaps

Research primarily focuses on perspectives of formal lenders and is equivocal on perspectives of borrowers crucial in exploring and measuring supply and demand constraints needed to establish variances so as to seal financial inclusion implementation initiatives' among SMEs' in Kenya. Measurements of concepts for effective government policy on broadening formal financial sector access, drawing from the available evidence.

5. Research Methodology

This study adopted descriptive survey design; appropriate for a study that seeks to describe the characteristics of certain groups, estimate the proportion of people who have certain characteristics and make predictions, Churchill, (1991). The study with aid of extension offices collected information Muhoroni Sugar company factory out-growers households' within the four administrative zones; Chemelil ward, Fort Tenan ward, Koru ward and Muhoroni ward. Extension systems facilitates access to knowledge and information by the farmers, their organizations and other market actors, Christopolos (2010). Agricultural extension are a set of organizations that support and facilitate farmers to solve problems by obtaining information, skills and technologies to improve their livelihoods, Anderson (2008).

The purpose of descriptive research is to determine and report the current status of population under study for two or more variables, Mugenda and Mugenda, (1999). Orodho and Oyugi, (2003), asserted that surveys are self-reports study that requires the collection of quantifiable information from the sample. The questionnaire, the primary level of estimation of H/Hs, enables timely coverage of large samples and allows respondents adequate time to provide well thought responses, Punch, (2003).

Target Population

Target population is the collection of elements that possess the information sought for by a researcher to support the study, Oso and Onen, (2009), (see Table 2).

Table 2: Muhoroni Sugar company factory Out-Growers Households'

	Residential Distribution Out-Growers Households'
Administrative Division	Households (5000)
Chemelil Ward	1550
Fort Tenan Ward	1450
Koru Ward	730
Muhoroni Ward	1270

Source: Osieko, (2013).

The study was carried out in Muhoroni Sub-County in Kisumu amongst Muhoroni sugar company factory's cane out-growers' households. Stratified proportionate random sampling technique was used to determine strata sample size of households, guided by figure 2; without probability sampling error estimates could not be constructed Glenn, (1992).

The sample size of respondents (370) was determined at 5% margin of error (degree of confidence) using 95% confidence level of a target population of 5000 out-growers households, an optimal sample size that fulfils the requirements of efficiency, representativeness, reliability and flexibility, Kothari, (2007). Simple random sampling allowed the population as a whole to have an equal probability chance of being selected, (Kothari, 2004).

The study relied on primary data collected through administering a structured questionnaire comprising closed and open-ended questions. The objectives of the study were the bases on which items on the questionnaire were developed. The researcher obtained an introductory letter from Laikipia University; the researcher proceeded and obtained all necessary authorization documents as evidenced in the appendices below. The researcher throughout liaised with the agricultural extension agents from administrative divisions; Chemelil, Fort Tenan, Koru and Muhoroni wards.

A tenth of the total sample size with homogeneous characteristics is appropriate for a pilot study, (Mugenda et al., 1999). The reliability of the questionnaire will be measured statistically using Cronbach's Alpha. A pre-test was done by providing the questionnaires to 37 respondents of Chemelil sugar out-growers' company H/Hs in Chemelil ward twice as pilot test. The population involved in the pilot study was not included in the sample. Any correction or adjustment to the questionnaire was carried out where it was deemed necessary based on the results from the pilot study.

Descriptive statistics are common interpretation of raw scores by reference to norms and are conversion into some relative reference or "standard" score such as mean and standard deviation, Brock, (2000), will be used. Tables, pie-charts, and graphs were used to present responses and facilitate comparison. In order to establish the effect of *M-Shwari* of financial inclusion among Muhoroni sugar factory out-growers' households.

6. Results and Discussion

Access to M-Shwari transaction

The study found that the majority (59.8%) of Muhoroni sugar factory out growers' households had used *M-Shwari*. Access to transactions had a statistical significant effect on usage. This is corroborated by SafariCom company reports, up to 70% on average used *M-Shwari,* an aggregate of KSh24 billion (US$278 million) were deposited into *M-Shwari* accounts, while a much smaller , 70%, an aggregate of KSh7.8 billion (US$92 million) had been loaned out through *M-Shwari*, Kaffenberger, (2014). In agreement to, (Hoope, 2013) who revealed that Vodacom's M-Pesa service menu *(M-Shwari)* is 100% accessible at the village centres and small sub-centres. Agent banking has had a significant impact in including the low income households of Kibera slums in the financial mainstream, (Matoke, 2012).

Suitability of *M-Shwari*

The *M-Shwari* suitability had the greatest statistical significant effect on usage by outgrowers' H/Hs. However the product did not significantly impact the members of outgrowers institutions to use the product. The fact that contracted out-growers were higher users than the memebers of OGIs meant that it did not serve the lower quartile equally. This concurs with (Mol, 2014) that wealth leads to increase in the savings habit of the rural households. More so a study by (Afande, 2015) revealed that the loan terms and conditions is as a result of supply-side constraints, meaning that the type of loans they require do not exist.

Procedural formalituies of *M-Shwari*

Procedural formalituies had a statistical significant effect on usage, H/Hs found proximity to the product and its terms and condition. This concurs with earlier findings of (Lundqvist, 2014) that technologies needed to deepen financial inclusion among these rural poor are claimed to be in place. Addressing financial market imperfections

that expand individual opportunities creates positive incentive effects, Conditionality for loan and loan product features were preferred from semi-formal and informal sources not from formal sources in rural Karala households, (Prathap, 2011).

Socio-Economic, Fiscal and Monetary Aspect of *M-Shwari*

The findings further revealed that the relationship between poverty level, cane income and perception of policies (fiscal/monetary) had a high effect on the use of *M-Shwari*. These variables factors did not add to the model, Δ R2 = 0 there was no significant relationship with outcome variable. An efficient financial system supported by a strong contractual and information infrastructure faces limitations, Hoope, (2013). However between poverty level, cane income and perception of policies (fiscal/monetary) on the use of *M-Shwari* using hierarchical regression yielded inconclusive results. Most of the respondents' access to formal credit indicated that low income households are dependents on formal financial system for credit.

Socio-Economic assessment showed that; educational and parental status had an effect on H/Hs use of the product. However they didn't have significant relationship with the outcome variable. The poor perception could be due to the existence of digital divide among sugarcane farmers, (Hamisi, 2015), which has a significant effect on accessibility to agricultural information. The sugar cane farmers prefer the use; of mobile phones, (26%), followed by combination of mobile phones and internet at 12%, radio at 10%, internet through computers at 7% and lastly Television programmes and adverts at 6%, (Hamisi, 2015).

7. Inferential Test

Correlation analysis

Inferential statistics namely Pearson's product moment correlation analysis was chosen for the study variables because a rating scale was used in the questionnaire. Pearson's product moment correlation tests were used to assess whether there is a relationship between the study variables. From the correlation analysis, the study found that there is a strong positive relationship between financial inclusion and Access to *M-Shwari* transaction where the correlation coefficients was .390**. Similarly it found a strong positive relationship between financial inclusion and Suitability of *M-Shwari* where the correlation coefficients was.910**. Thirdly it found a strong positive relationship between Financial inclusion and Procedural formalities of M-Shwari where the correlation coefficients was.770**. Lastly it found a strong positive relationship between financial inclusion Socio-Economic, Fiscal and Monetary Aspect of M-Shwari where the correlation coefficients was .586** all at a p-value less than 0.00.

8. Regression Analysis

The researcher conducted a multiple linear regression analysis so as to determine the relationship between the financial inclusion and the four independent variables. The regression model took the following form:

$Y= \alpha+ \beta_1X_1+\beta_2X_2+ \beta_3X_3 + \beta_4X_4 + \varepsilon$

Where:

Y: Dependent variable; the percentage of household heads having used an *M-Shwari* account.

α: Constant, the intercept of the model.

β_1: Coefficient of the X_1, β_2: X_2, β_3: X_3 independent variables and β_4: X_4 moderating variable.

Table 1 Correlation of the study variables

		Financial inclusion	Access to M-Shwari transaction	Suitability of M-Shwari	Procedural formalituies of *M-Shwari*	Socio-Economic, Fiscal and Monetary Aspect of *M-Shwari*
Financial inclusion	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	366				
Access to M-Shwari transaction	Pearson Correlation	.390**	1			
	Sig. (2-tailed)	.000				
	N	366	366			
Suitability of M-Shwari	Pearson Correlation	.910**	.497**	1		
	Sig. (2-tailed)	.000	.000			
	N	366	366	366		
Procedural formalituies of *M-Shwari*	Pearson Correlation	.770**	.608**	.815**	1	
	Sig. (2-tailed)	.000	.000	.000		
	N	366	366	366	366	
Socio-Economic, Fiscal and Monetary Aspect of *M-Shwari*	Pearson Correlation	.586**	.443**	.609**	.642**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	366	366	366	366	366

Source author: 2016

**. Correlation is significant at the 0.01 level (2-tailed).

X_1: Independent variable, the percentage assessment of H/H_S, of *M-Shwari*'s access to transactions.

X_2: Independent variable, the percentage assessment of H/H_S, preference of the product *M-shwari*.

X_3: Independent variable, the percentage assessment of H/H_S of *M-Shwari* procedural formalities preferable.

X_4: moderating variable, the percentage assessment of lower quartile level of H/H_S, cane turnover, fiscal and monetary perceptions.

ε: Error term

The researcher using statistical package for social sciences (SPSS) to code, enter and compute the measurements of the multiple regressions for the study to determine the coefficient of determination. The four independent variables that were studied, explain 82.7% of the financial inclusion among Out-growers' households in Muhoroni sub-county in Kenya as represented by adjusted R square. This therefore means that other variables not studied in this research contribute 17.3% of the financial inclusion on among Out-growers' households in Muhoroni sub-county in Kenya. Therefore, further research should be conducted to investigate the other variables and factors (217.3%) influence of use of m-shwari among the sugar sub-sector sector in Kenya.

Table 2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.910[a]	.827	.827	.204	.827	1744.725	1	364	.000
2	.912[b]	.833	.832	.201	.005	11.317	1	363	.001
3	.917[c]	.840	.839	.197	.007	16.844	1	362	.000

Table 3: Hierarchical Regression on Key Variables

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	ΔR^2
(Constant)	.242	.030		8.128**	.827
Suitability of *M-Shwari*	.816	.020	.910		
(Constant)	.329	.039		8.404**	.005
Suitability of *M-Shwari*	.854	.022	.951		
Access to Transactions	-.066	.020	-.083		
(Constant)	.394	.041		9.501**	.007
Suitability of *M-Shwari*	.754	.033	.840		
Access to Transactions	-.101	.021	-.127		
Procedural Formalities	.082	.020	.163		

Source author: 2016

**. Correlation is significant at the 0.01 level (1-tailed).

9. Conclusion

Access to *M-Shwari* transaction is overcoming barrier to inclusive financial systems through increased accessibility to transaction, a safe proximal source to an inclusive financial system. It has particularly been very effective for rural geographically remote MUSCO's Out-growers' households in Muhoroni sub-county. An effect of *M-Shwari* is access to safe, easy and affordable finance.

In addition suitability of *M-Shwari* is delivering convenience to customers through its price and non-price features overcoming, financial market frictions, through its preferable terms and conditions enabling occupational choices, which implies that an effect of *M-Shwari* is redistribution of wealth among MUSCO's Out-growers' households.

Procedural formalities of *M-Shwari*, transactions costs, financial market imperfection, would limit MUSCO's Out-growers' households in Muhoroni sub-county such as irregular and lower quartile H/Hs to their own savings and earnings. With lack of collateral, credit histories and connections, an inclusive financial systems, *M-Shwari* has an effect of creating opportunities among Out-growers' households in Muhoroni sub-county.

Finally, the poor perception of monetary and fiscal policy measures due to information asymmetries, financial market imperfection, has constrained human capital accumulation among Out-growers' households in Muhoroni sub-county. This implies that perception of *M-Shwari* has a delimiting effect on redistribution of wealth among MUSCO's Out-growers' households in Muhoroni sub-county.

10. Recommendations

The study has examined the effects of microfinance (*M-Shwari*) on financial inclusion in the sugar sub sector among H/Hs, through human capital accumulation and occupational choices. However, financial market imperfections limit access to finance. The study recommends that microfinance institutions should improve access to transactions in order to overcome access barriers to inclusive financial systems through safer, proximal sources financial system.

Though, selectively increased access is risky according to the theory; as capable of worsening inequality, data results suggest that a more inclusive financial system is associated with lower inequality in the sugar subsector. The study therefore recommends that to enhance delivery of financial products to customers, affordable price and non-price terms and conditions to enable capital accumulation and occupational choices to customers.

The study recommends that inclusive financial products should design convenient procedural with minimal information asymmetries, improve risk insurance mechanisms. This can be achieved by a considering consumer preferences to information media. The study recommends that fiscal and monetary policies that promote broader access to financial services should be at the core of building inclusive financial systems that focuses on equalizing opportunities.

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