

**EFFECT OF MICROFINANCE CREDIT ON THE PROFITABILITY OF  
SACCOS IN KENYA**

**BY**

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## DECLARATION

I declare that this is my original work and has not been presented for any award in any university.

Signed ...  .....Date .....22<sup>nd</sup> Nov 2022.....

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**D61/12353/2018**

This research project has been submitted for presentation with my approval as university supervisor.

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## **DEDICATION**

My special and unwavering gratitude to my family, especially my Late dad Raphael Serser, my mother Teresia Serser, my wife Jeniffer Chirchir, my children Lincoln Kipkorir Serser, Lynsey Cherop Chirchir and Lyon Kiprono Serser for their constant and frequent prayers that supported my academic journey. It was indeed a thorough process that demanded for understanding, care, concern and continuous support.

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## **LIST OF ABBREVIATIONS AND ACRONYMS**

ROA	Return on Assets
ROE	Return on Equity
SMEs	Small and Medium Enterprises
VIF	Variance Inflation Factor
WCM	Working Capital Management
SPSS	Statistical Package for Social Science
SACCOS	Saving and Credit Co-operative Societies

## ABSTRACT

Microfinance credit cannot be underscored in the development and evolution of firms. The quality microfinance credit is a prerequisite for financial survival and continued operation. The immense profitability is a product of appropriate policies guiding the business and its credit. Moreover, the efficiency and effectiveness of the firm is replicated on the profitability. The firms' mandate is to advance the returns, broaden and deepen sources of revenues through diversification, speculation of investment and efficiency. The microfinance credit and profitability are intertwined in the operation. It is imperative to elucidate that the supreme goal of the microfinance credit is to empower the firms and increase the capability. Notably, their operations have transformed to reach greatest notch and adequate framework have been incorporated to realize the aspiration and take chief part in the economic transformation. Moreover, profitability is vital for the success of the business. The excellent ideas are implemented with core objective of reaping substantial returns. Moreover, human capital, assets and investors have an integrated goal of ensuring continued profitability of the business. The objective of the study is to investigate the effect of microfinance credit on the profitability of SACCOs. On the other side, the descriptive design is common for explanation of cause-effect connection. The analyzing of the objective and arranging the work for easy computation is essential. In addition, purposive sampling is appropriate for rigorous assessment thereby arriving at the diligent conclusion. Arbitrarily, the data collected assist in realistic answers. The data collection was from 2017-2021 relating to 41 SACCOs. The data assembled was channeled via intensive procedures for analysis and conclusive outcome. The data was therefore classified, reviewed, and coded. Consequently, the study maximized SPSS for mathematical computation to arrive at better discernment. Moreover, it simplifies the interpretation and conclusion. It is important to postulate that dataset reached dependable solution through calculation, interpretation, and discussion. For instance, the standard deviation captured in the study expounded on the variability hence encapsulating data and providing condensed but insight findings. Importantly, profitability's autonomous figure was 0.088 hence accentuating that when all factors are kept constant there is an improvement in the profitability by 8.8%. As a consequence, an increment in the personal loans by a solitary unit translates to insubstantial increment in the profitability by 1.3% only when other enablers are kept constant ( $\beta=0.013$ ,  $p=0.096>0.05$ ). Furthermore, an addition of a solitary unit to business loans generates a corresponding significant decrease in the profitability by 18.8% whenever all the enabling factors are maintained unchanged ( $\beta=-0.188$ ,  $p=0.000<0.05$ ). Consequently, an improvement of agricultural loan by a singular unit appropriately triggers and a substantial adjustment on the profitability of 6.7% if all other variables are kept constant ( $\beta=0.067$ ,  $p=0.000<0.05$ ). In consequence, unitary positive advancement of real estate loans reciprocates an appropriate substantial increment on the profitability by 1.7% under condition that all enablers are constant ( $\beta=0.017$ ,  $p=0.15<0.05$ ). Furthermore, the study recommends that extra diligence should be observed when advancing a loan to any group. Preferably, collaterals should be sought before loan disbursements.

## **CHAPTER ONE: INTRODUCTION**

### **1.1 Background of the Study**

Microfinance credit cannot be underscored in the development and evolution of firms. Kagoyire and Shakla (2016) nailed the significance of microfinance credit in operational activities of the firms. It defines the immense reliance on the credit for all firms irrespective of the life cycle and size. The quality microfinance credit is a prerequisite for financial survival and continued operation. The immense profitability is a product of appropriate policies guiding the business and its credit. Additionally, these cornerstone firms have been left unattended for several years. Inability to access credit, series of bottleneck and collateral securities drove away the firms from borrowing. Mugisha, Omagwa and Kilika (2020) concluded that credit is the nerve center of profitability. The study advocated for prudential management of business. According to Kobarach (2020) microfinance credit is an initiative to improve the socio-wellbeing.

As per Myers and Majluf (1984) pecking order theory defines critical rigorous and procedural path in sourcing the finances for the firm. Therefore, this is an anchor theory since it describes precedence epitomized in decision making, funding, and prioritizing of debts instead of equity. Additionally, the trade-off theory chiefly reinforces the assessment by striking optimum degree of balance for the combination of debts and equity to realize performance (Modigliani & Miller, 1963). Signaling theory is a master plan for directing the decision making though there is unequal and incomplete information (Spence, 1973). It is a predictive mechanism hence increasing the corrective measures that mitigate against risk, reduces default and promoting profitability of the business. The presupposition holds prominent part in the credit management and strategic

planning. The assumptions have gained momentum that is inherent and consistent application to eliminate challenges. Finally, it opens the avenue for integration of an interactive business.

The businesses in Kenya ranging from the small financial entities to large firms rely on credit for optimum output. The business borrows to maximize on the prevailing opportunities and increase the business prosperity. The SACCOs are chief game-changers in the Kenya financial environment. The small firms, agricultural enterprises, individuals and companies rely on the cheaper microfinance credit for their prosperity. Prempeh and Asare (2016) states that cheaper credit is healthy for business because the poor can access and maximize on the operations. Sivalingam and Kengatharan (2018) opines that capital structure and microfinances are considered in determination of equilibrium level capable of reaping highest return in the business. Microfinance credit is paramount for the company's operation activities (Mugisha, Omagwa & Kilika, 2020). The core objective of the SACCOs include the maximization of the returns through rendering services and offering products. Besides offering credit services and charging interest, the firms incorporates strategies that ensure firm keep an optimal degree of credit and make it effective and productive.

### **1.1.1 Microfinance Credit**

The business intensification prospects through the microfinance credit is fundamental for survival, solvency and business prosperity. Microfinance credit entails sourcing the financial products on short-term basis specifically for firms that may not access banking services (Wakaba, 2014). Yazdanfar and Ohman (2015) pinpoints the microfinance credit as an obligation resulting from short-term debts. Akash, Khan, Haraid and Hussain

(2011) emphasize on the epitomizing the credit on the growth opportunities and greater return to the business. Therefore, freeing up the finances to meet timely accounts payable, loans, lease and growth opportunities is the major consideration for the firms. Hence, sound strategic planning is vital for the business transformation.

The significance of microfinance credit is getting the people out of socio-economic predicaments. Majority microfinance firms are on the cusp of momentous growth and always speculate on input mechanisms which fuels the effectiveness and efficiency (Kagoyire, Shakla, Nasir, Khan and Rozaa, 2016). The network highway and digitalization has taken immense steps in realm of commercial world. Nevertheless, the middle-class nations have great disparity in the income distribution which is the chief predicaments for the prosperity of the entire nation. It is imperative to articulate that microfinance credit is vital for eradication of poverty and more so in increasing equity and equality.

The small, large, individuals and sectors have advocated for accessibility of the finances. The microfinances credits unlock great opportunities. The global financial turmoil and crisis fuels the policy making, strategic management and increase consciousness on the need for microfinance credit to serve the poverty-stricken population hence increasing the potential, capability and execution of their innovative ideas (World Bank, 2021). The operationalization of microfinance credit has taken different forms based on the scholars; Amsi, Ngare, Imo and Gachie (2017) maximized credit amount, collateral, interest rate, repayment and entrepreneurial orientation. Additionally, Kayogire and Shukla (2016) utilized client appraisal, credit control and collection to explain microfinance credit. Finally, this examination put forward; agricultural loans, business loans, real estate loans.

### **1.1.2 Profitability**

The efficiency and effectiveness of the firm is replicated on the profitability. The firms' mandate is to advance the returns, broaden and deepen sources of revenues through diversification, speculation of investment and efficiency. According Njanja and Pellsier (2011) the efficient use of resources has significant impact on financial growth. Advancement on the financial performance is observable on the revenues, assets and employment. Kinyua and Muriu (2017) posits that profitability is the nerve center for business productivity. Lelgo and Obwogi (2018) resonates profitability with the execution of business mandates adequately, efficiently, effectively and optimally to advance the financial returns. Therefore, profitability portrays the maximum engagement of companies' resources for optimum return.

Profitability is vital for the success of the business. The excellent ideas are implemented with core objective of reaping substantial returns. Moreover, human capital, assets and investors have an integrated goal of ensuring continued profitability of the business. According to Lelgo and Obwogi (2018) firms amplify their capability through profitability. Additionally, the profitability expounds on the financial soundness and sustainability. Wakaba (2014) implies that failure to post continuous profitability is a great concern on business. Therefore, profitability increase capability to honor debts whenever they fall due as well as increasing the SACCOS' well-being in the distribution of approved microfinance credit.

The profitability takes different forms depending on the needs. Profitability explains the expansions of operation, utilization of investment, innovations, assets and other resources. Simply put, the profitability is manifested through ROA and ROI Wakaba

(2014). The revenue growth implicates the profitability; however, majority of business are keen to explain if all the assets and investment have been maximally apprehended for utilization. Technically, this investigation intends to optimize ROA as the proxy of the profitability.

### **1.1.3 Microfinance Credit and Profitability**

Kenyan government has opened door for intensive negotiation on the quality framework for distribution of microfinance credit to the marginalized population with untapped talents and skills. The policy making process has advocated for the microfinance institutions to link the people and firms that cannot access the credit. Mitchell and Reid (2010) states that microfinance credit aims at bridging the poverty gaps among the struggling population. The firms gain through microfinance credit by charging interest rate hence its performance can be well defined by the operation, productivity and profitability.

The microfinance credit is supreme for the performance of firms. However, there are several bottlenecks that pulls the business backward. The default risk, liquidity, government policy and unfriendly competition creates major challenges on the profitability. Microfinance credit fosters the profitability and capacity of the business. According to Kinyua and Muriu (2017) correlates the well-structured credit with financial performance and sustainability. The productivity, efficiency and performance of SACCOs is well informed by microfinance credit. The importance of microfinance credit cannot be underscored in the poverty alleviation. Moreover, the firms such as SACCOs charge interest rate and benefit immensely besides growing rapidly. The informal business, groups and the disadvantaged can easily access the funds and build



the business from the scratch. The management of SACCOs utilize the microfinance credit to enhance the operation and stability of the business.

#### **1.1.4 Savings and Credit Cooperatives Societies**

The SACCOs are the key pillar of the economic development. It was formulated in Ghana in 1959 by John McNulty. The intention was to drive away poverty and increase financial independence. Mwakajumilo (2011) indicated the importance of SACCOs in transformation of Africa Nations. The development of SACCOs in Africa is fast due to their innovation and alignment of the products to fit the market demands. The SACCOs bridge gap left by the commercial banks relating to the financial services.

In Kenya, the SACCOs were first embedded in 1908 by European Farmers. It was first named as Lumbwa Co-operative Society with the core mandate of increasing the purchase of fertilizer, chemicals and agricultural inputs. The returns were only realizable through the economies of scale. Additionally, the societies developed significantly to factor in several products and services. Currently, the evolution of SACCOs has reap significant returns to the shareholders, improve economic growth and eradicated poverty in some areas.

Therefore, the microfinance credit is one of the products of the SACCOs that seek to enhance the operation of the business. Important to illustrate that the members of SACCOs as well as the number of the firms have been increasing significantly. Notably, their operations has transformed to reach greatest notch and adequate framework have been incorporated to realize the aspiration and take chief part in the economic transformation. The government has taken tremendous efforts to enhance the growth of SACCOs and nurture those struggling to break-even (GoK, 2020). Importantly, the

special policies that protect the SACCOs and client have been going through ratification process to increase a win-win situation.

## **1.2 Research Problem**

The microfinance credit and profitability are intertwined in the operation. It is imperative to elucidate that the supreme goal of the microfinance credit is to empower the firms and increase the capability. Importantly, it started from the formation of groups and merry-go-rounds and graduated continuously to large businesses. Yunus (2011) pinpoints microfinance as turning point in the financial performance. The SACCOs relies on the microfinance credit to advance their performance and withstand the shocks. The SACCOs go for cheaper microfinance credit to increase their returns by reaping from the available opportunities (Mokari, 2017). Apparently, the ability to withstand wide-array of issues by the firms depends on access to finances to support their operation. The microfinance credit is fundamental for firms facing immense tribulation to reinforce their operations. Maina and Sakwa (2012) posit that credit are master plan for the firms, engaging resources optimally and exploitation of growth opportunities.

Contextually, SACCOs have great leeway in economic transformation. Akash, Khan, Haraid and Hussain (2011) pinpoints the importance of credit in business growth. Nonetheless, too much debts may subject business to commercial oblivion. In concurrence (Wasiuzzaman and Ammugan (2013) pinpointed the crucial roles of cooperatives. Exploitation of resources is core mandate of SACCOs. The balance between the poor and the rich is possible through the maximization of credits to enhance growth. Nevertheless, borrowing spree is the recipe for the business failure. The rampant bankruptcy and incapacitation of SACCOs in Kenya call for special attention on the

operationalization and strategies of microfinance credit. To instantiate, EKEZA SACCOs exhibited tremendous growth, diversification, great profits and higher returns before failing to obligate dues (SASRA, 2021). Miana and Sakwa (2012) concluded that microfinance credit works well in cases of quality control measure that ensures economical and effective use of resources.

Globally, Yunus (2011) advocates for the social entrepreneurship to eliminate poverty. Hasan *et al.*, (2011) concluded that financial decision is the nerve center for the longevity financial performance. According to Nwude et al (2016) debts structure replicate unpleasant significant effect on the financial fitness. Hassan et al (2016) posit that there is substantial inverse connection between short-term debts and ROA. Wasiuzzaman and Ammugan (2013) concludes that large business access credit freely while small firms experience numerous condition that are strenuous and unfriendly. Therefore, small firms that want to expand their opportunities look for credit to boost their undertakings. Therefore, striking optimum level for microfinance credit and equity is pivotal for reaping maximum value. Kradeniz et al., (2012) and Sheikh and Wang (2011) advocates for chief latitude enhancing performance. In summary, optimal capability of the business is to generate profit through utilization of microfinance credit replicated on degree of performance.

Locally, Chebii, Kipchumba and Wasike (2011) pinpoint that microfinance credit is substantial in the business transformation, yet major attention has always concentrated on the long-term debts. The optimization and intensification are aimed at reaping from opportunities, research and innovation. Nonetheless, the too much debts are not healthy for sound financial state. It exposes the firm to untold sufferings stemming from

bankruptcy, poor reputation, litigation and exposure to immense risk. According to Munene (2014) the microfinance credit should be economical, effective and efficient. The SACCOs are needed to adjust accordingly based on the fast-paced commercial environment. Kobarach (2020) cautions against too much short-term debts but encourage borrowing up to optimum level to enhance operation. Wakaba (2014) associates the borrowing to the financial turmoil and lock up in debts and costly exercise.

From in-depth empirical re-assessment of the work of the preceding scholars in global, regional and local context, it is imperative to detail that the outcome has been puzzling yet inconclusive yet inconsistent. Additionally, Chebii, Kipchumba and Waski (2011) advocates for microfinance credit while Kobarach (2021) cautioned against the same. Mcguigan, Moyer, Rao and Kretlou (2012) stated that short-term finances are crucial for quality performance and upgrading the financial decisions. Grounded on the multiple investigations, the findings exhibited mixed yet incomplete conclusions. Nevertheless, poor short-term funding decisions largely trigger several obstructions in the companies besides eroding confidence (Maina & Sakwa, 2011). Further, the prevailing studies state importance of credit for instance Mihajlov (2012). Moreover, Nyamweno and Olweny (2014) concentrated on short-term liabilities while Khan, Ahmed and Rizwan (2016) got concern on decision relating to short-term finances. It is worthwhile concluding that despite a substantial studies, minimal have scrutinized microfinance credit and profitability of SACCOs. In a nutshell, discrepancies in the outcome on the subject has driven the investigation. Moreover, some global studies are inconsistent with local and regional studies. Moreover, the assessments posted controversial and puzzling results hence calling for extensive exploration to bridge the gap. In this scenario, this study is

fueled to answer the question on; what is the effect of microfinance credit on the profitability?

### **1.3 Objective of the Study**

The objective of the study is to investigate the effect of microfinance credit on the profitability of SACCOs.

### **1.4 Value of the Study**

The study is crucial in shedding bright light on the microfinance credit and sound decision making. It may improve the decisions and policy making process thereby spurring the economic transformation. The findings extensively consider the profitability versus the credit in order to enhance quality interventions, generate and increase the economic stability and the performance.

The theories incorporated in this study were analyzed for suppositions, relevance, applicability and their failures. The study may increase the knowhow by digging deeply on the business loopholes and proposition. Hence organizational managers can choose wisely on the applicability of theories and can realize what have been overcome by time and events.

The study can aid the access to supreme relevant material that enhance sound business and remove instability. Therefore, the scholars can obtain quality reference material useful in advancing, deepening and broadening the research. It can constantly raise queries on sections that need further scrutiny hence solving the problem that may arise overtime. Additionally, the challenges on financial instability, microfinance and credit

can be addressed adequately and sufficiently. The comprehension of correlation between the profitability versus the microfinance credit is critical for the governance of SACCOs and planning accordingly without undue influence.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

This part is fundamental for rigorous comparison and assessment into pertinent theories that underpin this investigation. It expedites diligent criticisms, validity and applicability of the presupposition hence leading to conclusive inferences. The investigation pursues the determinants of profitability and gives empirical views among different researchers. Moreover, it nails the empirical reviews that are correlated to this area grounded on objective, research gaps, context and timeframe among others. In addition, the investigation analyzes the association in snapshot via the diagrammatic flowchart of conceptual model. Finally, the research gaps and critique are expounded to conclude on the driving force for the current study.

### **2.2 Theoretical Framework**

The investigation widens and broaden the comprehension of theories underpinning this research. Myers and Majluf (1984) blueprints the process and intensified procedure in sourcing finance. The theory implicates equity as the last resort while debt is the priority. Research is grounded on the trade-off postulation that optimum blending debt-equity is pivotal for quality performance. Finally, the study incorporates signaling theory to expound on the equity, equality and timely delivery of the information. Empirically, the business decision making is based on the governance capability, experience, knowledge and skills, hence daily decision relies on different theories for the execution of their mandates.

### **2.2.1 Pecking Order Theory**

This theory explains substantially on the capital structure and procedures on utilizing the sources on financing to the firm. The theory was embedded by Myers and Majluf (1984) to illustrate how managers followed specific pattern and procedure in sourcing funds. It presupposes that sourcing funds stands guided by the hierarchical steps. The theory assumes that business with debt are more profitable since all the assets and investment are engaged wholly and fully.

The drawback on this assumption is the information that business with greater debts are more thriving yet in reality, borrowing spree is dangerous for the business. The theory fails to give more information on the cost of financing and quantitative measurement. The theory considers specific outdated sourcing of funding without due consideration to innovative ways such as research and development among others. The theory pays minimal attention the risk and reward analysis which are the chief financial techniques for decision making.

The theory is validly reliable in sourcing funds within and from external. The decision-making is guided by the available avenues for sourcing funds. Therefore, prioritizing based on hierarchy stabilizes the standards that increase business capability. Additionally, it provides the useful guides to the business since the presence of asymmetric information can mislead the management. The theory is fundamental for guiding the business on the most viable and feasible direction for raising funds.

### **2.2.2 Trade-off Theory**

The theory is the lifeblood for business decision making. It was put forward in 1963 by Modigliani and Miller. Subsequently, it has undergone different modification for



instance the work of Warner (1977). It opines that business has wide-array sources of funds simplified and categorized into two. The two categories include debts and equity. Therefore, the governance should strike an optimum balance where the debts and equity are considered and combined but optimum sourcing of funds is obtained.

The shortcoming of this presupposition is inexistence of taxations, transaction and bankruptcy cost. Additionally, it fails to coin the presence of the asymmetric information which may cause wrong inferences. In this hypothesis, leverage is defined through balancing tax-saving benefits versus deadweight bankruptcy expenditures. Therefore, balancing is challenging since taxes are predictable and well-structured while bankruptcy is rare and unpredictable.

The theory is dominant to financing the business. The decision making prefer blending the debts and equity hence concluding on better liquidity and solvency level. A profitable entity prefer mixing both debts and equity to enhance their capability and efficiency in the uses of resources. The desirable mix is vital for enhancing financial stability without too much equity or debts. Similarly, business strive to achieve optimal debts level where the agency costs are less and can be maintained.

### **2.2.3 Signaling Theory**

Spence (1973) stated the signaling theory as process disseminating the information. The business performance, stock prices, liquidity, solvency and other business activities relays some crucial information to the potential users. It presupposes that market efficiency only exists if equal, same and relevance information is given to each individual. Hence the buyers and sellers with the full information can make rational

decisions for their benefits. The governance and lenders can make sound decisions through maximization of critical information available to them on time.

Nonetheless, the presupposition that information is reflected timely, accurately and credible on the behavior of the market, sellers, buyers and investors is sometimes misleading. Additionally, the governance access and possess immense information compared to the outsiders. The managers make tough choices on the decision stating which information to hold or share. Empirically, favorable information can be released easily by the management while unfavorable details can exhibit a restricted access. In some cases, the managers have maximized information asymmetry to reflect going concern of the business while they want to attract investors to resuscitate the collapsing business.

It is applicable since investors make great observation on the pattern of sourcing funds. The issuance of equity may signal overrated company, simply maximizing on the valuation. Consequently, stakeholders resonate the equity issuance with lower value. Unbalanced information is always existing on the financial fitness of the company. Signaling is usually utilized to attract investors and build the collapsing business. The attraction and retention of valuable players to the business increase their going concern and capability. The financial, non-financial, quantitative and qualitative information send critical signal to intended users on the financial state of the organization.

### **2.3 Determinants of the Profitability**

Profitability exemplifies if the business is doing the right thing in a crucial way. The success of firm is replicated through profitability since it illustrates the productivity, increase maximization of resources and minimization of wastage. According to Wakaba

(2014) profitability is the core objective of the business and can be utilized as a metric of success. The expansion and investment is possible if the business is profitable and can reap big. Kobarach (2020) emphasized that every business aspires to make substantial profit, however, it is enabled by series of enablers that are favorable to the business. This study factors in; personal loans, business loans, agricultural loans and real estate loans

### **2.3.1 Personal Loans**

The individual obtain money from SACCOs to undertake their personal activities. The money is used for the wide-array of issues. Currently, SACCOs have tailored their products and services to target individual customers who are motivated to consolidate debts, pay for personal expenses and even for capital ventures. The personal loans are readily available through online lending by the SACCOs or by visiting the entity for approval. The personal loans have different traits on their repayment conditions, interest rates, fees, and amount (Wanja & Jagongo, 2017). The personal loans can assist significantly on the emerging expenses and unpredicted events.

### **2.3.2 Business Loans**

The business loans are the amount borrowed to pursue the purchase and sale of goods and services. Both the thriving and start-up business need loans to sustain the operation and achieve the economies of scales. A start-up may need the loans from SACCOs and other institutions to upgrade the business, addition of inventory or to cover the debts generated from investment opportunities that has returns in the long-run. According to Nassir (2016) the business can increase its productivity and efficiency by utilizing the loans and credits.

### **2.3.3 Agricultural Loans**

Agriculture is the lifeblood of the Kenya economy. The loans aims at increasing the productivity during cyclical ups and downs. According to World Banks (2021) accelerate change in climatic condition necessitate the agricultural loans to increase the productivity. The farmers can purchase farm input with ease. The incorporation of technological farming is capital intensive and may lead to the increase in demands for loans to purchase equipment, increase farm inputs and marketing (Khalaf Altaani, 2013). Majorly, it tailored to fit the specific financial demands of the farmers. Moreover, it allows farmers and firms to secure planting, harvesting and equipment. In a nutshell, it boosts the free market where farmers compete fairly and equally.

### **2.3.4 Real Estate Loans**

Businesses and individuals are looking critically at the loans for financing the purchase or development of the property. The real estate loans have wide uses including the commercialized as well as loans meant for residential properties. Therefore, purchase of investment can be expensive and may demand lots of cash at the disposal. However, the application of loans can solve the long-term challenges and enable the firms and individual to own property. SACCOs have different products for real estate loans including mortgages, private money, existing home equity as well as quantified investment loans.

## **2.4 Empirical Review**

Bagh, Nazir, Khan and Razzaq (2016) undertook comprehensive study on working capital management verses the performance. Contextually, the study was expedited in Karachi Stock Exchange spanning from 2005-2014. The corporate performance was

expounded through ROA, EPS and ROE as the predictor factor. The study concluded that average payment period moved in opposite direction with performance. Moreover, turnover period indicates inverse correlation while average collection period posted a substantial but positive association. The study was spearheaded in Pakistan with keen scrutiny of the working capital while the current investigation is motivated to pursue the microfinance credit and the performance of SACCOs.

Takon and Atseye (2015) intended to exhaustively define WCM and profitability. The investigation was successfully accomplished in Nigeria. The timeframe of the assessment ranged from 2000-2009 for adequate comprehension. The rigorous inquiry made quality use of panel data to state a candid conclusion grounded on the outcome. The performance was well-represented by ROA. Imperatively, account receivable correlated with ROA inversely yet significantly contrary to the inventory. Additionally, firm size, leverage and growth were chief indicators of substantial positive interrelationship versus ROA. The inspection was done in Nigerian context with high consideration to WCM against the current microfinance credit. This examination uses different concepts and variables hence bridging the gaps.

Eysimkele and Koori (2019) gave chief latitude to the financial leverage. The study was critical for explanation of trending issues on the agricultural firm. The study strived to clarify wide-array of issues including debt-financing and debt-equity in addition to short term debts. The predictor variables were computed against the financial performance after extensive utilization of panel data. Since the selected firms were quoted at NSE, the data was garnered via secondary techniques. The descriptive computation was best suited for the elaboration of the far-reaching and conclusive results. The examination

conclusively stated that short-term debts endangered financial performance through negative and substantial effects. Nonetheless, the prevailing examination is concerned on the microfinance credit and SACCOs which has not been scrutinized.

Salempour and Vaez (2015) examined keenly the WCM and firm's profitability. The examination was extensively looked into and with the target of 471 companies listed, the study opined that WCM affects the profitability substantially. The assessment was undertaken with intense scrutiny of timeframe of 2002-2013. This systematic perusal was expedited in Iran with contradicting geopolitical state compared to Kenya. Moreover, the inspection failed to consider the microfinance credit hence making appropriate for the current study to fill the gaps.

Hassan, Imran, Amjad and Hussain (2014) empirically delved into WCM versus the performance of firms. The experimentation was made possible in Pakistan set-up using secondary dataset ranging from 2007-2010. The assessment acknowledged the presence of association varying connection between predictor factors and performance. Simply put, collection period correlated positively and significantly with ROA. The same case applied to payment period moving in the same direction with performance though insignificantly. From the inspection, it failed to incorporate the microfinance credit hence a meaningful undertaking is a priority.

Gachira, Chiwanzwa, Nkomo and Chikore (2014) inspected the WCM versus the ROA for the specified non-financial companies. The investigation timeframe spanned from 2009-2013. The incorporation of regression analysis was aimed at a diligent and dependable solutions. The researcher recommended for timely monitoring and advancing

strategies to protect the businesses from mass failure due to inventory turnover and creditors payment mishaps. The outcome was fundamental for pertinent knowledge though it was accomplished in Zimbabwe with varying phenomenal characteristics with Kenya context. Moreover, the study concentrated much on WCM and not microfinance credit.

Kobarach (2020) expressed concerns regarding the unpredictable environment which pushes firm to reshuffle, restructure and strategize on the operation and performance. The business related the good policies with great survival rate. The outcome inferred that decisions making followed reactive process, keen consideration to payment period, maturity and grace period among others. The study deliberated on short-term finance and economic prosperity using the secondary information. Moreover, the maximization of explanatory but non-experimental design ease the undertaking. The assessment made quality use of all companies listed at NSE. Hence the timeframe of the study interval at 2015-2019. SPSS was instrumental in mathematical computation, descriptive and inferential output. The inquiry considered cash and cash equivalents, growth as well as liquidity thereby poising a positive connection with financial performance. The study paid minimal attention to microfinance credit hence there is a gap.

Wachira (2011) analyzed the microcredit among the firms in the Buruburu Estate. The study optimized descriptive survey after collecting data through primary techniques. Subsequently, questionnaires aided the analysis and conclusive outcome. The assessment coined a strong correlation between the use versus terms and conditions of MFI loans. Additionally, the lending basically a guaranteed mode hence majority of the clients were women. The assessment wrapped-up that improvement of terms and conditions motivates

the clients while improving the performance of business. Moreover, diversification and training portrayed good results in the long run. The investigation failed to include microfinance services and products.

Mugisha, Omagwa and Kilika (2020) undertook a critical examination of short-term debts due to their substantial role in the societal and economic development. The small and medium enterprises were factored in for systematic inquiry. Contextually, Ugandan region became the epicenter of the research. The paper was motivated to connect performance versus the short term debts. In that sense, descriptive cross-sectional design was chiefly used for diligent analysis. The researcher selected a percentage of the aggregate population utilizing purposive sampling. Moreover, the data assemblage was via questionnaires. The paper concluded that short-term debt correlated significantly yet negative with performance of SMEs.

Kagoyire and Shakla (2016) highlighted the centrality of credit management in the realization of important firm activities that have received minimal attention. The study recommended for quality and sound prerequisites guiding the firms on their survivability, sustainability, capability and profitability to avoid sinking into unimaginable debts. The investigation made quality use of descriptive design while targeting a population of 57 employees. The context of study was Rwanda Equity banks and purposive sampling was substantial based on the intention of the study. The first-hand data were sourced via questionnaires hence giving a quality leeway for descriptive and inferential computation. Client appraisal, credit risk, risk control as well as collection policy were prioritized. The conclusion illustrated that stringent policy is highly efficient debt recovery.



Mahfuzah and Yadav (2012) analyzed the financial structures to blueprint the profitability. The experimentation was done using panel while scrutinizing 237 firms trading at Malaysia. The rigorous examination maximized profitability using Tobin's Q, EPS and ROA. On the other side, short-term as well as long term debts were maximized as the proxies for finance structure. The results posted that the profitability interconnected with finance structure inversely. The prevailing study is keen on microfinance credit in connection with performance hence filling the gaps.

Kinyua and Muriu (2017) concentrated on the capital structure to generate well-grounded picture on their influence on performance. Therefore, 2010-2015 were the timeframe for the collection of dataset. Additionally, the firms considered were listed at NSE. Further, yearly and quarterly reports gave in-depth knowledge on correlation. The examination conclusively stated that asset and equity yields were pivotal in the profitability of the business.

Hasan *et al.*, (2011) analyzed corporate financial decision and its benefits. The examination made close scrutiny of decisions and performance with key inspection of manufacturing sectors. The sector chosen was due to little empirical scrutiny as well its chief economic mandate. Hence, the longitudinal techniques were supreme for multifaceted dimensions of variables' interactions. The study coined a negative correlation in Kuwait which majorly linked dismay in growth and too high charges on debts.

Akinyomi and Olagunju (2013) ascertained capital structure in the Nigerian context to reveal interrelationship with performance. The systematic scrutiny was possible via

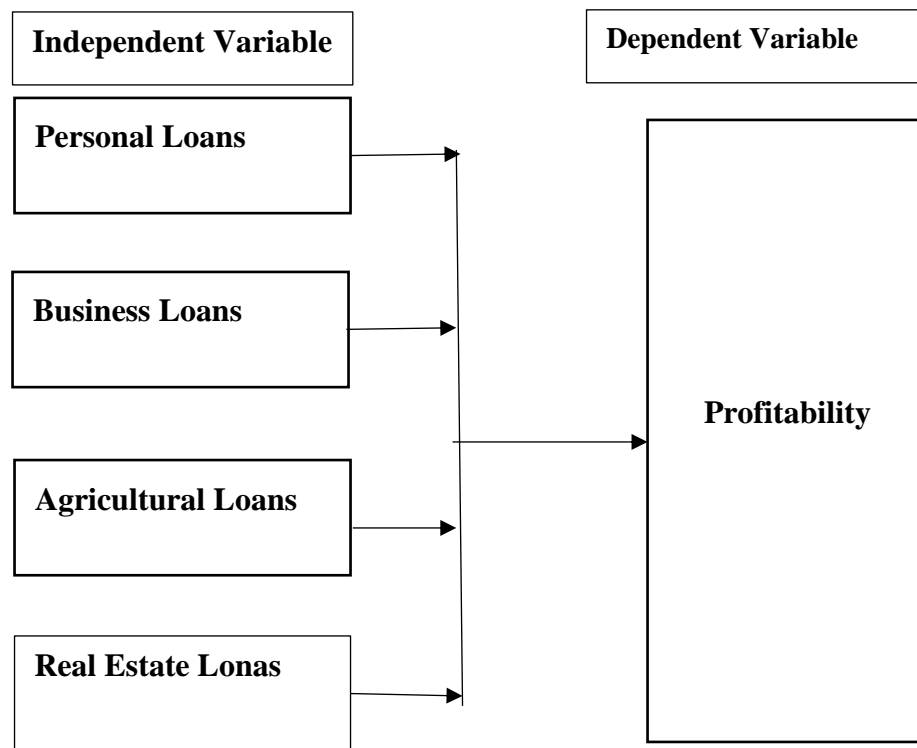
descriptive design. In that case, a population of 86 manufacturing firms were targeted before sampling 24 for a ten-year period. The period of experimentation spanned from 2003-2012 amounting to 10years. The outcome of assessment concluded that leverage posted inverse connection with performance. From the far-reaching results, the investigation advocated for intensive assessment of credit finances hence this study purposed to assess microfinance credit.

Khalaf Al-Taani (2013) assessed the connection between the capital structure and performance. Contextually, the study was done in Jordan by looking closely to the 45 firms. The firms selected were all involved in manufacturing and listed. As a consequence, the descriptive design was incorporated with the time frame spanning from 2005-2009. Subsequently, multiple regression techniques aided in a jointly discussion of the variables. Consequently, ROA articulated on the performance while STL, LDT and DE expounded on the leverage. The far-reaching consequences alluded on an indirect yet not significant connection between STL and ROA.

Nassar (2016) factored in debts to expound on the capital structure. Moreover, the ROA and ROE articulated significantly on performance. Consequently, a population of productive industries was assembled for analysis. The aggregate number selected was 136 for a period ranging from 2005-2012. The multivariate regression simplified the link among the regressor in conjunction to the predicted variables. The study concentrated significantly on specific sector in Turkey. As a consequence, Turkey varies substantially with Kenya based on socio-political and economic activities. Therefore, a scrutiny of banking sector is fundamental for this study.

## 2.5 Conceptual Framework

A clear picture is simplified through the conceptual framework. It is fundamental and instrumental in explanation of association of all factors chosen jointly. As a result, the research problem is addressed on the framework precisely and with clarity. The flowchart shows the prevailing correlation that is under examination. Subsequently, the hypothesis to be tested are clearly understandable from the diagrammatic representation in figure 2.1.



**Figure 2.1 Conceptual Framework**  
Source: Researcher (2022)

## **2.6 Summary of Empirical Literature and the Research Gaps**

Foremost, the prevailing studies have considered short-term finances under the capital structures or as plainly with comprehensive analysis. Additionally, the majority of the studies have concentrated on the WCM versus the performance hence minimal consideration to the microfinance Credit (Bagh, Nazir, Razzaq, 2016). The studies have not observed the microfinance credit among the firms in Kenya hence leading to several gaps stemming from empirical, conceptual and contextual.

The microfinance credit is trending due to digitalization and innovation that have enhanced disruptive innovation however, minimal studies have maximized this to look at their impacts. Contextually, majority studies have concentrated on the manufacturing, industrial, banking and agriculture and ended up with ineffectual consideration of SACCOs hence existence of contextual gaps (Eysmkele & Koori, 2020).

From far-reaching conclusions reviewed by Nassir (2016) and Hasan et al. (2011), it is imperative to present that majority of the research have maximized either primary or secondary data. Additionally, the census and sampling mechanism have been incorporated hence this might have resulted in mixed outcome. This study is the bedrock for addition of new dimension of knowledge on the correlation among the variable. The preceding study endeavor to fill the knowledge gap through analysis of microfinance credit and performance which stood neglected for quite significant time.

The studies comprehended have skipped the SACCOs whereas their performance are crucial for economic prosperity and stability. The relationship among regressor variables have ranged from weak, neutral, moderate to strong. Subsequently, negative, positive and

neutral correlation have been emphasized thereby resulting in puzzling outcome. The lack of concurrence portrays a confusing and misleading results that may be applicable only to particular sector, context, and concept or in cases of the application of different methods. Therefore, to give immense consideration to microfinance credit is a recipe for increasing Kenya findings hence prompting the microfinance institution to solve the underlying challenges.

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

The methodology is the bedrock of the investigation. Besides ensuring systematic and complete assessment free from obstructions and predicaments, it acts as a roadmap towards extensive outcome. The research design is the cornerstone for arriving at the meaningful conclusion that is complete frankness and sufficiently adequate to delineate the significance. Furthermore, this section analyzes the relevant and adequate population that can address the research problem and respond to the research questions. In addition, the research collection techniques is posted to guide the study on the requirements and instruments for assembling data and organizing the investigation to conform to the prevailing analysis. Therefore, it articulates the concepts clearly with complete frankness thereby aiding the justification of the outcome.

### **3.2 Research Design**

Design is the bedrock of conclusive and extensive outcome. The various steps followed in the completion and enhancement of knowledge. Kothari (2015) posit that the design aids the expansion of knowledge and initiation of new things. In fact, delves into the systematic empirical inquiry of phenomena and their link. Hence, descriptive research design was fundamental in ensuring quality development of mathematical model capable of explaining them jointly.

The descriptive design is common for explanation of cause-effect connection. Therefore, analyzing of the objective and arranging the work for easy computation is essential. In a nutshell, this section provides detailed information suitable for the appropriate topic. The design is important since it conform to the topic, give proper guidance to the data collection while ensuring that important factors are incorporated. It is imperative to

conclude that it sharpens the understanding and promote the clarity and deeper comprehension. As per Cooper and Schindler (2014) research design stresses on systematic, bold picture and precision in research. In general, it refers to the structured layout glued on the research problem while answering the research questions.

### **3.3 Population**

The population elucidates the detailed data about the phenomena. Therefore, the population refers to the individuals and events exhibit commonality in their traits. In this case, population is chief provider of deeper insight based on quantified data. Therefore, it warranties the quality output with less obstructions. Further, it attempts to obtain applicable answers to questions accurately, precisely and objectively. This investigation pivotal area were SACCO due to their hallmark in the economic prosperity.

The population guides the decision making on the how, why and when on the collection of data. To specify, it also accentuates the major techniques guiding the study. Hence an overall scheme that attempts to give quality answers to the problems are well documented and applied. Sufficient population blueprints verifiable results. From the data collection, analysis to conclusion special regards focus the population.

### **3.4 Sampling**

The researcher may not find critical factor in all the SACCOs in Kenya, therefore sampling was vital for the study. The time factor and large population impede the analysis of all population; therefore, sampling is paramount. This design is vital for truly representation, accuracy and extensive findings. Purposive sampling is appropriate for rigorous assessment thereby arriving at the diligent conclusion. The study targets the 41 SACCOs attached in Appendix I.

### **3.5 Data Collection**

Assembling data is integral for research. Apart from ensuring timely and efficient information is obtained to reinforce the making of conclusion that is predictive. It incorporates the sourcing of that from meaningful and authorized sources for comparison and computation. Creswell (2017) stated the data collection as the problem-solving and providing answers to the research problems. The population of the study are SACCOs licensed in Kenya as at 31/12/2021. Secondary information provided quick and timely answers thereby aiding the extensive findings. Arbitrarily, the data collected assist in realistic answers. The data collection was from 2017-2021 relating to 41 SACCOs.

### **3.6 Data Analysis**

The data assembled was channeled via intensive procedures for analysis and conclusive outcome. The data was therefore classified, reviewed and coded. This process is substantial to aid mathematical model hence increasing its explanation on the joint associations. It justifies the prevailing interconnection and present precise inferences and descriptive analysis. Importantly, bold knowledge on the phenomena, degree of problem and candid interpretation is spearheaded.

Data analysis aids in the definition and comprehension of the collected data. Apart from identifying the pattern, it is crucial for condensing the data for interpretation. Therefore, data adjustment for completeness, review and classification are basic traits of readiness for computation. In this scenario, analytical model is paramount in the explanation on how the variable are correlated jointly. The study maximized SPSS for mathematical computation to arrive at better discernment. Moreover, it simplifies the interpretation and conclusion.



### **3.6.1 Diagnostic Test**

The mathematical computation aims at covering sufficient adequate scope capable of pinpointing the magnitude and degree of association. The fundamental analysis clears the dataset from the diagnostic challenges and boost confidence on the interpretation. The normality tests were successfully executed by Kolmogor-Smirnova. Further multicollinearity and autocorrelation were intensified via the VIF and Durbin-Watson. In a nutshell, it defines the grounds for criticisms, problem-solving and corrective techniques.

It is imperative to note that normality analysis aids in scrutinizing the shapes and pattern of distribution. Non-fulfillment of research threshold on normality necessitates further computation such as graphical investigation. In addition, the autocorrelation aids in the simplification of randomness, lagged and preceding pattern in cross-correlation. Consequently, non-observance to the autocorrelation makes it necessary to apply other broad and far-reaching analysis. Subsequently, multicollinearity outline the existing association among the regressor variables. Specification of intense association among the predictor variables via analysis, advocates for dropping of exceedingly correlated factor.

### **3.6.2 Analytical Model**

The analytical model is fundamental for simplification and definition of the existing interrelationship. It strives to present an accurate reality of the connection among variables. The proper formulation is a recipe for quality inferences and interpretation. Consequently, it represents a precise and bold problem as well as the objective assessed. The core mandate of analytical model is promoting decision making through intensive problem-solving. Generally, it delineates a deep insight and information thereby solving

series of problems. This investigation incorporates the multivariate regression to enhance decision making, devising strategies and making prediction. This summary is presented below,

$$Y = \alpha_0 + \beta_1 PL + \beta_2 BL + \beta_3 AL + \beta_4 REL + \varepsilon$$

Y= Profitability (ROA= Net Income divided by Total Assets).

$\alpha_0$ = Y intercept of the regression is the constant variable.

PL= Personal Loans (Natural Log of aggregate personal loans)

BL= Business Loans (Natural log of aggregate Business Loans)

AL= Agricultural Loans (Natural log of aggregate agricultural Loans)

REL= Real Estate Loans (Natural Log of Real Estate Loans)

$\varepsilon$ = error term

### **3.6.3 Significance Test**

The researcher scrutinized how the explanatory and explained variable are interconnected. The variable considered were personal loans, business loans, agricultural loans and real estate loans as the explanatory variables while ROA is the explained variable. Regression was of significance use in pursuit of degree and nature of association between regressor and regressed variable. Consequently, F-Test optimized values:  $P > 0.05$  verse  $P \leq 0.05$  as the interpretation of whether or not significance or mathematical significant respectively. R-Square test spanning from 0 to 1 Value portrayed the degree of freedom thereby elucidating the line of good-fit.

## **CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION**

### **4.1 Introduction**

It is a culmination of the investigation and answers the diligent inquiries by giving quality, meaningful and useful solution to the research gaps. The chapter is a transition from the procedural and methodological blueprints to building the conclusive results. Therefore, this part exhibit supremacy and mastery of presentation in addition to discussion. It strives to justify the outcome through credible and verifiable results. Additionally, the information is given adequately, comprehensively, and optimally supported by credible arithmetic. Besides accentuating and presenting data in a meaningful and understandable format, it gears exhaustive outcome.

In a nutshell, it spearheads a logical and extensive description of dataset. The study's pivotal point was microfinance credit and the profitability of the SACCOs. Consequently, a thorough empirical computation was expedited via SPSS to convert the raw data into understandable and factual proposition. In that case, the immense consideration was in descriptive and inferential statistics, hence guiding the in-depth outcome. It simply postulates apprehension of information after extensive process of logical review, coding and systematic classification. Subsequently, it decrees quality, comprehensive and informative findings.

### **4.2 Descriptive Statistics**

It is worth stating that descriptive is the expressive of dataset in snapshot. Hence, it reinforces the explanation and articulate fundamental statistical viewpoint. Moreover, it builds the explanation of prevailing traits hence giving chief latitude to summary and

bold picture about the dataset. In fact, it offers a leeway for explanation and determination of structure and pattern of data emanating from average, highest to the lowest values. It is important to postulate that dataset reached dependable solution through calculation, interpretation, and discussion. For instance, the standard deviation captured in the study expounded on the variability hence encapsulating data and providing condensed but insight findings.

Descriptive statistics illuminated the nature and traits of data but with keen pivotal focal on specific variables. The profitability registered lowest value of 0.1191 and greatest value of 0.2860 while averaging at 0.2239 in addition to standard deviation of 0.0355. Moreover, personal loans posted the least value of 0.0051, greatest of 0.7140, average of 0.3151. Further to the findings agricultural loans registered a least value of 1.9027 and maximum of 3.5205. Real estate loans showed a minimum value of 0.00014 and a greatest value of 0.91958.

From the heightened and extensive scrutiny, the diverse computation cleared the data for further analysis by showing that data did not include substantial outliers. Moreover, keen look for standard deviation posits that; profitability posted 0.0355, personal loans 0.01869, business loans 0.0441, agricultural loans 0.3893 and real estate loans 0.2289. Based on the standard deviation extensive inferences delineate that there was absence of immense difference from average and SD hence giving least variability. In a nutshell, it alludes that the dataset was fit and quality for arrival on dependable solution as well as forecasting.

**Table 4.1 Descriptive Statistics**

	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>
Profitability	205	.11907	.28603	.2238540	.03549793
Personal Loans	205	.00510	.71399	.3151978	.18689966
Business Loans	205	.34565	.61869	.3692921	.04413020
Agricultural Loans	205	1.90271	3.52054	2.9482490	.38934694
Real Estate Loans	205	.00014	.91958	.1965911	.22887997
Valid N (Listwise)	205				

### **4.3 Diagnostic tests**

Accuracy and relevance are key pointers of conclusive findings. These were adequately addressed via diagnostic tests. It aimed at examining if the dataset reaches the mandated threshold. Hence, it was paramount in the narration of dataset as tandem to the fundamental standards. Saunders and Horwath (2015) posits that diagnostics are key pillars for dataset through enhancement of sound decision and hastened capacity to meet the standards. Moreover, it assists in getting quality information, hence making informed decision. Therefore, the data was highly suitable for modelling, prediction, and elucidation. Therefore, normality test, multicollinearity test and the autocorrelation analysis.

#### **4.3.1 Normality test**

The Kolmogorov-Smirnov in addition to the Shapiro-walk test was epitomized to test for the distribution of data of the respective variable. From the findings the significance

values for both tests were less than the p values, this implied that the data had been obtained from a normally distributed population. Normality enhanced the mastery of crucial knowhow and rewarding informed decision. Therefore, the specific resolution was expedited with minimal obstructions through integration of series of information.

**Table 4.2 Tests of Normality**

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Walk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Profitability	.153	205	.000	.930	205	.000
Personal Loans	.080	205	.003	.957	205	.000
Business Loans	.296	205	.000	.493	205	.000
Agricultural Loans	.159	205	.000	.921	205	.000
Real Estate Loans	.195	205	.000	.793	205	.000

a. Lilliefors Significance Correction

### 4.3.2 Multicollinearity Test

The in-depth scrutiny attempting to enhance conclusive outcome was realized through multicollinearity tests. It presented the crucial roadmap for bridging the knowledge gaps. In addition, it assisted in learning and understanding the specific patterns and behavior. It was expedited to ensure adherence to postulation that multicollinearity coined under tolerance and VIF values have chief mantle in meeting the requirement of more than 0.2 for Tolerance and less than 10 for VIF. From exhaustive examination there was absence of predicament that needed attention and fixation before successive computations.

In a nutshell, it enhanced mastery of an in-depth gaps. In a nutshell, it portrays presence and absence of violation of basic scientific requirements. Burns and Groove (2010) postulates that conclusive and dependable solution are generated under minimal obstructions. As a consequence, multicollinearity test was performed to ascertain if the predictor variables posted multicollinearity predicaments. The VIF and the tolerance values in the model coefficients were the hallmarks for coming up with the conclusive evidence. Tolerance values 0.746, 0.629, 0.456 and 0.634 > 0.2 while the VIF values 1.341, 1.589, 2.193 and 1.577 < 10 hence implying that the four explanatory variables faced no multicollinearity's requirement breach.

**Table 4.3 Collinearity Analysis**

Model	Collinearity Statistics		
	Tolerance	VIF	
(Constant)			
1	Personal Loans	.746	1.341
	Business Loans	.629	1.589
	Agricultural Loans	.456	2.193
	Real Estate Loans	.634	1.577

**4.3.3. Autocorrelation**

Researcher spearheaded the autocorrelation analysis to examine the trend in a specified time series covering successive points. From the conclusive undertaking and empirical computation the Durbin Watson requirement ranging at 0 to 4 was posted. The values ranging from 0-2 is pointer of positive autocorrelation while zero explains

autocorrelation. In addition, 2-4 expounds on negative autocorrelation. Hence, this analysis was expedited to scientific requirement were strictly adhered to reinforce conclusive outcome.

The intensive examination of autocorrelation was strictly undertaken to post the degree of error terms in the series of years of the investigation. Therefore, Durbin-Watson played crucial role in delineating paramount information. From the finding of the autocorrelation results, it inferred a value of 0.835 hence ranged within specified well-documented range as defined below in table 4.4.

**Table 4.4 Autocorrelation Analysis**

<b>Model</b>	<b>Durbin-Watson</b>
1	.835

**4.4 Correlation analysis**

The extensive undertaking was pre-eminent and supreme for reinforcing accuracy and relevance. It was engaged due to its salience in pinpointing predicaments and giving comprehensive sophisticated computations (Autukaite & Molay, 2013). As a consequence, increment in the determination and examination of interrelation promote comprehension and understandability. It is imperative to expound that interrelation among the variable is predictive of existing pattern. Therefore, it can assist in the decision making process.

The correlation analysis performed was aimed at investigating the kind of relationships the variables exhibited with one another. In a nutshell, correlation ranges from positive to negative. From the table below, the profitability being the dependent variable posted



negative correlation with personal loans and business loans. Business loans showed a strong negative correlation of  $r=-0.5045$  while personal loans registered a weak negative correlation of  $-0.3723$  towards financial performance. In consequence, agricultural loans posted a strong positive correlation of  $r=0.8461$  while real estate loans expounded a weak positive correlation of  $r=0.3478$  towards the financial performance.

**Table 4.5 Correlation Analysis**

	<b>Profitability</b>	<b>Personal Loans</b>	<b>Business Loans</b>	<b>Agricultural Loans</b>	<b>Real Estate Loans</b>
Profitability	1				
Personal Loans	-0.37233	1			
Business Loans	-0.50454	0.229538	1		
Agricultural Loans	0.846059	-0.50152	-0.42213	1	
Real Estate Loans	0.347784	-0.15781	0.225924	0.411612	1

#### **4.5 Regression Analysis**

It is pre-eminent to elucidate that regression is a unique analysis of existing interactions among variables. As a result, it entails quantifying the dataset and depicting the direction as well as the magnitude of shift. In that scenario, the researcher undertook the regression analysis to examine the magnitude of correlation among the variables as well as the portion of the correlation coefficient. It also formulate the arithmetic model that was central for forecasting the futuristic level of financial performance under the four regressor variables. Simply put, the regression analysis comprised of three sub-sections; the model summary, ANOVA and the coefficient of determination.

#### 4.5.1 Model summary

The model summary showed the general nature of the model used in this research. The R value 0.8681 showed the degree of correlation among the variables in the investigation. This therefore expressed that there was 86.81% correlation among the study variables. The R-Square 0.7537, was the interaction co-efficient. As a consequence, it then showed that 75.37% corresponding adjustment and variation in financial performance was as a consequence of the personal loans, business loans, agricultural loans and the real estate loans. This finding further illustrated that 24.63% changes in the profitability was as a result of factors not epitomized in this investigation.

**Table 4.6 Regression Model Summary**

<b>Regression Statistics</b>	
Multiple R	0.868144
R Square	0.753674
Adjusted R Square	0.748747
Standard Error	0.017794
Observations	205

#### 4.5.2 ANOVA

This computation was done to exclaim the differences among average within specified groups. Consequently, ANOVA tabulation was supreme in accentuating the outcome. F-Statistic was 152.987 at the significance degree of 0.000. As a subsequent, the findings widen and deepen through sum of squared regression as 0.194 and mean squared as 0.048 with 4 degrees of freedom whereas, sum of square residual is 0.063 and 0.000 mean square with 200 degrees of freedom. Proportionately, the results accentuated that the

model was appropriate and significance in explanation of the profitability since degree of confidence was 0.000 hence beneath the P-Value of 0.05. From table 4.7 below posts summary hence illuminates the significance level of  $0.000 < P (0.05)$ . This simply means that the model was statistically significant and could be comfortably used to predict the future of the profitability given the factors listed above.

**Table 4.7 ANOVA<sup>a</sup>**

<b>Model</b>		<b>Sum of Squares</b>	<b>Df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
	Regression	.194	4	.048	152.987	.000 <sup>b</sup>
1	Residual	.063	200	.000		
	Total	.257	204			

a. Dependent Variable: Profitability

b. Predictors: (Constant), Real Estate Loans, Personal Loans, Business Loans, Agricultural Loans

### **4.5.3 The Regression coefficients**

The regression table 4.8 showed that if all the factors have been kept at constant, then the result of profitability increases at 8.8%. The findings further demonstrated that personal loans had a positive but insignificant relationship towards the profitability as demonstrated by ( $\beta=0.013$ ,  $p=0.096 > 0.05$ ). Business loans had a negative and significant relationship towards the financial performance as seen by ( $\beta=-0.188$ ,  $p=0.000 < 0.05$ ).

Furthermore, both agricultural loans and real estate loans had positive relationship towards the financial performance. However, the two differed on their significance towards the dependent variable. Agricultural loans significantly affected financial

performance as seen in ( $\beta=0.067$ ,  $p=0.000<0.05$ ) while real estate loans significantly affected the financial performance ( $\beta=0.017$ ,  $p=0.15<0.05$ ).

**Table 4.8 Coefficient of Determination**

Model	Unstandardized Coefficients		Standardized Coefficients	Sig.
	B	Std. Error	Beta	
			T	
(Constant)	.088	.024		3.690 .000
Personal Loans	.013	.008	.068	1.674 .096
Business Loans	-.188	.036	-.233	-5.272 .000
Agricultural Loans	.067	.005	.737	14.188.000
Real Estate Loans	.017	.007	.108	2.443 .015

With the findings above the researcher came up with a predicting equation.

$$Y=0.088+0.013PL_1-0.188BL_2+0.067AL_3+ 0.017REL_4+\varepsilon$$

From inferences in modelled equation above, it is worthwhile contending that profitability autonomous figure was 0.088 hence accentuating that when all factors are kept constant there is an improvement in the profitability by 8.8%. As a consequence, an increment in the personal loans by a solitary unit translates to insubstantial increment in the profitability by 1.3% only when other enablers are kept constant ( $\beta=0.013$ ,  $p=0.096>0.05$ ). Furthermore, an addition of a solitary unit to business loans generates a corresponding significant decrease in the profitability by 18.8% whenever all the

enabling factors are maintained unchanged ( $\beta=-0.188$ ,  $p=0.000<0.05$ ). Consequently, an improvement of agricultural loan by a singular unit appropriately triggers a substantial adjustment on the profitability of 6.7% if all other variables are kept constant ( $\beta=0.067$ ,  $p=0.000<0.05$ ). In consequence, unitary positive advancement of real estate loans reciprocates an appropriate substantial increment on the profitability by 1.7% under condition that all enablers are constant ( $\beta=0.017$ ,  $p=0.15<0.05$ ). Nevertheless, since personal loans are insignificant, it is paramount to post a credible and dependable solution grounded on inference.

Hence;  $Y=0.088-0.188BL_2+0.067AL_3+ 0.017REL_4+\varepsilon$

Whereby

Y= Profitability (ROA= Net Income divided by Total Assets).

A0= Y intercept of the regression is the constant variable.

PL= Personal Loans ( $\beta=0.013$ ,  $p=0.096>0.05$ ).

BL= Business Loans ( $\beta=-0.188$ ,  $p=0.000<0.05$ ).

AL=Agricultural Loans ( $\beta=0.067$ ,  $p=0.000<0.05$ )

REL=Real Estate Loans ( $\beta=0.017$ ,  $p=0.15<0.05$ ).

$\varepsilon$ = error term

#### **4.6 Discussion of the Findings**

The descriptive statistics showed that the profitability posted a mean average of 22.38%. It also showed that the dependent variable had SD of 0.03549. Personal loans and business loans had an average of 31.52% and 36.93% with 0.1869 and 0.0441 standard deviations respectively. The findings further showed that the agricultural loans posted average of 2.948 and standard deviation of 38.93%. Real estate loans showed an average

mean of 19.66% and 0.2289 standard deviation. From keen examination and comprehension, there were minimal variability hence signifying quality dataset worth for sound decision making.

From the correlation analysis, both personal and business loans had negative correlation towards the profitability while, agricultural loans and real estate loans depicted positive correlation toward the financial performance. Agricultural loans had a strong positive correlation of 0.8461 while business loans had a strong negative correlation towards the profitability. Bagh, Nazir, Khan and Razzaq (2016) undertook comprehensive study on working capital management versus the performance and advocated for beneficial loans to enhance the performance hence concurring sufficiently with the current postulations. Takon and Atseye (2015) opined that financial performance depends on crucial activities of the business, extensive yet prudent management of loans.

Eysimkele and Koori (2019) indicated that financial leverage motivates the management to maximize assets. However, the examination cautioned the business against short term loans which has been well observed among the personal loans under this assessment. Salempour and Vaez (2015) recommended for strict adherence to policies relating to loans and repayment terms. In that case, the study postulated that businesses can remain buoyant by utilizing available resources. The study is inconsistent with Hassan, Imran, Amjad and Hussain (2014) personal loans are chief pointer of success and profitability while the current study posted insignificant association. In rejoinder, Gachira, Chiwanzwa, Nkomo and Chikore (2014) advocated proper management of short-term loans, enhancement of working capital management and doing away with microfinance credit. Kobarach (2020) expressed concerns on paradigm shift in management of short-

term funds and nailed the importance of liquidity in enhancing quality performance. Wachira (2011) postulated that quality microfinance products were given a leeway towards holistic profitability hence concurring with agricultural and real estate loans posted by this study. Mugisha, Omagwa and Kilika (2020) examined the critical position of short-term debts and concluded that SMEs are chief beneficiaries of loans but cautioned against the short-term borrowing spree hence concurring with the current study on the personal loans.

The diagnostic test gave information on the normality test, multicollinearity test and the Autocorrelation test. The test for normality conducted through the Kolmogorov-Smirnov and the Shapiro walk test showed that the data of each variable had been obtained from a normally distributed population. The multicollinearity test also showed that the four variables had no multicollinearity problem. Autocorrelation was analyzed using the Durbin-Watson value of 0.835. This value lied within the required values of the Durbin Watson values.

The regression analysis showed that the five variables in this study had strong positive correlation of 86.81%. It also showed that personal loans, business loans, agricultural loans and the real estate loans explained 75.37% change in financial performance imposing that 24.63% of change in profitability was as a result of factors outside this study. Kagoyire and Shakla (2016) highlighted the essentiality of reaping big from credit and call for the attention of the short-term loan that enhances survivability, sustainability and profitability. However, the study did not specify the type of loans hence this study has categorized into personal loans, business loans, agricultural and real estate loans. Kinyua and Muriu (2017) advocated for profitability through utilization of assets. Hasan

*et al.*, (2011) opined that debts and loans subjects business dangers. However, this study is cognizance of SACCOs mandate in giving out loans to reap maximum benefit as displayed by agricultural and real estate loan hence in consistence with past output.

Akinyomi and Olagunju (2013) opines that credit services drives the business towards future predicaments. On the other side, Khalaf Al-Taani (2013) coined the importance of both short-term and long-term loans to enhance quality performance hence concurring with postulation of this study coining positive relationship. Nassar (2016) factors in debts and recommended the productive firms to maximize giving and receiving loans for mutual benefits. The model coefficient depicts that if all the factors are held at constant, the profitability registers an 8.8% increase. Personal loans, agricultural loans and real estate loans showed positive effects of (0.013, 0.067 and 0.017) towards profitability while business loans showed that a unit change could result to a decrease in profitability by 18.8%. This finding simply meant that the model equation could be written as;

$$Y=0.088+0.013PL_1-0.188BL_2+0.067AL_3+ 0.017REL_4+\varepsilon$$



## **CHAPTER FIVE**

### **SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION**

#### **5.1 Introduction**

This chapter elucidates a compilation of research outcome in a sequence and logical manner. The investigation was guided by research objective aimed at exploring the effect of microfinance credit on the profitability of SACCOs. The findings instantiate the summary of the examination. Moreover, the conclusion features on this part to shed light on the study's inferences. Additionally, the study delves further into recommendations that can enhance microfinance and profitability of SACCOs. As a consequence, the denouncement of paradigm shifts on the personal loans, business, agricultural and real estate loans are highlighted in this part. This is crucial for wrapping-up and highlighting the degree of gaps bridged by the current assessment. It also underscore the setbacks and give appropriate resolution mechanisms. Besides giving recommendations on practice and policies, it ends by advocating for extensive studies.

#### **5.2 Summary of Findings**

The investigation was principally expedited to assess the effect of microfinance credit on the profitability of SACCOs. As a consequence, this is well stipulated and articulated to boost the inferences. In a nutshell, extensive and exhaustive outcome were generated to seal the research gaps. Therefore, the SACCOs can understand the pattern and make sound decision, increase the competitiveness and improve their buoyancy degree. In a nutshell, this section outlines the summarized inference of the research. As a result, the summary of findings are presented as per the objectives of the study.

### **5.2.1 Personal Loans**

The descriptive results of the study indicated that personal loans had a mean of .2238540 and a standard deviation of .03549793. In addition, the correlation results of the study indicated that personal loans had a negative effect on the profitability of SACCOs. The linear regression results on the other hand indicated that the coefficient of personal loans was positive (.013) and statistically insignificant (.096>0.05) implying that a unit increase in personal loans will lead to 0.013 units increase in the profitability of SACCOs. However, the increment in profitability will be insignificant. The personal loans entail the loans that a SACCO lends to an individual. The funds are utilized by the individual for various tasks. Wanja & Jagongo, (2017) argued that personal loans are readily available through online lending by the SACCOs or by visiting the entity for approval and have different traits on their repayment conditions, interest rates, fees, and amount. The repayment of the loans as well as the interest rates charged on the loans determines the profitability of the SACCOs. Failure to repay the loan by an individual affects the profitability of the SACCO negatively whereas the interest charged by the SACCOs on the loans advanced to the individuals positively contributes to the profitability of the SACCOs.

### **5.2.2 Business Loans**

The descriptive findings of this research further pointed out that the mean and standard deviation of business loans were .3692921 and .04413020 respectively. The correlation results between business loans and profitability of SACCOs was negative correlation (-0.50454). The linear regression results on the other hand indicated that business loans had a negative (-.188) and statistically significant (0.000<0.05) linear relationship with

the profitability of SACCOs. This means that a unit increase in the business loans will lead to a significant decrease of 0.188 units in the profitability of SACCOs. The businesses in Kenya ranging from the small financial entities to large firms rely on credit for optimum output. The business borrows to maximize on the prevailing opportunities and increase the business prosperity. According to Prempeh and Asare (2016), cheaper credit is healthy for business because the poor can access and maximize on the operations. Both the thriving and start-up business need loans to sustain the operation and achieve the economies of scales. A start-up may need the loans from SACCOs and other institutions to upgrade the business, addition of inventory or to cover the debts generated from investment opportunities that has returns in the long run. According to Nassir (2016) the business can increase its productivity and efficiency by utilizing the loans and credits. However, the defaults on these loans affect the profitability and sustainability of the SACCOs adversely.

### **5.2.3 Agricultural Loans**

From the analysis of the study results, the descriptive findings of this research argued that the mean and standard deviation of agricultural loans were 2.9482490 and .38934694 consecutively. The correlation results between agricultural loans and profitability of SACCOs was positive correlation (0.846059). The linear regression results on the other hand indicated that agricultural loans had a positive (0.067) and statistically significant ( $0.000 < 0.05$ ) linear relationship with the profitability of SACCOs. This means that a unit increase in the agricultural loans will result in a significant increase by 0.067 units in the profitability of SACCOs. Agricultural loans enables the farmers to purchase farm inputs with ease. The incorporation of technological farming is capital intensive and may lead

to the increase in demands for loans to purchase equipment, increase farm inputs and marketing (Khalaf Altaani, 2013). Majorly, the agricultural loans are tailored to fit the specific financial demands of the farmers. Moreover, it allows farmers and firms to secure planting, harvesting and equipment. In terms of its effect on the profitability of SACCOS, the interest rates charged on the loans positively affect the profitability of the SACCOS. Furthermore, farmers comprise the majority of the loan seekers and mainly access their credit through the SACCOS that are available to them locally. The interest rates charged on the loans advanced to these farmers boost the profitability of the SACCOS.

#### **5.2.4 Real Estate Loans**

A summary of findings regarding the analysis of data on real estate loans and profitability of SACCOS is presented in this section. The descriptive findings of this research argued that the mean and standard deviation of real estate loans were .1965911 and .22887997 respectively. The correlation results between real estate loans and profitability of SACCOS was positive correlation (0.347784). The linear regression results further pointed out that real estate loans had a positive (0.017) and statistically significant ( $0.015 < 0.005$ ) linear relationship with the profitability of SACCOS. This means that a unit increase in the real estate loans will result in a significant increase by 0.017 units in the profitability of SACCOS. The loans are the loans to finance the purchase or the development of a property. The real estate loans have wide uses including the commercialized as well as loans meant for residential properties. Therefore, purchase of investment can be expensive and may demand lots of cash at the disposal. However, the application of loans can solve the long-term challenges and enable the firms and

individual to own property. SACCOs have different products for real estate loans including mortgages, private money, existing home equity as well as quantified investment loans

### **5.3 Conclusion**

The study concludes that personal loans may affect the profitability of the SACCOs either negatively or positively. The individuals who may default on their loans will affect the profitability of the SACCOs negatively. However, the interest rates that are charged on the loans advanced to individuals affects the profitability of the SACCOs positively. Therefore, proper management of the loans and carrying due diligence when issuing loans to individuals is key on ensuring the profitability and sustainability of the SACCOs. Furthermore, the study concludes that, business loans are also critical in enhancing the profitability of the SACCOs. Business loans comprise huge amounts of loans hence implying that the interest rates charged on these loans is substantial. However, in the case of default on these loans, the profitability of the SACCOs will be adversely affected. Enhancing the quantity of loans advanced business coupled with utmost diligence when issuing the loans will significantly affect the profitability of the SACCOs. Agricultural loans on the other hand have a positive impact on the profitability of the SACCOs. Farmers are able to access the SACCOs easily and locally as compared to the other financial institutions. Many farmers seek loans to enable them access farm inputs and other production requirements. Tapping on the many farmers will lead to a significant amount of agricultural loan disbursements and hence improved profitability due to improved coverage.

Lastly, the loans on real estate which entail the funding for purchase or development of a property are also instrumental in boosting the profitability of the SACCOs. This category of loans requires large sums of investments. Furthermore, the loans advanced in this category are generally viewed as low risk because the property purchased or developed can be used as a collateral on the loan. The substantial interest rates gained from the loans advanced are essential in enhancing the profitability of the SACCOs.

#### **5.4 Recommendation**

The study recommends that the SACCOs should invest more in increasing their outlets locally. This is because majority of the citizens are based locally and hence availing financial services to there is beneficial to them and the SACCOS. Furthermore, the study recommends that extra diligence should be observed when advancing a loan to any group. Preferably, collaterals should be sought before loan disbursements. With regards to agricultural loans, the SACCOs should purchase the inputs of production and give them to farmers as opposed to giving the farmers the money. This money may end up being misused and hence increasing the risk of default. Similarly, for the business and real estate loans, the businesses and the property should be used as collaterals respectively when advancing the loans.

#### **5.5 Limitations of the Study.**

This research was limited to the SACCOs. However, there are other financial institutions including commercial banks that advance credit to the various groups. Furthermore, this study was limited to the use of secondary data in its analysis. However, primary data can give more concise information as the researcher will gain first-hand information from the beneficiaries and the SACCOs themselves.

## **5.6 Suggestion Further Research**

The study recommends that further studies be conducted on the effect of microfinance credit facilities on the agricultural productivity of tea farmers in Kenya.

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**Appendix I: List of Deposit Taking Saving and Co-operative Societies**

	Name		
1	Airport	26	Nandi farmers
2	Bandari	27	Nation
3	Baraka	28	Ndege chai
4	Boresha	29	Patnas
5	Centenary	30	Qwetu
6	Chai	31	Safaricom
7	Cosmopolitan	32	Sheria
8	Githunguri dairy	33	Thamani
9	Harambee	34	Times u
10	Hazina	35	Transnation
11	Imarisha	36	Ukulima
12	Jamii	37	Wakenya pamoja
13	Jumuika	38	Wakulima commercial
14	Kenpipe	39	Waumini
15	Kenversity	40	Winas
16	Kenya bankers	41	Yetu
17	Kenya highlands		
18	Kenya police		
19	Kimbilio		
20	K-unity 45.		
21	Lengo		
22	Wanandegge		
23	Metropolitan national		
24	Mombasa ports		
25	Mwalimu national		

**Source: SACCO Societies Regulatory Authority (2021)**

## Appendix II: Data Collection Instrument

Financial Performance	Personal Loans	Business Loans	Agricultural Loans	Real Estate Loans
0.21090	0.53549	0.37731	2.56718	0.02590
0.21090	0.47684	0.37589	2.58037	0.06508
0.19420	0.54824	0.37493	2.60035	0.06874
0.19420	0.44624	0.37168	2.62992	0.08108
0.21090	0.59414	0.36922	2.61833	0.09491
0.22538	0.60179	0.38308	2.62512	0.13966
0.22538	0.43604	0.37572	2.63151	0.11295
0.21090	0.59159	0.37382	2.66068	0.11403
0.22538	0.71399	0.36967	2.67906	0.10807
0.22538	0.51764	0.36670	2.70064	0.10454
0.19420	0.55589	0.34648	2.39417	0.00081
0.19420	0.50234	0.34645	2.42414	0.00041
0.21090	0.58394	0.35270	2.46769	0.00068
0.19420	0.50489	0.34634	2.47568	0.00068
0.19420	0.41564	0.34589	2.71462	0.00176
0.19420	0.64004	0.34586	2.74179	0.00176
0.21090	0.39524	0.35028	2.51125	0.00936
0.21090	0.52784	0.35021	2.51604	0.00963
0.21090	0.51764	0.35004	2.52963	0.00895
0.21090	0.44879	0.35014	2.52044	0.00868
0.11907	0.48704	0.61869	1.90271	0.11335
0.11907	0.42584	0.59982	1.96904	0.15091
0.11907	0.58649	0.56916	2.07732	0.23457
0.11907	0.55334	0.55987	2.11049	0.25640
0.11907	0.47939	0.53457	2.19959	0.23701
0.15025	0.45389	0.52527	2.21157	0.23105
0.15025	0.46664	0.53042	2.19279	0.21681

0.15025	0.41819	0.52949	2.19639	0.21057
0.15025	0.37739	0.53453	2.17801	0.20067
0.17444	0.53804	0.50059	2.16483	0.15742
0.17444	0.50999	0.35567	2.48248	0.00407
0.17444	0.53549	0.35633	2.45730	0.01668
0.17444	0.47684	0.35547	2.49007	0.00529
0.17444	0.54824	0.35415	2.54121	0.01220
0.17444	0.44624	0.35398	2.54761	0.01953
0.17444	0.59414	0.35319	2.57797	0.03891
0.17444	0.60179	0.35263	2.59955	0.02319
0.17444	0.43604	0.35070	2.67267	0.02346
0.17444	0.59159	0.35139	2.64590	0.02658
0.17444	0.71399	0.35097	2.66268	0.02386
0.23814	0.51764	0.35222	2.72981	0.03132
0.23814	0.55589	0.35346	2.75817	0.05017
0.23814	0.28050	0.35191	2.77975	0.05207
0.23814	0.22185	0.35135	2.78734	0.05166
0.23814	0.29324	0.35211	2.77735	0.05288
0.22538	0.19125	0.35070	2.77975	0.03986
0.22538	0.33914	0.34565	2.86646	0.05980
0.22538	0.34679	0.34634	2.87884	0.06441
0.22538	0.18105	0.34703	2.84368	0.06725
0.22538	0.33659	0.34697	2.84488	0.06617
0.21090	0.45899	0.35675	2.61873	0.03064
0.21090	0.26265	0.34976	2.63431	0.01017
0.21090	0.30089	0.34880	2.68785	0.00895
0.21090	0.24735	0.34842	2.70943	0.01234
0.21090	0.32894	0.34786	2.74099	0.01085
0.21090	0.24990	0.34703	2.75857	0.01003
0.21090	0.16065	0.34690	2.76936	0.01139

0.21090	0.38504	0.34690	2.76976	0.01139
0.21090	0.14025	0.34679	2.77735	0.01085
0.21090	0.27285	0.34693	2.76577	0.00990
0.22538	0.26265	0.35623	2.57278	0.03295
0.21090	0.19380	0.36065	2.59995	0.05329
0.21090	0.23205	0.35885	2.63231	0.05600
0.21090	0.17085	0.35529	2.69504	0.09207
0.21090	0.33149	0.35505	2.69944	0.07132
0.21090	0.29834	0.35319	2.73260	0.07959
0.21090	0.22440	0.35156	2.76137	0.09044
0.21090	0.19890	0.35059	2.77855	0.09898
0.21090	0.21165	0.34983	2.79174	0.10088
0.21090	0.16320	0.34766	2.78614	0.03769
0.21090	0.12240	0.35146	2.53921	0.02210
0.21090	0.28305	0.35125	2.54920	0.02237
0.21090	0.25500	0.35142	2.54121	0.02224
0.21090	0.28050	0.35129	2.54721	0.02237
0.21090	0.22185	0.35018	2.60954	0.01098
0.19420	0.29324	0.34607	2.62272	0.00136
0.19420	0.19125	0.34607	2.63151	0.00095
0.19420	0.33914	0.34607	2.62672	0.00095
0.19420	0.34679	0.34610	2.60394	0.00014
0.23814	0.18105	0.35360	3.28719	0.19023
0.23814	0.33659	0.35771	3.28320	0.22549
0.22538	0.45899	0.36418	3.28959	0.26006
0.24956	0.26265	0.34593	3.28440	0.00488
0.24956	0.30089	0.36010	3.30318	0.22834
0.21090	0.02550	0.35650	3.32236	0.16990
0.24956	0.03315	0.36760	3.33794	0.29477
0.22538	0.03825	0.38035	3.34913	0.47538



0.22538	0.06375	0.36791	3.36231	0.30128
0.22538	0.08415	0.36826	3.36990	0.30359
0.21090	0.09180	0.35495	3.21487	0.16420
0.21090	0.07395	0.34842	3.23885	0.05193
0.21090	0.08160	0.34852	3.25483	0.04461
0.21090	0.20400	0.34862	3.26722	0.06942
0.24956	0.00765	0.35685	3.25883	0.15268
0.21090	0.04590	0.35018	3.29918	0.06156
0.26932	0.00765	0.36072	3.29958	0.16705
0.21090	0.07395	0.34572	3.31556	0.00122
0.24956	0.00510	0.34887	3.32915	0.03837
0.24956	0.09435	0.36110	3.35472	0.19566
0.23814	0.13005	0.37157	3.09620	0.07859
0.26932	0.11475	0.37292	3.12617	0.87551
0.24956	0.01785	0.36908	3.16533	0.77517
0.24956	0.00765	0.37379	3.20928	0.80880
0.23814	0.06120	0.37233	3.24924	0.59335
0.24956	0.02295	0.38097	3.28480	0.68379
0.25989	0.08415	0.39836	3.32635	0.84541
0.25989	0.07650	0.40133	3.36990	0.90927
0.25989	0.04335	0.40496	3.40267	0.91958
0.25989	0.03060	0.40693	3.42025	0.85449
0.24956	0.05610	0.34949	3.15534	0.04556
0.28603	0.04335	0.35156	3.19809	0.07186
0.27800	0.09180	0.35115	3.25843	0.07539
0.27800	0.13260	0.35471	3.31357	0.12325
0.27800	0.02805	0.34741	3.35072	0.02197
0.25989	0.02256	0.35180	3.37390	0.06752
0.24956	0.02550	0.36190	3.41106	0.16623
0.23814	0.03315	0.37067	3.44902	0.27525

0.22538	0.03825	0.36438	3.46660	0.19240
0.24956	0.06375	0.35851	3.48418	0.12366
0.23814	0.08415	0.34593	2.85886	0.13247
0.23814	0.09180	0.34728	2.90122	0.19837
0.23814	0.07395	0.35125	2.98353	0.37979
0.21090	0.08160	0.34797	2.99791	0.13668
0.21090	0.20400	0.35512	3.04146	0.52067
0.22538	0.00765	0.35319	3.06704	0.39349
0.22538	0.04590	0.35616	3.11059	0.50372
0.21090	0.22950	0.34814	3.13856	0.07091
0.23814	0.28815	0.35246	3.13936	0.17762
0.23814	0.21675	0.35668	3.12857	0.26779
0.24956	0.31874	0.35668	3.04946	0.60948
0.24956	0.17085	0.34786	3.09101	0.08596
0.24956	0.16320	0.34869	3.17212	0.06983
0.23814	0.32894	0.34638	3.21008	0.01817
0.23814	0.17340	0.34569	3.22726	0.00136
0.22538	0.05100	0.36155	3.25643	0.26101
0.22538	0.24735	0.36096	3.27161	0.29789
0.21090	0.20910	0.35695	3.28320	0.18345
0.21090	0.26265	0.35578	3.30038	0.14020
0.22538	0.18105	0.34880	3.31916	0.04163
0.25989	0.26010	0.36680	3.30917	0.54209
0.25989	0.34934	0.37569	3.31237	0.71728
0.25989	0.12495	0.37869	3.35632	0.48365
0.25989	0.36974	0.38191	3.40387	0.59267
0.25989	0.23715	0.38315	3.42265	0.52121
0.25989	0.24735	0.37271	3.43303	0.32379
0.25989	0.31619	0.37461	3.47219	0.34738
0.25989	0.27795	0.37569	3.49497	0.37627

0.24956	0.33914	0.36798	3.50615	0.23634
0.23814	0.17850	0.37558	3.52054	0.30522
0.24956	0.21165	0.35402	3.04866	0.36325
0.24956	0.28560	0.34655	3.08102	0.03146
0.24956	0.31109	0.34665	3.10779	0.02847
0.24956	0.29834	0.34676	3.13137	0.03200
0.24956	0.34679	0.34676	3.12737	0.03105
0.24956	0.38759	0.35108	3.18291	0.16081
0.23814	0.22695	0.35447	3.23245	0.31199
0.23814	0.25500	0.35633	3.23565	0.43199
0.23814	0.22950	0.34569	3.21647	0.00447
0.23814	0.28815	0.35802	3.21288	0.74914
0.24956	0.21675	0.34572	3.04866	0.00434
0.24956	0.31874	0.35084	3.06744	0.20935
0.24956	0.17085	0.34835	3.10499	0.09424
0.24956	0.16320	0.34894	3.15574	0.10210
0.24956	0.32894	0.34959	3.21048	0.09302
0.25989	0.17340	0.35035	3.22966	0.10318
0.24956	0.05100	0.35094	3.26202	0.09288
0.26932	0.24735	0.38104	3.28440	0.59050
0.25989	0.20910	0.38263	3.28799	0.51362
0.25989	0.48449	0.34773	3.32196	0.02956
0.26932	0.54314	0.35025	3.19490	0.14942
0.24956	0.47174	0.36701	3.23365	0.63985
0.24956	0.57374	0.36705	3.25843	0.44365
0.24956	0.42584	0.36839	3.28240	0.52148
0.23814	0.41819	0.37873	3.31277	0.52365
0.23814	0.58394	0.35675	3.33354	0.15810
0.22538	0.42839	0.36618	3.33514	0.24895
0.22538	0.30599	0.35509	3.34393	0.11891

0.25989	0.50234	0.34831	3.35592	0.03254
0.25989	0.46409	0.34593	3.37869	0.00420
0.26932	0.51764	0.37652	3.16533	0.69518
0.26932	0.43604	0.36760	3.21407	0.48975
0.26932	0.51509	0.37123	3.27161	0.58196
0.26932	0.60434	0.37220	3.28679	0.61260
0.26932	0.37994	0.37413	3.31756	0.49436
0.26932	0.62474	0.37569	3.34193	0.44270
0.26932	0.49214	0.38720	3.37829	0.61165
0.26932	0.50234	0.38979	3.41026	0.64867
0.26932	0.57119	0.40002	3.41465	0.61463
0.26932	0.53294	0.40168	3.43144	0.57382
0.17444	0.59414	0.36725	2.44572	0.09681
0.17444	0.43349	0.37959	2.44332	0.16434
0.15025	0.46664	0.37461	2.44492	0.16868
0.15025	0.54059	0.37537	2.35342	0.28583
0.15025	0.56609	0.37987	2.27550	0.05858
0.17444	0.55334	0.39196	2.19919	0.08569
0.17444	0.60179	0.39355	2.26911	0.10020
0.17444	0.64259	0.39466	2.25553	0.19376
0.17444	0.48194	0.39677	2.22915	0.08932
0.15025	0.50999	0.39010	2.21996	0.77748
0.25989	0.48449	0.36044	3.15294	0.09369
0.26932	0.54314	0.34807	3.14655	0.03471
0.26932	0.47174	0.34804	3.14255	0.02508
0.26932	0.57374	0.34817	3.15494	0.02142
0.25989	0.42584	0.35011	3.15214	0.03729
0.1942	0.41564	0.34589	2.71462	0.00176