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THE EFFECT OF DELINQUENCY ON PERFORMANCE OF PAYGO SOLAR HOME SYSTEM COMPANIES IN KENYA

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Abstract

This study aimed at determining the effect of delinquency on the performance of Pay as You Go (PAYGO) solar home systems in Kenya. Descriptive survey research design was adopted with the target population being six leading PAYGO solar companies in Kenya. The study sampled 150 employees drawn from the companies using stratified and simple random sampling methods. Questionnaires and interview guides were used to collect data. Descriptive statistics including standard deviation, means, mode and frequency were used to analyze quantitative data. Regression analysis was done to determine the relationship between the independent and the dependent variables. Qualitative data was analyzed thematically using code themes. The customer credit assessment was described as effective and the organizations employed strategies as constant education on repayment, hiring of representatives to monitor the customer progress and organizing customers into groups for ease of management and follow-ups. The organizations also employed actions such as repossessing products and persuasion to urge customers to repay. The study established that the repayment delinquency had a negative effect on the performance of the PAYGO companies as it resulted in firms not meeting their operational costs, experiencing declining profitability, and customer bases and inability to expand their operations.. The study recommended that the management of PAYGO companies should; intensify education to its customers on the importance of timely repayment of the installments, should enforce the customer credit assessment to enhance its effectiveness and thus minimize the risk of default and should motivate customers to repay their installments faithfully, by rewarding the customers who have repaid faithfully.

Key words : *Delinquency, performance, PAYGO , Solar companies .*

Introduction

Prudent credit risk management to minimize loan delinquencies are the challenges that micro-lending institutions face in order to survive in both good and bad economies. High loan delinquencies could lead to a liquidity problem that causes these lending institutions to fail. Delinquency is among the reasons most established lending financial institutions have not shown interest in financing those in the lower income brackets (Kizilcec, Parikh & Bisaga, 2021). Delinquency makes micro-lending institutions very vulnerable as they are uncertain whether they will recover their money plus the interest from the borrowers.

Energy is an essential resource in the contemporary world as its supply has a direct bearing on the economic and social development of economies. Thus, achieving the goal of universal access to electricity is crucial to carrying out the Kenya Vision 2030 which is only possible with achievement of the goal of universal access to electricity. However, larger populations in Kenya, particularly the rural poor are yet to be connected to the grid. Due to the grid extension's high cost to the rural areas, majority of the rural population (70%) can only have their sustainable energy needs met through off-grid renewable energy technology (RETs) and mostly through solar home system (SHS) (OECD/IEA 2011). The use of the innovative PAYGO model by the company has partly unlocked the market, which has allowed for the payment in installments for the solar home system over a period of time. However, there have been the problem of delinquency in the recent past with regard to the repayment by the customers. This has seen some firms scale down their activities yet some have closed down because of liquidity problems.

As noted by Irena (2014) delinquency was among the major determinants of 2008 financial crisis. Arko (2012) studying the causes and impact of non-performing loans on the operation of MFI in Ghana noted that such loans underperformed and failed short of earning the desired returns thus minimizing the quality of the loan portfolio. According to Bikki (2003), the institutions profitability is greatly undermined by the delinquency. It leads to losses which erode the profitability of the firms (Wangai, 2014).

Cascio (2014) defines organizational performance as the rate of attainment of work target which has its measure in terms of customer satisfaction, work outcome, the quality of service or the intangible assets. Kotter (2012) conceptualizes organizational performance as net income, market share, revenue, number of employees and financial stability.

Ittner and Larcker (2012) list factors such as productivity efficiency, consistency and quality as indicators of organizational performance.

As an innovation, the PAYGO business model emerged to address the energy access challenges particularly to the majority of the rural poor by providing access to electricity mainly generated from renewable energy sources which are more affordable with payments facilitated by technologies available in these areas.

The PAYGO firms trade their services and/or products through pre-payment model in which customers who cannot afford or are not willing to purchase by cash make payments in small installments. The customers pay a deposit which is at least 10% of the total buy out price of the product and they are given the product (Solar Home System), the balance is broken down in to either daily or weekly or monthly tokens, model termed as lease-to-own model while

the customer continue enjoying lighting and entertainment. The payment scheme is tailored to the budgets of bottom-of-the-pyramid customers. Once the customers pay the full amount of the product buy out price the product is unlocked and fully owned by the customer. PAYGO firms' sustainability are largely dependent on effective and efficient repayment collection ability. In other words remain sustainable or rather financially viable, there is need by the PAYGO firms ensure a high portfolio quality based on 100% repayment. Alternatively, the firms should maintain low delinquency/default, efficient lending and cost recovery (Hansen, 2018)..

Several studies have been done in Kenya on the PAYGO Solar Home System Companies in Kenya. Adwek et al. (2019) studied the solar energy access in Kenya focusing on the PAYGO solar home system and found that many rural homes embraced the solar energy mainly due to the fact that more firms were financing their acquisition. Another study by Opiyo (2019) on the impact of neighborhood influence on social acceptance of small solar home system in rural Western Kenya, found that neighbourhood to a great extent influenced the social acceptance of small solar home system. Also, Hansen (2018) looked at off-grid solar PV in rural Kenya where the analysis was on the technological diffusion where she found that the technological diffusion was very low which was blamed on the flexibility of the system. Carr-Wilson and Pai (2018) studies how PAYGO business model is helping light millions of Rural Kenyan homes with solar. The study found that the business model has helped many rural homes have benefited from the PAYGO business model. These studies are of importance in highlighting how the PAYGO has enhances access to electricity, however, none of the studies has been done

of the effect of delinquency on the performance of the PAYGO solar home system companies in Kenya. The objective of the study was to investigate the effect of delinquency on the performance of PAYGO solar home systems in Kenya.

Literature Review

The study was anchored on two theories namely the asymmetry theory and moral hazard theory. According to this theory, the party that has more information in an economic transaction on the specific product has the potential to negotiate optimally for the transaction as opposed to the other party (Auronen, 2003). However, it becomes difficult to know good and bad borrower in a lending transaction due to information asymmetry. Thus as argued by Bester (1985), it is easier to make right or wrong decision by the party with less information with regard to transaction. Due to the adverse selection there has been significant defaulted repayment among the PAYGO solar home systems, therefore, sharing of information is likely to lessen adverse selection through enhancement of the firms' information on applicants' credit worthiness.

Moral hazard by French economist Dreze (1961) there is a highly likely that a party entering the deal may not be committed to good faith as they may offer wrong information regarding their credit power, or properties. This may be done in the hope of gaining the benefits prior to the contract expiry (Stone, 2011). As such, it is about concealment of much important information regarding the transaction in the case of borrowing and lending transaction. As Wangai (2014) puts it, moral hazard is the risk whereby misleading information regarding credit capacity, liabilities or assets is provided by party to a transaction, or the party may want to take unusual risks in an attempt to earn a profit before the contract

settles. The theory postulates that in normal circumstances, a party to a transaction does not enter into the contract in good faith, and as such provides false information with regard to their credit capacity, assets or liabilities.

According to Hoppe and Kusterer (2011), moral hazard is a problems of buyers deliberate blinding the seller's actions. In fact, the buyer had difficult in assessing the sellers action as to whether it is reasonable or appropriate because the difficulty in assessing the quality of the service. The irreversibility of the service and uncertainty of outcome is attributed to the exogenous factors.

Empirical Review

Kinya, Shavulimo, Chepkoech and Langat (2015) sought to determine how loan terms and conditions affected the SACCOs loan volume. Descriptive survey design was used targeting employees in the deposit taking SACCOs in Nyeri County. 100 employee participated in the study where questionnaires were used to collect data. Inferential statistics was used to analysis data. The loan terms and conditions were found to significantly influence the loan volume granted by the SACCOs. The study recommended a general review of the credit policy by all SACCOs so as to maintain competitiveness in the dynamic lending environment.

Mugambi, Njeru, Member, and Tirimba (2015) sought to determine how loan repayment affected the financial performance of SACCOs in Mount Kenya Region. Descriptive survey was employed in which 30 SACCOs in Mount Kenya Region were targeted. The study sampled 92 respondents randomly. Questionnaires were used to collect data. Level of gross loan portfolio was found to be average. Further, there was found to be an increase on the rate

of loan default. Finally, that the level of outstanding loans was found to be very high.

Achou (2007) found NPL to be inversely related to banks profitability. The failure of credit is associated with increased NPL. According to Khemraj (2009) performance problems experienced by banks are associated largely with NPL and in both the developed and developing countries, there was found financial crisis. Bikki (2003) also found the Tanzanian microfinance institutions to be facing the major risk of loan delinquency which was attributed to the banks in Tanzania failure to adhere to the regulations of the Bank of Tanzania and or the internationally accepted practices of banking to set aside reserves to cushion against anticipated delinquency, thereby exposing the banks effect of loan delinquency.

In Kenya Wangai (2014) investigated on the impact of NPL on the MFB's financial performance in Nakuru (Kenya). The study found credit risk to have a negative effect on the banks' profitability which was mainly attributed to the increase in the NPL. The study established that the poorly performing banks had huge NPL prior to their failure and the asset quality was found to be precursor of the insolvency (Allen, 1997).

In another study, Dietrich and Wanzenried (2009) investigated the determinants of commercial banks' profitability with focus on Switzerland in the period 1999 to 2006. A sample of 1,919 observations was drawn from 453 banks. Bank-specific characteristics as well as set of macroeconomic and industry specific were included in the regression analysis. He noted that Banks are liquid when they are able to pay their debts and depositors, thus more profitable when they are capitalized. Shareholders are more confident to invest in banks with adequate capital thus ability to

earn profits making it worthwhile investment. As such bigger banks with adequate capitalization and ability to settle obligations are financially stable and more profitable. In a nutshell, to cover all forms of risks that are encountered, there must be adequacy of capital.

Studies have found positive correlation between the banks' financial performance and credit risk. For instance positive relationship NPL and indicators of credit risk and financial performance was documented by Boahene et al (2012). Further examining the how the credit risk management impacted on the financial performance of Jordanian banks, Alshatti (2015) found positive relationship between NPL and financial performance.

Banks with large loan portfolio have been found to experience difficulty in covering their expenses which include taxation due to delinquent loans (Akkizidiz, 2012). Lending doubtful loans impacted negatively on the net profitability and the shareholders paid their dividends (Awunyo-Vitor, 2012). The banks' financial statement have been found to indicate that a direct effect of bad loans on the banks net profits (Oni, Oladele & Oyewole, 2015). The reason for this effect is due to the fact that charges for bad debt are treated as expenses of comprehensive income and thus negatively impacting on the bank's net profit.

Research Methodology

The study adopted descriptive survey research design. In this study the population were employees of the six leading PAYGO solar companies in Kenya, namely Sunking dlight with 28.65%, MKopa Azuri and Solar Panda. The target population was 247 permanent employees of the PAYGO companies. Both stratified and simple random sampling methods were used to select respondents. The Sample size of this

study was determined using the formula by Bertlett, Kotrilik and Higgins, (2001) and emphasized by Mugenda and Mugenda (2008):

$$n = \frac{z^2 p(1-p)}{d^2}$$

Where:

n -: the desired sample size.

Z -: is the corresponding standard score with the probability of error at 0.05 and a confidence level of 95%, which is 1.96. p -: is the occurrence level of the phenomenon under study and is equal to 0.5 where the occurrence level is not known. d -; is the selected probability of error of the study corresponding with 95% confidence level in this case 0.05. Substituting for the values:

$$n = \frac{1.96^2 \times 0.5(1 - 0.5)}{0.05^2}$$

$$n = 384$$

However, since the target population to the study (247) is less than 10,000, the final sample size estimate could be adjusted as recommended by Mugenda and Mugenda (2008).

$$fn = \frac{n}{1 + n/N}$$

Where:

nf = is the sample size when population is less than 10,000

n = the sample size when the population is above 10,000

N = the population of the target sub-population

Substituted for the values, the final sample size is $n = \frac{247}{1 + \frac{247}{384}}$

$$n = 150$$

From each company, the study selected 25 respondents using stratified sampling according to the level of management. This resulted into a sample size of 150 respondents.

Questionnaires and interview guides were used to collect data. In depth interviews were done to gather more insights from the managers about delinquency levels in their companies. The reason for choosing in depth interview is essentially to encourage the interviewees to freely discuss their own opinion on the effect of delinquency on the performance of the PAYGO home solar companies. 6 interviewees (manager in charge of finance) one from each of the PAYGO home solar companies participated in the depth interviews.. Descriptive statistics such as frequency, mean, mode and standard deviation were used to analyse the quantitative data. The study used multiple regression analysis to determine the relationship of the delinquency and performance of the PAYGO firms. The regression model was given as:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \mu_i$$

Where

Y = Performance of PAYGO companies

β_0 = Constant

$\beta_1, \beta_2, \beta_3$ = Beta coefficients of variables i the measure of the change in Y associated with a t change in X.

X_1 = Default repayment

X_2 = Bad debt

X_3 = Weak credit assessment

μ = expected error assumed to be associated with variables

Qualitative data was analyzed using content analysis . The coding scheme categorises data into smaller clusters that have similar contents to allow for simple analysis of data. Constant comparative method was used to analyse the data (Strauss & Corbin, 1990; Glaser & Strauss, 1967).

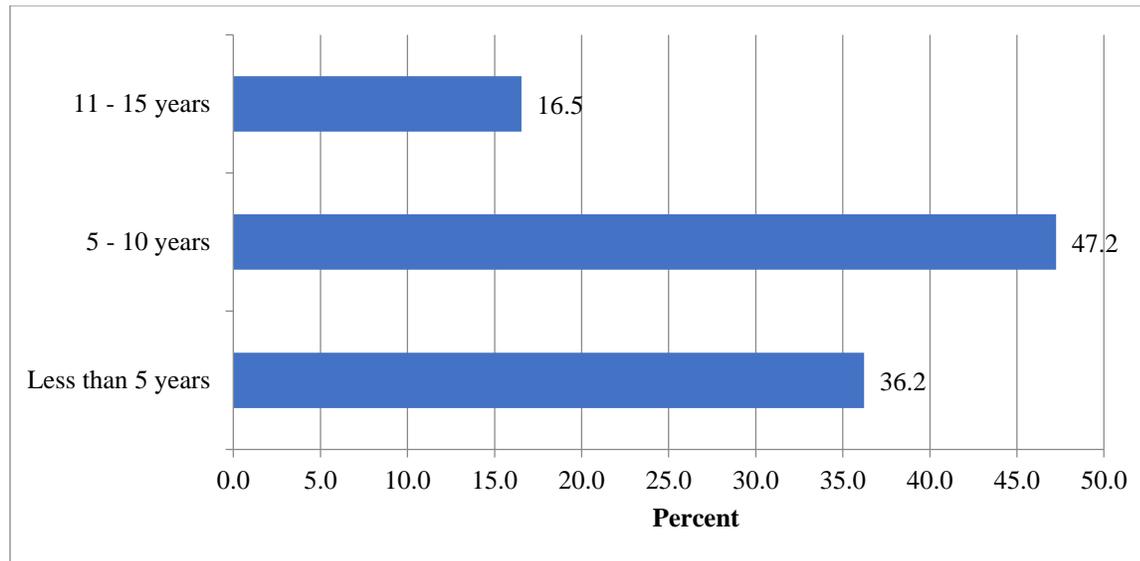
Study Findings

A total of 150 respondents were given questionnaires of which 127 completed and returned the questionnaire, thus giving a response rate of 84.7% which is above Mugenda and Mugenda (2013) recommended 50% response rate.

Among the respondents, (57% were male while 43% were female). The results show that those with college education were 52% while those who attained university education were 33.9%. The results of the study mean that the firms hire more qualified professionals.

The respondents were asked to state how long the respondent firms have been operational in Kenya. Figure 1 shows the findings.

Figure 1: Duration Organization has been Operational in Kenya



According to the findings, 47.2% respondents noted that organizations have been in existence for at least 5 years and at most 10 years. The results further revealed that according to 36.2% the firms have been in operation for less than 5 years. The results however, imply that most of the firms have been in business long enough.

The researcher sought to find out the extent of uptake of the solar home lighting system. The respondents' extent of agreement with statements provided was thus sought with

regard the uptake of solar home lighting system on a scale of strongly disagree and strongly agree. The score of disagreement assumed mean score of 0.0 to 2.0 on the incessant Likert scale; ($0.0 \leq D \leq 2.0$), the 'undecided a mean score of 2.1 to 3.0 ($2.1 \leq N \leq 3.0$), whereas agree a mean score 3.1 and 5.0 ($3.1 \leq S.A \leq 5.0$). A standard deviation of less than 1.0 indicates no variance in the responses on particular item on questionnaire among respondents. . Table 1 presents the findings.

Table 1: The Uptake of Solar Home Lighting System

	Mean	Std. Dev
Many people are coming for the solar home lighting system	3.45	1.146
The company cannot sustain the demand for the solar home lighting system	3.20	.989
Most people in the rural prefer the solar home lighting system to main grid	3.38	.928
We have today lit most homes with the solar home lighting system	3.24	.765
Most rural folks are shying off from the solar home lighting system	2.98	.884
Overall Mean	3.25	.649

Based on the findings on uptake of solar home lighting system, the study found that most of the respondents were generally in agreement that many people were coming for the solar home lighting system (mean = 3.45 SD 1.146). The results further show that respondents were generally in agreement that the company cannot sustain the demand for the solar home lighting system (mean = 3.20 SD = 0.989). Respondents were mostly in agreement that most people in the rural prefers solar home lighting system to main grid (mean = 3.38 SD = 0.928). There was agreement that today most homes have been lit with the solar home lighting system (mean = 3.24 SD = 0.765). The study similarly established that some respondents were undecided as to whether people in the rural are shying off

from the solar home lighting system or not (mean = 2.98, SD = 0.884). Averaging the responses with regard to the statements on the uptake of the solar home lighting system show that respondents were in agreement with the statements (mean = 3.25, SD = 0.649). The results show that most of the values of the standard deviation are less than 1.0 except for one item meaning that there was minimal variation in responses.

The study sought to find out the rate of installment repayment by the customer. Respondents were thus required to state the extent of agreed with the statements describing the installment repayment of the solar home lighting system by the customers. Table 2 shows presentation of findings.

Table 2: Installment Repayment Described

	Mean	Std. Dev
The installment repayment is on schedule	2.35	.843
The repayment of installment is very slow	3.30	.726
Some customers do not faithfully repay their installment	3.34	.917
The company has been forced in some cases to reposes due to default payment	3.19	.982
Poor repayment has derailed the operations of the organization	3.30	1.041
Overall mean	3.05	.817

The study established that respondents were generally indifferent at whether the installment repayment was on (mean = 2.35, SD = 0.843). The study further respondents agreed that the repayment of the instalments by the customers was very slow (mean = 3.30, SD = 0.726). According to results majority agreed that some customers did not faithfully repay their instalments (mean = 3.34, SD = 0.917). Majority of the respondents were in agreement with statement that the company had been forced

in some cases to reposes due to default repayment (mean = 3.19, SD = 0.982). Similarly, most respondents stated that poor repayment had derailed the operations of the organization (mean = 3.30, SD = 1.041). The overall result mean that according to most respondents the statements regarding the instalment repayments were true (mean = 3.05, SD 0.817). The values of most of the standard deviation were less than 1.0 except for one, meaning that there was minimal variance in the responses.

The causes of installment repayment default by the customers was sought by the

researcher.. Table 3 shows the Causes of Default in Installment Repayment.

Table 3: Causes of Default in Installment Repayment

	Mean	Std. Dev
The poor performance of the economy	3.09	1.130
The effect of the COVID 19 pandemic on the peoples economy	3.06	.939
The culture of the people of not paying loans	3.08	.973
The perception of the benefits of the product by the customers	3.10	1.068
Overall mean	3.07	1.030

As per the study findings respondents indicated that to a moderate extent, the default in instalment repayment was caused by the poor performance of the economy (mean = 3.09, SD = 1.130). Further, the results show that default in instalment was to a moderate extent resultant of COVID 19 pandemic effects people's economy (mean = 3.06, SD = 0.939). Most of the respondents noted that the default in the instalment repayment was to a moderate extent a resultant of the culture of the people of not paying loans (mean = 3.08, SD = 0.973). Similarly, respondents noted that the default in the repayments of instalments was to a great extent caused by the perception of the benefits of the products by the customers. The value of the standard deviation was varied with some above the 1.0 while others below 1.0. This implies that there were items with small variance while other had a big variance.

The overall mean of 3.07 imply that respondents generally noted that according to the respondents, the poor performance of the economy, effects of COVID 19 pandemic on peoples economy, the peoples culture of not paying loans and the customer perception of the benefits of the product were to a moderate extent attributed for the default in the installment repayment of the solar home lighting system.

The researcher sought to find out the strategies organizations employed in order to enhance the installment repayment by the customers. As a result, participants were to state their agreement with the statements provided regarding the strategies employed on a 5 point scale of strongly disagree and strongly disagree. Findings are presented in Table 4

Table 4: Strategies Employed by Organizations to Enhance Installment Repayment

	Mean	Std. Dev
The organization constantly educates its customers on the need to repay their installments faithfully	3.38	.883
The company has representatives assigned customers and expected to provide report on their progress	3.25	1.154
The company has organized customers in groups for ease of management and follow-ups	3.26	1.107
The company rewards and recognizes customers who repay their installments faithfully	2.98	.996
Overall mean	3.22	.635

According to the results, most respondents indicated their agreement with statement that organization constantly educated its customers on the need to repay their installments faithfully (mean score 3.38). Further, there was a generally agreement by respondents that the company has representatives assigned to customers and expected to provide report of their progress (mean score 3.25). The study found that respondents agreed with statement that the company has organized customers into groups for ease of management and follow-ups (mean score 3.26). The findings revealed that most respondents were neutral to statement that company rewards and recognizes customers who repay their installments faithfully (mean score 2.98).

With overall mean of 3.22, the respondents generally agreed with the statements that the organizations constantly educated customers to repay faithfully, companies assigned representatives to customers and organized customers into groups for ease of management and rewarded and recognized customers who repaid their installments faithfully. This means that the organizations had strategies in place to enhance installment repayment by customers.

The study did a regression analysis to determine the relationship between the dependent variable (performance of PAYGO firms) and the independent variables (delinquency).

Table 5 Model summary and ANOVA

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.849 ^a	.721	.714	.44499		
ANOVA		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	62.830	3	20.943	105.768	.000 ^b
	Residual	24.356	123	.198		
	Total	87.186	126			

a.

a. Dependent Variable: Performance

b. Predictors: (Constant), Default repayment, bad debt, weak credit assessment

From the Table 5 the R value was 0.849 showing a positive direction of R is the correlation between the observed and predicted values of the dependent variable.

The coefficient of determination R squared value was 0.721. This shows that 72.1% of the variance in dependent variable (performance of PAYGO companies) was explained and predicted by independent variables (default repayment, bad debt and weak credit assessment).

ANOVA is used to show the extent the model predicts performance by use of the independent variables. According to the results the F-statistics (105.768) was found to be significant at 95% level of significance (sig. < 0.05). The results mean that the model can be used to predict performance of PAYGO firms. Thus, the relationship between delinquency and performance are significant.

Table 6: Regression Coefficient

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.031	.210		.145	.885
	Default repayment	-.574	.068	-.564	8.386	.000
	Bad loan	-.318	.087	-.243	3.643	.000
	Weak credit assessment	.160	.075	.145	2.136	.035

a. Dependent Variable: Performance

Table 4.9 gives the result for the regression coefficient for the linear equation

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Substituting

$$Y = 0.031 - 0.564 X_1 - 0.243 X_2 + 0.145 X_3$$

The results mean that holding everything constant, the PAYGO companies would still record performance of the proportion 0.031. The findings show that the default repayment has a negative and significant relationship with performance of PAYGO firms ($\beta = -0.564$, $p\text{-value} < 0.05$). The results also show that bad debts have a negative and significant relationship with performance of PAYGO companies ($\beta = -0.243$, $p\text{-value} < 0.05$). Finally, the results of the study show that weak credit policy has a positive and significant relationship with performance of PAYGO companies ($\beta = 0.143$, $p\text{-value} < 0.05$).

Qualitative Analysis

Data from the interview regarding the uptake of solar home lighting system revealed that four participants noted that nearly every rural home today has been lit, thanks to the solar home lighting system.

An analysis of the qualitative data on the factors causing repayment rate, the participants noted that the slow repayment or the increase in the default rate was attributed to the poor economic situation and most households are struggling for survival. For instance, participant noted:

As you are aware, the economic situation in our country is bad; people are going even without a meal a day some even for days. Would such a person look for money to pay for the device or will he struggle with how his family will feed (RA003).

According to other respondents, the firms should adopt a policy where the customers pay for the product whether in installments but are not allowed to start enjoying the services until they are done with the payment in full, as this will ensure that only those who have paid benefit from the product and the company also avoid incurring losses due to delinquency.

Only those people who have paid in full should be allowed to carry home the device whether they pay cash or instalment but until they finish paying, then they be allowed to enjoy the benefits.

Four respondents stated that the organizations need to intensify their education to members on the importance of repaying and further to introduce rewards for those who have repaid faithfully so as to encourage more customers to put effort knowing that faithfulness is rewarded and default is punished.

The study findings that default installment repayment negatively affected the performance of the PAYGOs firms agree with the views of Wangai (2014) who noted that poorly performing loans had huge non-performing loans prior to their failure. The findings also agree with Achou (2007) who noted that the non-performing loans negatively affected the profitability of the banks. Other studies like Saheb and Reddy (2018) on the effect of non-performing loans on the profitability of the banks and found a negative effect.

Conclusion

The study concludes that the uptake of the solar home lighting system is high. The demand for the devices is high surpassing the supply. The installment repayment was described as poor by the respondents. The default has been attributed to poor

performance of the economy, the effect of COVID-19 pandemic of people economy and the perception of the benefits of product by customers. The customer credit assessment was described as effective and the organizations employed strategies as constant education on repayment, hiring of representatives to monitor the customer progress and organizing customers into groups for ease of management and follow-ups. The organizations also employed actions such as repossessing products and persuasion to urge customers to repay. The study established that the repayment delinquency had a negative effect on the performance of the PAYGO companies as it resulted in firms not meeting their operational costs, experiencing declining profitability, and customer bases and inability to expand their operations.

Recommendations

The study established that among the reasons given for the default repayment was perception on the benefits of the products by the customers. The study thus recommends that the management of PAYGO companies should intensify education to its customers on the benefits of the solar home system and the importance of timely repayment of the installments.

The study found that the customers' defaulted repayment for the devices as it was done either off time or past due date. The researcher therefore recommends that the management of PAYGO companies should enforce the customer credit assessment to enhance its effectiveness and thus minimize the risk of default.

Further the researcher established that the repayment of the devices was described as poor by the respondents. The researcher recommends that the management of PAYGO companies should motivate customers to repay their installments

faithfully, by rewarding the customers who have repaid faithfully.

According to the study, the effectiveness of the customer credit assessment was in doubt by most of the respondents. The study recommends that the organizations put in place effective measures for customer credit assessment so to minimize the risk of delinquency.

Suggestions for Further Research

This study was done on the PAYGO solar home lighting companies only. The study recommends that similar studies be done on the effect of delinquency on the performance of other lending institutions in Kenya. The study was also done on a selected PAYGO solar home lighting companies in Kenya. Further studies should be done in the entire industry to include of the solar home lighting companies in Kenya.

References

- Achou, F. T. (2007). *Bank Performance and Credit Risk Management*. Master Degree Project, University of Skovde.
- Adwek, G., Boxiong, S., Ndolo, P. O., Siagi, Z. O., C. C., Kemunto, C. M., . . . Yabo, A. C. (2019). The Solar Energy Access in Kenya: a Review Focusing of Pay-As-You-Go Solar Home System. *Journal of Technology*, 4, 3897-3938.
- Akkizidi, I. (2012). *Financial Risk Management for Banking and Finance*. Plagrade Macmillan.
- Arko, S. (2012). *Determining the causes and impact of nonperforming loans on the operations of microfinance institutions: A case of Sinapi Aba Trust*. . An executive MBA thesis. Kwame Nkuruma University and Technology, Accra, Ghana.
- Auronen, L. (2003). *Asymmetric Information: Theory and Applications*. *aper presented in the Seminar of Strategy and*

- International Business as Helsinki University of Technology.*
- Awunyo-Victor, D. (2012). Determinants of loan repayment default among farmers in Ghana. *Journal of Development and Agricultural Economics*, 4(13), 339-345.
- Bikki, J. (2003). Microfinance Regulations in Tanzania: Implications for Development and Performance of the Industry. *Africa Region Working Paper Series*, 51, 7-37.
- Boahene, N., Dasah, G., & Agyei, H. (2012). Credit risk and profitability of selected banks in Ghana. *Research Journal of Finance and Accounting*, 3(7), 2222-2847.
- Carr-Wilson, S., & Pai, S. (2018). Pay-As-You-Go: How a Business Model Is Helping Light Millions of Rural Kenyan Homes with Solar. *Journal of Energy Studies*.
- Cascio, P. (2014). Cultural Change: Opportunity, Silent Killer, or Metamorphosis? In M. J. R. H. Kilman, *Gaining Control of the Corporate Culture*. San Francisco: Jossey-Bass.
- Dietrich, A., & Wanzenried, G. (2009). What determines the profitability of commercial banks? New evidence from Switzerland. In *12th conference of the Swiss society for financial market researches*, (pp.2-39). Geneva.
- Dreze, J. (1961). Les fondements logiques de l'utilité cardinale et de la probabilité subjective. In La-Decision, *Colloques Internationaux du* (pp. 73-97). Paris: CNRS.
- Hansen, F. H. (2018). *A case Study: Off-Grid Solar PV in Rural Kenya*. Thesis of University of Oslo.
- Hoppe, E. I., & Kusterer, D. J. (2011). Conflicting tasks and moral hazard: Theory and experimental evidence. *European Economic Review*, 55(8), 1094-1108.
- Irena, M. L. (2014). The Financial Crisis Impact on Credit Risk Management in Commercial Banks. *Knowledge Society Institute*, VII(1).
- Ittner, E., & Larcker, M. (2012). *Organizational Culture: A Key to Financial Performance*. San Francisco, CA: Jossey-Bass.
- Khemraj, T., & Pasha, S. (2013). Determinants of non-performing loans in licensed commercial banks: Evidence from Sri Lanka. *Asian Economic and Financial Review*, 5(6), 868-882.
- Kinya, D. N., Shavulimo, P. M., Chepkoech, L., & Langat, P. C. (2015). Effect of Loan Terms and Conditions on Loan Volume Granted by Selected Deposit Taking Saccos in Nyeri County. Kenya. *IOSR Journal of Business and Management*, 17(2), 81-94.
- Kizilcec, V., Parikh, P., & Bisaga, I. (2021). Examining the Journey of a Pay-as-You Go Solar Home System Customer: A Case Study of Rwanda. *Energies*, 14, 330.
- Kotter, J. P. (2012). *Corporate Culture and performance*. New York: Free Press.
- Mugambi, D. N., Njeru, A., Member, F., & Tirimba, O. I. (2015). Effect of Loan Repayment on Financial Performance of Deposit Taking SACCOs in Mount Kenya Region. *International Journal of Innovation and Applied Studies*, 10(4).
- Mugenda, O. M., & Mugenda, A. G. (2008). *Research Methods, Quantitative and Qualitative Approaches*. Nairobi: Acts Press.
- Mugenda, O., & Mugenda, A. (2013). *Research methods: Quantitative and qualitative approaches*. Nairobi: Acts Press.
- Opiyo, N. (2019). Impact of Neighbourhood Influence of Socioal Acceptance of Small Solar Home Systems in Rural Western Kenya. *Energy Research and Social Sciences*, 52(C), 91-98.

Stone, D. (2011). Moral hazard. *Journal of health politics, policy and law*, 36(5), 887-896.

Wangai, B. (2014). Impact of Non-Performing Loans on Financial Performance of Microfinance Banks in Kenya: A SURvey of Microfinance Banks in Nakuru Town. *International Journal of Science and Research*, 10(3), 1-5.