

**INFLUENCE OF MEMBERS' DEMOGRAPHIC CHARACTERISTICS ON LOAN
DEFAULT IN SAVINGS AND CREDIT CO-OPERATIVE SOCIETIES IN KIAMBU
COUNTY**

DORIS WANGARI MAINA

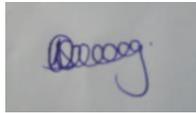
**A Research Project Submitted In Partial Fulfilment Of The Requirements For The
Award Of The Degree Of Master Of Co-Operative Management, The Co-Operative
University Of Kenya.**

NOVEMBER 2020

Declaration

This research project is my original work and has not gotten submitted in any other university for an academic award.

Signature



Date 30/11/2020

Maina Doris Wangari

Reg. No.: MCMC02/0016/1/2016

We confirm that the work reported in this project was carried out by the candidate under our supervision and has been submitted with our approval as university supervisors



30th November, 2020

Dr. Lucy Maina Kiganane
Department of Entrepreneurship and Economics
School of Business and Economics
The Cooperative University of Kenya

Date



Dr Monicah Wanjiku Nderitu
School Of Business and Economics
The Co-Operative University of Kenya

30th November, 2020

Date

Dedication

I dedicate this project to my parents for instilling in me good values and virtues that have continued to guide my decisions in life. I also dedicate to my friends for their encouragement to be the best that they could.

Acknowledgement

I give thanks to the Almighty God for my success in writing this proposal. His enough grace and mercies have allowed me reach higher mileage. In addition, it is my pleasure to extend my utmost appreciation to my supervisors Dr Lucy Maina Kiganane and Dr Monicah Wanjiku Nderitu for their patience, supervision, encouragement, knowledge and contributions that have made it possible for me to complete this project. I am also thankful to Prof A, Ayako for his input in the processing and conclusion of the project. Special appreciation to my family for their patience that enabled me endure the studies and complete this project. Lastly, I would like to give credit to my classmates for their contribution towards the fruitful conclusion of the project.

Table of Contents

Declaration.....	ii
Dedication.....	iii
Acknowledgement.....	iv
Table of Contents.....	v
List of Tables.....	x
List of Figures.....	xi
Operational Definition of Terms.....	xii
List of Abbreviations and Acronyms.....	xiii
Abstract.....	xv
CHAPTER ONE.....	1
INTRODUCTION.....	1
1.1 Background of the Study.....	1
1.1.1 Loan Default.....	3
1.1.2 Demographic Characteristics.....	4
1.1.3 Loan default and Demographic Characteristics.....	5
1.2 Statement of the Problem.....	7
1.3 Objectives of the Study.....	8

1.4	Research Questions	9
1.5	Significance of the Study	9
1.6	Limitations of the Study.....	10
1.7	Scope of the Study.....	10
CHAPTER TWO		12
LITERATURE REVIEW		12
2.1	Introduction	12
2.2	Theoretical Review	12
2.2.1	Information Asymmetry Theory.....	12
2.2.2	Liquidity Theory of Credit	13
2.3	Empirical Review	14
2.3.1	Education Level	14
2.3.2	Gender	15
2.3.3	Marital status	16
2.3.4	Age.....	17
2.3.5	Terms of Repayment	18
2.3.6	Loan Default	19
2.4	Conceptual Framework	20
2.5	Summary of Literature	21

2.6 Research Gaps	22
CHAPTER THREE	23
METHODOLOGY	23
3.1 Introduction	23
3.2 Research Design	23
3.3 Target Population	23
3.4 Sampling Design	24
3.6 Data Collection Method	27
3.6.1 Collection Instruments.....	27
3.6.2 Pilot Test.....	27
3.6.3 Reliability test.....	28
3.6.4 Validity Test	28
3.7 Data Collection Procedure	28
3.8 Measurement of variables	29
3.8 Diagnostic Tests	30
3.8.1 Testing for Multicollinearity	31
3.8.2 Testing for Heteroscedasticity	31
3.8.3 Testing for Normality	32
3.8.4 Test or Autocorrelation.....	32

3.8.5 Test for Linearity	32
3. 9 Data Analysis and Preparation	33
CHAPTER FOUR.....	35
RESEARCH FINDINGS AND DISCUSSIONS	35
4.1 Introduction	35
4.2 Response Rate	35
4.3 General Information	36
4.4 Demographic information	37
4.4.1 Marital Status	39
4.4.2 Gender	42
4.4.3 Age.....	45
4.4.4 Education Level	48
4.5 Diagnostic Tests	50
4.5.1 Normality Test.....	51
4.5.2 Multicollinearity Test	52
4.5.3 Linearity Test.....	53
4.5.4 Autocorrelation Test.....	55
4.5.5 Heteroskedasticity Test.....	55
4.6 Regression Analysis	56

4.7 Moderation effect of Loan Repayment Terms	61
CHAPTER FIVE	65
SUMMARY, CONCLUSION AND RECOMMENDATIONS	65
5.1 Introduction	65
5.2 Discussion of Findings	65
5.2.1 Marital status and loan default.....	65
5.2.2 Gender and loan default.....	65
5.2.3 Age and loan default.....	66
5.2.4 Level of education and loan default	67
5.2.5 Loan repayment terms and loan default	68
5.3 Conclusion.....	68
5.4 Recommendations	70
5.5 Limitations of the Study.....	71
5.6 Suggestions for Further Research	72
REFERENCES.....	73
APPENDIX I: LETTER OF INTRODUCTION	81
APPENDIX II: RESEARCH QUESTIONNAIRE	82
APPENDIX III: DATA COLLECTION SHEET	88

List of Tables

Table 3.1: sampling frame and distribution of sample among sub-counties	25
Table 3.2: Operationalization Table	29
Table 4.1: Response Rate.....	35
Table 4.2a: General Information.....	36
4.2b: General Information.....	37
Table 4.3: The extent to which demographic characteristic affect loan default rates.....	39
Table 4.4: Marital Status and Loan Default Rate	41
Table 4.5: Marital status of the borrowers and their loan repayment behaviors in SACCOs.....	42
Table 4.6: Gender and loan default rates in SACCOs	43
Table 4.7: Number of defaulted loans by gender.....	44
Table 4.8: Age and Loan default Rate	46
Table 4.9: Age Group	47
Table 4.10: Levels of education loan default rate.....	50
Table 4.11: Tests of Normality	52
Table 4.12: Multicollinearity Test	53
Table 4.13: Durbin Watson Test for Autocorrelation.....	55
Table 4.14: Breuch Pagan for Heteroskedasticity.....	56
Table 4.15: Model Summary	56
Table 4.16: Analysis of Variance.....	57
Table 4.17: Regression of coefficient	58
Table 4.18 Model Fitness after moderation	61
Table 4.19: Analysis of Variance after moderation	62
Table 4.20: Regression of Coefficients after moderation	63

List of Figures

Figure 2.1: Conceptual Framework	21
Figure 4.1a: Is customer demographic profiling performed before issuing a loan	38
Figure 4.2: Does marital status of borrowers contribute to loan default rate	40
Figure 4.3: Amongst the borrowers, who are the majority?	43
Figure 4.5: Does the SACCO have a minimum and maximum age of borrowers?	46
Figure 4.7: Has education level of the members contributed to loan default	49
Figure 4.8: Linearity test.....	54

Operational Definition of Terms

Age is the number of years someone has lived; time when you can legally do something (Kilpeläinen et al, 2012).

Education level refers to the highest level of education that a person has successfully completed (Baum, Cunningham & Tanenbaum, 2015).

Gender refers to the characteristics of women, men, girls and boys that are socially constructed such as norms, behaviours and roles associated with being a woman, man, girl or boy, as well as relationships with each other (WHO, 2020).

Loan default is the failure to repay a debt including interest or principal on a loan or security. A default can occur when a borrower is unable to make timely payments, misses payments, or avoids or stops making payments (Wilson, 2017).

Loan repayment terms refers to the terms and conditions involved when borrowing money. This can include the loan's repayment period, the interest rate and fees associated with the loan, penalty fees borrowers might be charged, and any other special conditions that may apply (Ssekiziyivu et al, 2018).

Marital status refers to one's situation with regard to whether one is single, married, separated, divorced, or widowed (OECD, 2014).

List of Abbreviations and Acronyms

ANOVA	-	Analysis of Variance
CBK	-	Central Bank of Kenya
GDP	-	Gross Domestic Product
GOK	-	Government of Kenya
HCU	-	Horticultural Co-operative Union
IFRS	-	International Financing Reporting Standards
IMF	-	International Monetary Fund
KCC	-	Kenya Co-operatives Creameries
KES	-	Kenyan Shilling
KPCU	-	Kenya Planters Co-operative union
KUSCCO	-	Kenya Union of Savings and Cooperatives
MD	-	Moderating variable
MFI	-	Micro-Finance Institutions
MSEs	-	Micro and Small Enterprises
NBFI	-	Non-Bank Financial Institutions
NPL	-	Non-Performing Loans
PAR	-	Portfolio at Risk
SACCOS	-	Savings and Credit Co-operatives Societies
SASRA	-	Sacco Societies Regulatory Authority
SD	-	Standard Deviation

- SME** - Micro and Small Enterprises
- SPSS** - Statistical Package for Social Scientist
- SSA** - Sub Saharan Africa
- UEMOA** - Union Economies et Monétaire Ouest Africaine.
- VIF** - Variance inflation factor
- WOCCU** - World Council of Credit Unions
- YEDF** - Youth Enterprise Development Fund

Abstract

The aim of the study was to determine the influence of member's demographic characteristics on loan default in SACCOs in Kiambu County, Kenya. The major source of income for Savings and Credit Co-operatives Societies (SACCOs) is interest on loans and this makes loaning the backbone of the Savings and Credit Co-operatives Societies. Despite the growth of the Savings and Credit Co-operatives Societies industry, defaults on loans pose the utmost danger to the steadiness of the multi-billion-shilling Savings and Credit Co-operatives Societies movement. Despite studies being conducted, none of them has addressed influence of demographic features on loan defaults in SACCOs. Specifically, the researcher sought to investigate the influence of member demographic characteristics on loan default in Savings and Credit Co-operatives Societies in Kiambu County and to explore the moderating effect of loan repayment terms to member demographic characteristics on loan default in Savings and Credit Co-operatives Societies in Kiambu County. The research utilized descriptive survey design. The target populace was 301 Savings and Credit Co-operatives Societies in Kiambu County which were active by end of year 2017 and a sample of 172 Savings and Credit Co-operatives Societies derived using Yamane formula. Stratified random sampling was employed and the sub-counties were used as strata while the respondents were randomly selected with the help of random number tables. A questionnaire containing closed-ended and Likert questions was employed gathering primary data. The results got scrutinized by use of descriptive and inferential statistics. The specific descriptive results were means, frequencies and percentages whereas the specific inferential statistics were regressions. Marital status, age, gender, education level were found to be satisfactory in explaining 57.1% of loan default in Savings and Credit Co-operatives Societies. Regression of coefficients showed that marital status and loan default in Savings and Credit Co-operatives Societies have a negative and substantial correlation, gender and loan default in Savings and Credit Co-operatives Societies have a positive and substantial correlation, age and loan default in Savings and Credit Co-operatives Societies have an undesirable and significant relationship while level of education and loan default in Savings and Credit Co-operatives Societies have a positive and substantial correlation. The R^2 of the model summary prior to getting moderated was 57.1% but after moderation the R^2 declined to 54.6% implying that loan repayment terms reduce loan default rates. The study concludes that educational level, gender, marital status, and age are significant determinants of loan nonpayment rate. The investigation indorses proper background checks of the customers to ensure that loanees are credit worth with no bad record on loan repayment. It additionally recommends that Savings and Credit Co-operatives Societies ought to apply effectual and operative debt risk supervision methods and operative repayment terms that will guarantee that loans get harmonized with capability of the borrower to service them and that loan nonpayers get anticipated and appropriate action instituted to diminish the same. The investigation also recommends that Savings and Credit Co-operatives Societies ought to pool together and launch a credit material bureau to which the lenders could make reference prior to extending credit facilities.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Robert Owen was the father of the co-operative movement, and being the first Co-operative theorist, he is credited with inspiring the modern co-operative movement at Rochdale, Lancashire England, which was started by the Rochdale Pioneers in 1844. Owen had the clue of starting "support villages" which employees would use to move themselves out of scarceness by farming to produce their own foodstuffs, sewing their clothing and ultimately becoming autonomous. His efforts became fruitful in the global co-operative movement, flung in 1844 at Rochdale, England, at the point when the Rochdale Pioneers established the contemporary co-operative in Lancashire, England, to give a moderate option in contrast to low quality and besmirched food and arrangement, utilizing any surplus to profit the network. From that point forward the co-usable development has thrived, reaching out over the globe and incorporating all parts of the economy. The co-operative development worldwide has around 1 billion individuals and is assessed to represent in excess of 100 million openings around the globe, according to WOCCU (2017).

The pioneer era of co-operatives matches with pre-colonial Africa at a time when co-operatives relied on a philosophy of independence. In pre-colonial Africa, the achievement of communal objectives was at the front of shared events in acknowledgment of the interdependence of persons in the community. The second epoch is the coming up of co-operatives in Africa, which matches with the colonial epoch. The primary motive for co-operatives during this era was the progression of the economic interests of colonial powers and cooperative's role was the limited preserve of foreign powers (Nyagah 2012).

The finishing of expansionism achieved diverse social and political goals, which prompted the third stage in the development of co-operatives in Africa. During this period, pioneers of recently autonomous African nations saw co-operatives as a method of improving social attachment and optimizing monetary improvement in their separate nations (Getnet & Anullo 2012). From that point forward co-operatives in Africa have turned out to be one of the primary types of prominent monetary and social association (plan of action) for the declining of hardship. The dominant part of African nations depends, all things considered, on the development of the rural areas, where over 60% of the populace lives. Abdulai and Tewari (2016) show that in Africa, needy individuals profit from proficient work (produce marketing) monetary markets with access to credit, and other money-related administrations, consequently winding up stronger and better to adapt to the ordinary emergencies.

In Kenya, formal cooperatives started when colonizers from Europe started the Lumbwa Co-operative Society in 1908. The opening legislation piece on co-operatives was the Co-operative Civilizations Ordinance ratified in 1931. On February 8, 1931, the Kenya Co-operative Creameries (KCC) was the pioneer of to be first listed, then the Kenya Farmers Association (KFA) followed. The Kenya Planters Co-operative Union (KPCU) was enrolled in 1937 and the Horticultural Cooperative Union (HCU) in 1951. Today, Kenya's co-operative part is rumored to be one of the best in Africa and East Africa. An IMF (2011) report noticed that, Kenya has the most elevated extent, in rate focuses, of GDP inferable from co-operatives all around, remaining at 45 percent, trailed by New Zealand with 22 percent. One out of five Kenyans is an associate of a SACCO. This implies at any rate, about 8 million Kenyans are individuals from co-operatives while 14.3 million individuals (63%) rely upon the development by implication (GOK, 2012).

1.1.1 Loan Default

Murray (2011) describes loan default as occurring in the event that a loanee flops in making loan payments as required or put in another way breaches the terms of a loan. Gorter and Bloem (2012), state that loan defaulting is primarily instigated by an inevitable quantity of incorrect economic selections by individuals and pure unlucky which may at other times not be prohibited. A report of the Commission for Africa (2010) noticed that the African continent needs fruitful African business visionaries and a solid and energetic SME division to provide the innovation and profitability development vital for long haul poverty decrease. Anyway, this has been incredibly influenced by the staggering defaults rates in the co-usable development in Africa. Rising credit hazards in sub-Saharan Africa (SSA), which started in 2015, is currently taking steps to hinder accessibility of cash advances in the area.

In an article published by *Business daily Africa*, it was noted that at the close of 2015, only about 8% of financial institutions unsettled debts in SSA got labelled non-performing, on regular terms. The figure then marginally climbed to 10 per cent in 2016. However, by the close of 2017, it had steeply jumped to about 13 percent, all on average terms. Nigeria, Angola and Ghana alone, 23 per cent of financial sector unsettled loans got clustered as non-performing by the close of 2017, up from 17 percent at the close of 2015. In Tanzania, annual private sector credit growth plunged to its lowest of just under two percent in 2017 despite the country's regulator Bank of Tanzania amplifying liquidity in the system. In Uganda, 2017 annual private sector credit growth came in at just six per cent. The outlook for credit growth in 2018 is not rosy either.

However, not all countries in SSA recorded sustained deterioration in loan performance. There are a group of nations, which recorded a decline or stability, and they include such notable

names as South Africa, Ethiopia, Uganda, Zimbabwe and the eight-member West African monetary and economic union, often referred to by its French acronym of UEMOA (Union Economies et Monétaire Ouest Africaine). In Rwanda, default in SACCO's has been blamed on embezzlement of funds by managers and poor management. The Rwandese Ministry of Trade and Industry noted that the general share of loans that were not performing in SACCO's as at 30th June 2018 was at 16.3 percent, which exceeds the supervisory requirement for this sector of 5 percent.

The Central Bank of Kenya Annual Report (2014) noted that loan default in SACCOs is a chief menace in the ability of SACCOs to grant loans to the applicants and the progress of the enterprises. CBK (2016) and SASRA (2017) state that PAR in Kenyan SACCO's rose from 5.12% in 2015 to 5.2% in 2016 and deteriorated to 6.14% in the year 2017. This shows an increasing trend every year which negatively affects the SACCO sustainability. To mitigate this, a substantial amount of lending by SACCOs is always backed by the savings as collateral and thus the most secure way of advancement of credit. Secondly, credit advanced by SACCOs is always co-guaranteed by a minimum of three other members of the SACCO.

1.1.2 Demographic Characteristics

According to Dr. Charlie French (2014), demographics encompass a collection of socio-economic data, which include the classification of a populace on the basis of education, age, gender, income level, job status, geographical location and home possession. In addition, client demographics constitute the entire measurements essential to statistically define the end-user base in a specified market. Grasping the demographics of the target clients is significant for the

accomplishment of any SACCO. The demographics will assist the SACCO to deduce precisely what the product and services mixes will constitute when tailor-making their products.

To evaluate the likelihood of loan default, it is a mandatory to grasp the demographic profile of a SACCO's clients. To see if the demographic traits are essential to support the business performance, it ought to examine the client; purchasing power, the level of disposable income within the many demographic categories, if residences are owned or home-rented, mode of transportation of the clients, do clients in the region own automobiles, with age ranges, does the community comprise of youth approaching their prime earning moments, empty nesters, young professionals or retirees; family status-whether there exist many of four families in the region or mainly singles; leisure activities - form of hobbies and recreational activities do individuals in the community engage in.

1.1.3 Loan default and Demographic Characteristics

Demographic characteristics of a member are a crucial feature that SACCOs look at before giving out credit to their members. This is because demographic sketching is a significant aspect manipulating loan advancement and the ensuing advanced loan performance. Profiling offers important info about the borrowers and this helps the credit officer reach conclusions on the borrower's suitability to refund the loan. This suggests that the demographic info might indicate the probable risk level of a specific person in case of extending credit.

Everett (2015) articulates that age is a fundamental characteristic of a borrower that every lender should check on. Individuals are economically active at different stages of life. Youths are associated to lower default than their older counterparts (Everett, 2015). The more people grow old, the more their commitment to repay the loan reduces. Groups with members who have

advanced in age may register high rates of defaults since they are not economically active which leads to low level of income hence the default.

Marital status is equally important in influencing loan default. Most SACCO members are from very poor backgrounds and hence do not have collateral and use co-guarantorship as collateral. Some SACCOs may require the spouse also to be a co-guarantor. This makes the family responsible for the loan if they are running a family business. Some studies have shown that members who are single have better repayment records than the married members. The default rate among the married borrowers has been higher compared to repayment rate. This has been attributed to the many expenses associated with family and they end up diverting all the profits to family expenses or other unintended purposes.

Gender cannot be overlooked as a determinant of default. Too & Simiyu (2018) in their study on Firms Characteristics and Financial Performance of General Insurance Firms in Kenya, explains that male borrowers have access to credit than their female counterparts. Female borrowers have been associated with high default rates (Too & Simiyu, 2018). The high default in female borrowers has been attributed to the notion that females take extra family responsibility compared to males and, therefore, tend to divert the profits towards family expenses.

According to Mwangi and Sichei (2011), education is key in business management and also record keeping. SACCOs would prefer borrowers who are educated since it would be easier to communicate with them, can keep proper documentation and also they are easily trainable (Mwangi & Sichei, 2011), Training is part of lending model where members are taken through some training before money is disbursed to them, the training is essential for managing their businesses and finances. However, this research was conducted in microfinances in Kenya but not in SACCOs. Peace (2011) explains that it is always easier to train literate people on business

skills than illiterates. Default rate among the literates and the illiterate is not clearly evident which group defaults more than the other (Peace, 2011). For example, in a research undertaken by Angaine and Waari (2014) in microfinance in Kenya, the borrowers who have studied up to secondary and college level have poor repayment habits than the university level borrowers.

1.2 Statement of the Problem

The major source of income for SACCOs is interest on loans and this makes loaning the backbone of the SACCOs. Despite the growth of the SACCO industry, defaults on loans pose the utmost danger to the steadiness of the multi-billion-shilling SACCO movement (CBK, 2012). The difficulties in lending have arisen with time for a horde of motives, the leading reason being directly related to lack of profiling of their customers based on their demographic factors to assess whether they will service the loans advanced to them resulting in increased degrees of loan default. According to SACCOs supervision report by SASRA (2019), loan portfolio risk has remained at above 6% at 6.14% in 2017, 6.30% in 2018 and 6.15% in 2019. The number of SACCOs with above 10% non-performing loans ratio increased from 56 to 60 in 2018 and 2019 respectively. The report also showed that for the majority of the SACCOs, the non-performing loan ratio deteriorated in 2019 compared to the ratios in the previous years (SASRA, 2019). According to previous studies demographic characteristics of loanees such as age, education level, civil status and gender are correlated with economic behaviors including delinquency and these influence loan repayment performance (Thayaparan & Sivatharshika, 2019).

Alfred (2011) indicates that savings and credits societies have an increased contact with loan default or credit risk which perhaps indicates that the bulk of debts were granted to non-qualified borrowers, or inefficient loan assessments and risk appraisal competences by creditors. Default risks on individual loans issued by SACCOs is high, as the only security for these loans is

member guarantors. Locally, Kosen (2013) studied the impact of demographic features on loan recital of Kenyan commercial banks and his findings indicated that demographic topographies influence the loan defaulting in the banks. Daud and Mohamed (2015) undertook a research on the influence of affiliate demographics on the reserves and outlay of persons in SACCOs and in his findings, there existed a noteworthy association amid the independent and dependent variables in the investigation.

Despite all the studies that have been conducted, none of them has addressed influence of demographic features on loan defaults in SACCOs. This investigation, therefore, focused on determining influence of demographic features on loan defaulting in deposit-taking SACCOs in Kenya by focusing Kiambu County.

1.3 Objectives of the Study

The overall aim of this investigation was to determine the influence of member's demographic characteristics on loan default in SACCOs in Kiambu County, Kenya.

The specific aims of this investigation were: -

- i. To determine the influence of marital status of members on loan default in Savings and Credit Co-operatives Societies.
- ii. To determine the influence of gender of members on loan default in Savings and Credit Co-operatives Societies.
- iii. To evaluate the influence of age of members on loan default in Savings and Credit Co-operatives Societies
- iv. To investigate the influence of education level of group members on loan default in Savings and Credit Co-operatives Societies.

- v. To determine moderating influence of loan repayment terms to member demographic characteristics on loan default in Savings and Credit Co-operatives Societies.

1.4 Research Questions

The investigation aimed to answer the ensuing questions:

- i. To what extent does marital status of members influence on loan default.
- ii. To what level does gender of members affect loan default?
- iii. To what level does age of members affect loan default?
- iv. To what extent does education level of group members contribute to loan default?
- v. What is the level of moderating effect of loan repayment terms on member demographic characteristics and loan default?

1.5 Significance of the Study

The outcomes of this investigation could be of great importance to SACCOs in Kiambu County and also other financial institutions in Kenya in formulating strategies that optimize credit default management as well as their overall financial score. The results of the research may also highlight some of the demographic characteristics that may affect loan defaulting in SACCOs in Kiambu county and Kenya as a whole. By so doing, SACCOs can make informed decisions on how to innovate their financial services.

In addition, the investigation may be of advantage to oversight units, for example, the Central Bank of Kenya, SASRA, and KUSCCO among other organizations in Kenya in making guidelines and warning to SACCOs. The study's findings may help identifying key factors that contribute largely on loan default among loanees. The outcomes may likewise be an important expansion to the current learning and give a stage to further research which may be valuable to

academicians and researchers. This examination is helpful to future academicians and scientists as a point of reference and data to create on the subject of statistic qualities and credit default in Kenya and on the planet.

1.6 Limitations of the Study

This study was limited in terms of reluctancy of respondents in providing the needed information because they feared victimization by the senior staff. To handle this limitation, the respondents were assured of the privacy and confidentiality of the data that was being collected. The researcher therefore assured the respondents of their privacy and confidentiality of the data collected and also provided them with the permission letter form the management. The study also suffered the limitation of time since some of the respondents took too long to respond to the questionnaire and to return. To solve this, the researcher did a lot of follow-ups to the respondents. The study was also limited by the tight schedule of the respondents who are departmental heads and therefore accessing them was difficult. This was addressed by taking advantage of the little time that the mangers had a break.

1.7 Scope of the Study

The targeted scope of the investigation was Kiambu County. The investigation attempted to ascertain the influence of demographic features on loan default in SACCOs. The investigator used the effect of marital status, gender, age and, education level of group members as the independent variables while the loan default as the dependent variable of the study. The study laid emphasis on the SACCOs for the last four years (2014 – 2017) because it is the period that both SACCO and banking industry faced challenges in growth due political influence in 2013

and how these SACCOs managed to mitigate and manage their loan defaulters so as to increase growth in the subsequent years up to 2017 is of great interest to the researcher.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter outlines related literature evaluation on the topic being investigated presented by innumerable investigators, academics, expert and authors. The specific areas covered encompass theoretical review, empirical review, abstract framework, critique of empirical review and study gaps to be filled by the investigation.

2.2 Theoretical Review

The theoretical framework of an investigation identifies with the philosophical premise on which the investigation happens and frames the connection between the hypothetical viewpoints and the components of the study undertaken. It understands relationship of the variables and aspects that have been considered essential to the issue and give meaning of the connections amid all the factors with the goal that the predicted connection between them can be understood (Hillman, 2014). This investigation is affixed on the Information Asymmetry Theory and Adverse Selection Theory.

2.2.1 Information Asymmetry Theory

The theory was propounded by Akerlof (1970), Spence (1974), and Stiglitz (1976). It is grounded on the supposition that one of the affiliates in a deal is likely to have more information regarding the transaction or contract than the other party, which makes it difficult for the credit team to differentiate amid a safe and a bad debtor. The affiliate who has less knowledge is, therefore, possibly going to make more risky decisions since the information provided to them is inadequate or even untrue. In some cases, borrowers are made aware of the risks linked with the

business for which they borrow funds for. The problem of information asymmetry has resulted in the rise of loan defaults in SACCOs.

The snags in measuring the often-multifaceted demographic and credit info regarding persons' previous and present experience with loans has aided in motivating the acceptance of scoring approaches for construing credit past (Cassar et al., 2015). A record of loan repayment score speaks to the assessed connection between data on the financial records of people contained in credit agency reports and the probability of poor advance execution.

The borrower is supposed to disclose correct information about them to the lender at the point of loan application. Some customers may not disclose their true marital status at the point of loan application, some may not update their records if the status changes during the time they are servicing their loans. The age and gender may be derived from identification document. Education level can also be a bit challenging to determine (Benmelech & Bergman, 2013). However, it is the role of the lender to ensure that they get accurate information from the borrower as possible. This theory linked all the independent variables with the dependent variable since it explains the link between the SACCO members and tendency of loan default.

2.2.2 Liquidity Theory of Credit

This theory, first suggested by Emery (1984), proposes that credit rationed individuals use more trade credit than those with normal access to financial institutions. Meissner and Nielsen (2002), using small firms as a proxy for credit rationed firms, finds that when there is a monetary contraction, small firms react by increasing the amount of trade credit accepted. As financially unconstrained firms are less likely to demand trade credit and more prone to offer it, a negative relation between a buyer's access to other sources of financing and trade credit use is expected.

Bryant (1980) show that a financial institution's asset and liability structures are closely connected, particularly, with regard to the fund withdrawals and borrower defaults. In their financial intermediation, financial institutions create liquidity in the economy, either from their balance sheets by generally financing risky projects using the deposits of their clients, or from off-balance sheets, by opening credit lines (Holmstrom & Tirole, 1998). This theory explained the link between loan repayment terms and loan default hence informing the moderating variable.

2.3 Empirical Review

This part discusses literature on various variables on the study.

2.3.1 Education Level

In a study conducted by Angaine and Waari (2014) to determine the issues impacting loan servicing in MFIs in Kenya, it was found out that regarding defaulting in loan servicing, 9.76 percent of individuals who have a primary level education avoided repaying, 62.93 percent of borrowers with secondary level of education avoided repaying, 47.71 percent of borrowers with tertiary level education defaulted and 0.0% of borrowers with university level qualification dodged. However, the study focused on microfinance whose nature of business operations is different from that of SACCOs presenting a contextual gap. This demonstrates that loan refund default cases were truncated amid individuals with post-secondary education as likened to borrowers with at least secondary level qualification (Angaine & Waari, 2014).

In their investigation, Dufhues *et al.*, (2011) revealed that a greater level qualification was noteworthy and positively-linked to improved performance in terms of servicing (Dufhues *et al.*, 2011). In his find on another study conducted by Chong *et al.*, (2010) on demographical aspects

and servicing recital of NBFIs clients in Kuching, education level did not play a notable part in influencing the repayment or rate of default.

Pasha and Negese (2014) conducted an investigation in Ethiopia to decide the variables influencing credit reimbursement among MFIs and discovered that the instruction level was emphatically and altogether affecting advance reimbursement at 1% level of significance, an expansion in one-year tutoring enlarges the likelihood of the advance reimbursement rate by 4.939 percent. This suggests the debtors with high educational level like college degree have the likelihood of credit reimbursement many more likely than the those who have lower training level like essential training or uneducated people (Pasha & Negese, 2014).

Moreover, Wakoli (2018) examined the impact of financial elements on loan servicing amid Youth Enterprise Development Fund (YEDF) board recipients in Trans Nzoia County, Kenya. The results of the investigation showed that a minute share 8 (1.8 percent) did not attend school whereas more than one third 152 (34.7 percent) had achieved university and tertiary level education. Mainstream of the participants traversing the research areas had accomplished secondary level of teaching. Refund performance was 100 percent amid those debtors with no schooling tracked by those with primary teaching 53(84.1 percent). The outcomes show that the rate of default enlarged with upsurge in educational level (Wakoli, 2018).

2.3.2 Gender

In a study conducted by Angaine & Warri (2014), fifty-five-point two percent of the male participants dodged in repayments while forty-seven-point five percent of the females dodged. This indicates that there was no noteworthy variance in loan refund default amidst females and males. This contradicts the outcomes of a research carried out by Chong *et al.* (2010) where they

found out that the female debtors do not show to have a pointedly better refund performance compared to that of male. However, age and training level seemed to have a noteworthy consequence on default than gender (Chong *et al.*, 2010). However, the study by Angaine and Warri (2014) and Chong *et al.* (2010) focused on microfinance whose nature of business operations is different from that of SACCOs presenting a contextual gap.

Awunyo-Vitor (2012) showed that the likelihood of an advance reimbursement was greater for men compared to females. Awunyo-Vitor (2012) additionally contended that male debtors had involvement in getting to microcredit than their feminine partners. On the divergent side, Roslan and Abdul Karim (2009) examined microcredit credit reimbursement in Malaysia and in their examination, they discovered that men who had a more drawn out term for reimbursements had a higher likelihood of defaulting.

In an investigation instigated by Wakoli (2018) on the influence of financial elements on loan servicing amid YEDF panel recipients in Trans Nzoia County, the outcomes revealed that a majority 226 (51.6%) of the participants were men and the rest 212(48.4%) were women. This suggests that a majority of the receivers of YEDFL are male. The defaulting rate was 9.3 percent and 17.9 percent amidst male and female correspondingly. This suggests that defaulting rate is greater amid feminine debtors. This might be accredited to the part played by females in caring for the homes. Women will more probably spend a section of their loans on domestic consumption (Wakoli, 2018).

2.3.3 Marital status

In a study conducted by Wongnaa and Awunyo-Vitor (2013) regarding loan refund performance amidst Ghanaian yam growers, the outcomes demonstrated that a majority of the ranchers in the

area were married. Since married ranchers were probably going to have a bigger family measure, they will incur developed costs than solitary ranchers. In this way single ranchers were probably going to have preferable reimbursement capacity over married ranchers (Wongnaa & Awunyo-Vitor, 2013).

These findings correspond with the outcomes in an investigation carried out by Lewis Wakoli (2018) on impact of financial determinants on loan refunding amidst YEDF board recipients in Trans Nzoia County, Kenya. Results indicated that approximately one third 139(31.7 percent) of the participants were single. More than half 76 (54.7 percent) of the single participants were reliable borrowers whereas the rest 43(30.9 percent) and 20(14.4 percent) were aberrant and nonpayers correspondingly. Amongst the separated, the mainstream 39(79.6 percent) were virtuous repayers of credit while 10(20.4 percent) were aberrant. Nonpayment rate was greater among the divorcees or widowed as opposed to the married. Recipients who were detached were good debtors likened to the widows or divorcees. This might be accredited to couples supplementing their household spending and revenue-plummeting loan and returns diverted to inadvertent resolves.

2.3.4 Age

In an investigation carried out by Wamalwa (2016) on determinants of loan refund by debtors from SME establishments in Nakuru County Kenya, age as a determinant was contrarily yet factually noteworthy at 1% significance. This infers that the more individuals grow, the responsibility of reimbursing credit diminishes along these lines. On period of borrowers, age squared apparently was related with 0.088303 increments in advance reimbursement. This implies a unit increment in age is related with a 0.88303 increment in advance reimbursement,

the expansion proceeds until a defining moment where increment in one unit of age is related with a 0.001369 lessening in credit reimbursement.

Young people are related with advance reimbursement than their old partners. This examination was halfway to the investigation directed by Kosen (2011) on the influence of statistic qualities on credit implementation of business banks in Kenya where it was discovered that impact of age on advance execution is measurably irrelevant (Kosen, 2011). Kenneth (2013), in his research on factors influencing repayment of loans amid clients of commercial banks in Kenya, discovered that 90.5% of the participants testified that the age the debtor influenced the likelihood of loan servicing while 9.5% of the participants noted that the age the debtor did not impact the likelihood of them refunding their loans (Kenneth, 2013).

2.3.5 Terms of Repayment

Adherence to agreed loan terms by borrowers reduces loan default rates. Short loan repayment period can easily lead to a non-performing loan. Despite this, the results indicated that there is positive connection amid good loan repayment and a long repayment period. Million *et al.* (2012), in an investigation on admittance to credit and development of MSEs in Ho Municipality of Ghana inferred that one obstruction to MSEs development is high obtaining expense and stiffneses in loan fees.

Brehanu and Fufa, (2008) in an examination discovered that the expense of account was appraised by over 35 percent of MSEs as a noteworthy development requirement in an example of 71, most creating nations. An expansion in loan fees implies that organizations regularly need to dedicate more assets paying premiums on their current obligations, which brings down the sum accessible for speculation.

Roslan and Mohd (2009), in an examination verified the speculation that the genuine loan fee has adverse effect on the economy of Jordan. The outcomes were found to help the theory. Natukunda (2010), in a gathering overview of MSEs in a Pacific Island nation found that their development is compelled by banks' financing costs, expenses and charges and insurance necessities.

Kirui *et al.* (2017), in their investigation on impacts of repayment period on loan performances in Moi University SACCO, found out that short loan repayment period is a cause of nonperforming loans. This implies that a short loan repayment period can easily lead to a non-performing loan. Despite this, the results revealed that there exists positive connection amid good loan repayment and a long repayment period.

Keneth Ochung (2013), in his investigation on components prompting advance recompense amid clients of commercial banks in Kenya, The examination built up that interest rates charged on the advance, proportion of arrangement expenses, development time of the advance, appropriate period before reimbursement begins, sort of advance (Fixed/variable premium) and measure of credit progressed influenced the degree of advance reimbursement at Barclays Bank of Kenya.

2.3.6 Loan Default

In an investigation carried out by Magali (2013) on variables influencing credit default perils for SACCOs in Tanzania, he reasoned that advance default was brought about by nonappearance of appropriate credit dangers the executives systems; absence of speculation investigation; political obstruction in SACCOs' absence of advance limit; inability to consent to the rules and guidelines by SACCOs' staff, and advance evaluation panel and the executives when issuing advances.

Akomas (2018) directed an examination on assurance of certain variables that impacts advance default installment contextual analysis: clients from Akatakyiman Rural Bank Ltd Komenda, and in his discoveries sort of credit were the elements which altogether affected whether a client defaulted an advance reimbursement whiles sex, conjugal status, instructive level, years the client has been working with the bank and town did not contribute fundamentally to the model.

2.4 Conceptual Framework

The study proposed that loan default is determined by the education level, marital status, gender and age of the borrower in SACCOs located in Kiambu County.

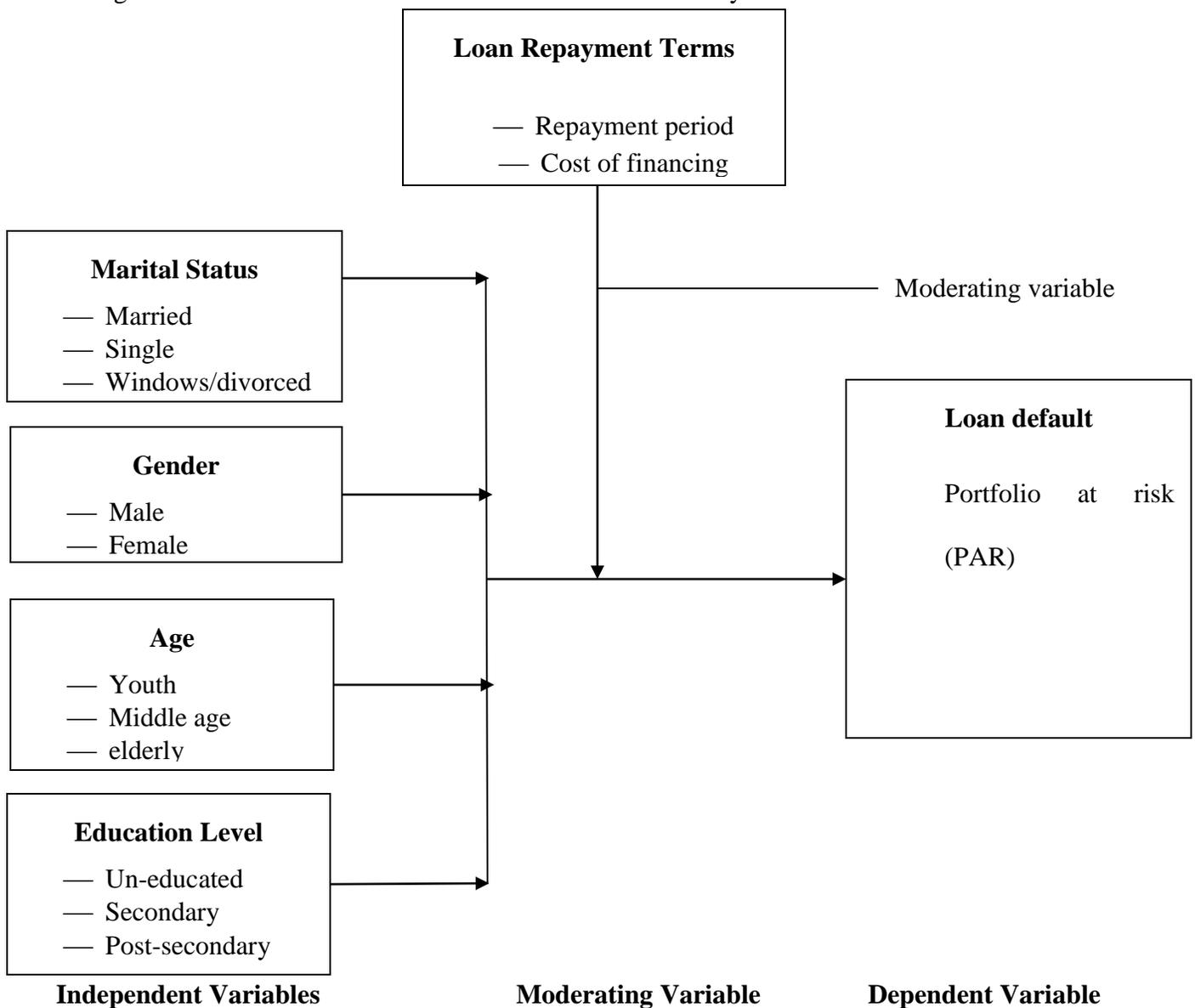


Figure 2.1: Conceptual Framework

The demographic characteristics were operationalized into: marital status; either single, married, widowed or divorced. Gender; either male or female. Age; either youth, middle age or elderly. Education level; either uneducated, secondary level or post-secondary level. Marital status, gender, age and level of education are projected to influence loan default operationalized in a Likert scale of 1= Very high, 2= High, 3= moderate and 4=Low 5= Very low. The association amid demographic features and loan nonpayment is also moderated by loan repayment terms operationalized using repayment period and cost of financing.

2.5 Summary of Literature

Different scholars have assessed the demographic characteristics that influence the likelihood of credit default. However, few or none of the investigations have emphasized on the influence of demographic features on loan default among SACCOs in Kiambu County. Education level seems to be the mostly tested demographic variable, and studies have discovered greater education qualifications to be lined with increase in the default likelihood. In addition, gender has been assessed, and scholars often deduce that being feminine is connected with an extensive decline in the probability of default.

Roslan and Abdul (2009) on elements of microcredit reimbursement in Malaysia discovered that the male gender has a higher likelihood of loan defaulting. However, the study focused on microfinance in Malaysia whose business environment might be different from Kiambu presenting contextual gap. Nyaga (2017) on factors influencing loan repayment amid clients of commercial banks in Kenya discovered that there is no noteworthy association amid age and credit defaulting. Regarding marital status, it was discovered to have a noteworthy connection to

loan defaulting. However, the study focused on commercial banks whose nature of business operations slightly differs from that of SACCOs presenting a contextual gap.

2.6 Research Gaps

There are diverse research gaps that are predominant in the present literature on the concept of loan default in relation to loans among the SACCOs. Among the scholars constitute Nawai and Shariff (2012) assessed elements influencing refund performance in microfinance plans in Malaysia. These studies vary from these scholars on the basis of geographical context and scope. The studies failed to illustrate the relationship among loanees demographic characteristics and loan default presenting conceptual gaps.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This section highlights the approaches applied in gathering data on the area of investigation. It deliberates and defines the data gathering tools, research design, population, data gathering process, sampling, data collection and an examination of the limitation of the projected method.

3.2 Research Design

As argued by Upagade and Shende (2012), a research design is the plan of condition from gathering and investigation of information in a way that intends to join suitability to the investigation reason with economy in strategy (Upagade & Shende, 2012). The investigation utilized a descriptive research framework to gather the information important to test the factors (Cantrell, 2011). Descriptive research portrays conditions or relationships held, forms that are going on, impacts that are clear or patterns that are creating, ideas, capacities, principles, and material of an exact individual, situation or gathering (Omair, 2015). A descriptive survey was favored in light of the fact that it superbly endeavors to come up with the assortment and arrogation of some social abilities and to find how these features may be acknowledged with certain standards of conduct or frames of mind. Descriptive survey was also suitable for the study since it useful in collecting data regarding the current situation o the members in terms of their demographics and which was not manipulated in any way.

3.3 Target Population

Mugenda and Mugenda (2012) illustrate population as being comprised of the whole gathering of things from which an examination was led before a sample size is chosen. Population refers to

the whole gathering of individuals or gathering having normal noticeable trademark. The target populace was 301 SACCOs in Kiambu County which were active by end of year 2017 (Kiambu County Co-operative Reports, 2017). The study used SACCOs as the unit of analysis and the respondents were the head of credit departments.

3.4 Sampling Design

The researcher utilized stratified random sampling design using sub-counties as the strata because this technique gave every SACCO an identical chance of enclosure in the sample frame. Kiambu County has eleven sub counties and co-operatives offices according to Commissioner of Co-operatives (2017) reports.

The sample size for the investigation was estimated using Yamane (1957) formula. The formula is appropriate when estimating sample size from a large population. The calculation of the sample size was as indicated below;

$$\text{sample size } (n) = \frac{N}{1 + N * e^2}$$

$$\frac{301}{1 + (301 * 0.05^2)} = 172$$

Where

n = sample size, **N** = population size (301 credit heads/managers), and **e** = level of precision (5% significance level).

Respondents per Sub-County were consistently calculated as indicated in Table 3.2. The investigation utilized simple random sampling directed by an arbitrary number table to choose SACCOs from every sub-county. Respondents were purposively sampled targeting only the

credit department heads in SACCOs because they tend to have more information related to credit. The total sample was distributed proportionately among the sub-counties. Table 3.1 indicates the sample frame and dispersal of the total sample among sub-counties.

Table 3.1: sampling frame and distribution of sample among sub-counties

Population of SACCOs in Kiambu county		301 SACCOs (unit of observation)	
Sample Size		172 SACCOs (Unit of analysis)	
SUB-COUNTIES	NUMBER OF SACCOs	K% {proportionate percentage of sub-counties SACCOs in the population}	Sampled SACCOs from each sub-county
KIAMBU	37	$\frac{172}{301} * 37 = 21$	21
KIAMBAA	17	$\frac{172}{301} * 17 = 7$	10
KIKUYU	44	$\frac{172}{301} * 44 = 25$	25

LIMURU	33	$\frac{172}{301} * 33 = 19$	19
LARI	9	$\frac{172}{301} * 9 = 5$	5
GITHUNGURI	28	$\frac{172}{301} * 28 = 16$	16
RUIRU	30	$\frac{172}{301} * 30 = 17$	17
GATUNDU NORTH	8	$\frac{172}{301} * 8 = 5$	5
GATUNDU SOUTH	16	$\frac{172}{301} * 16 = 9$	9
THIKA WEST	76	$\frac{172}{301} * 76 = 43$	43
THIKA EAST	3	$\frac{172}{301} * 3 = 2$	2
TOTAL	301		172

3.6 Data Collection Method

3.6.1 Collection Instruments

Primary data was gathered by use of a questionnaire and secondary data got collected utilizing an information catch sheet. The questionnaire encompassed both closed-ended and Likert scale questions. It is sub-divided into two parts; A and B. Part A involves general data of the respondent and part B assembles data concerning the connection between the statistic attributes and credit default. The data collected was coded. The coding procedure was utilized to match returned finished surveys with those conveyed to the respondents. The gathering of secondary data was founded on desktop research method. For all independent variables and the moderating variable, primary data was collected while the dependent variable used both primary and secondary data

3.6.2 Pilot Test

The questionnaire's reliability and validity of the was tested by conducting a pilot test. Cooper and Scindler (2011) contend that the incentive for piloting testing is to identify inadequacies in data collection tool. Pilot testing was done on 9 SACCOs (comparable to 5% of the sample estimate) was haphazardly chosen and the respondents were right-hand credit chiefs since the fundamental investigation focused on the credit supervisors. The procedures utilized in pretesting the poll was equivalent to that was utilized during the actual information gathering (Noble & Smith, 2015). The reason for pilot testing was to decide if every one of the inquiries estimated what they are proposed to quantify, regardless of whether the respondents are translating questions in a comparable way, whether the inquiries are justifiable and clear and the time taken to finish the poll (Peters, 2014). Remarks and proposals which may emerge during the pre-testing

were considered in light of the fact that they may improve the poll. On the off chance that the analyst takes note of that the respondent translates a few inquiries in an unexpected way, such inquiries was rethought to pass on a similar importance to all subjects.

3.6.3 Reliability test

The dependability of the questionnaire was verified using the Cronbach's Alpha correlation coefficient with the help of SPSS software version 23.0. George and Mallery (2003) note that Cronbach Alpha value greater than 0.7 was considered suitable for reliability valuation.

3.6.4 Validity Test

Validity tests if a questionnaire is gauging what it implies to gauge (Heale & Twycross, 2015). Validity is the exactness and significance of implications, that are founded on the outcomes of an investigation (Leung, 2015). The validity of the instruments was verified by supplying the questionnaire to two sub-county co-operative officers and two SACCO managers and two senior officials from the Ministry of Co-Operative Development And Marketing, who evaluated the rationality of the declarations on the questionnaire. Their concerns and views were recorded and made use in improving the questionnaire where appropriate.

3.7 Data Collection Procedure

The investigator appended all the necessary documents to the county government and the SAACOs targeted for the study. Once permission was granted by all the relevant offices there were personal administration of questionnaires by the investigator with the aid of qualified investigation aids. The questionnaires were coded for the resolve of identical returned complete

ones with those issued to the participants. Furthermore, secondary was extracted from audited financials and recorded on a data collection sheet.

3.8 Measurement of variables

Table 3.2 shows how variables in the study were measured and operationalized.

Table 3.2: Operationalization Table

Variable	Operationalization	Operational Definition of Variable	measurement
Loan Default	Taken as Total portfolio at risk, proportion of total loans defaulted out of the total gross loans	PAR is taken as the percentage of total delinquent loans against the total gross loans. measured in likert scale of 1= Very high, 2= High, 3= moderate and 4=Low 5= Very low	ratio
Member Demographic characteristics	<i>Marital status</i> Proportion of the loans defaulted by married, single, divorced/widowed amongst the defaulted loans. <i>Age</i> Proportion of youth defaulters,(18-35yrs) middle aged(35-55yrs) and	One's situation with regard to whether one is single, married, separated, divorced, or widowed. The period of time someone has been alive	Nominal scale Ordinal scale

	<p>aged defaulters(56 yrs. and above)</p> <p><i>Gender</i></p> <p>Proportion of male defaulters and female defaulters</p> <p><i>Education level</i></p> <p>Proportion of loans defaulted by borrowers who are uneducated, below secondary school level and post-secondary level</p>	<p>or something has existed.</p> <p>The state of being male or female</p> <p>This is the grading of education levels</p>	<p>Nominal Scale</p> <p>Ordinal scale</p>
<p>Loan repayment terms</p>	<p><i>Repayment period</i></p> <p>This is the time a borrower is given to pay the loan</p> <p><i>Cost of financing.</i></p> <p>These are the interest rates and loan processing fees.</p>	<p>The time frame within which the loan must be cleared.</p> <p>This is the costs incurred in borrowing and servicing a loan</p>	<p>Ordinal scale</p> <p>Ratio</p>

3.8 Diagnostic Tests

The relationship between the dependent and the independent variables should satisfy the assumption of normality, linearity and multicollinearity. To test the appropriateness of data, multicollinearity, heteroskedasticity, normality, autocorrelation and linearity tests were conducted before embarking on regression analysis.

3.8.1 Testing for Multicollinearity

Multicollinearity test was performed with a view of identifying variables with a high correlation among them. When two or more predictors are correlated thus giving redundant information, multicollinearity arises, and as the multicollinearity increases the coefficient estimates of the regression model become unstable thereby inflating the standard error and making them less reliable (Mugo, 2018). Furthermore, a wider confidence interval and less reliable probability values (P values) for the independent variables can result from multicollinearity. Variance inflation factor (VIF) test was used to detect multicollinearity for correlated variables. A VIF more than 10 for all the independent and dependent variables indicates presence of multicollinearity (Cohen *et al.*, 2003).

3.8.2 Testing for Heteroscedasticity

When there is a systematic pattern in the errors where the error term does not have a constant variance, heteroscedasticity is said to occur. Heteroscedasticity likely occurs when an independent variable has a high value than is necessary but not sufficient for observation to have a high value on dependent variable. As the values of an independent variable become extreme in either direction, errors increases causing biased Ordinary Least Squares estimates of the standard error. This result in biased test statistics and confidence intervals or unstable hypothesis (Sazali *et al.*, 2009). The Breusch-Pagan / Cook-Weisberg Test for Heteroscedasticity was used to detect any linear form of heteroscedasticity. The null hypothesis was tested to show that all error variances are equal against the alternative that the error variances are a multiplicative function of one or more variables (Williams, 2015).

3.8.3 Testing for Normality

Normally distributed data is fit for statistical analysis and doesn't result in under estimated standard errors or inflated statistics. A normality test is a necessary regression model estimation that indicates whether the data is fit for further statistical analysis (Mishra et al, 2019). The normality of data was tested using the Kolmogorov-Smirnov test. Accordingly, from one viewpoint, in the event that the p value is not exactly the picked alpha level, at that point the null hypothesis is dismissed and there is proof that the tested data is not evenly disseminated

3.8.4 Test or Autocorrelation

Autocorrelation refers to the degree of correlation between the values of the same variables across different observations in the data. In a regression analysis, autocorrelation of the regression residuals can occur if the model is incorrectly specified. A common method of testing for autocorrelation is the Durbin-Watson test. The Durbin-Watson tests produces a test statistic that ranges from 0 to 4. Values close to 2 (the middle of the range) suggest less autocorrelation, and values closer to 0 or 4 indicate greater positive or negative autocorrelation respectively. A Durbin-Watson test will be conducted in this study to test for autocorrelation of the data.

3.8.5 Test for Linearity

Linear regression needs the relationship between the independent and dependent variables to be linear. Linearity means that the predictor variables in the regression have a straight-line relationship with the outcome variable. It is also important to check for outliers since linear regression is sensitive to outlier effects. The linearity assumption can best be tested with scatter plots.

3. 9 Data Analysis and Preparation

Data collected was edited, coded prior to being input into Statistical Package for Social Science (SPSS) version 23.0. When coded, it was then cleaned to guarantee exactness and wholeness of the data gained. Descriptive and inferential analyses were engaged in analyzing the data. Mean scores, standard deviations, frequencies and percentages were applied for descriptive analysis while for inferential statistics, multiple linear regression analysis was engaged and to enable easy comparison, tables were utilized to recap answers for extra analysis. A multivariate regression model was used to test influence of variables with respect to loan default by percentage in SACCOs.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Where;

Y = Loan default

X₁ = marital status

X₂ = Gender

X₃ = Age

X₄ = Education level

Test for moderation using repayment terms

$$Y = \beta_0 + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 MD + \epsilon$$

$$Y = \beta_0 + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 (CX_1 MD) + \epsilon$$

Where Y is loan default measured as portfolio at risk (ratio of non-performing loans to gross loans)

β_0 = constant

x_1 to x_4 = Demographic characteristics

MD = Moderating variable

Cx_1MD = Interaction between demographic characteristics, moderating variable and loan default

Further, β_1 to β_4 = Regression Coefficients while ε = Error term. The multiple R square (R squared) was used to measure the fitness of the overall model. The model measured the amount of variation in the dependent variable (loan default) explained by the overall model.

Quantitative reports produced from the closed ended and Likert questions were analyzed using frequencies and percentages and presented in form of tables.

CHAPTER FOUR
RESEARCH FINDINGS AND DISCUSSIONS

4.1 Introduction

This chapter summarizes the outcomes, results and inferences of the variables encompassing the response rate, company profile information, descriptive statistics and regression analysis. Regression model was performed. The independent variables of the study were marital status, age, gender, education level and how they influence loan default in SACCOs.

4.2 Response Rate

A total of 172 questionnaires were disseminated out of which 143 got expansively filled and returned, but some of the partakers returned the them half-filled while a few failed to return them in spite of several follow ups. Table 4.1 shows the rate of response.

Table 4.1: Response Rate

Response	Frequency	Percent
Returned	143	83.1%
Not returned	29	16.9%
Total	172	100%

The response rate was 83.1 percent while non-response rate was 16.9 percent. A rate of response of 83.1 percent is regarded satisfactory to draw deductions for the investigation. Bailey (2000) stated that a 50 percent rate of responding is significant whereas a rate bigger than 70 percent is very good. This suggests that relying on this avowal, a rate of 83.1 percent was thus adequate for the study. The data gathering techniques the researcher employed were accredited to this significant rate of response. These comprised the use of competent research aids, prior alerting of

participants and voluntary partaking by contributors; dropping and picking of questionnaires to permit abundant time to complete them; guarantee of privacy and secrecy and follow up calls to elucidate enquiries of the participants.

4.3 General Information

The research presented general information about the SACCOs. This was inspired by the need to establish whether there exists any close relationship among SACCOs general information and loan default. SACCOs profile information is highlighted in Table 4.2a.

Table 4.2a: General Information

Company profile	Frequency	Percent
Years of Service		
Less than 1 year	56	39.0
1-5 years	30	20.9
6-10 years	26	18.0
Over 10 years	31	22.1
Designation		
Assistant manager	81	56.4
Manager	62	43.6

The results in Table 4.2a show that 39.0% of the SACCOs had operated for less than 1 year, 22.1% for over 10 years, 20.9% for 1-5 years and 18.0% 6-10 years. The results imply that majority of SACCOs were started a decade ago. The outcomes also exhibited that the mainstream 56.4% of the participants were assistant manager while 43.6% were bosses. The results suggest that the participants were knowledgeable regarding loan default and could present crucial information. Table 4.2b further illustrates more profile information about the SACCOs.

4.2b: General Information

Variable	Average	Min	Max
Members	67	24	149
Loanees	12958	4097	17038
Married	7564	5039	10867
Single	4865	2354	6475
widowed/separated/divorced	529	49	634
Loan default in KES	13867000	6097907	16453000

The descriptive results reveal that the average member numbers in the SACCOs was 67 members, with smallest SACCO having 24 members and largest SACCO having 149 members. Further, the SACCOs had average loanees of 12,958, whereas the smallest SACCO had 4,097 loanees and largest SACCO having 17038 loanees. The study also revealed that of the total loanees, average of 7,564 loanees were married, 4,865 loanees were single while 529 loanees were either widowed, separated or divorced. Marital status has a significant consequence on loan defaulting. Lastly, it was revealed that the SACCOs had an average loan default of KES 13,867,000. The SACCO with least loan default had loan default figure of KES 6,097,907 while the SACCO with largest loan default was KSH 16,453,000

4.4 Demographic information

The investigation aimed at finding out whether customer demographic profiling was performed before extending a credit to a member. The outcomes are indicated in Figure 4.1a

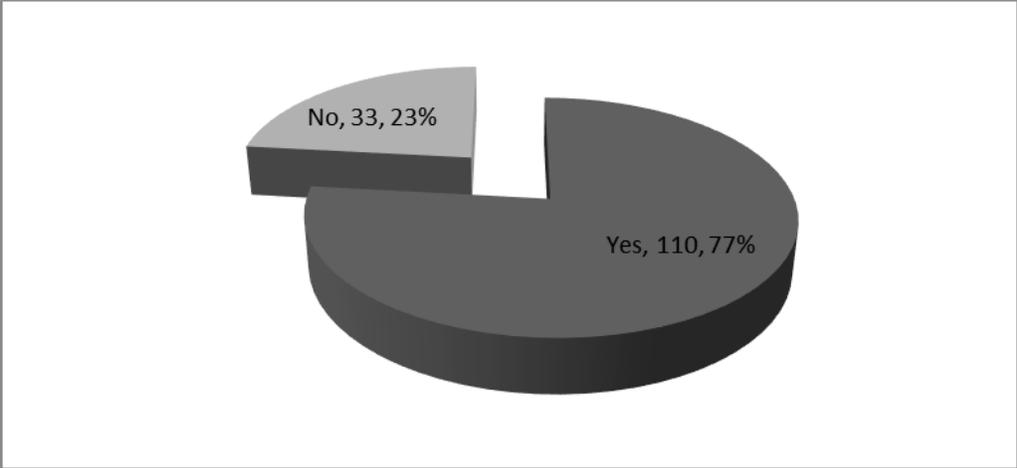


Figure 4.1a: Is customer demographic profiling performed before issuing a loan

Outcomes in Figure 4.1a discovered that mainstream 77% of SACCOs performed customer demographic profiling before issuing loans. It is important to perform customer demographic profiling to understand the credit worthiness of the borrowers. Customer demographic profiling determines loan default rates. The study also sought to know whether information on customer demographic information are important when making a decision to issue a loan. The outcomes of the investigation are presented in Figure 4.1b.

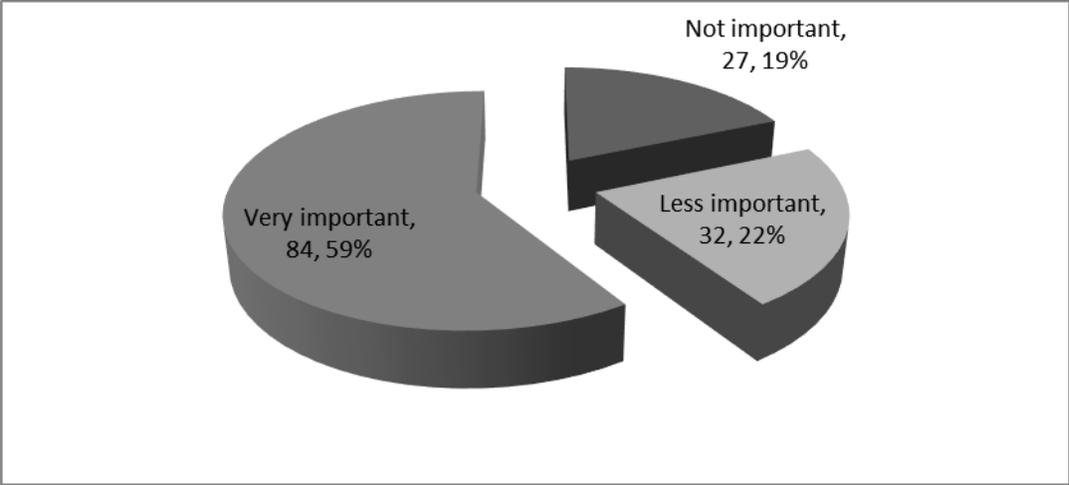


Figure 4.1b: Is information on customer demographic important when making a decision to issue a loan?

The outcomes in Figure 4.1b revealed that mainstream 59% of participants showed that information on customer demographic was very important in making decisions before issuing loan. Further, 22% of the respondents indicated that information on customer demographic was less important while 19% of the respondents indicated that information on customer demographic was not important. The results therefore implied that information on customer demographic is critical in determining whether to issue loan to a customer or not. Results in Table 4.3 shows that demographic characteristic affect loan default rates to a great extent [59.9%, mean=3.61] in the SACCOs.

Table 4.3: The extent to which demographic characteristic affect loan default rates

Statement	no extent	little extent	moderate extent	great extent	very great extent	Mean	SD
To what extent does a demographic characteristic affect loan default rates in your SACCO?	0.0%	10.5%	23.8%	59.9%	5.8%	3.61	0.75

4.4.1 Marital Status

The investigation aimed to present information on marital status of loanees. It was important to ascertain if there is any association amid marital status and loan defaulting. The investigator aimed to know whether marital statuses of borrowers contribute to credit defaulting rate in the SACCO. The investigation’s outcomes are presented in Figure 4.2.

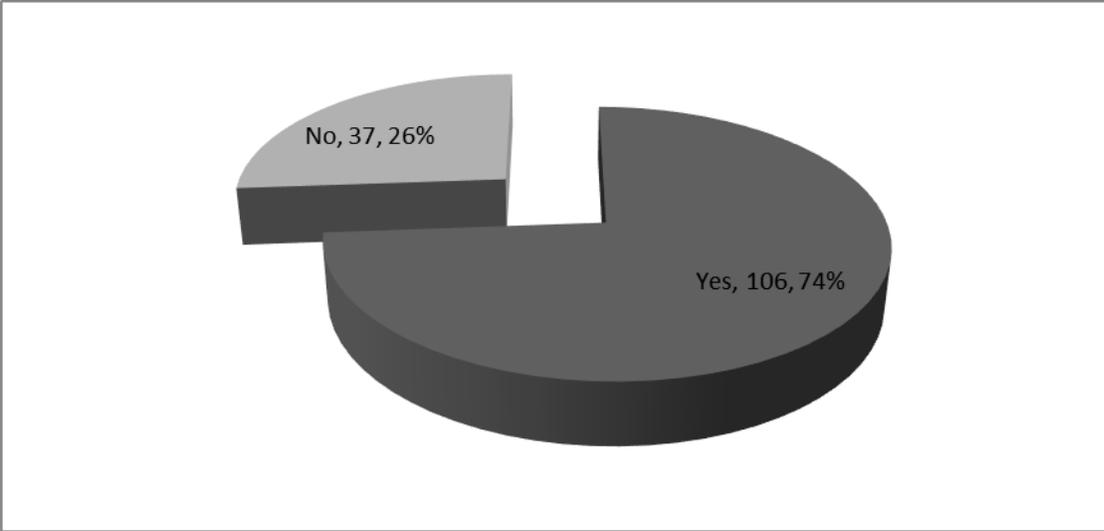


Figure 4.2: Does marital status of borrowers contribute to loan default rate

The outcomes in Figure 4.2 shows that a mainstream (74%) of the participants acknowledged that marital status of borrowers contribute to loan default rate. The results implied that marital status have a noteworthy impact on loan default rates among loanees. Some studies have shown that members who are single have better repayment records than the married members (Too & Simutu, 2018). The default rate among the married borrowers has been higher compared to repayment rate. This has been attributed to the many expenses associated with family and they end up diverting all the profits to family expenses or other unintended purposes. The study further sought to know among married, single and Separated/divorced/widowed which one recorded the highest rate of default in the SACCOs. The outcomes are presented in Table 4.4.

Table 4.4: Marital Status and Loan Default Rate

Marital status	Highest default rate	Moderate default rate	Lowest default rate	Mean	Standard Deviation
Married	50.6%	33.1%	16.3%	1.36	0.74
Single	36.6%	34.3%	29.1%	1.92	0.81
Separated/divorced/widowed	49.4%	39.5%	11.0%	1.62	0.68

The results in table 4.4 showed that married borrowers are associated with highest loan default rate [50.6%, Mean=1.36], followed by Separated/divorced/widowed [49.4%, mean=1.62] and single [36.6%, mean=1.92]. The results imply that married couples have high tendency to default loans. This may be attributed to many commitments that come along with marriage. Likewise, separated/divorced/widowed borrowers tend to default more. This may be attributed to the emotional disturbance that comes along with one being widowed, separated or divorced. The results agree with Yeboah and Oduro (2018) that marital status is a substantial factor that impacts loan defaulting. Further, the investigation aimed to rate the extent of the respondents' approval of the following statements on marital status of the borrowers and their loan repayment behaviors in SACCOs. The outcomes of the investigation are highlighted in table 4.5.

Table 4.5: Marital status of the borrowers and their loan repayment behaviors in SACCOs

Statement on Group Characteristics	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	SD
Married borrowers are better loan repayers than single borrower	0.0%	8.7%	19.8%	59.3%	12.2%	3.75	0.78
The separated and divorced borrowers are not good in loan repayment	27.3%	58.1%	14.5%	0.0%	0.0%	1.87	0.64
Single, divorces, and separated borrowers have similar records in terms of loan repayment.	8.1%	36.6%	32.0%	23.30%	0.0%	2.7	0.92

The outcomes in Table 4.5 indicated that a mainstream of participants approved that married borrowers are better loan repayers than single borrower, with mean score of 3.75 and standard deviation is 0.78. The outcomes further indicated that a mainstream of the participants did not agree that the separated and divorced borrowers are not good in loan settlement, with mean score of 1.87 and standard deviation is 0.64. The findings also revealed that the partakers were neutral on whether single, divorces, and separated borrowers have similar records in terms of loan repayment with mean score for place is 2.7 and standard deviation is 1.92.

4.4.2 Gender

The investigator also wanted to present gender information of loanees and loan default. It was important to establish whether there is any association amid gender of loanees and loan defaulting. The outcomes of the research are shown in Figure 4.3.

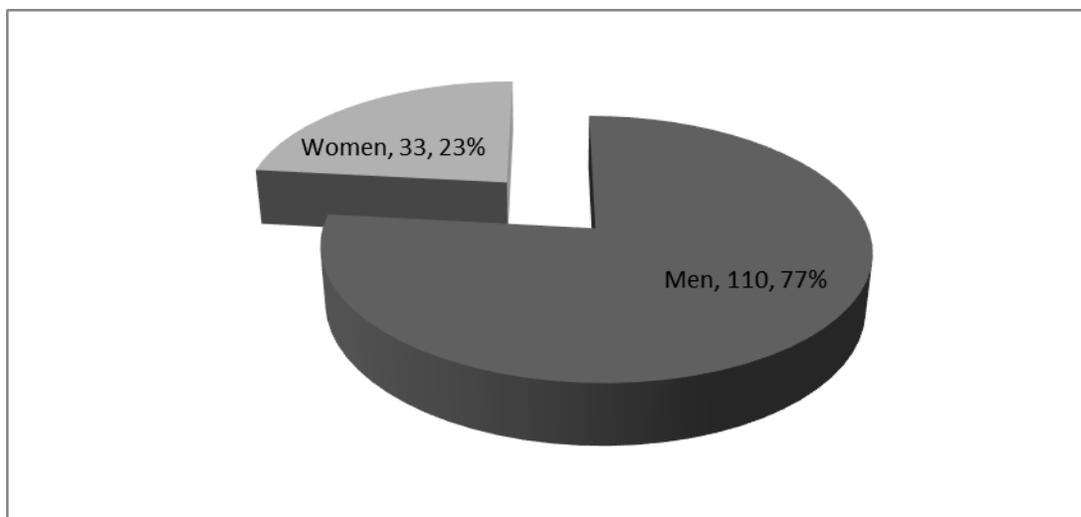


Figure 4.3: Amongst the borrowers, who are the majority?

Figure 4.3 shows that the mainstream (77 percent) of the participants showed that men are the majority borrowers in the SACCOs. The results may imply that since men are often the heads of the households, demands of the house are many and must borrow from SACCOs to supplement their income. The researcher also wanted to find the extent gender affect loan default rates in SACCOs. The outcomes of the investigation are shown in Table 4.6.

Table 4.6: Gender and loan default rates in SACCOs

Statement	no extent	little extent	moderate extent	great extent	very great extent	Mean	SD
To what extent does gender affect loan default rates in your SACCO?	0.0%	7.0%	30.8%	59.3%	2.9%	3.58	0.67

Outcomes in Table 4.6 discovered that the mainstream of respondent approved that gender affects loan default rates to an inordinate extent in SACCOs, with mean score of 3.58 and standard deviation is 0.67. The results thus imply that gender is critical parameter affecting loan

defaulting in SACCOs. The investigation also sought to explore the gender that registers high loan defaults between men and women in SACCOs. Mukherjee and Price (2016) noted that females have pointedly lower defaulting rates in the patrilineal community but suggestively higher defaulting in the matrilineal community likened to the men. The outcomes of the investigation are shown in Figure 4.4.

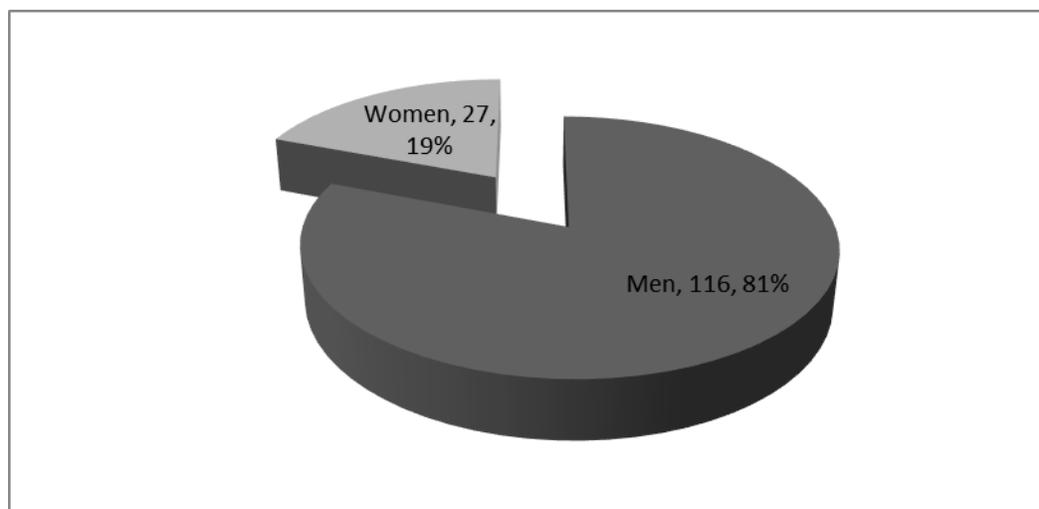


Figure 4.4: Among men and women, who registers high loan defaults

The results Figure 4.4 indicated that men registers high loan default rates (81%) compared to women. Further, the investigator aimed at ascertaining the amount of defaulted loans for both male and females. The investigation’s outcomes are shown in Table 4.7

Table 4.7: Number of defaulted loans by gender

Gender	Number of defaulted loans	% number of defaulted loans
Male	106	74.4
Female	37	25.6

The results in table 4.7 indicated that male defaulted most (74.4%) compared to female (25.6%). However, the results contrast Too and Simiyu (2018) that females have high loan default compared to men. The higher loan default in female borrowers has been attributed to the fact that, women take more family responsibility than men and, therefore, tend to divert the profits towards family expenses (Magali, 2013). Gender factor impacts loan defaulting in SACCOs. This is in agreement with Magali (2013) and Yegon *et al.*, (2013) who discovered that males exhibit higher defaulting rate than females. Sileshi *et al.*, (2012) recommended that male headed households had high default rates than female headed. Women demonstrate high repayment and savings than their male counterparts. Magali (2013) found out that it is more risky to provide men with loans compared to women in the rural SACCOs' in Tanzania.

4.4.3 Age

The investigation aimed to ascertain whether the SACCOs have a minimum and maximum age of borrowers. It was important to establish whether there is any association amid age of loanees and defaulting of loan. The outcomes of the investigation are presented in Figure 4.5.

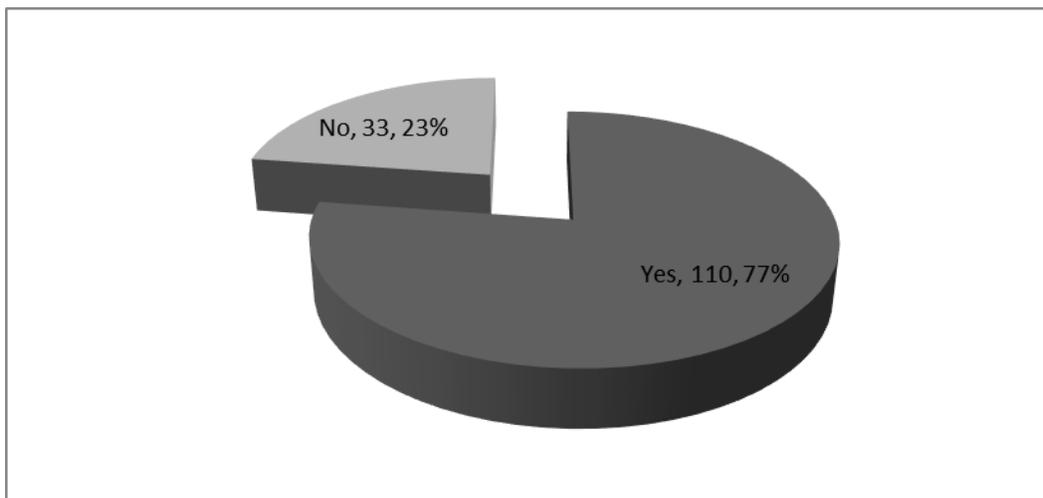


Figure 4.5: Does the SACCO have a minimum and maximum age of borrowers?

The results Figure 4.5 indicated that SACCOs have minimum age of borrowers. This is reinforced by the realization that a majority (77%) agreed to the statement. The results thus implied that age limit is important when making decision to issue loan to borrowers. The SACCO may not issue loan to a very young person because he/she might not be having reliable source to repay back the loan. Likewise, a very old person may not have more time left to repay loan borrowed. Further, the study sought illustrates the extent does age affect loan default rates in SACCO. The outcomes of the investigation are highlighted in Table 4.8.

Table 4.8: Age and Loan Default Rate

Statement	extent	little extent	moderate extent	great extent	very great extent	Mean	SD
To what extent does age affect loan default rates in your SACCO?	0.0%	8.1%	57.6%	23.3%	11.0%	3.37	0.79

Outcomes in Table 4.8 showed that the mainstream of respondent approved that age affects loan default rates to moderate extent in SACCOs, with mean score of 3.37 and standard deviation is 0.79. The results thus imply that age is partially significant parameter affecting loan default in SACCOs. Fikirte (2011) carried out an investigation on the determinants of loan refund recital in Addis Credit and Saving Institution in Ethiopia. Results revealed that time of borrowers has a relationship with credit repayment defaults. The higher the time of borrowers, the lower the pace of credit repayment defaults. As showed by Shaik (2014), the development borrowers at more energetic stages have higher default rates than the people who are at increasingly prepared age. The young people don't have a great deal of contribution with managing their wealth and

subsequently they have higher pace of credit default. As per Angaine and Warri (2014), there is no noteworthy change in credit refund default in the midst of females and males. This contradicts the outcomes of a research carried out by Chong *et al.* (2010) where they found out that the female debtors do not show to have a pointedly better refund performance compared to that of male. However, age and education level seemed to have a noteworthy effect on default than gender (Chong *et al.*, 2010). The investigation further aimed to indicate the age group that has the highest and lowest loan default rates in SACCOs. The outcomes of the investigation are itemized in Table 4.9.

Table 4.9: Age Group

Age group	High rate	Moderate rate	Low rate	No default	Mean	Standard Deviation
Youth	57.6%	26.7%	15.7%	0.0%	1.38	0.75
Middle age	19.2%	61.6%	19.2%	0.0%	2.0	0.62
Elderly	5.8%	14.0%	30.2%	50.0%	3.54	0.9

Outcomes in Table 4.9 indicated that youth have the highest rate of loan default as indicated by mean response of 1.38 and standard deviation is 0.75. The results showed that middle age have moderate rate of defaulting loans [mean=2.0, SD=0.62] while the elderly have the lowest rate of loan default [mean=3.54, SD=0.9]. The results thus imply that age is a significant predictor of loan default in SACCOs. SACCOs must carry out age profile information of a customer before issuing loan. On age Gebremedhin (2010) says that age contribution to successful loan repayment performance cannot be predetermined. While more of the young respondents may be educated and better informed on loan repayment plans and default implications, they may not be as well established or experienced in business or farming as the older folks. Thus age may or

may not be a significant contributor to successful loan repayment. It can be deduced that most people in the middle age possibly have many family responsibilities likely to compete with loan repayment obligation, hence higher loan default index. On the other hand, however, the middle age bracket is typically in its prime earning years, and therefore it would naturally be expected to perform much better in loan repayment.

4.4.4 Education Level

The investigation destined to show the education level of loanees. This was inspired by the need to uncover any correlation amid the educational level and loan defaulting rates. The outcomes of the investigation are shown in Figure 4.6.

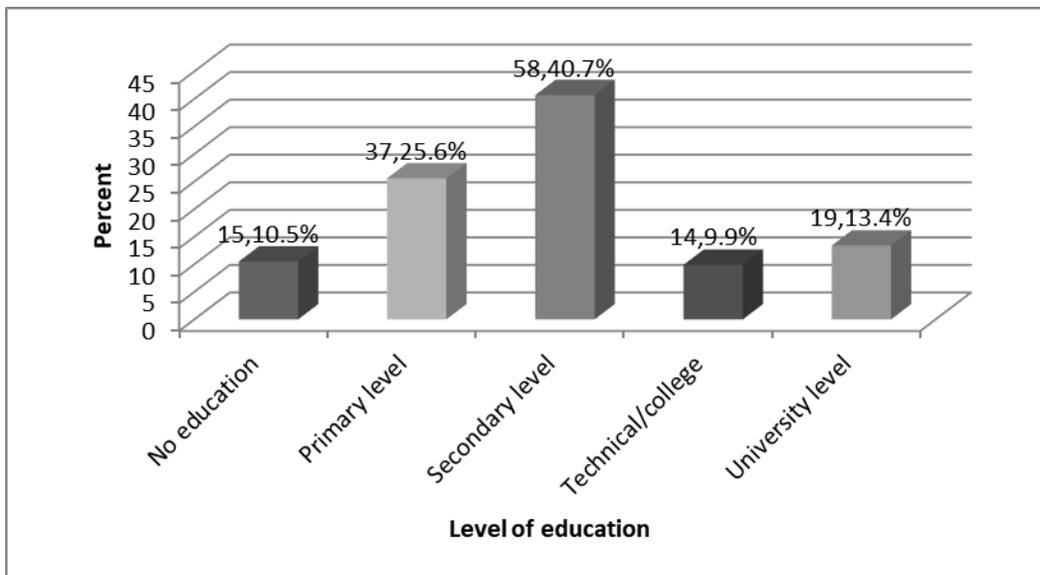


Figure 4.6: Average formal education level of members

The results of the investigation showed that most of loanees (40.7%) had secondary level of education, 25.6% had primary educational level whereas 13.4% had university level of education. It was also established that 10.5% had no education while 9.9% of the loanees had technical/college level of education. According to a study conducted by Angaine & Waari

(2014), the borrowers who have studied up to secondary and college level have poor repayment habits than the university level borrowers. In his findings of another study conducted by Chong et al., (2010) on demographical aspects and servicing recital of NBFIs clients in Kuching, education level did not play a notable part in influencing the repayment or rate of default. The investigation additionally aimed to determine whether education level of the members had contributed to loan default. The outcomes of the investigation are highlighted in figure 4.7.

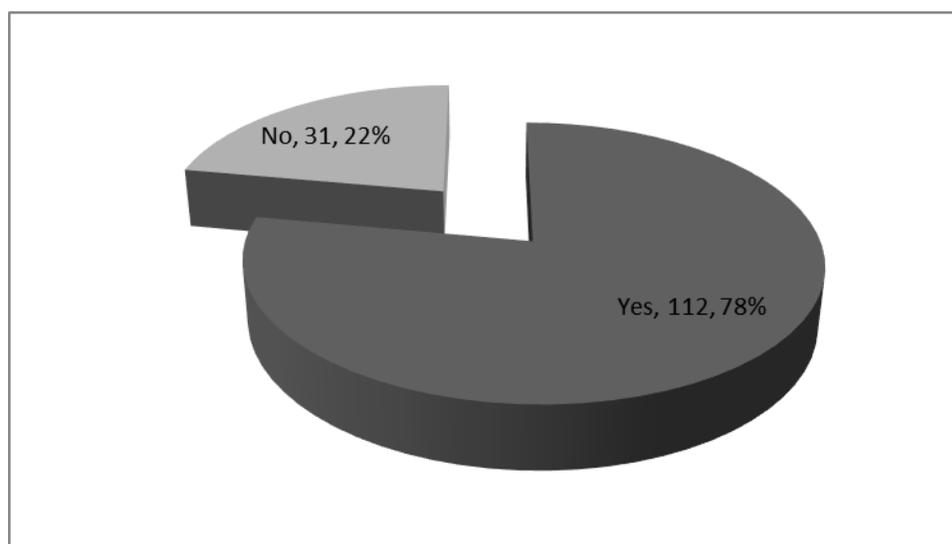


Figure 4.7: Has education level of the members contributed to loan default

The outcomes in Figure 4.7 showed that education of members had contributed to loan default. As shown above, majority 78% of the participants acknowledged that education had contributed immensely to loan defaults in SACCOs. The results agree with Pasha and Negese (2014) that debtors whose educational level is higher like college degree have the likelihood of credit reimbursement multiple times than the debtors with lesser training level say essential training or uneducated people. Further, the study sought to establish whether borrowers from various levels of education contribute to loan default rates in SACCOs. The outcomes of the investigation are revealed in Table 4.10

Table 4.10: Levels of education loan default rate

levels of education	High rate	Moderate extent	Low rate	No default	Mean	Standard Deviation
Primary	26.7%	41.9%	24.4%	7.0%	2.12	0.88
Secondary	53.5%	34.3%	12.2%	0.0%	1.39	0.7
Technical/college	12.2%	35.5%	49.4%	2.9%	2.53	0.74
University	41.3%	24.4%	20.3%	14.0%	2.07	1.08

Table 4.10 showed that primary level of education contributed to loan default moderately as shown by mean response of 2.12 and standard deviation is 0.88. The results showed that secondary level of education contribute the highest rate of loan defaults [mean=1.39, SD=0.7] while technical college contribute the lowest to loan default [mean=2.53, SD=0.74]. The results also showed that university level of education contributed most to loan default as shown by [mean=2.07, SD=1.08]. The results thus imply that educational level is a substantial predictor of loan default in SACCOs. The findings are in line with Wakoli (2018) that default rates enlarged with upsurge in the level of education.

4.5 Diagnostic Tests

Statistical tests rely upon certain conventions about the variables utilized in the examination. Osborne and Waters (2014), opine that if these conventions are not realized the outcomes might not be valid. They further argue that this could lead in a type I or type II error, or over or under-estimation of implication or effect size(s). It is therefore important to pretest for these assumptions for validity of their results Osborne, Christensen, and Gunter (2001) discovered that

couple of articles report having tried presumptions of the factual tests they depend on for making their inferences.

According to Osborne and Waters (2014), not pretesting for these assumptions has led to to a circumstance where there is rich writing in instruction and sociology, however inquiries into the legitimacy of a significant number of these outcomes, ends, statements still exist. Testing for presumptions is valuable as it guarantees that an examination meets the related suspicions and stays away from type I and II blunders (Osborne and Waters, 2014; Owino, 2014). Prior to data analysis, assumptions for normality and multicollinearity were checked.

4.5.1 Normality Test

The normality of data was tested using the Kolmogorov-Smirnov test. Accordingly, from one viewpoint, in the event that the p value is not exactly the picked alpha level, at that point the null hypothesis is dismissed and there is proof that the tested data is not evenly disseminated. Then again, on the off chance that the p value is more noteworthy than the picked alpha level, at that point the invalid speculation is that the information originated from an ordinarily appropriated populace can't be dismissed. The null-hypothesis of this test is that the populace is normally distributed. Results of the normality test are presented in Table 4.11.

Table 4.11: Tests of Normality

	Kolmogorov-Smirnov		
	Statistic	df	Sig.
Marital status	.567	172	.057
Gender	.607	172	.074
Age	.842	172	.109
Education level	.734	172	.086
Loan default	.867	172	.128

The normality results showed that marital status evaluation had p value $.057 > 0.05$ hence the data is normally distributed. It was also established that the p value for gender was $.074 > 0.05$, age had p value $.109 > 0.05$, education level had p value $.086 > 0.05$, while loan default had p value $.128 > 0.05$. The outcomes of the normality test revealed that the data was normally spread and hence further analysis was conducted.

4.5.2 Multicollinearity Test

Multicollinearity exists when at any rate two of the pointers in a backslide model are fairly or significantly associated thusly confining the investigation closures to be drawn. As demonstrated by Zainodin, Noraini, and Yap (2011), multicollinearity suggests the proximity of associations between the marker factors. In extraordinary cases of perfect associations between pointer factors, multicollinearity can recommend that a fascinating least square answer for a backslide examination can't be figured (Field, 2009). As per Field (2009), VIF values in excess of 10 implies that the closeness of Multicollinearity. Multicollinearity expands the standard missteps and sureness between times provoking insecure examinations of the coefficients for particular

markers. Multicollinearity was assessed in this assessment using the Variance Inflation Factor (VIF) as showed up in Table 4.12.

Table 4.12: Multicollinearity Test

Model	Collinearity Statistics	
	Tolerance	VIF
(Constant)		
Marital status	.880	1.136
Gender	.933	1.072
Age	.928	1.077
Education level	.896	1.115

Outcomes got indicated in Table 4.12. A variance inflation indicator was undertaken to test for multicollinearity of the predictors and a value less than 10 is adequate. Marital status had V.I.F value of 1.136 which falls below 10 meaning there is no multicollinearity. Gender had a V.I.F value of 1.072 means that there is no multicollinearity since VIF is less than 10. The outcomes showed that age had a V.I.F value of 1.077 while Education level had a V.I.F value of 1.115 implying there is no multicollinearity since VIF is less than 10. Regression could therefore be run to determine the impact of member’s demographic characteristics on loan default in SACCOs in Kiambu County, Kenya.

4.5.3 Linearity Test

Scatter plots were used to test for linearity and to visually show whether there was a linear or curvilinear association amid members’ demographic characteristics and loan default. Figure 4.8 shows the linearity test for the study.

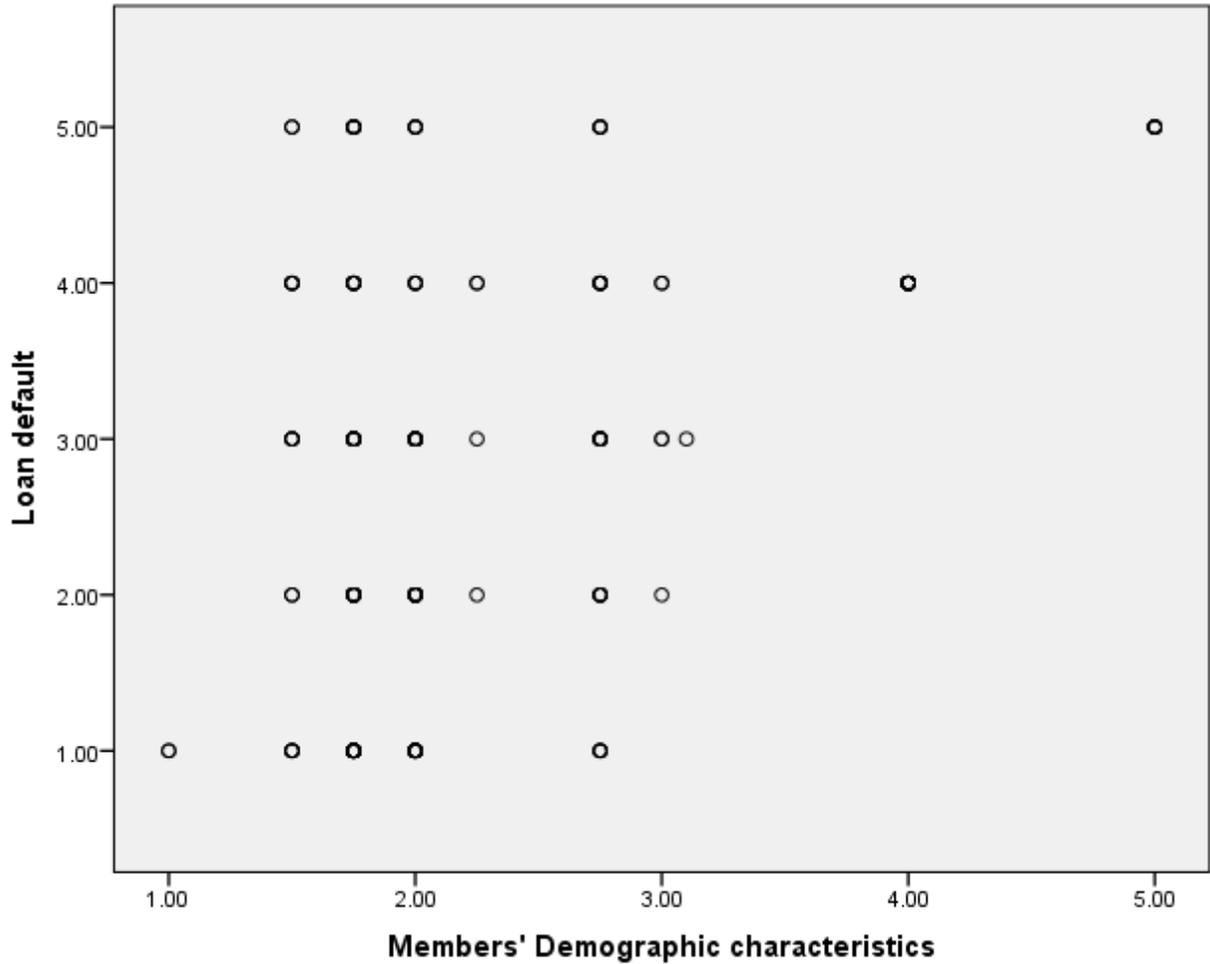


Figure 4.8: Linearity test

The linearity test indicates the connection amid dependent and independent variables. For linear regression to be conducted, the connection amid the independent and dependent variables needs to be linear. The linearity supposition can best be tried with scatter plots and graphs. The linearity test results show that the data set was exhibiting linear pattern hence we can conduct linear regression. The scatter plot diagram revealed a moderate relationship between members' demographic characteristics and loan default. Multiple regression model could thus be

undertaken to ascertain the association amid marital status, age, gender, education level and loan default in SACCOs.

4.5.4 Autocorrelation Test

Autocorrelation was tested through the application of Durbin Watson Test which has values up to 4 whereby, 2 shows no autocorrelation, values of 0 to <2 shows positive autocorrelation and values of >2 to 4 shows a negative autocorrelation.

Table 4.13: Durbin Watson Test for Autocorrelation

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
.709a	0.571	0.456	1.0729	1.881

Table 4.13 results demonstrate that there was no autocorrelation as the durbin Watson coefficient was 1.881 which was close to 2. These results were also satisfactory as the value for Durbin Watson was more than 1 but less than 3. According to Field (200), values under one or more than three are always a cause for concern.

4.5.5 Heteroskedasticity Test

The Hetttest command calculates Breuch Pagan for group wise Heteroscedasticity in the residuals. This is done by using the square of residuals as the dependent variable. The basis here is to test whether the dependent variable change with increasing values of the independent variables which would mean the data suffers from heteroscedasticity otherwise the data is homoscedastic. The null hypothesis is that the data does not suffer from Heteroscedasticity if the p-value is greater than the 5% (Fletcher, Gallimore & Mangan, 2000).

Table 4.14: Breuch Pagan for Heteroscedasticity

	Sum of Squares	df	Mean Square	F	Sig.
Regression	0.000	1.000	0.000	0.000	1.000
Residual	11.266	170	0.066		
Total	11.266	171			

The null hypothesis was not rejected at a critical p value of 0.05 since the reported value was 1.00>0.05. Therefore, the data did not suffer from heteroscedasticity.

4.6 Regression Analysis

This section contains inferential analysis for gender, education level, marital status, and age how it influences loan default in SACCOs. Inferential statistics in this segment comprise of model fitness, ANOVA tests and regression coefficients. The findings indicated in Table 4.13 highlight the appropriateness of model used of the regression model in elucidating the investigation phenomenon.

Table 4.15: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.709 ^a	.571	.456	1.07290

a. Predictors: (Constant), Marital status, Age, Gender, Education level

Marital status, age, gender, education level was discovered to be suitable in illuminating loan default in SACCOs. This is reinforced by coefficient of resolve also referred to as the R square of 57.1%. This implies that marital status, age, gender, education level explains 57.1% of loan default in SACCOs. Demographic characteristics of a member are a crucial feature that SACCOs look at before giving out credit to their members. This is because demographic sketching is a significant aspect manipulating loan advancement and the ensuing advanced loan performance.

Profiling offers important info about the borrowers and this helps the credit officer reach conclusions on the debtor's suitability to refund the loan. The ANOVA results are highlighted in Table 4.16.

Table 4.16: Analysis of Variance

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	113.206	4	28.302	24.586	.000 ^b
Residual	192.236	167	1.151		
Total	305.442	171			

a. Dependent Variable: Loan default

b. Predictors: (Constant), Marital status, Age, Gender, Education level

The outcomes showed that the general model was statistically substantial. Also, the findings imply marital status, age, gender, education are good predictors of loan default in SACCOs. This was supported by an F statistic of 24.586 which was greater than the critical F-statistic of 3.21 and the reported p value (0.000) which was less than the conventional probability of 0.05 significance level. The findings for F calculated (24.586) was also compared against the F critical value ($F_{4, 167}$) of 2.372 calculated from the F tables. Since the F calculated was greater than F critical ($24.586 > 3.21$), the model is significant. Regression of coefficient results is presented in Table 4.17. To interpret the regression coefficient results, calculated p value is compared at 5% level of significance. If the p value is less than 0.05, then the relationship between variables is significant otherwise insignificant.

Table 4.17: Regression of coefficient

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.398	.588		4.078	.000
Marital status	-.527	.138	-.244	-3.829	.000
Gender	.363	.095	.250	3.813	.000
Age	-.285	.089	-.204	-3.209	.002
Education level	.451	.105	.280	4.313	.000

a. Dependent Variable: Loan default

Loan default model

$$Y = 2.398 + -.527X_1 + .363X_2 + -.285X_3 + .451X_4$$

Where

Y = Loan default

X₁ = Marital status

X₂ = Gender

X₃ = Age

X₄ = Education level

The constant value of 2.398 means that in the absence of marital status, age, gender, education, loan default in SACCOs is positive. This implies that there are other factors that lead to loan

defaulting though not included in the model. There is inherent risk in lending and thus default rate is common.

Regression of coefficients showed that marital status and loan default in SACCOs have a adverse and significant connection ($\beta=-.527$, $p=0.000$). The regression of coefficient implies that marital status influences loan default. As age increases loan default rises. Marital status on the other hand is equally important. Most SACCO members are from very poor backgrounds and hence do not have collateral and use co-guarantorship as collateral. Some SACCOs may require the spouse also to be a co-guarantor. This makes the family responsible for the loan if they are running a family business. The results are in line with Mensah, Raphael, Dorcas and Kwadwo (2013) that marital status has a negative affiliation with loan reimbursement. However, Antwi, Mills, Mills and Zhao (2012) indicated no significant connection between marital status and loan default.

The results also revealed that gender and loan default in SACCOs have a positive and significant correlation ($\beta=.363$, $p=0.000$). The regression of coefficient implies that gender positively influences loan default. The association amid gender and repayment has gotten examined in a many research. Results in these studies indicated that women consistently outperform men in terms of repayment. The results are in line with Too and Simiyu (2018) that male borrowers have access to credit than their female counterparts. Female borrowers have been associated with high default rates. The high default in female borrowers has been attributes to the fact that, women take more family responsibility than men and, therefore, tend to divert the profits towards family expenses. Kanayari and Namusonge (2013) indicated that gender determines loan repayment default.

The results also revealed that age and loan default in SACCOs have a negative and significant relationship ($\beta=-.285$, $p=0.002$). The regression of coefficient implies that gender negatively

influences loan default. As age increases loan default rises. The results agree with Murthy and Mariadas (2017) there is a negative relationship between age of borrowers and repayment schedule to loan defaults. According to Everett (2015) articulates that age is a fundamental characteristic of a borrower that every lender should check on. Individual are economically active at different stages of life. Youths are associated to lower default than their older counterparts. The more people grow old, the more their commitment to repay the loan reduces. Groups with members who have advanced in age may register high rates of defaults since they are not economically active which leads to low level of income hence the default. According to Pasha and Negese (2014) age significantly influences loan repayment. According to this finding, one would be right making the conclusion that the probability of successful loan repayment increases as borrowers' age increases.

The results also revealed that level of education and loan default in SACCOs have a positive and significant relationship ($\beta=.451$, $p=0.000$). The regression of coefficient implies that level of education positively influences loan default. People with lower level of training are bound to default in credit reimbursement contrasted with partners who have more significant levels. This is on the grounds that people with lower level of training are probably going to need administrative aptitudes to control their organizations and consequently advance got probably won't yield enough pay to improve credit reimbursement on schedule. Then again, people with more significant level of instruction may have some administrative abilities which can assist them with dealing with their organizations and thus more salary to reimburse the credit got on time taking everything into account. The outcomes are in accordance with Yeboah and Oduro (2018) that training is huge factor that impact credit default.

4.7 Moderation effect of Loan Repayment Terms

The second objective of the investigation was to find out the moderating effect of loan repayment terms to member demographic characteristics on loan default in SACCOs in Kiambu County. Each of the independent variable was moderated by multiplying it with loan repayment terms to generate interaction term. The outcomes shown in Table 4.18 demonstrates model the fitness for a regression model after moderation.

Table 4.18 Model Fitness after moderation

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.604 ^a	.546	.439	.35028

a. Predictors: (Constant), loan repayment terms, Marital status, Gender , Age, Education level

The R^2 of the model summary before moderation was 57.1% but after moderation the R^2 reduced to 54.6%. This implies that loan repayment terms reduce loan default rates. Adherence to agreed loan terms by borrowers reduces loan default rates. The mind-boggling expense of credit as far as high financing costs, advance preparing expenses, exchange costs, legitimate charges and protection charges joined make advances costly for less settled youthful business people. Cost of money has been revived as one of the imperatives to MSE development. Different exact investigations done everywhere throughout the world bears witness to this. Million *et al.* (2012), in an investigation on access to credit and development of MSEs in Ho Municipality of Ghana inferred that one obstruction to MSEs development is high obtaining expense and rigidities in loan fees. According to Kirui *et al.* (2017), short loan repayment period can easily lead to a non-performing loan. Despite this, the results showed that there is positive connection between good loan repayment and a long repayment period. The ANOVA results are highlighted in Table 4.19.

Table 4.19: Analysis of Variance after moderation

Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	52.033	5	10.407	60.816	.000 ^b
	Residual	28.465	166	.171		
	Total	80.498	171			

a. Dependent Variable: loan default

b. Predictors: (Constant), loan repayment terms, Marital status, Gender, Age, Education level

The outcomes show that the overall model was statistically significant. Additionally, the outcomes mean loan repayment terms, marital status, gender, age, education level are good predictors of loan default. This was supported by an F statistic of 60.816 which was greater than the critical F-statistic of 3.21 and the reported p value (0.000) which was less than the conventional probability of 5% level of significance. The findings for F calculated (60.816) was also compared against the F critical value ($F_{5, 166}$) of 1.847 calculated from the F tables. Since the F calculated was greater than F critical ($29.881 > (1.847)$), the model is significant. A regression model was run after moderation. The outcomes are shown in Table 4.20. The regression coefficients of the variables are indicated as per the effect on the overall.

Table 4.20: Regression of Coefficients after moderation

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.069	.154		.446	.656
Marital status	-.249	.051	.276	-4.869	.000
Gender	.148	.056	.159	2.641	.009
Age	-.109	.053	.127	-2.049	.042
Education level	.144	.047	.168	3.047	.003
Interaction term (Loan repayment terms*Members demographic characteristics)	.263	.038	.306	6.974	.000

a. Dependent Variable: Loan default

$$Y = .069 + -.249X_1 + .148X_3 + -.109X_2 + .144X_4 + .263M$$

Y = Loan default

X₁ = Marital status

X₂ = Gender

X₃ = Age

X₄ = Education level

M = Loan repayment terms (moderator)

β₀, β₁, β₂, β₃, β₄, β₅ = Regression coefficients of changes included in Y by each X value

ε = Error term which is normally distributed with a mean and variance of zero

The multiple regression model after moderation revealed that marital status was significant and negatively related to loan default. Gender revealed positive and significant relationship with loan default. Age had negative and noteworthy association with loan defaulting in SACCOs while educational level also revealed positive and noteworthy correlation with loan defaulting. Loan repayment terms revealed a positive significant association with loan default. Loan repayment terms moderate association amid demographic characteristics.

Adherence to agreed loan terms by borrowers reduces loan default rates. The mind-boggling expense of credit as far as high financing costs, advance preparing expenses, exchange costs, legitimate charges and protection charges joined make advances costly for less settled youthful business people. Cost of money has been revived as one of the imperatives to MSE development. Different exact investigations done everywhere throughout the world bears witness to this. Million *et al.* (2012), in an investigation on access to credit and development of MSEs in Ho Municipality of Ghana inferred that one obstruction to MSEs development is high obtaining expense and rigidities in loan fees.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the discussion of the findings, conclusion, recommendations, limitations of the investigation and propositions for further studies.

5.2 Discussion of Findings

5.2.1 Marital status and loan default

Marital status of borrowers contributes to loan default rate ($\beta=-.527$, $p=0.000$). The outcomes suggest that marital status have a significant influence on loan default rates among loanees. Some studies have shown that members who are single have better repayment records than the married members (Too & Simutu, 2018). The default rate among the married borrowers has been higher compared to repayment rate. This has been attributed to the many expenses associated with family and they end up diverting all the profits to family expenses or other unintended purposes. Married couples have high tendency to default loans. This may be attributed to many commitments that come along with marriage. Likewise, separated/divorced/widowed borrowers tend to default more. This may be attributed to the emotional disturbance that comes along with one being widowed, separated or divorced. The results agree with Yeboah and Oduro (2018) that marital status is a significant factor that influences loan default.

5.2.2 Gender and loan default

Gender has significant relationship with probability of loan default ($\beta=.363$, $p=0.000$). Gender is critical parameter affecting loan default in SACCOs. The study also sought to explore the gender

that registers high loan defaults between men and women in SACCOs. Mukherjee and Price (2016) noticed that ladies have fundamentally lower default in the patrilineal society yet altogether higher default in the matrilineal society contrasted with their male partners. It was revealed that males default more compared to females. However, the results contrast Too and Simiyu (2018) that females have high loan default compared to men. The higher loan default in female borrowers has been attributed to the fact that, women take more family responsibility than men and, therefore, tend to divert the profits towards family expenses. Gender orientation factor impacts credit default in SACCOs. This is in accordance with Magali (2013) and Yegon et al., (2013) who noticed that men have higher default rates than ladies. Sileshi et al., (2012) proposed that male headed family units had high default rates than female headed. Ladies exhibit high reimbursement and investment funds than their male partners (Magali, 2013). Magali (2013) discovered that it is progressively hazardous to furnish men with advances contrasted with ladies in the provincial SACCOs' in Tanzania.

5.2.3 Age and loan default

It was also revealed that age limit is important when making decision to issue loan to borrowers ($\beta = -.285$, $p = 0.002$). The SACCO may not issue loan to a very young person because he/she might not be having reliable source to repay back the loan. Likewise, a very old person may not have more time left to repay loan borrowed. According to Fikirte (2011) time of borrowers has a relationship with credit repayment defaults. The higher the hour of borrowers, the lower the pace of credit repayment defaults. As showed by Shaik (2014), the credit borrowers at more energetic stages have higher default rates than the people who are at progressively settled age. The adolescents don't have a ton of association with managing their wealth and along these lines, they have higher pace of credit default. According to Angaine and Warri (2014), there is no

noteworthy variance in loan refund default amidst females and males. This contradicts the outcomes of a research carried out by Chong *et al.* (2010) where they found out that the female debtors do not show to have a pointedly better refund performance compared to that of male. However, age and education level seemed to have a significant effect on default than gender (Chong *et al.*, 2010).

Period of operation of SACCOs influences loan default. It is expected that Saccos that have in operational for years are better placed to confirm viability of the borrower. business operational period and the customers' involvement with business are significant elements to think about when dispensing advances. This goes about as an affirmation to the money related organization coherence for quite a while. The size of business and its area are significant variables to think about when evaluating credits and hence there is critical need to physically visit the premises to survey business capacity to reimburse advances.

5.2.4 Level of education and loan default

The results also revealed that level of education and loan default in SACCOs have a positive and significant relationship ($\beta=.451$, $p=0.000$). The results imply that the level of education positively influences loan default. People with lower level of training are bound to default in credit reimbursement contrasted with partners who have more significant levels. This is on the grounds that people with lower level of training are probably going to need administrative aptitudes to manage their organizations and hence advance got probably won't yield enough salary to upgrade advance reimbursement on schedule. Then again, people with more significant level of instruction may have some administrative abilities which can assist them with dealing with their organizations and thus more salary to reimburse the advance got on time all things

being equal. The results are in line with Yeboah and Oduro (2018) that education is significant factors that influence loan default.

5.2.5 Loan repayment terms and loan default

Loan repayment terms moderates relationship between demographic characteristics. The R^2 of the model summary before moderation was 57.1% but after moderation the R^2 reduced to 54.6%. This implies that loan repayment terms reduce loan default rates. Adherence to agreed loan terms by borrowers reduces loan default rates. The mind-boggling expense of credit as far as high financing costs, advance preparing expenses, exchange costs, legitimate charges and protection charges joined make advances costly for less settled youthful business people. Cost of money has been revived as one of the imperatives to MSE development. Different exact investigations done everywhere throughout the world bears witness to this. Million *et al.* (2012), in an investigation on access to credit and development of MSEs in Ho Municipality of Ghana inferred that one obstruction to MSEs development is high obtaining expense and rigidities in loan fees. According to Kirui *et al.* (2017), short loan repayment period can easily lead to a non-performing loan. Despite this, the results showed that there is positive connection between good loan repayment and a long repayment period.

5.3 Conclusion

The investigation concluded that marital status is a significant determinant of loan default rate. To evaluate the likelihood of loan default, it is important to understand how marital status influence loan default. Marital status on the other hand is equally important. Most SACCO members are from very poor backgrounds and hence do not have collateral and use co-

guarantorship as collateral. As a result, cases of loan default because collaterals are not there for disposal in case of loan default.

The study concluded that gender is critical predictor of loan default. Male borrowers have access to credit than their female counterparts. Female borrowers have been associated with high default rates. The high default in female borrowers has been attributes to the fact that, women take more family responsibility than men and, therefore, tend to divert the profits towards family expenses. Gender of loanee has some effect on loanees' capability to service their loans. In the study, it was established female are less probable to default likened to males.

The study concludes that age is significant determinants of loan default rate. To evaluate the likelihood of loan default, it is a mandatory to grasp the age structure of a SACCO's clients. Age is a fundamental characteristic of a borrower that every lender should check on. Individual are economically active at different stages of life. Youths are associated to lower default than their older counterparts. The more people grow old, the more their commitment to repay the loan reduces. Groups with members who have advanced in age may register high rates of defaults since they are not economically active which leads to low level of income hence the default.

It was concluded that level of education influences loan default. People with lower level of training are bound to default in credit reimbursement contrasted with partners who have more significant levels. This is on the grounds that people with lower level of training are probably going to need administrative aptitudes to manage their organizations and hence advance got probably won't yield enough salary to upgrade advance reimbursement on schedule. Then again, people with more significant level of instruction may have some administrative abilities which can assist them with dealing with their organizations and thus more salary to reimburse the advance got on time all things being constant.

5.4 Recommendations

The study recommends for proper background checks of the customers to ensure that loanees are credit worth with no bad record on loan repayment. There should be proper screening before loans are granted to them (borrowers). Credit co-usable social orders ought to emphatically consider borrowers' attributes that significantly impact advance reimbursement before they award these advances. Legitimate borrower's investigation is significant so as to survey the character, capacity to pay back (ability), evaluate undertakings' feasibility for which the credit is expected, and furthermore the sum to favor. For wedded couples, credit officials offering advances ought to include borrower's life partner completely where conceivable. Absence of companion inclusion prompts advance redirection, family clashes, division and the mate ought to be utilized as a co-underwriter in credit availability.

Policymakers ought to be cautious about summing up an approach essentially in light of the fact that it has worked in a specific setting. There might be numerous different ways social setting can be significant for arrangement and the approach producers ought to consider it to configuration better-focused on strategies. Policymakers should contemplate the heterogeneity crosswise over social orders and the social setting in which the strategy is actualized.

The study also recommends that proper scrutiny for one's ability to repay should be established based on other features without relying on age only. Empirical results indicates that older people are likely to default because they may not be interested to borrow more compared to young people who still need to borrow after another loan. However, this may not be true because some

older people may have business and other income generating activities to repay the loan compared young persons who may not have stable income to repay loan.

The investigation further recommends that to alleviate the reimbursements issues, a cozy connection among moneylender and borrower can be applied through observing, business counselor and ordinary gathering. Other than that, the loan specialist can acquainted remunerate framework with those that paid on time, for example, refund or rebate. At last, the investigation prescribes that SACCOs ought to likewise apply painstakingly custom-made approaches radiating from statistic attributes and advance advances so as credits are granted to those with capacity to reimburse and moderate good dangers, for example, insider loaning and data asymmetry.

The investigation additionally prescribes that Saccos ought to apply proficient and powerful credit hazard the board systems and compelling reimbursement terms that will guarantee that advances are coordinated with capacity to reimburse, no or insignificant insider loaning, advance defaults are anticipated as needs be and pertinent estimates taken to limit the equivalent. The investigation further suggests that SACCOs should pool together and build up a credit data authority to which reference can be made before an advance gets dispensed.

5.5 Limitations of the Study

The study relied much on questionnaire as a major data collection tool. Questionnaire is only appropriate when measuring attitude and perception and so the results may not be comprehensive and conclusive. There may be need to combine questionnaire with other data collection techniques to allow triangulation of result findings.

5.6 Suggestions for Further Research

In the limitation section, it was revealed that the study relied much on questionnaire as a major data collection tool which has some inherent limitations. Future research should consider collecting secondary information about loanees' demographic features and loan default. By using secondary data, it is possible to estimate rate of loan default based on different loanees' demographic characteristics. Further research should also entail a comprehensive approach combining both quantitative and qualitative data. Use of interview with SACCOs management may help elaborate the relationship between loanees demographic information and loan default. The use of in-depth interview technique facilitates deeper understanding of the topic by conducting open conversation with study participants. It also allows triangulation of findings by complementing quantitative data collected via questionnaire.

REFERENCES

- Abdulai, A., & Tewari, D. D. (2016). Efficiency of microfinance institutions in sub-Saharan Africa: a stochastic frontier approach. *Ghana Journal of Development Studies*, 13(2), 117-139.
- Addae-Korankye, A. (2014). Causes and control of loan default/delinquency in microfinance institutions in Ghana. *American International Journal of Contemporary Research*, 4(12), 36-45.
- Akerlof, G. A. (1970). The Market for "Lemons": Quality Uncertainty and the Market Mechanism, 84Q. *J. ECON*, 488, 489-90.
- Akomas, G. C. (2018). *Effects of Geographical Location on MFI Lending Behaviour in Developing Countries* (Doctoral dissertation, University of Huddersfield).
- Alfred, O. (2011). Corporate Governance and Financial Performance of SACCOs in Lango Sub-Region. Master's Thesis presented to Makerere University.
- Amare Brehanu & Bekabil. (2008). Repayment Rate of Loans from Semi-Formal Financial Institutions Among Small-Scale Farmers in Ethiopia. *Journal of Social-Economics*, 37(6) Pg 2221-2230.
- Angaine, F., & Waari, D. N. (2014). Factors influencing loan repayment in Micro-Finance Institutions in Kenya. *IOSR Journal of Business and Management (IOSR-JBM)*, 16(9), 66-72.
- Antwi, S., Mills, A. E. F. E., Mills, A. G., & Zhao, X. (2012). Risk factors of loan default payment in Ghana: a case study of Akuapem Rural Bank. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, 2(4), 376-386.
- Awunyo-Vitor, D. (2012). Determinants of loan repayment default among farmers in Ghana.
- Baum, S., Cunningham, A., & Tanenbaum, C. (2015). Educational attainment: Understanding the data. *Change: The Magazine of Higher Learning*, 47(6), 18-27.
- Benmelech, E., & Bergman, N. (2018). *Debt, Information, and Illiquidity* (No. w25054). National Bureau of Economic Research.

- Bryant, J. (1980). A model of reserves, bank runs, and deposit insurance. *Journal of banking & finance*, 4(4), 335-344.
- Cantrell, M. A. (2011). Demystifying the research process: Understanding a descriptive comparative research design. *Pediatric Nursing*, 37(4), 188-190.
- Cassar, G., Ittner, C. D., & Cavalluzzo, K. S. (2015). Alternative information sources and information asymmetry reduction: Evidence from small business debt. *Journal of Accounting and Economics*, 59(2-3), 242-263.
- CBK (2014). Annual Supervision Report
- CBK, (2016). The Kenya Financial Sector Stability Report 2016.
- Chong, F., Morni, F., & Suhaimi, R. (2010, December). Demographic factors and repayment performance of NBFIs customers in Kuching. In *Science and Social Research (CSSR), 2010 International Conference on* (pp. 1340-1345). IEEE.
- CKB (2012) Annual Supervision Report
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). Outliers and multicollinearity: Diagnosing and solving regression problem II. *Applied multiple regression/correlation analysis for the behavioral sciences*, 390-430.
- Commission for Africa (2010) noticed that the African continent needs fruitful African business visionaries and a solid and energetic SME
- Daud, A. M. A., & Mohammed, S. A. (2015). *U.S. Patent No. 9,146,988*. Washington, DC: U.S. Patent and Trademark Office.
- Dermine, J., & De Carvalho, C. N. (2006). Bank loan losses-given-default: A case study. *Journal of Banking & Finance*, 30(4), 1219-1243.
- Dr. Charlie French (2014). *Why Demographic Data Matters*. University of New Hampshire Cooperative Extension.
- Dufhues, T., Buchenrieder, G., Quoc, H. D., & Munkung, N. (2011). Social capital and loan repayment performance in Southeast Asia. *The Journal of Socio-Economics*, 40(5), 679-691.

- Economic Commission for Africa, (2010). *Promoting high-level sustainable growth to reduce unemployment in Africa*. Addis Ababa: Economic commission for Africa.
- Emery, G. W. (1984). A pure financial explanation for trade credit. *Journal of financial and quantitative analysis*, 271-285.
- Everett, C. R. (2015). Group membership, relationship banking and loan default risk: the case of online social lending.
- Fikirte, K. (2011). Determinants of loan repayment performance: A case study in the Addis Credit and Saving Institution. Wageningen University: Netherlands.
- George, D., & Mallery, M. (2003). Using SPSS for Windows step by step: a simple guide and reference.
- Getnet, K., & Anullo, T. (2012). Agricultural cooperatives and rural livelihoods: Evidence from Ethiopia. *Annals of Public and Cooperative Economics*, 83(2), 181-198.
- GOK, (2012). Historical Background of *Cooperatives in Kenya*
- Heale, R., & Twycross, A. (2015). Validity and reliability in quantitative studies. *Evidence-based nursing*, 18(3), 66-67.
- Hillman, N. W. (2014). College on credit: A multilevel analysis of student loan default. *The Review of Higher Education*, 37(2), 169-195.
- Holmström, B., & Tirole, J. (1998). Private and public supply of liquidity. *Journal of political Economy*, 106(1), 1-40.
- IMF (2011 kenya GDP
- Keneth Ochung (2013), Factors Affecting Loan Repayment Among Customers of Commercial Banks in Kenya.
- Kiambu County Co-operative Reports, (2017).
- Kilpeläinen, K., Tuomi-Nikula, A., Thelen, J., Gissler, M., Sihvonen, A. P., Kramers, P., & Aromaa, A. (2012). Health indicators in Europe: availability and data needs. *The European Journal of Public Health*, 22(5), 716-721.

- Kirui D. Kipngetch & Kering A. Kimeli. (2017). Effect of Repayment Period on Loan Performance in Moi University SACCO, Eldoret, Kenya.
- Kosen, E. L. (2013). *The Effect of Demographic Characteristics on Loan Performance of Commercial Banks in Kenya*. University of Nairobi.
- Leung, L. (2015). Validity, reliability, and generalizability in qualitative research. *Journal of family medicine and primary care*, 4(3), 324-327.
- Magali, J. J. (2013). Factors affecting credit default risks for rural Savings and Credits Cooperative Societies (SACCOs) in Tanzania.
- Meissner, G., & Nielsen, K. (2002). Recent advances in credit risk management: A comparison of five models. *Derivatives Use, Trading & Regulation*, 8(1), 76-76.
- Mensah, C., Raphael, G., Dorcas, O., & Kwadwo, B. Y. (2013). The relationship between loan default and repayment schedule in microfinance institutions in Ghana: A case study of Sinapi Aba Trust. *Research Journal of Finance and Accounting*, 4(19), 165-175.
- Miled, K. B. H., & Rejeb, J. E. B. (2015). Microfinance and poverty reduction: a review and synthesis of empirical evidence. *Procedia-Social and Behavioral Sciences*, 195, 705-712.
- Million, S., Nyikal, R., & Wania, S. (2012). Factors affecting loan repayment performance. *Developing Countries Studies*, 2(11), 4-10
- Mishra, P., Pandey, C. M., Singh, U., Gupta, A., Sahu, C., & Keshri, A. (2019). Descriptive statistics and normality tests for statistical data. *Annals of cardiac anaesthesia*, 22(1), 67.
- MUGO, E. N. (2018). Effect Of Investment Strategies On Investment Returns: Evidence From Kenyan Pension Funds.
- Mukherjee, S., & Price, M. (2016). *Gender, Group and Moral Hazard in Microfinance: Evidence from Matrilineal and Patrilineal Societies in India* (No. 00554). The Field Experiments Website.
- Murray, J. (2011). Default on a loan, United States Business Law and Taxes Guide National Credit Act (2005). Act No. 34 of 2005, Republic of South Africa.

- Murthy, U., & Mariadas, P. A. (2017). An Exploratory Study on the Factors Contributing Loan Repayment Default among the Loan Borrowers in Micro Finance Institutions in Shah Alam, Selangor. *International Journal of Business and Management*, 12(12), 242-250
- Mwangi, I. W., & Sichei, M. M. (2011). Determinants of access to credit by individuals in Kenya: A comparative analysis of the Kenya National FinAccess Surveys of 2006 and 2009. *European Journal of Business and Management*, 3(3), 206-227.
- Natukunda, J. (2010). Microcredit lending terms: How to reduce arrears in microfinance institutions. *Journal of Microfinance*, 3(1), 614–628.
- Nawai, N., & Shariff, M. N. M. (2012). Factors affecting repayment performance in microfinance programs in Malaysia. *Procedia-Social and Behavioral Sciences*, 62, 806-811.
- Ndungo, J. M., Tobias, O., & Florence, M. (2016). Effect of credit access function on financial performance of SACCOs in Kenya. *International journal of finance and accounting*, 1(2), 35-47.
- Noble, H., & Smith, J. (2015). Issues of validity and reliability in qualitative research. *Evidence-based nursing*, 18(2), 34-35.
- Nyaga, K. M. (2017). *The impact of mobile money services on the performance of small and medium enterprises in an urban town in Kenya* (Doctoral dissertation).
- Nyagah, W. N. (2012). Co-operatives as potential channel for enhancing financial inclusion. In *Forum on Enhancing Financial Innovation and Access, Abuja, September* (Vol. 18).
- OECD (2014). Glossary of Statistical Terms
- Olando, C. O., Mbewa, M. O., & Jagongo, A. (2012). Financial Practice as a Determinant of Growth of Savings and Credit Co-operative Societies' Wealth (A Pointer to Overcoming Poverty Challenges in Kenya and the Region). *International Journal of Business and Social Science*, 3(24).
- Omais, A. (2015). Selecting the appropriate study design for your research: Descriptive study designs. *Journal of Health Specialties*, 3(3), 153-156.

- Onyeagocha, S., & Chidebelu, D. (2012). Determinants of loan repayment of microfinance. *International Journal of Science and Humanities*, 1(1), 3-6.
- Pasha, S. A. M., & Negese, T. (2014). Performance of Loan Repayment Determinants in Ethiopian Micro Finance-An Analysis. *Eurasian Journal of Business and Economics*, 7(13), 29-49.
- Peace, K. (2011). Small savings and credit schemes and financial accessibility in rural areas: A case study of Mitaana SACCO in Rukungiri District. *Kampala: Makerere University*.
- Peters, G. J. (2014). The alpha and the omega of scale reliability and validity: why and how to abandon Cronbach's alpha and the route towards more comprehensive assessment of scale quality.
- Roslan, A. H., & Karim, M. A. (2009). Determinants of microcredit repayment in Malaysia: The case of Agrobank. *Humanity & Social Sciences Journal*, 4(1), 45-52.
- SASRA (2017). *SACCOs annual report 2017*. Nairobi: SASRA.
- SASRA (2019). *The Sacco Supervision Annual Report 2019*.
- Sazali, A. W., Haslinda, A., Jegak, U., & Raduan, C. R. (2009). Evolution and development of technology transfer models and the influence of knowledge-based view and organizational learning on technology transfer. *Research Journal of International Studies* (12), 79-91.
- Shaik, A. M. (2014). Performance of Loan Repayment Determinants in Ethiopian Micro Finance - An Analysis. *Eurasian Journal of Business and Economics*, 7(13), 29-49
- Sivatharshika, B., & Thayaparan, A. (2019). Credit Worthiness and Repayment Performance Among Small-Holder Farmers in Sri Lanka: Application of Probit Model. *European Journal of Marketing and Economics*, 2(3), 13-22.
- Spence, M. (1974). Competitive and optimal responses to signals: An analysis of efficiency and distribution. *Journal of Economic theory*, 7(3), 296-332.
- Ssekiziyivu, B., Bananuka, J., Nabeta, I. N., & Tumwebaze, Z. (2018). Borrowers characteristics, credit terms and loan repayment performance among clients of microfinance institutions

- (MFIs): Evidence from rural Uganda. *Journal of Economics and International Finance*, 10(1), 1-10.
- Stiglitz, J. E. (1976). The efficiency wage hypothesis, surplus labour, and the distribution of income in LDCs. *Oxford economic papers*, 28(2), 185-207.
- Stiglitz, J. E. (2016). Income-Contingent Loans: Some General Theoretical Considerations, with Applications. In *Contemporary Issues in Microeconomics* (pp. 129-136). Palgrave Macmillan, London.
- Thayaparan, A., & Sivatharshika, B. (2019). *Borrowers' characteristics and their impact on repayment behaviour in Sri Lanka. An application of discriminant and logistic models*. GRIN Verlag.
- Too, I. C., & Simiyu, E. (2018). Firms Characteristics and Financial Performance of General Insurance Firms in Kenya.
- Upagade, V., & Shende, A. (2012). *Research Methodology 2 nd Edition S. Chand & Company ltd ram Nagar New Delhi*.
- Wachilonga, I. W. (2018) Effect of finance determinants on loan repayment among youth enterprise development fund board beneficiaries in Trans Nzoia county, Kenya.
- Wamalwa, W. N. (2016). Determinants of Loan Repayment by Borrowers from Micro-Financial Institutions in Nakuru County Kenya. *Journal of Investment and Management*, 5(5), 64.
- WHO (2020). Gender, Equity and Human Rights
- Williams, R. (2015). Heteroskedasticity. Department of Sociology, University of Notre Dame: 1–16.
- Wilson, S. (2017). A causal framework for credit default theory. *Australian Prudential Regulation Authority Working Paper, October*.
- WOCCU (2017). International Operating Principles
- Wongnaa, C. A., & Awunyo-Vitor, D. (2013). Factors Affecting Loan Repayment Performance Among Yam Farmers in the Sene District, Ghana.
- Yamane, T. (1957). Elementary sampling theory.

Yeboah, E. and Oduro, I.M. (2018) Determinants of Loan Defaults in Some Selected Credit Unions in Kumasi Metropolis of Ghana. *Open Journal of Business and Management*, 6, 778-795.

APPENDIX I: LETTER OF INTRODUCTION

Date

Maina Doris Wangari
P.O BOX 79850-00200
Nairobi.

TO THE CEO
..... SACCO LTD,
P.O BOX

Dear Sir/Madam,

REF: COLLECTION OF RESEARCH DATA

I am a student pursuing a Master of Co-Operative Management course at The Co-Operative University of Kenya and I wish to undertake a research entitled ‘Effect of Borrowers Demographic Characteristics on Loan Default in Savings and Credit Co-Operatives in Kiambu County. Your SACCO has been identified as a key player in the SACCO sector in Kenya and hence the decision to have your participation in this important study.

Information will be gathered by use of questionnaires; I therefore request you to kindly allow my research assistants to issue questionnaire to the credit manager or his assistant in your SACCO. The response to the questionnaire therein and any other information provided will be purely for academic research purpose. It will be treated with strict confidence it deserves.

Your assistance and co-operation will be highly appreciated.

Thank you,

Yours faithfully,

Doris Wangari Maina

APPENDIX II: RESEARCH QUESTIONNAIRE

This research is in partial fulfillment of requirements for a Master’s degree in Co-operative management from Co-operative University of Kenya and I will be most grateful if you could kindly complete this questionnaire. This questionnaire consists of two parts. Kindly answer the following questions by ticking in the appropriate box or filling the spaces provided. The information given here will only be used for purposes of this study and will be treated with utmost confidentiality. Your cooperation will be highly appreciated.

PART A: GENERAL INFORMATION

1. Name of SACCO.....
2. Years of service/working period in the SACCO? (Tick as applicable)

Less than 1 year [], 6-10 years, [], 1-5 years [], Over 10 years []
3. What is your designation? Manager [], Assistant manager []
4. Please indicate the number of (a) members (b) loanees.....,
5. Please indicate the SACCOs total loan portfolio, ksh.....
6. Please indicate the number of loanees : (a) married..... (b) Single.....

(c) widowed/separated/divorced.....
7. Please indicate the amount of defaulted loans in your SACCO. Ksh.....

PART B: DEMOGRAPHIC CHARACTERISTICS AND LOAN DEFAULT *(Demographic*

profiles constitute parameters such as gender, age, education, income level, employment status, geographical location and home ownership)

8. Do you perform a customer demographic profiling before issuing a loan to a member?

Yes [], No []

9. Is information on customer demographic important when making a decision to issue a loan?

Very important [], less important [], Not important []

10. To what extent does demographic characteristics affect loan default rates in your SACCO?

- To a very great extent []
- To a great extent []
- To a moderate extent []
- To a little extent []
- To no extent []

MARITAL STATUS

11. Does the marital status of borrowers contribute to loan default rate in this SACCO?

Yes [] No []

12. Among the 3 categories listed below, which has recorded the highest rate of default in your SACCO, within a scale of between one and three. 1 is the highest default rate, 2 is moderate default rate and 3 is the lowest default rate.

Marital status	1	2	3
Married			
Single			

Separated/divorced/widowed			
----------------------------	--	--	--

13. How would you rate your level of agreement with the following statements on marital status of the borrowers and their loan repayment behaviors in your SACCO?

(Use a scale of 1 to 5 where 1 is strongly disagree, 2 is disagree, 3 is neutral, 4 is agree and 5 is strongly agree).

Statement on Group Characteristics	5	4	3	2	1
Married borrowers are better loan repayers than single borrower					
The separated and divorced borrowers are not good in loan repayment					
Single, divorces, and separated borrowers have similar records in terms of loan repayment.					

GENDER

14. Amongst your borrowers, who are the majority?

Men [] women []

15. To what extent does gender affect loan default rates in your SACCO?

- To a very great extent []

- To a great extent []
- To a moderate extent []
- To a little extent []
- To no extent []

16. a) Among men and women, who have registered high defaults in your SACCO)

Men [] women []

b) State the number of defaulted loans for

gender	Number of loans in default
Male	
Female	

AGE

17. Does the SACCO have a minimum and maximum age of borrowers? Yes [] No []

If yes, what is the minimum age?.....what is the maximum age?.....

18. To what extent does age affect loan default rates in your SACCO?

- To a very great extent []
- To a great extent[]
- To a moderate extent[]

- To a little extent[]
- To no extent []

19. To what extent do the following aspects of age group affect loan default rates in your SACCO? Use a scale of 1 to 5 where 1= high rate, 2= moderate extent, 3= low rate and 4 is to no default.

Age group	1	2	3	4
Youth				
Middle age				
Elderly				

EDUCATION LEVEL

20. Please indicate the average formal education level of your members

- a) No education [], b) primary level [], (c) secondary level [], (d) Technical/college [] (e) university level [].

21. Has education level of your members contributed to loan default?

Yes [] No []

22. At what rate do borrowers in the following levels of education contribute to loan default rates in your SACCO? Use a scale of 1 to 4 where 1= high rate, 2= moderate extent, 3= low rate and 4 is to no default.

Age group	1	2	3	4
Primary				

Secondary				
Technical/college				
University				

LEVEL OF LOAN DEFAULT RATES

23. Indicate the level of loan default rates in your SACCO?

Use a scale of 1 to 4 where 1= Very high, 2= High, 3= moderate and 4=Low 5= Very low.

24. To what extent do the following aspects of repayment terms affect loan default rates in your SACCO? Use a scale of 1 to 5 where 1= high rate, 2= moderate extent, 3= low rate and 4 is to no default.

Repayment terms	1	2	3	4
Repayment period				
cost of financing				
Cost of default				

APPENDIX III: DATA COLLECTION SHEET

YEAR	2014	2015	2016	2017
TOTAL NUMBER OF GROSS LOANS				
AMOUNT OF GROSS LOANS				
TOTAL NUMBER OF LOANS DEFAULTED				
TOTAL AMOUNT OF LOANS DEFAULTED				
PAR				