Influence of Technological Factors and Homeownership through Mortgage Financing in Kenya

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Abstract

The uptake of mortgage just like any other business today is being affected by technological factors. The purpose of this study was to establish the influence of technological factors on the growth of home ownership through mortgage financing in Nairobi County, Kenya. A descriptive survey of 92 credit managers in 43 mortgage banks and 393 mortgage customers selected from a population 24,000 employees of three parastatals was conducted. Secondary data was collected from published financial statements of CBK, mortgage lenders, and Kenya National Bureau Statistics (KNBS) for the period of 30 years. The study established that technological factors had a statistically significantly influence on the growth of homeownership through mortgage financing in Kenya ($\beta = 0.439$, $t = 13.412$, $p < 0.05$). The study also determined that decisions by mortgage customers are strongly influenced by the rapid changes that new technologies offer. The study concluded that while the technological drivers for change are often perceived as disruptive, they are neither sudden nor random and thus appropriate positioning will help mortgage firms to gain more customers and also continue attracting more clients. The study recommends that the mortgage industry players need to consider the technological factors in the policy making process which can enhance the mortgage uptake in Kenya. The study also recommends that lenders must have a technology that is capable enough to get homebuyers into their dream homes faster, customize engagement with their unique customers, stay in contact throughout the process and respond to homebuyers needs on their terms.

Keywords: Technological Factors, Mortgage Financing, Mortgage Customers, Credit Managers, Homeownership.

Introduction

In the recent past, a large number of people have opted to buy or build homes and houses rather than stay on rented ones. This has resulted in an upsurge of mortgage companies that offer financial solutions. Many commercial banks now provide mortgage financing as one of their products to enhance their financial performance, remain competitive and improve their market share. A home buyer or builder can obtain financing (a loan) either to purchase or secure against the property from a financial institution such as a bank either directly or indirectly through intermediaries (CBK and World Bank, 2015).

The uptake of mortgage just like any other business today is being affected by technological factors. From customer-centric thinking across the industry. Companies are motivated to free

up organizational capacity by removing non-value adding activities, for example through automation. In the short term, this will most likely promote a standardization of business practices as firms try to do the simple things well. In the long term, there will be more bespoke offerings and market differentiation. Companies expect their business aspirations to naturally evolve alongside wider Technological factors. Changes in technology is also happening faster than ever. The ease, speed and simplicity of new technologies are fundamentally changing customer expectations. No longer required to wait for a third party to complete activities for them, the customer is now in control. And they expect each experience to be in line with their best last experience, regardless of the cross-over between industries. Mobile technologies have been a significant catalyst for this shift in expectations: billions of people can access information and complete activities at the touch of a fingertip. In just three decades, the number of mobile devices in the world has exceeded the number of humans.

Statement of the Problem

The mortgage industry has increasingly grown and has become competitive. According to a Survey by the CBK (2015), the value of mortgage loans stood at Kshs 203.3 billion in December 2015 up from Kshs 164.0 billion in December of 2014, representing a growth of Kshs 39.3 billion (23.4%). About 71.6% of lending to mortgage market was carried out by 5 institutions (one medium sized bank with 23.4%, and four banks from large peer group with 48.2% as compared to 68% lending by 4 institutions by end of December 2014. The report further notes that there were 24,458 mortgage loans in the Kenyan market by end of December 2015 compared to 22,013 mortgage loans in December 2014, an increase of 2,445 mortgage loans (11.11% growth). The report further asserts that the outstanding value of non-performing mortgages increased from Kshs 10.8 billion in December 2014 to Kshs 11.7 billion in December 2015 (CBK 2015). The main obstacles as noted by the CBK Mortgages Survey of 2015 were high cost of properties, high interest rates, high incidental fees, low-income levels, difficulties with property registration and titling, stringent land laws, access to long term finance, high construction costs, lengthy charge process timelines, startup costs, high cost of funds and credit risk.

The main providers of mortgages in Kenya are Housing Finance, Savings & Loan (KCB mortgage arm), Standard Chartered Bank, Barclays Bank and Stanbic Bank. A report by Center for Affordable Housing Finance in Africa (CAHF, 2011), indicated that mortgage industry value as of 2010 stood at KES 61.4Bn (USD 655Mn), this includes 13 803 mortgage loans. The industry has grown to KES 91.2Bn as of December 2011 representing a growth of 48.5%. However, mortgage lending is still accessible to only a tiny minority - mortgage lending as a percentage of GDP stood at 2.6% in 2012.

There have been some efforts to expand this reach by the industry. New entrants and aggressive marketing have resulted in some newer products. For example, fixed rate mortgages have been made available for between 10- and 20- year terms. Some banks have recently introduced 100% financing for the full value of a house. One lender has also introduced mortgage insurance against the risk of a loss of income. The Retirement Benefit Authority in 2009 allowed that pension contributions of up to 60% could be used to secure a mortgage. This has the potential to leverage assets worth KES 290 billion (USD 3.625 billion) and increase access for lower-earning people who have accumulated substantial pensions.

Kenya's mortgage debt compared to its GDP is better than its East African neighbors, Tanzania and Uganda at just under 2.5% but is not as developed as its developing country peers such as

India (6%) and Colombia (7%). However, the mortgage debt to GDP ratio is around 50% in Europe and over 70% in US indicating there is significant room to grow. The Central Bank of Kenya Bank Supervision Annual Report for year 2013 affirms that home ownership in urban centers stood at 17.7% and 82.2% in rural areas. Out of these Kenyans with houses, a third had acquired their houses through inheritance while only 1.5% had taken up mortgage facilities to own up their houses. The study intended to establish whether the technological factors affect the mortgage growth in Kenya. The study therefore focused on influence of technological factors on the growth of homeownership through mortgage financing in Kenya.

Literature Review
Technological Factors and Innovation Theory of Mortgage Financing
Innovations are often adopted by organizations through two types of innovation-decisions: collective innovation decisions and authority innovation decisions. The collection-innovation decision occurs when the adoption of an innovation has been made by a consensus among the members of an organization. The authority-innovation decision occurs when the adoption of an innovation has been made by very few individuals with high positions of power within an organization (Rogers, 2005). Unlike the optional innovation decision process, these innovation- decision processes only occur within an organization or hierarchical group. Within the innovation decision process in an organization there are certain individuals termed "champions" who stand behind an innovation and break through any opposition that the innovation may have caused.

The champion within the diffusion of innovation theory plays a very similar role as to the champion used within the efficiency business model Six Sigma. The innovation process within an organization contains five stages that are slightly similar to the innovation-decision process that individuals undertake. These stages are: agenda-setting, matching, redefining/restructuring, clarifying, routinizing. There are both positive and negative outcomes when an individual or organization chooses to adopt a particular innovation. Rogers states that this is an area that needs further research because of the biased positive attitude that is associated with the adoption of a new innovation (Rogers, 2005). In the Diffusion of Innovation, Rogers lists three categories for consequences: desirable vs. undesirable, direct vs. indirect, and anticipated vs. unanticipated.

The innovation adoption curve of Rogers is a model that classifies adopters of innovations into various categories, based on the idea that certain individuals are inevitably more open to adaptation than others. The concept of adopter categories is important because it shows that all innovations go through a natural, predictable, and sometimes lengthy process before becoming widely adopted within a population (Rogers, 2000).

The late majority, on the other hand, are creatures of habit and predictability. They want to know the rules, they love systems. The beautiful thing about the late majority is that when they don't find rules or systems, they'll start figuring them out. Laggards are very set in their way and will only adopt innovation when it has become mainstream, i.e. standard practice in an organization (Repp, 2004).

Another important concept described by Rogers (2000) is the S-shaped adoption curve i.e. successful innovation goes through a period of slow adoption before experiencing a sudden period of rapid adoption and then a gradual leveling off (forms an S-shaped curve). Rapid expansion of most successful innovations will occur when social and technical factors combine

to permit the innovation to experience dramatic growth. The paper adopts the innovation theory since technology evolves through the innovations which have contributions on the mortgage uptake in Kenya today.

Materials and Research Methods
A descriptive census survey of employees in 43 mortgage lenders' banks and mortgage customers in state corporations were conducted. Both secondary and primary data was collected. Primary data was collected from 92 credit managers of mortgage institutions and a sample of 393 mortgage customers. The study also collected data from a sample of 393 mortgage customers selected from a population 24,000 employees of three parastatals. Secondary data was collected from published financial statements of CBK, mortgage lenders, and Kenya National Bureau Statistics (KNBS) for the period of 30 years (1989 –2019). Data from likert type questions was also analyzed through frequency distributions and percentages.

Regression model fitness was estimated using coefficient of determination which helped to explain how closely the predictor variable explains the variations in the dependent variable. To test the significance of each individual predictor and make conclusion on whether to reject or accept the null hypotheses, the P value was used. The level of significance of 5% was used as a benchmark. If the P value is less than 0.05 at 5% significance level, reject the null hypotheses and accept the alternative and vice versa (Kothari, 2014).

This study applied the following hypotheses generated from the model:

> **H$_0$**: *Technological factors has no significant influence on Growth of Homeownership through Mortgage Financing in Kenya*

Growth of Homeownership through Mortgage Financing = f (Technological factors + random error)

$$Y = \beta_0 + \beta_0 X_0 + \varepsilon$$

To address the research hypothesis, the study will check whether the regression coefficient of technological factors (β_0) is positive (+) and significant (p values of ‹ 0.05) in line with theory and study expectations.

Results
Descriptive Statistics Results
Respondents were requested to rate various aspects of technological factors, according to the findings; 56% of the respondents agreed that ICT has aided the employees to access various mortgage products; According to the findings 67% of the respondents strongly agreed that the ease of mobile payments and enquiries on mortgage products has influenced decision on mortgage uptake. 80% of the respondents agreed that technology has led to diversification mortgage products. Further according to the findings, technology has influenced the homeownership through micro financing and this has also affected mortgage uptake. The findings indicated that 63% percent of lenders were familiar with the technology.

Inferential Results
RegressionAnalysis
Regression model fitness was estimated using coefficient of determination which helped to explain how closely the predictor variable explains the variations in the dependent variable. To

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The hypothesis of the study sought to assess the significance of the causal and effect relationship between technological factors and Growth of Homeownership through Mortgage Financing. The hypothesis was:

> H_0: *Technological Factors has no significant influence on the Growth of Homeownership through Mortgage Financing in Kenya*

To test the above hypothesis, the study adopted the approach of simple linear regression analysis. The findings regarding the model summary are provided in Table 1.   and the findings were as shown in Table 1.

Table 1: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.835[a]	.697	.687	.53753

a. Predictors: (Constant), Technological Factors

The findings as summarized in Table 1 indicate that the model (technological factors) was able to explain 68.7% of the variation in the growth of homeownership through mortgage financing (Adjusted R Square = 0.687). This suggests that 31.3% of the variation in homeownership was explained by other factors that were not included in the model.

The study analysed the variance of the regression model and the results are as provided in Table 2.

Table 2: ANOVA of the Regression Model

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	51.977	1	51.977	79.892	.000[b]
	Residual	100.838	49	.289		
	Total	152.816	50			

a. Dependent Variable: Technological Factors
b. Predictors: (Constant): Growth of Homeownership Through Mortgage Financing

The findings of ANOVA as shown in Table 2 indicates that the simple linear regression model was a good fit to the collected data [F (1, 49) = 79.892, P < 0.05]. these findings indicate that the model was statistically significant and had some predictive power.

The significance of the technological factors in the regression model was assessed using *t* test. The findings are as provided in Table 3.

Table 3: Significance of the Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	β	Std. Error	Beta		
1 (Constant)	2.053	.104		19.723	.000
Technological Factors	.439	.033	.583	13.412	.000

a. Dependent Variable: Growth of Homeownership through Mortgage Financing

Technological factors had a positive standardized beta coefficient (Standardized beta = 0.583) as indicated by the results displayed in Table 3. This implies that a unit increase in the technological factors is likely to result to an increase in growth of homeownership through mortgage financing in Kenya by 0.583. Besides, the findings indicate that technological factors had statistically significant positive effect on the growth of homeownership through mortgage financing in Kenya ($\beta = 0.439$, t = 13.412, p <0.05). These findings led to the rejection of the null hypothesis that technological factors have no significant influence on the growth of homeownership through mortgage financing in Kenya.

Discussion
The study findings determined that technological factors had a significant positive effect on home ownership through mortgage financing in Kenya (t = 13.412, p < 0.001). These findings imply that technological factors such as internet and building technology could significantly influence home ownership. These findings led to the rejection of the null study hypothesis; H0: Technological factors have no significant effect on the growth of home ownership through mortgage financing in Kenya. These results support the findings by Jain and Mandot (2012) that assessed the impact of technology in investment decision of investors in Rajasthan. The study established that use of prefab technology addressed the gap between time, efficiency and funding for mass housing projects in India. This has enhanced home ownership.

Another study with similar findings regarding the significant effect of technology on home ownership is by Turner and Lue (2014). The study established that smart devices and accessible broadband have increased the use of the internet in the housing sector to enable potential homeowners to interact with housing developers and mortgage providers. This has increased mortgage uptake and home ownership. The study results also support the findings by Yasmin and Muhd (2014) that internet technology is used in the housing sector as both buyers and sellers have become more educated by the advent of internet. Property agents have developed advanced systems and platforms to showcase the residential properties they have which has influence their sales positively.

Conclusions and Recommendations
The study concludes that Technology factors affecting mortgage industry a key driver for Processes as well as strategy. The mortgage customer's decisions are being strongly influenced by the rapid changes that new technologies offer.

The study also concludes that the voice of the customer is becoming increasingly important in mortgages. While the technological factors drivers for change are often perceived as disruptive, they are neither sudden nor random and thus appropriate positioning will help mortgage firms to gain more customers and also continue attracting more clients.

The study recommends that the mortgage industry players need to consider the technological factors in the policy making which can enhance the mortgage uptake in Kenya. The mortgage players need to more practical and cutting-edge technology so that they can create the right experience.

The study also recommends that lenders must have technology that is capable enough to get homebuyers into their dream homes faster, customize engagement with their unique customers, stay in contact throughout the process and respond to homebuyers needs on their terms. This

will lead to mortgage lending companies working with developers to create robust technologies that meet the specific needs of their consumers and investors.

The study finally recommends that mortgage industry should appreciate automation of service not only because of all the possibilities posed by these technologies but also because of the partnership opportunities they presented. The study further recommends that mortgage industry should embrace IT integration of all the processes in their loan lifecycle will allow lenders to deliver improved customer service, respond to customers faster and decrease the opportunities for errors. These capabilities will help lenders streamline complex processes, reduce friction in borrower interactions and better anticipate client needs to deliver more proactive service across the loan lifecycle.

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