EFFECT OF DEBT LITERACY ON THE INDEBTEDNESS OF FORMAL SECTOR EMPLOYEES IN KENYA

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Effect of debt literacy on the indebtedness of formal sector employees in Kenya

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DECLARATION

This thesis is my original work and has not been presented for a degree in any university.

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DEDICATION

To my dad, the late Geoffrey Mucugi Matheri.

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LIST OF ABBREVIATIONS AND ACRONYMS

AKCP	Association of Kenya Credit Providers
AMFIK	Association of Microfinance Institutions of Kenya.
ANOVA	Analysis of Variance
APR	Annual Percentage Rate
ASCA	Accumulating Savings and Credit Associations
BB	Borrowing Behaviours
BERR	Business Enterprise Regulatory Reforms
CMHC	Canada Mortgage and Housing Corporation
DBR	Debt Burden Ratio
DC	Debt Capability
DE	Debt Experiences
DIR	Debt Income Ratio
DK	Debt Knowledge
DL	Debt Literacy
DMP	Debt Management Programs
DSR	Debt Service Ratio
FSD	Financial Sector Deepening
GDP	Gross Domestic Product
ILO	International Labour Organisation
KNBS	Kenya National Bureau of Statistics
MFI	MicroFinance Institutions
MMR	Moderated Multiple Regression
OECD	Organization for Economic Cooperation and Development
OLS	Ordinary Least Squares

ROSCAs	ROtating and Savings Credit Organisations
SACCOs	Saving and Credit Cooperatives
SASRA	SAcco Societies Regulatory Authority
SPSS	Statistical Package for Social Sciences
UK	United Kingdom
VIF	Variance Inflation Factor
USA	United States of America

DEFINITION OF TERMS

Borrowing Behaviours: This refers to psychological traits which affect financial decision-making leading to sub-optimal, sometimes, irrational, illogical and incorrect decisions (Farrell, Fry & Risse, 2015). It also refers to habits, heuristics and coping mechanisms that are influenced by a range of personality and environmental factors. Examples of behaviours affecting borrowing are self-control, peer effects, self-confidence among others (Legge & Heynes, 2009). This study adopted Farrell et al. (2015) definition.

Debt Capability: This is the ability to apply debt knowledge (Zakaria, Jaafar & Marican, 2012). It is also the capacity to apply financial skills, education and current information in day to day live (Huston, 2010). It is also the potential to understand and process information and eventually make simple borrowing decisions. In other words, it involves the ability to understand debt, and the processes in money management (Lusardi & Tufano, 2009). This study adopted Lusardi and Tufano (2009) definition.

Debt Experiences: This refers to the practical experiences individuals encounter in the credit and loan market as they manage their financial resources which includes refinancing loans, debt consolidation and taking home improvement loans (Moore, 2003). They also refer to reported experiences with credit providers whether conventional or alternative (Lusardi & Tufano, 2009). This study adopted Moore (2003) definition.

Debt Income Ratio: DIR is the ratio of total debt outstanding to the income (Bicakova, Prelcova & Pasalicoca, 2011). Debt income ratio is the ratio of total loan owed to disposable income (Herceg & Sosic, 2010). This study adopted Herceg and Sosic (2010) definition.

Debt Knowledge: This refers to abstract skills, education and current information possessed by a person with respect to managing his financial commitments. A debt knowledgeable person should understand the basic concepts underlying money management (Loke & Hageman, 2014). It refers to acquisition and possession of financial skills, education and current information about debt finance (Huston, 2010). This study adopted Loke and Hageman (2014) definition.

Debt Literacy: This is a combination of awareness, knowledge, skills, attitude and behaviours necessary to make sound debt decisions and ultimately achieve individual financial wellbeing (OECD, 2011). Debt literacy is the ability to understand debt, and the processes involved such as how to avoid, reduce or repay debt while maintaining a good credit rating. It also refers to competences in using loans and responses to debt including the ability to determine whether credit is justified and the inclination to repay debts and bills when they are due (Lusardi & Tufano, 2009). Debt literacy is also defined as the ability to correctly assess debt contracts especially when making financial decisions about loans, credit cards, interest rates and other fees (Loke & Hageman, 2014). This study adopted OECD (2011) definition.

Debt Service Ratio: DSR is the ratio of total monthly loan repayment to the total income (Djoudad, 2011). Debt service ratio is the ratio of total loan repayments to disposable income (Bicakova et al., 2011; Liv, 2013). This study adopted Bicakova et al. (2011) and Liv (2013) definitions.

Formal Sector: This refers to the sector providing jobs that are characterised by an employment relationship that is subject to national legislation, income tax, social protection or entitlement to benefits such as paid leave, life and health insurance, pension and gratuity. It is an organised system of employment with clear written rules, agreement and job responsibility. In this sector, employees also work for fixed hours and hence receive fixed salaries (ILO, 2010).

Personal Indebtedness: This refers to a commitment to honour an obligation or liability arising from borrowing money or taking goods or services on credit by individuals (Prinsloo, 2002). Indebtedness is a relative term but researchers have attempted to make it more meaningful by comparing the total debt outstanding or the debt repayment with income, assets or wealth. Broadly, individuals who have taken on debt can either be under-indebted or over- indebted (Liv, 2013). This study adopted both definitions.

ABSTRACT

Over-indebtedness can cause socioeconomic and psychological damages on the borrowers. It can also affect the employers and the economy negatively. On the other hand, there is a relationship between debt literacy and borrowing which imply debt illiteracy can reduce the financial wellbeing of the borrowers. The general objective of the study was to examine the effect of debt literacy on the indebtedness of formal sector employees in Kenya. The study adopted descriptive research design which was mainly survey, cross sectional and correlational. The study targeted a population of about 2.5 million formal sector employees. Two-stage cluster sampling technique was used where 12 counties were selected from 47 and thereafter, respondents were sampled randomly. The study used primary data collected by use of self-administered questionnaire. Three hundred eighty four (384) questionnaires were circulated where 337 were returned. Of the returned, 292 questionnaires were considered usable. Using ANOVA the debt literacy score of the employees significantly predicted indebtedness. Further, age of the employees significantly predicted indebtedness. Pearson's correlation analysis found the constructs and sub-constructs were found uncorrelated. Further, OLS regression models revealed that all the debt literacy indicators have a significant effect on indebtedness. Therefore, all null hypotheses were rejected. Regression results also found that aggregated debt literacy only explained respondent's DSR and DIR conservatively meaning the coefficient of non-determination was material. Similarly, OLS Moderated Multiple Regression (MMR) models found age of the respondents had significant moderating effect on the relationship between debt literacy and indebtedness. Therefore, null hypothesis five was rejected. Using the significance values, all the constructs of debt literacy were found significant and were retained in the revised conceptual frameworks. The DSR model was found statistically better than the DIR model. The study helps to buttress life cycle theory of literacy and also borrowing. Further the government, policy makers, employers and scholar are expected to benefit from the findings of the study. The study provides employees with strong insights that debt literacy is important for sound financial outcome including optimal indebtedness. On the other hand, the government need to introduce financial education and personal finance in colleges. The mass media should write more on diverse area of financial interest to their readers while organised finance bodies should give free professional debt advice and counselling services. Lenders should screen experience borrowers better so as reduce adverse selection, tame over-indebtedness in their clientele, and simultaneously minimise non-performing debts, and strive to give utmost good faith advice when it is sought by prospective borrowers. The study faced numerous limitations: under-reporting of debt owing and over-reporting of disposable incomes may have occurred which was mitigated by use of the sturge's rule, use of ordinal and interval scales to measure the variables was another challenge which was mitigated by use of reliability tests, data was collected from formal sector employees only meaning the findings may have limited applications and the questionnaire statements were adopted from studies done in developed countries; such statements may not exactly reflect the Kenyan setting. In addition, the effect of debt literacy on the indebtedness of informal sector employees needs to be studied while the lenders' perspective needs to be sought.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

This study sought to establish the effect of debt literacy on the indebtedness of formal sector employees in Kenya. Personal finance researchers have referred to taking goods and services on credit or borrowing money by individuals by terms such as household debt, consumer debt, personal loan and personal debt (Chawla & Uppal, 2012). Though some scholars have differentiated these terms, the term personal debt was used in this study. Personal debt has been classified in several ways. Based on the source of personal credit, it may be formal or informal. Based on collateral provided, it may be secured or unsecured and finally, it may be either consumption or non-consumption. In other cases, personal debt is packaged as a product such as car loan, housing loan, education loan, bank loan, bank overdraft, micro-credit, medical loan and mortgage loan (Chawla & Uppal, 2012; Malaysia, 2011).

The sellers of such packaged personal debt are formal institutions, which include commercial banks, credit unions (common in America), cooperatives (common in Africa), finance and merchant companies, mortgage finance companies, hire purchase (HP) companies, leasing companies and credit card companies. Informal institutions that lend money include Rotating Savings and Credit Associations (ROSCAs), Accumulating Savings and Credit Associations (ASCAs), and alternative money lenders popularly known as "shylocks" in Kenya (Munyoki & Okech, 2012). The purposes of taking on personal debts are varied and include housing, transport, consumption, education among others (Malaysia, 2011). In finance theory, use of credit facilities has "time value for money" benefits to the borrowers. However, abuse

of debt is likely to occur due to borrowers' characteristics (Cynamon & Fazzari, 2008). This study also examined debt literacy levels. Debt literacy levels of employees can lie at any point on the debt illiteracy to debt literacy continuum.

There is both theoretical and empirical evidence which has linked debt illiteracy with negative consequences such as severe financial distress, overspending on credit cards, loan default, loan delinquencies, over-indebtedness, poor mortgage choices, foreclosures, repossessions and high-cost borrowing. Other financial catastrophes associated with poor financial literacy include lavish and outrageous spending, bad investments, declining wealth, poor business partnerships, bankruptcies and poor retirement planning. There are also numerous tales of riches to rags where majority of the people affected are those who have received regular incomes during their active working life. Several studies have concluded that these negative consequences and the "riches to rags" tales are as a results of poor decision making and lack of financial literacy (e.g. Alessie, Rooij & Lusardi, 2011; Brown & Graf, 2013; Disney & Gathergood, 2012; Hastings, Madrian & Skimmyhorn, 2013; Jang, 2015; Lusardi & Mitchell, 2008; Lusardi & Tufano, 2009; Mottola, 2013; van Ooijen & van Rooij, 2014, Zuroni & Lim, 2012).

1.1.1 General Overview of Personal Debt

Classical economics and finance theories predict that rational individuals make optimal financial decisions regarding savings, investing, and borrowing (Cynamon & Fazzari, 2008; Mian & Sufi, 2010a, 2010b). Borrowing decisions are important for aggregate consumption, asset demand and financial stability. However, the problem starts when the amounts borrowed are disproportional to the borrower's means (Georgarakos, Lojschova & Ward-Warmedinger, 2010; Liv, 2013). In the market of

goods and services, including money, sellers have the option of selling by both cash and credit. Credit facilities are important because they smooth and satisfy personal needs and wants. Immediately after the credit service, a debt contract between the lender and borrower emerges. A debt contract carries a creditor-debtor relationship which features the terms of borrowing such as interest rate, fees, repayment schedule and sometimes the collateral the borrower has to provide (Haas, 2006; Chawla & Uppal, 2012). Debt is a common item in personal budgets, partly due to the greater availability of credit (Ironfield-Smith, Keasey, Summers, Duxbury & Hudson, 2005).

Majority of debt contracts or agreements are paid without difficulty and results in benefits for all parties (Russell, Maitre, & Donnelly, 2011). However, personal debt can lead to negative consequences. Scholars have conflicting views on the impact of personal indebtedness (Munyoki & Okech, 2012) although majority view indebtedness as a threat to the economy (Papadimitriou, Shaikh, Santos, & Zezza, 2002; Seccareccia, 2001). This is because indebtedness ultimately produces bad debts that pose a negative effect to the economy. The role of mortgage borrowing in the 2007/08 US financial crisis provides considerable support to this view (Farhadieh, 2009; Munyoki & Okech, 2012; Orlowski, 2008).

At individual level, indebtedness can lead to negative consequences. For example, economic psychologists have found strong correlation between stress and debt (Brown, Taylor, & Price, 2005; Munyoki & Okech, 2012). Financial stress can cause critical damage to social lives such as poor social relationships and deteriorating intra-household relationships (Rogaly, Fisher, & Mayo, 1999) especially between spouses (Dew, 2008). On the other hand, employee with high levels of financial stress are more likely to experience higher levels of absenteeism; thus spending work hours

handling personal finances, which decreases the time they are at work (Kim, Sorhaindo, & Garman, 2006). The cumulative effects of financial stress over long periods of time increases the susceptibility to heart disease, diabetes and common infections. Additionally, financial stress coping mechanisms such as excessive alcohol consumption, overeating and other destructive actions have a negative impact on the debtor's health (Dew, 2008).

Excessive debt can also have negative impact on physical and mental health of the debtor (Dew, 2008; Keese & Schmitz, 2010). Debtors also face the risk of social, financial and market exclusion. Cases of divorce, mental disorders, homelessness (Frade & Lopes, 2009) and even suicide (Hossain, 2013) have been reported and directly connected to prolonged stress caused by indebtedness. For example, 54 suicides were reported in Andhra Pradesh, India in 2010 following a micro-finance crisis (Kaur & Dey, 2013). Having financial difficulties is one of the fraud 'red flags'; that is personal behaviours that may lead to fraudulent activities (Naruedomkul, Rodwanna & Wonglimpiyarat, 2010).

Fraud is perhaps the most fatal of all the risks confronting organizations (Idowu, 2009) and indebtedness presents one of the ingredients of the fraud triangle, namely pressure (Albrecht, Albrecht & Albrecht, 2004). Employee theft is a major problem for firms of all sizes. It is estimated that one-third of business bankruptcies are due to employee theft (Moorthy, Seetharaman, Somassundaram & Gopaplan, 2009). In fact, the problem of indebtedness is so dire that some countries like France (Coustin, 2012), South Africa (Paile, 2013) and US (Scott, 2007; Macgee, 2012) have legislated legal mechanisms to tackle over-indebtedness. Further, UK has created a task force

(Ironfield-Smith et al., 2005) and Commission to tackle over-indebtedness (Meadowcroft, 2006).

At the macro level, aggregate personal debt can lead to economic and financial fragility (Djoudad, 2011; Kreamer, 2014; OECD, 2013; Townley-Jones, Griffiths & Bryant, 2008). In fact, the rise in personal debt in the years prior to 2007 in most advanced countries such as United States of America (USA), Greece and other Euro zone economies is believed to have caused the global financial crisis (Athanassiou, 2012; Christelis, Ehrmann & Georgarakos, 2013; Cynamon & Fazzari, 2008; Mian & Sufi, 2010a, 2010b). The scale of the financial crisis was unprecedented because the world Gross Domestic Product (GDP) is estimated to have declined by 2.2% in 2009, the first time it declined since the Second World War. Further, at the close of 2010, some 64 million more people around the world lived in poverty than would have been the case without the crisis and 30,000 to 50,000 children in Africa died in 2009 due to malnutrition (Ong & Watsa, 2010).

Ever increasing personal debt can affect the financial stability of an economy because there is a link between credit growth and non-performing loans. Significant loan defaults would affect the portfolio quality of financial institutions, their stability and sustainability, as witnessed in various countries around the world. This also affects the returns to investors, the overall image of the industry, and finally jeopardises the entire economy (Jappelli, 2009; Liv, 2013). This explains why National Bank of Kenya almost collapsed in the 1990s, the financial crisis experienced in Asia in the late 1990s, and the economic meltdown of 2007 to 2008 in USA (Munyoki & Okech, 2012). According to Jappelli (2009), over-indebtedness exposes an economy to vulnerability to adverse shocks. For example, a recession may last longer and with

severe consequences because of personal over-indebtedness. Empirical literature have indicated that the level of personal debt is a significant determinant of increase in the level of unemployment (Mian & Sufi, 2012; Jauch & Watzka, 2013), loan loss provision (Munyoki & Okech, 2012) and income inequality (Comelli, 2014).

1.1.2 Global Outlook of Personal Debt

Financial markets have grown rapidly over the last decade, directly reaching millions of people worldwide. The problem has shifted from financial exclusion to having too much access, which could have a negative impact especially when borrowers take too much debt leading to over-indebtedness (Liv, 2013). Further, low interest rates coupled with rapid financial innovations and financial liberalization such as lowering of collateral requirements has contributed to the increase in indebtedness (Campbell & Hercowitz, 2006; Dey, Djoudad & Terajima, 2008). The increase in indebtedness over the past 25 years has contributed to a decline in the household saving rate. In many countries and for the last ten years, indebtedness has reached historical highs (Barba & Pivetti, 2009). For example, in 2010, 18% of the households (and 21% of the population) in Hungary were in arrears (Szivos, Bernat & Koszeghy, 2011).

The picture painted is worrisome when the ratio of personal debt to disposable income is analysed. It reveals that persons are spending all their income to pay off debts. However, some countries are hit by this menace badly. For example, the ratio of household debt to disposable income (DIR) for 2015 was 293.1% for Denmark (the highest), 276.1% for Netherland, Ireland at 230.4%, Switzerland at 211.2%, Australia at 211.9%, Sweden at 177.8%, Canada at 175%, Korea at 169%, Korea 169%, United Kingdom at 150.1%, Portugal at 144%, Japan at 135% and Finland at 129.5%, well above the Organization for Economic Cooperation and Development (OECD) average

of 130% (OCED, 2017). In Canada, for instance, total household debt reached 175% of disposable income. This implies that for every $100 of disposable income, households had obligations of $175. This is the highest level recorded in Canada since 1990 (Macdonald & Matier, 2016). In conclusion, such dramatic increases in household debt are particularly disturbing when remembered that any time household debts exceed GDP, especially in America, serious financial crisis has followed. For example, household debt has exceeded GDP in the American history only twice; in 1929 and in 2006 and this was followed by shocking global financial depressions (Finocchiaro, Nilsson, Nyberg & Soultanaeva, 2011).

1.1.3   Trends of Personal Debt in Kenya

In Kenya, most literature focuses on government borrowing. Little is said about private borrowing, which is debt accumulated by individuals, households and businesses (Mbuthia, 2015). The indebtedness of employees in Kenya was estimated using the loan portfolio data provided by the Kenya National Bureau of Statistics (KNBS), SACCO Societies Regulatory Authority (SASRA) and Association of Microfinance Institutions of Kenya (AMFIK). These institutions provide the sum total of loans outstanding as at December 31st.

Table 1.1: Domestic loan portfolio and wage bill in billions of Kshs.

Years	2010	2011	2012	2013	2014	2015
Credit to government	375	306	463	505	492	553
Credit to private sector	1,147	1,485	1,702	1,981	2,361	2,731
Credit to private households	320	399	451	540	681	796
Gross formal sector wage	796	861	949	1,175	1,316	1,498
Disposable wages	557	603	664	823	921	1,049
Debt Income Ratio (DIR) %	57.43	66.20	67.89	65.65	73.92	75.88

Source: KNBS, 2015a, 2016; SASRA, 2015, 2016; AMIFK, 2015, 2016.

From Table 1.1 above, government borrowing from domestic commercial banks has increased by 47.4 % between 2010 and 2015 while credit to private sectors has more than doubled (138%) over the same period. At this rate, private credit is projected to exceed Kshs. 34 trillion by the end of year 2030 (SASRA, 2016; AMFIK, 2015). The disposable wages increased by approximately 15% on an annual basis over the period. For comparability with OECD data, the gross formal sector wage was converted to disposable income by a uniform tax rate of 30%. The DIR increased from 57% in 2010 to 76% in 2015. DIR found in Table 1.1 is a ratio of credit to private households and disposable wages. This ratio though below the OECD average DIR of 130% over the same period is rated high when compare with those for some developed economies such as Russia (29.2%), Slovenia (57.1%), Poland (64.2%), Hungary (50.7%), Chile (66.5 %) and Czech Republic with 67.8% (OECD, 2017). More so, when we consider the low credit provided by financial institutions to the private individuals and the low private credit referencing bureau coverage (World Bank, 2008). The situation is also worse when household debt to Gross Domestic Product (GDP) ratio is considered. Kenya's debt to GDP ratio for households is 15.47%. Although this is lower than the global average (33%), it ranks poorly against some more developed economies shown in Table 1.2.

Table 1.2: Countries with better household debt to GDP ratio than Kenya

Country	%	Country	%	Country	%
Argentina	5	Colombia	8	Kenya	15
Brazil	4	Czech Republic	12	Mexico	12
Bulgaria	12	Finland	4	Turkey	6
China	12	India	8	Venezuela	2

Source: Jappelli, Pagano and di Maggio (2008, p. 35)

Kenya is flooded with debt finance institutions (Financial Sector Deeping [FSD] Kenya (2010). FSD (2010) classifies Kenya's financial system into three: formal,

other formal and informal. The formal institutions are prudentially regulated by the Central bank of Kenya, while the other formal institutions are simply registered under specific Acts of Parliament and the informal institutions are unregistered. A summary of the classification is shown in Table 1.3.

Table 1.3: Classification of debt finance institutions in Kenya

Formal	Other formal	Informal
Commercial Banks	Unregulated MFIs	ASCAs
Deposit Taking MFIs	Unregulated SACCOs	ROSCAs
Deposit Taking SACCOs	Mobile Payment services	Shopkeepers
Post Banks	Hire purchase companies	Moneylenders
Insurance Companies	Credit card companies	

Source: FSD Kenya (2010)

1.1.4   Employees and the Formal Sector in Kenya

At independence in 1963, the Government of Kenya identified poverty and unemployment as major economic problems facing its people. Fifty years later, and despite numerous policy efforts, poverty continues to afflict many Kenyans, and millions are unemployed, under-employed or are "working poor" (Mwangi & Kihiu, 2012). Similar to other developing countries, Kenya has two sectors: formal and informal. According to the 2009 Kenya Population and Housing Census (2010), there were 15,786,331 employees in both formal and informal sector. At the end of year 2015, the formal sector employed an estimated 2,478,000 people. These are broken down as 1,759,600 employees in the private sector and 718,400 employees in the public sector (KNBS, 2016).

About 73.5% of the employees in Kenya were on low wage of between Shs.10,000 and Shs. 50,000 per month in the fiscal year 2014. Only 68,676 employees earn more than Shs.100,000 a month, representing 2.89% (KNBS, 2015a, 2015b). Despite high level of education with those in formal employment, Kenyans generally, are not very

financially literate (Gachango, 2014; Mwangi & Kihiu, 2012). Variation in debt literacy among employees in Kenya is expected since each has different financial capability and motivation for gaining financial knowledge. Also expected from them is the diversity in terms of age, education, income, occupation, professional orientation and locality (Gachango, 2014). However, Danish Trade Union (2014) contends that the labour force in Kenya is relatively mobile, well educated and entrepreneurial.

1.2   Statement of the Problem

According to Munyoki and Okech (2012) personal indebtedness is one of the major problems faced by many countries worldwide. The average DIR for OECD member countries is 130% while the global average debt to the GDP is 33% (OECD, 2017). The ratio of personal debt to GDP has continued to increase in the last several years raising serious doubts on the vulnerability of the households, the financial sector and generally the world economy (Bicakova et al., 2011). In many countries including Kenya, the situation is considered to be at its peak and any further increase is expected to affect the global economy negatively (Munyoki & Okech, 2012). The information on the background to this study reveals that the ever-increasing personal debt has adverse   macro and micro-consequences.

Borrowing by the private sector accounted for about 83% of the total loans offered by financial institutions in 2015, and it has more than doubled in the past five years (KNBS, 2016). Personal debt has important micro and macroeconomic implications for any country. In fact, borrowing can enhance welfare, however, the recent international financial crisis show that excessive borrowing can make individuals and economies vulnerable to adverse financial shocks and crisis (World Bank, 2008).

Excessive borrowing has already resulted into debt crisis in Bosnia, Morocco, Nicaragua, Pakistan, and Herzegovina among other places (Schicks, 2012).

Several studies exist on the effect of financial literacy and indebtedness in developed and emerging economies: For example, Idris, Krishnan and Azmi (2013) examined the relationship between financial literacy and financial distress among youths in Malaysia. Brown and Graf (2013) examined the relationship between financial literacy, household investment and household debt in Switzerland. Disney and Gathergood (2011) studied the effect of Financial literacy on indebtedness in UK and French and McKillop (2014) examined financial literacy and over-indebtedness in low-income households in Ireland. This shows that limited attention has been given to the effect of debt literacy on indebtedness of individual even in these developed and emerging countries. Therefore, there is need for an empirical study on the effect of debt literacy on the indebtedness of individuals to fill this research gap.

Although a relationship seems to exist between debt literacy and indebtedness, not much has been done on the two variables in a single study. No Study linking the two variables was found in the Kenyan context. On the other hand, several studies have been done on the area of financial literacy and personal debt in Kenya. For example, Nyamute and Maina (2011) studied the effect of financial literacy on personal financial management practices in financial institutions. Mwangi and Kihiu examined the impact of financial literacy on access to financial services. Gachango (2014) studied the effect of financial literacy on personal financial management practices financial institutions but Munyoki and Okech (2012) analysed empirically the personal debt among the youth using students in Kenyan universities. This shows there is limited attention paid to not only the effect of debt literacy on indebtedness of

formal sector employee in Kenya but also to the areas of debt literacy and personal debt. This study filled these existing knowledge gaps.

1.3   Research Objectives

1.3.1   General Objective

The general objective of this study was to establish the effect of debt literacy on the indebtedness of formal sector employees in Kenya.

1.3.2   Specific Objectives

The specific objectives of this study were to;

1. Determine the effect of debt experiences on the indebtedness of the formal sector employees in Kenya.

2. Assess the effect of borrowing behaviours on the indebtedness of the formal sector employees in Kenya.

3. Establish the effect of debt capability on the indebtedness of the formal sector employees in Kenya.

4. Determine the effect of debt knowledge on the indebtedness of the formal sector employees in Kenya.

5. Assess the moderating effect of age of formal sector employees in Kenya on the relationship between debt literacy and indebtedness.

1.4   Research Hypotheses

Following the research objectives, the null hypotheses to be tested were as shown below.

H_{01}: There is no significant effect of debt experiences on indebtedness of formal sector employees in Kenya.

H$_{02}$:   There is no significant effect of borrowing behaviours on indebtedness of formal sector employees in Kenya.

H$_{03}$:   There is no significant effect of debt capability on indebtedness of formal sector employees in Kenya.

H$_{04}$:   There is no significant effect of debt knowledge on indebtedness of formal sector employees in Kenya.

H$_{05}$:   There is no significant moderating effect of age on the relationship between debt literacy and indebtedness of formal sector employees in Kenya.

1.5   Justification of the Study

Empirical and theoretical literature is awash with evidence suggesting that debt literacy is associated with several negative consequences. Generally, Kenyans are not financially literate (Mwangi & Kihiu, 2012). As such, it would be important for formal sector employees to know what variables are antecedents of debt literacy in order to create conditions necessary for the development of such antecedents. Cognitive and non-cognitive ability are thought to be important antecedents of debt literacy. The study contributes to literature on debt literacy and indebtedness that could be of use to scholars and other interested parties. There is no rich literature available in Kenya on debt literacy as well as how it affects indebtedness of   formal sector employees. The study filled these gaps.

1.6   Significance of the Study

A key contribution of the study was methodology. Firstly, the study established that debt literacy indicators had an effect on the indebtedness of formal sector employees. Secondly, the study examined whether age of employees has a moderating effect on the debt literacy-indebtedness relationship. Although the debt literacy-indebtedness

relationship has been studied, the moderating effect of age of employees in the relationship between debt literacy and indebtedness, which has not been previously modelled and studied, was determined. Thirdly, bulk of empirical evidence regarding the effect of debt literacy and indebtedness was from developed countries; this study filled the contextual gaps because it was conducted in a developing country, namely Kenya.

One of the propositions of the life cycle theory and the permanent income theory is that the young are most likely to be over-indebted. Another proposition by relative income theory is that borrowing pattern of individual is affected by that of the reference group, the "Veblen effect". This study assessed whether these propositions among others, are valid by modelling some of the study's variable such as age, peer effect among others against indebtedness. The findings from this research are of interest to financial institutions, other lenders, employers, scholars and policymakers. The findings will assist in designing a policy response where policy makers will be able to integrate the findings to make legislation, curriculum development and payroll guidelines. To the scholars and academicians, the findings from this research will serve as guide for further study in the areas of debt literacy and indebtedness by replicating the study in other countries in the world.

1.7   Scope of the Study

The study was conducted in Kenya. Three provinces namely; Central, Coast and Nairobi were clustered. The chosen provinces had the proper mix of socioeconomic characteristics. The study did not attempt to tabulate the total debt held by employees in the formal sectors in Kenya. This study was concerned with investigating the effect of debt literacy on the indebtedness of about 2.5 million formal sector employees in

Kenya. The variables and sub-variables of financial literacy used in this study are those most commonly studied (see Santo & Abreu, 2013; Zakaria et al., 2012; Zuroni & Lim, 2012). However, they have not been tested as modeled in this study. On other hand, indebtedness has several dimensions, qualitative and quantitative which are commonly studied. This study interrogated the latter more with a view of adding knowledge. The formal sector employees were chosen because according to Wood (2010) they are ones most affected by over-indebtedness. The period for data collection was 3 months.

1.8   Limitations of the Study

Data on indebtedness is sensitive and not easy to gather. This study gathered data on the magnitude of the indebtedness and levels of income for formal sector employees. A key limitation of the data collected would be under-reporting of debt owing and over-reporting of disposable incomes. However, this was mitigated by constructing a detailed questionnaire where the debt owing and current disposable income were collected by sturge's rule graduated scales. The use of the sturge's rule thus mitigated this limitation.

The study used ordinal and interval scales to measure the variables. These scales do not give the investigator the level of precision required in a study, especially where strong statistical procedures are to be applied (Mugenda, 2008). However, Cronbach's alpha resulted in values that was within the acceptable thresholds, thus mitigating this limitation. Data was collected from formal sector employees only in 12 counties. Hence the findings of this study have limited applications to the informal sector employees, and the remainder of the counties and therefore difficult to generalize. This study was also cross sectional. Future researcher needs to carry out a longitudinal

study. The questionnaire statements were adapted from Copur (2011), Farrell et al. (2015), Krah, Aveh & Addo (2014), OECD (2011) among others sources. These are studies mainly done in developed countries and such statements may not exactly reflect the Kenyan setting.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter discusses theories relevant to debt literacy, borrowing and age of employees. It also includes related empirical studies, a conceptual framework that illustrates the relationship between the independent variables, namely debt knowledge, debt capability, borrowing behaviours and debt experiences of the employees and the dependent variable, indebtedness, along with the moderating variable, age of employees, which moderates this relationship. The chapter then proceeds to define and operationalise the above study variables. Finally, the chapter presents a critique of the literature reviewed, summary and the research gaps.

2.2 Theoretical Review

The main theories that explain the variables in the study are the learning theory by Skinner (1953), goal setting theory by Locke and Latham (1990), the life cycle theory by Modigliani and Brumberg (1980), the relative income theory by Duesenberry (1949) and the permanent income theory by Friedman (1957).

2.2.1 Learning Theory

Learning theory evolved most notably with the work of Skinner (1953) who determined that once the behaviour is associated with a consequence, whether a reinforcement or punishment, the likelihood of the action continuing changes. Skinner (1953) argued that positive reinforcement and punishment are not equal; with the former providing longer lasting results and the latter having negative side effects (as cited in Bandura, 1991). Learning theory according to Bandura (1991) describes how knowledge is absorbed, processed and retained during learning period. On the other

hand, cognitive, emotional and environmental influences as well as prior experiences all play a part in how understanding is acquired and also how knowledge and skill are retained.

Bandura (1991) suggests that people learn within a social context and that learning is facilitated by observation and imitation, and that the person's behaviour, environment and personal qualities all reciprocally influence each other. The learning process, Bandura continues; involve attention, retention, reproduction and motivation. Any new experience is evaluated by means of past experiences. Learning is therefore a thorough evaluation of present experiences against the past. Learning occurs when a person interacts with the environment. However, the capability of an individual will provide him with the ability of being both insightful and foresightful (Bandura, 1991).

According to Korczak (2004) learning is reinforced when there are goals targeted, and learning occurs when the behaviour is sustained systematically with a view to attaining a goal. An individual will learn by self-regulated activities such as self-observation, self-judgement and self-reaction. The goals that are pre-set enhance learning and sustain self-regulation (Korczak, 2004). This means the debt literacy of an individual will depend not only on personal financial plans and goal but also on the number of times they have interacted with financial institutions, other borrowers and even guarantors.

Empirically, Brown, van der Klaauw, Wen and Zafar (2013) concluded that there is evidence that learning financial related issues decreases the incidence of adverse outcomes such as bankruptcies, and reduces the likelihood of carrying debt, but he found the effect fade with age. This theory is important in this study because borrowers are in a learning process as they related with credit and the loan market. It

is inevitable for a borrower to learn after such interactions. Therefore, this theory was used to anchor the research hypotheses that examined the relationship between debt literacy dimensions and indebtedness.

2.2.2   Goal Setting Theory

Goal setting theory is associated with the work of Locke and Latham (1990). In 1990, Locke and Latham (1990) published "A theory of goal setting and task performance" in which they identified five principles that were important in setting goals. These principles are clarity, challenge, commitment, feedback, and task complexity. Goal setting theory is grounded in the belief that conscious goals and intentions drive results (Locke, 1996). Based on the goal setting theory of motivation, Locke (1996) found that goals are likely to determine how well individuals perform their tasks. Specifically, clearly defined and more challenging goals yield higher performance than vague, easy or do-your-best goals. To be effective, goal-setting theory assumes that individuals must be committed to the goal, must get feedback and must have the ability to perform the task. This means that personal financial plans should be more effective when they are motivated by perceptions and concerns about financial well-being later in life (Locke, 1996).

According to Bandura (1991), individuals who set goals for themselves are able to predict their performance levels while those who do not set goals achieve no change in effort. Goal setting will enhance performance especially where the course of action is known. Individuals are by nature goal oriented. Personal goal setting forces individuals to avoid involving themselves with distracting activities such as impulsive expenditure. In fact, those who set no goal achieve no change in effort, Bandura argues.

Self-regulation activities such as self-observation, self-judgment and self-reaction generally suggest personal financial control which is seeking to know the direction one is headed as far as goal achievement is concerned (Korczak, 2004). According to Bandura (1991) knowledge of how one is doing ultimately alters one's subsequent behaviour because they are able to self-evaluate and implement the necessary corrective reactions. Therefore, personal financial controls enhance performance more so when the goals are known in advance. Bandura concludes that people who set goals attempt to predict their expected level of performance.

In an empirical study, Hilgert, Hogarth and Beverly (2003) formed a Financial Practices Index based on goal setting behaviour in cash flow management, credit management, saving and investment practices. When they compared the results of this index with scores on financial literacy, they found a positive correlation between financial literacy scores and financial practices index scores. Their results suggest that high financial capability lead to improved financial outcomes. Consequently, this theory was used to anchor the third research hypothesis.

2.2.3 Life-Cycle Theory

This theory was developed by Franco Modigliani and his student, Richard Brumberg in 1980. The life-cycle theory is an economic theory that pertains to the spending, borrowing and saving habits of people in their lifetime. This theory presumes that individuals base consumption on a constant percentage of their anticipated life income. According to the life-cycle hypothesis, borrowing can improve a person's lifetime welfare by allowing him to spread consumption more smoothly across different stages of his life cycle. When income is relatively low during youth, households will typically borrow to support higher consumption than could be financed by current income alone. Conversely, as income rises during the middle

years of the life cycle, the person saves (and reduces debt) in order to accumulate the wealth necessary to support consumption during retirement years when income is lower (Modigliani, 1985).

The life-cycle theory remains an essential part of economists' thinking because with population growth, there are more young people than old, so more people are borrowing than are saving, so that the total savings of the old will always be less than the borrowings of the young, and therefore there will always be net borrowings. In addition, the variable of income can be studied with reference to Ando and Modigliani's (1963) model of life cycle because it explains the phenomenon of personal indebtedness. When the income is lower than average, people will borrow to finance their everyday consumption and will refund when their income increases. Given that the majority of people profit from a rise in their income during their life, their debt will tend to be higher than their income at the beginning of their life cycle, and decrease gradually with age (Modigliani, 1985).

According to this theory, the permanently high debt levels at young age might therefore be fully rational, assuming higher future income level. Therefore, the consumption and smoothing behaviour implies an inverted-U pattern (hump shaped) between age and indebtedness. In fact, borrowing is used to transfer purchasing power from one phase of life to another. According to life cycle theory, personal debt is for the young and the low income. Coincidentally, the young are new job entrants and their salaries are relatively low compare with their compatriots (Crawford & Faruqui, 2012).

The life cycle theory has wide application. For instance, Abid, Zouari and Zouari-Ghorbel (2012), have shown that socio-economic characteristics have life cycle

character. For example, chances are that the marital status and family size of an individual will be determined by their age; with the young been single and holding either no family or small family size. Abid et al. contends that personal indebtedness is related to socio-economic characteristics such as age, income, education, marital status, family size among others. Thaicharoen, Ariyapruchya and Chuched (2004) suggest that young people tend to accumulate debt until the age of 50, and Disney, Bridges and Gathergood (2008) found household headed by individuals aged less than 30 had high DIR which is compatible with life cycle theory. Disney et al. found the effect of age on debt is positive until the person reaches the 50s where it starts to become negative; which is consistent with the life cycle theory.

Further, there is empirical evidence that there is personal financial learning throughout the life of the person, which is optimised by formal learning, trial and error and by financial experiences. However, learning by doing is not an effective substitute for financial knowledge. Financial mistakes also vary with age and usually follow a U-shaped pattern (Hastings et al., 2013), and cognitive ability also obeys the life cycle theory, declining at older age (Lusardi & Mitchell, 2014). Accordingly, this theory was used to anchor all the research hypotheses.

2.2.4 Relative Income Theory

In economics, relative income theory is attributed to Veblen (1899) and Duesenberry (1949). However, Duesenberry documented the implications of this hypothesis to consumption behaviour in his 1949 book: "Income, Saving and the Theory of Consumer Behaviour". Relative income theory states that the satisfaction or utility an individual derives from a given consumption level depends on its relative magnitude in the society rather than its absolute level. Theoretically, an individual will compare

his consumption pattern to the average consumption of his reference group. It is based on a postulate that has long been acknowledged by psychologists and sociologists that individuals care about status. Duessenberry claimed that an individual's utility index depended on the ratio of his or her consumption to a weighted average of the consumption of the reference group (as cited in Carr & Jayadev, 2014).

A reference group is a social group that is important to the concerned person. Most socioeconomic characteristics such as age, income, education and occupation can be used to create social groups. For instance, in organisations, employees are diverse and belong to the three levels of management: operations, middle and top management (Carr & Jayadev, 2014). A study by Georgarakos et al. (2010), for example, used age category as a reference group. Reference groups are important source of information because they introduce persons to new products so that their choice set is expanded and they also share experiences and knowledge on how to appreciate, enjoy and use the new product (Bryan, Taylor & Veliziolis, 2010; Cynamon & Fazzari, 2008). People struggle to preserve not only their absolute but also their relative standards of consumption. The effort amongst individuals to maintain acquired social positions is essentially based on the 'social visibility' of consumption. Extravagant consumption whose social visibility is much higher is preferred to wealth accumulation whose social visibility is much lower (Carr & Jayadev, 2014).

In reality, consumption spikes due to social group comparison. In most cases, members in a social group may participate in a status race which is detrimental, by for instance leading to increased levels of debt. The status race is mainly on durable items such as cars, jewels and electronic equipments (Carr & Jayadev, 2014). According to Georgarakos et al. (2010), there are always differences, actual or imagined among

members of a social group. To bridge the inequalities, there is increased loan demand which eventually increases levels of debt. Reference to the debt load of others has an effect on the indebtedness of a group member since it might encourage more borrowing. Eventually, the ensuing indebtedness leads to social stigma especially when the group member realises that his debt load is unreasonably high. Georgarakos et al. concluded that individuals evaluated their debt burden with debt position of their peer group.

In conclusion, according to relative income theory, lower income groups may borrow irresponsibly to keep up with the average consumption levels of their compatriots earning higher incomes. They literally copy, mimic and imitate the action of others irrationally. This phenomenon, popularly called the "Veblen effect" acts as a driver of increased personal leverage. "Veblen effect" literally means "keeping up with the neighbour". In the arena of investing, it is called the "herding effect" but in sociology, it is called the "peer effect" (Baddeley, Burke, Schultz & Tobler, 2012). The irrational behaviours such as impulsiveness, peer influence and self-confidence in this study are anchored by this theory. Therefore, this theory was used to support research hypothesis two and by extension, research hypothesis five interrogating the moderating effect of age of the employees in the relationship between debt literacy and indebtedness.

2.2.5   Permanent Income Theory

According to Weil (1993), the Nobel Prize winning economist Milton Friedman formulated the permanent income theory in 1957. The theory implies that changes in consumption behaviour are not predictable, because they are based on individual expectations. Under this theory, even if economic policies are successful in increasing

income in the economy, the policies may not kick off a multiplier effect from increased consumer spending. Rather, the theory predicts there will not be an uptick in consumer spending until workers reform expectations about their future incomes. Permanent income theory states that people will spend money at a level consistent with their expected long-term average income. The level of expected long-term income then becomes the level of "permanent" income that can be safely spent. A person will borrow only if his or her current income is lower than the anticipated level of permanent income, in order to compensate with future increase in income. Permanent income theory divides income into permanent income and transitory income (Weil, 1993).

Permanent income is any amount of money an individual expects to recur constantly and periodically. Transitory income refers to any windfall gain and more often sporadic cash flows. Individuals will consume based on their permanent income rather than total income (Comelli, 2014). When permanent income is more stable, individuals keep less precautionary savings. On the other hand, when their permanent income witness persistent shocks, there is stronger precautionary saving motive. The more risk averse individuals will keep adequate emergency funds so as to weather any future income shocks (Weil, 1993).

In conclusion, according to permanent income theory, consumers are assumed to seek stable consumption during their life cycle, achieving it by borrowing. As their total income varies across their life cycle, they would only borrow against future permanent earnings to stabilize their consumption patterns. The more persistent the income shocks and the lower the precautionary savings an individual holds indicates his risk aversion is indeed low. Over-confident individuals have lower risk aversion

(Weil, 1993). Figure 2.1 show that income, saving and spending will usual follow a hump-shaped curve based on age; in youth and retirement spending exceeds income while during middle age income exceeds consumption. A study by Bicakova et al. (2011) found age group 50-59 created the largest saving alluding this to the fact that this group was approaching retirement and were therefore creating financial reserve for their old age, and those aged 70 and above were borrowing the least due to little anticipated permanent income. Accordingly, this theory was used to instigate the age of employees as a moderating variable and by extension the fifth research hypothesis interrogating the moderating effect of age of the employees in the relationship between debt literacy and indebtedness.
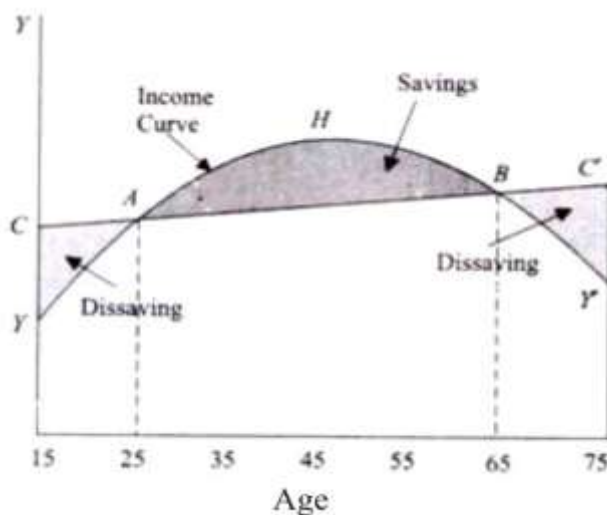
Figure 2.1: Life cycle pattern of income, borrowing, saving and spending Source: Modigliani (1985)

2.3 Review of Study Variables

The independent and dependent variables are first shown in a conceptual framework as Figure 2.2. The independent variable is debt literacy. The four indicators of debt literacy namely debt experiences, borrowing behaviours, debt capability and debt knowledge are also discussed. Also mentioned are the socioeconomic characteristics,

where more emphasis is given to age of the employees. The dependent variable is indebtedness. The two dimensions of indebtedness namely DSR and DIR are also discussed.

2.3.1 Conceptual Framework

The conceptual framework is depicted in Figure 2.2 and the inter-relationship among the variables is envisaged to be as follows: Debt literacy (independent variable) affects indebtedness (dependent variable). The effect of debt literacy (independent variable) on indebtedness (dependent variable) may be affected by the age of the employees. Prior theoretical and empirical research on the phenomenon of indebtedness informed the selection of study variables and indicators. Both theoretical and empirical evidence indicate that debt literacy has an effect on indebtedness of employees. The effect of debt literacy on indebtedness may be moderated by age of the employees.

Debt literacy indicators

Debt Experiences
- Debt restructuring
- Debt advice
- Debt counselling
- Multiple loans

Borrowing Behaviours
- Self-control
- Self-confidence
- Peer influence

Indebtedness (ID)
- Debt Service Ratio (DSR)
- Debt Income Ratio (DIR)

Debt Capability
- Budgeting
- Budgetary control
- Planning

Debt Knowledge
- Numeracy skills
- Debt education
- Debt training
- Self-assessment

Age of employees
(1 if young, 2 if mid-age, and 3 if older)
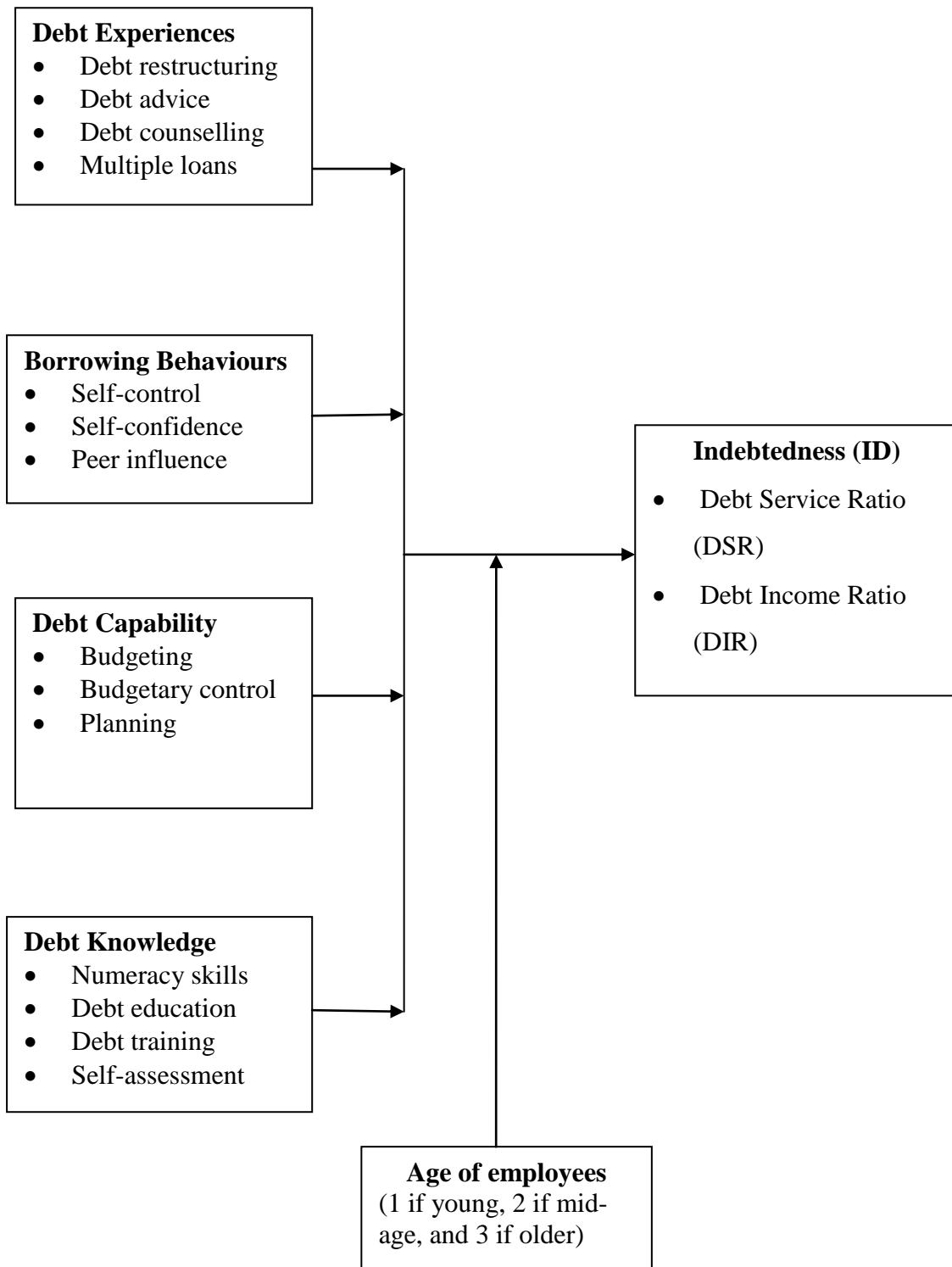
Independent variables   **moderating variable**   **Dependent variable**

Figure 2.2: Conceptual framework

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2.3.2 Debt Literacy

Generally, literacy refers to a person's ability to read and write. According to Ambarkhane, Venkataramani and Singh (2015) the essential features of financial literacy are: actual and perceived knowledge (DK), skills for application of that knowledge (DC), financial behaviour (BB) and financial experiences (DE). On the other hand, Remund (2010) classifies financial literacy into five categories: knowledge of financial concepts, ability to communicate about financial concepts, aptitude in managing personal finances, skill in making appropriate financial decisions and confidence in planning effectively for future financial needs. Similarly, OECD (2011) defines financial literacy as a combination of awareness (DE), knowledge (DK), skills (DC), attitude and behaviours (BB) necessary to make sound financial decisions and ultimately achieve individual financial wellbeing.

Financial literacy is determined by two separate elements; first, the cognitive portion which covers knowledge and understanding, and second, the non-cognitive factors which covers behaviour and attitude. Both cognitive and non-cognitive factors are intrinsic attributes of the person. Financial literacy with respect to non-cognitive factors is an antecedent of behaviour and attitude. The non-cognitive attributes are determined by the person's self-perception (Arellano, Camara & Tuesta, 2014).

Debt literacy is one of the core competences of financial literacy. This implies debt literacy borrows heavily from, and applies, the dimensions of financial literacy. It refers to the competences in borrowing decisions such as making simple decisions regarding debt contracts and applying basic mathematical knowledge about interest compounding to everyday debt choices. A debt contract will feature interest rate, fees, penalties and repayment schedules among other terms and conditions. Low debt

literacy provides a fertile ground for debt decision mistakes (Lusardi & Tufano, 2009). Therefore, using Ambarkhane et al. (2015) and the OECD (2011) definitions, the four dimensions of debt literacy used in this study are debt experiences, borrowing behaviours, debt capability and debt knowledge. Researchers in the area of financial literacy lack common constructs, argues Huston (2010). Table 2.1 show different constructs of financial literacy proposed by the selected authors.

Table 2.1: Financial literacy dimensions

Definition source	Dimensions
Ambarkhane et al. (2015)	• Actual and perceived knowledge • Skills for application of that knowledge • Financial behaviours • Financial experiences
Arellano et al. (2014)	• Cognitive ability covering knowledge and understanding • Non-cognitive ability covering behaviour and attitude
Huston (2010)	• Understanding (personal finance knowledge) • Use (personal finance application)
Remund (2010)	• Knowledge of financial concepts • Ability to communicate about financial concepts • Aptitude in managing personal finances • Skill in making appropriate financial decisions • Confidence in planning effectively for future financial needs
OECD (2011)	• Awareness • Knowledge • Skills • Attitude • Behaviours

2.3.3   Debt Experiences

Debt experiences refer to the practices individuals undergo in the credit and loan market as they manage their financial resources (Moore, 2003). These practical experiences detail the processes undergone in the debt cycle such as obtaining the loan, how to avoid, reduce or repay debt while maintain a good credit rating. Researchers on indebtedness have explored debt experiences such as multiple loans

(Liv, 2013), debt access (Gloukoviezoff, 2007; Mwangi & Kihiu, 2012; Mwangi & Sichei, 2011), loan restructuring (Masilo & Rankhumise, 2014) debt advice and credit counselling (Disney, Bridges, Gathergood & Jorg, 2014; Finke, 2011).

Multiple loans need to be consolidated especially when interest rate fall or when DSR is high. Debt consolidation frees up income for consumption (Munyoki & Okech, 2012). Debt access refers to the chance of having your debt application accepted. Membership to financial institutions such as credit cooperatives or banks has been used to proxy financial access (Gloukoviezoff, 2007; Jiang & Lim, 2012; Russell et al., 2011). However, for this study debt access as an experience was assumed equally distributed because only responses from employees with debt were analysed. This is consistent with Wickramasinghe and Gurugamage (2012) in a study in Sri Lanka which targeted only individuals with credit card balances.

Loan restructuring refers to any change to the terms of the initial debt contract especially with respect to instalment amount and term of the loan. Loan restructuring will take place when the loan amount is increased by a "top up" or decreased by full or partial loan settlement. Therefore, loan restructuring shortens or prolongs the term of the loan. Generally, financially distressed borrower will ask for additional funds, popularly called "top ups" or elongation of the loan term where the monthly instalment is reduced. Researchers have measured loan restructuring by posing question statements. For example, have you ever applied for any form of loan restructuring (Alfaro & Gallard, 2012; Business Enterprise Regulatory Reforms [BERR], 2008; Liv, 2013)?

Disney et al. (2014) differentiates credit counselling and credit advice. Credit advice is given prior to the debt contract while credit counselling services are rendered after

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the debt contract. In most case, credit counselling services are given to borrowers already facing financial distress, although the professional advisor or counsellor may be the same expert. Counselled borrowers develop a sustained ability to maintain superior debt performance hence lower default rates (Agarwal, Amromin, Ben-David, Chomsisengphet & Evanoff, 2010; Masilo & Rankhumise, 2014). Seeking debt advice from persons deemed to be debt literate has been used to indicate debt literacy. Debt advice prevents debt problems by optimising the decision made (Korczak, 2004; van Ooijen & van Rooij, 2014). Therefore, debt literacy has also been operationalised by the custom of using debt advice from experts. In a study by Winchester (2011), the use of debt advice was measured by the respondent's response to the query; "did you use the services of a financial expert, which included debt advice before your current debt obligations?" This question yielded a binary value, "Yes or No".

Suboptimal debt experiences are therefore related to over-indebtedness, and the inability to reduce existing levels of debt (Lusardi & Tufano, 2009). These debt experiences are optimised by debt capability, which is the ability to apply debt knowledge (Huston, 2010). Deployment of sound debt experiences ultimately determines the overall financial position (Zakaria et al., 2012). Theoretically, individuals with poor debt experiences make suboptimal debt decisions, which lead to financial difficulty (Suwanaphan, 2013). The quality of debt experiences significantly predicts financial outcomes. Specifically, individuals who adhere to responsible debt experiences report lower levels of financial problems, specifically indebtedness and are more likely to report higher levels of financial satisfaction (Zakaria et al., 2012). This study therefore used multiple loans, debt restructuring, debt counselling and search for debt advice as indicators of debt experiences. Therefore, the relationship was formally stated in its null form as follows:

H_{01}: There is no significant effect of debt experiences on indebtedness of formal sector employees in Kenya

2.3.4   Borrowing Behaviour

Besides optimal debt experiences, successful personal debt expenditure entails borrowing behaviours which are basically psychological. This includes motivation to seeking financial information and ability to control emotions that affect decision and financial management capacities (Farrell et al., 2015). Often, some borrowing behaviours are irrational, illogical and incorrect and an indication of poor debt capability. Borrowing behaviours therefore involve certain traits, habits, heuristics and biases usually influenced by a range of personality and environmental factors (Legge & Heynes, 2009). Empirical review provide examples of borrowing behaviours such as self-control or impulsiveness (Gathergood, 2012), self-confidence (Chio, 2014; Santos & Abreu, 2013) and peer influence or herding (Baddeley et al., 2012; Copur, 2011) that impede personal financial management.

A self-control problem refers to a situation where an individual is not able to balance between short-term and long-term preferences. It also influences saving choices and usually leads to impulse buying and excess borrowing (Gathergood, 2012). People who carry serious self-regulation by way of personal financial planning and control have high internal locus of control, otherwise there will be an illusion of control (Bandura, 1991). The impulsiveness of the borrower has been measure on a likert scale of five by Gathergood (2012). This study used four likert scale statements to measure self-control.

According to Farrell et al. (2015), self-confidence is related to self-esteem and that in most cases the financial planning of an individual is affected by his self-esteem.

Whereas Arellano et al. (2014) contend that individual with higher level of self-confidence score higher in financial literacy. On the other hand, self-confidence leads people to set and pursue ambitious goals meaning it is an antecedent of motivation and hence increase the ability to apply debt knowledge. Farrell et al. measured self-confidence of borrower on a four points likert scale using six survey questions. In this study, three similar self-belief statements were used to proxy self-confidence.

Although self-confidence improves wellbeing, it has diminishing returns leading to loss of wellbeing. In fact, according to Finocchiaro et al. (2011), individual who are over-confident hold insufficient precautionary savings or too much debt because they are over-confident and underestimate the variance of future personal financial shocks. Finocchiaro et al. contends that over-confidence contributes to indebtedness. This is because very high levels of self-confidence make the individual prone to the risk of over-confidence. This study used three self-belief statements to assess self-confidence and not over-confidence.

Peer influence occurs when individual mimic others, ignoring their own information set. Peer influence or effects refers to how social interactions and perceptions of peers influence key financial decisions of compatriots in the social group (Fasianos, Godin & Kin, 2014). The peer influence to borrower has been measure on a likert scale. For example, Copur (2011) used five points likert scale. This study used three similar statements to measure peer influence. This study used self-control, self-confidence, and peer effects as indicators of borrowing behaviours. The degrees to which these borrowing behaviours affect debt capability significantly predict financial outcomes. Specifically, lower suppression of debt capability by a given borrowing behaviour is

related to lower levels of financial problems. Thus, it was hypothesised in the null form as follows:

H_{02}: There is no significant effect of borrowing behaviour on indebtedness of formal sector employees in Kenya

2.3.5 Debt Capability

Debt capability refers to the capacity to make debt decisions given a set of financial skills, education and information (Ajzerle, Brimble & Freudenberg, 2013). Debt capability covers four areas, namely, planning when to borrow, managing borrowed money, making prudent buying decisions and staying informed about financial realities. Debt capable persons should therefore be able to keep track of their own debt finances, and plan their future financial commitment (Mbekomize & Mapharing, 2015). Debt capability has been measured in, at least, three ways. First, personal budget has been used. Personal budgeting refers to preparation of a formal plan, which is expressed in financial term and limited to a time horizon. A personal budget allocates future incomes towards living expenses, savings and debt repayment, albeit within the budget constraints. Secondly, personal budgetary control has been used. Personal budgetary control prevents impulse and unnecessary expenditure (Krah et al., 2014).

Third, financial planning (also called goal setting) have been used. Financial planning is about making sure that the individual's financial resources are spent in the most efficient way and in tandem with his goals. In contrast with personal budgets, the financial plans need not be in writing but are long term in nature. Personal financial planning, budgeting and control are standard personal financial management practices (Nyamute & Maina, 2011). Standard personal financial management practices seem to

lead to sound financial position. On the other hand, unstructured, vaguely planned, and mental money management seem to facilitate slipping into debt spiral (Kamleitner, Hornung & Kirchler, 2010). Kamleitner et al. (2010) and Krah et al. (2014) have indicated that maintaining a precautionary fund or an emergency kitty is a good financial management practices. Krah et al. requested respondents to rank the magnitude of their emergency kitty on a four points likert scale.

Personal financial budgeting, budgetary control and planning have been operationalized in accordance with Krah et al. (2014). This study measured debt capability using personal budgeting, budgetary control and planning. Accordingly, individuals who are debt capable should be able to prepare and implement budgets, goals and plans. Thus, employees who are debt capable should be able to manage their borrowing, control their expenditure, avoid excessive borrowing and be able to save to meet their future obligations. Therefore, it was hypothesised in the null format as follows:

H_{03}: There is no significant effect of debt capability on indebtedness of formal sector employees in Kenya

2.3.6 Debt Knowledge

Debt knowledge can be viewed as either perceived or actual. Actual debt knowledge refers to what an individual knows while perceived debt knowledge refers to what an individual thinks he knows. In most case, actual debt knowledge does not mirror perceived debt knowledge (Ambarkhane et al., 2015). A person is regarded as debt knowledgeable if he possesses skills, education and current information on how to manage his debt obligations. He should understand the basic concepts underlying money management which comprise understanding words, symbols and arithmetic

operations in debt contracts. It also involves the use of financial prose, documents and information. It also comprise the stock of knowledge acquired through education and training. Financial knowledge has been used as an input to explain variations in financial outcomes (Huston, 2010).

Debt knowledge has been measured in, at least, four ways. Firstly, questions statements relating to the debt contract especially on compound interest, time value of money, payment methods and financial products have been used. A debt knowledge score is created by summing number of questions correctly answered and dichotomising the borrowers as either debt literate or illiterate. These questions test the respondent's numerical and mathematical skills. Several researchers have used questions instruments to measure debt literacy (Disney et al., 2008; Disney et al., 2014; Lusardi & Tufano, 2009; van Ooijen & van Rooij, 2014).

Secondly, self-assessment by the borrower has been used. Borrowers are asked to assess and rank their debt knowledge on a likert scale from very low to very high. Loke and Hageman (2014) used a five point likert scale while Winchester (2011) used a seven point likert scale. Third, having debt education has been used as a proxy of being debt literate. Debt knowledge can be attained or increased through the formal education process (Brown et al., 2013; Lusardi, 2009; Winchester, 2011). Fourth, work place debt training programs can improve debt knowledge (Winchester, 2011). This study measured debt knowledge using self-assessment, numeracy test, debt education and debt training. Therefore, following literature review the following relationship was stated in its null form:

H_{04}: There is no significant effect of debt knowledge on indebtedness of formal sector employees in Kenya.

Non-cognitive ability	High	Debt Over-confidence		Debt Literate	Target Zone
	Medium				Caution Zone
	Low	Debt Unawareness		Debt Paralysis	Danger Zone
		Low	Medium	High	Debt Literacy
		Cognitive ability			Zones

Figure 2.3: Debt literacy grid and zones

Adapted from Huston (2012, p. 568)

Figure 2.3 was adapted from Huston (2012); however the two dimensions of debt literacy used in this figure were those of Arellano et al. (2014) as shown in Table 2.1 above. According to Huston (2012), there are three debt literacy zones within the scoring grid. First, the person who scores high in both cognitive ability (debt knowledge and experiences) and non-cognitive ability (debt capability and borrowing behaviours) can be found in the target zone. Second, those with at least mid-level scores in both dimensions are found in the caution zone, and last, those with low scores in either cognitive ability or non-cognitive ability, or both are in the danger zone. Within the danger zone there are three sub-classes or persons. The foremost to mention are those who are debt paralysed since they have high cognitive ability and low non-cognitive ability, next are the debt over-confident persons because they have excess confidence and low cognitive ability and finally, the debt unaware persons since they score low in both cognitive and non-cognitive ability. This study anticipated that debt literate employees found in the target zone would be less indebted.

2.3.7 Socioeconomic Characteristics of the Employees

The distribution of personal debt within countries is very similar especially when borrowers' characteristics are considered (Herceg & Sosic, 2010). The most common social characteristics are age, gender, marital status, family size, type of housing, level of education, number of year worked, occupation, region, and sector. On the other hand, the commonest economic characteristic is level of respondent's income. Researchers in the area of personal debt and debt literacy have collected data on the social and economic character of the respondents (e.g. Bhushan & Medury, 2013; Chawla & Uppal, 2012; Disney et al., 2008; Liv, 2013).

These researchers have proceeded to compare the socioeconomic characteristics with either debt literacy or indebtedness. Studies by Chawla and Uppal (2012), Disney et al. (2008) and Liv (2013), for example found that socioeconomic characteristics determine the levels of indebtedness. In the same line Bhushan and Medury (2013) concluded that socioeconomic characteristics influence the financial literacy of employees. However, this comparison is beyond the realms of this study. Nevertheless, this study collected data on socioeconomic characteristics of the employees with a view to painting a general picture of the sample characteristics. In addition, the study examined the moderating effect of age of the employees on the relationship between debt literacy and indebtedness.

2.3.8 Age of the Employees

The objective of this section is foremost, to justify the choice of age of employees as a moderating variable in the relationship between debt literacy and indebtedness. Second is to anchor the relationship between age and debt literacy on one hand and indebtedness on the other with theories and prior studies. According to Ibrahim and

Alqaydi (2013) age refers to the approximate period of time a respondent has been alive since he was born.

The usual pattern, in accordance with the life cycle theory, is that people borrow more while young, save in their middle age and spend after retiring. Young people are keener to borrow in order to smooth consumption. With population growth, there are more young people than old, so more people are borrowing than are saving, so that the total saving of the old will be less than the borrowing of the young, and there will be net borrowing. Therefore, personal debt is for the young. By coincidence, the young are newly employed and their salaries are relatively low compared with their older cohorts (Abid et al., 2012; Lusardi & Tufano, 2009). The life-cycle hypothesis expects indebtedness to increases during the first half of the life cycle and then gradually decline in the second half. This means the relationship between age and indebtedness follows hump-shape curve as shown in Figure 2.4.
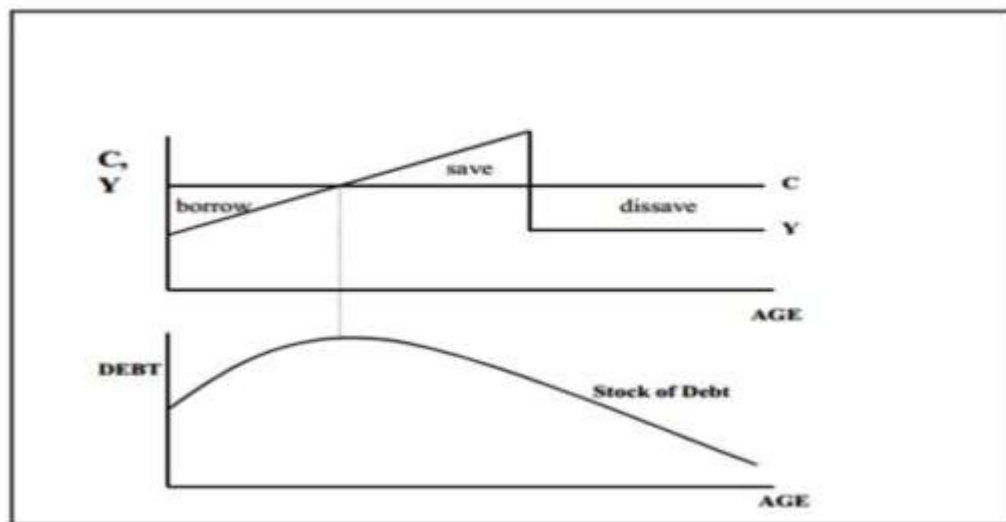
Figure 2.4: Average debt of individuals
Source: Thaicharoen et al. (2004, p.6)

The permanent income theory presumes that individuals base consumption on a constant percentage of their anticipated life income. According to this theory, the

permanently high debt levels at young age are fully rational assuming growth of their income in future. Given that the majority of the workers get salary increases during their lifetime, debt levels will therefore tend to be higher than their salaries at the beginning of their life cycle and decrease gradually with age (Modigliani, 1985). The relative income theory propounds that an individual will compare his consumption pattern to the average consumption of his reference group. Alvarez-Cuadrado and Long (2008) argue that young people derive utility from leisure and relative consumption. They emphasise that the relative consumption of the youth is driven by either comparison of their lifecycle income or the lifetime income of their reference group.

Age is a key determinant in the nomenclature of the other socioeconomic characteristics. For instance, the family size and marital status are often determined by age. Several studies have concluded that the greater the size of the household (family size) the higher the consumption, medical and education budget and therefore the greater the likelihood for the household-head to demand and hold debt (Byran et al., 2010; Fasianos et al., 2014). Yet Crawford and Faruqui (2012) contend that the demand of credit vary considerably across households depending on age, income, among other factors. On the other hand, they continue to argue, the willingness of the lender to supply credit will depend on some of these socioeconomic characteristics with age of the borrower considered a major determinant.

Age is empirically a key determinant of debt holding. However, research findings have been contradictory. A study by Frade and Lopes (2006) concluded that Portuguese over-indebted people are aged between 30 and 49 years. Yet another study by Herceg and Sosic (2010) in Croatia found that the probability of having a bank

loan decreases with age. Whilst a study by Chawla and Uppal (2012) in Canada found the incidence and level of household debt are higher in certain population groups, singling out the younger homeowners and young families with children. The study also showed that 60% of the debt was held by those under 45 years of age (Chawla & Uppal, 2012)

A study in Czech by Cernohorska and Linhartova (2013) found the young persons aged less than 29 years used debt the most and the oldest people aged 70 years and above were borrowing the least. Yet another study by Fasianos et al. (2014) in Europe specifically Greece, Spain, France, Germany, Italy and Portugal, found age as one of the most significant determinants of household debt. Whereas Dick and Jaroszek (2013) concluded that elderly people are reluctant to buy in credit generally. Similarly, Lusardi and Tufano (2009) concluded that indebtedness is for the young. Finally, a study by Legge and Heynes (2009) where financial behaviours and family characteristics were regressed against indebtedness, found age a significant confounding factors. It follows that several extant research findings are inconsistent with the life cycle hypothesis that the curve for indebtedness against age is hump-shaped.

Social learning theory proposes that learning occurs because of interaction with the environment (debt market) and new experiences are evaluated by means of past experiences. Therefore, per the social learning theory, the learning curve is hump-shaped. Financial socialisation hypothesis, which was inspired by learning theory, states that learning occurs when interaction with media, parents, schools and peers occur. Lusardi, Mitchell and Curto (2010) posit that financial skills are usually learnt

from an individual's circle of family, particularly from parents' financial behaviour. The implication is that the young are more likely to consult parents on debt matters.

Copur (2011) concluded that financial communication from parents diminishes with age. Copur contends that as people age, they establish autonomy from their parents and discuss and learn from peer groups. He concludes that the younger the person is the stronger is the peer effect from friends. Bandura (1991) asserts that younger people learn through observation and imitation from role models they frequently come into contact with. Learning theories propose that personal financial learning improve with time and it is optimised by financial education, training, trial and error and by financial experiences. However, learning by doing is not an effective substitute for financial knowledge. Financial mistakes also vary with age and usually follow a u-shaped pattern (Hastings et al., 2013).

Further, Locke and Latham (2013) contend in their goal setting theory that elderly persons will show higher goal commitment than both medium aged and the young. The implication is that debt budgeting, control and planning improves with time. Yet Finke (2011) contend that individuals spend a lifetime acquiring financial knowledge but financial capability which is the ability to apply financial knowledge declines with age as memory and recalling ability fades. He referred this as the "loss of fluid intelligence thesis". The "loss of fluid intelligence" may begin as early as 20 years but quickly accelerates after 60.

Several studies have found debt illiteracy particularly acute among the elderly (Lusardi, 2006; Lusardi, 2009; Lusardi & Tufano, 2009). Yet another study by de Bassa-Scheresberg (2013) in America found young adults lacking basic financial knowledge the most. Yet a study by Disney and Gathergood (2011) found that self-

confidence declines with age. The Federal Reserve Board (2013) found older adults more vulnerable to poor financial choices, often making mistakes because of declining cognitive ability. However, the youth are as well susceptible but their mistakes are more likely to be due to inexperience.

Therefore, the age of the borrower is empirically and theoretically supported as a vital determinant of both debt literacy and indebtedness. Age of employees was operationalised as a categorical ordinal variable. This study dichotomised age as 1 if aged less than 36 years, 2 if 36 to 45 years and 3 if over 45 years. The hypothesis was stated in their null form as follows;

H_{05}: There is no significant moderating effect of age on the relationship between debt literacy and indebtedness of formal sector employees in Kenya.

2.3.9   Personal Indebtedness

In the subsistence of a debt agreement, the debtor is indebted to the creditor. Indebtedness therefore refers to a commitment to honour an obligation or liability arising from borrowing money or taking goods or services on credit (Prinsloo, 2002). Indebtedness therefore is a relative term but researchers have attempted to make it more meaningful by comparing the total debt outstanding or the debt repayment with income, assets or wealth. Broadly, debtors can either be under-indebted or over-indebted (Liv, 2013).

Several dimensions have been used to measure indebtedness: Firstly, indebtedness has been measured by a self-assessment by the borrower. The borrower indicates the degree of financial difficulties he faces during repayment of the personal debt. This has been operationalised by ranking the financial distress faced by the borrower on a

likert-scale (Gathergood, 2012; Schicks, 2012). This measure is based on the borrower's subjective judgement because it relies on personal evaluation of debt burden. Borrowers will have different rating for similar debt burden (Herceg & Sosic, 2010). Gathergood (2012) adds that the rating of the debt burden will also be affected by other factors such as comparison with other borrowers in the reference group. It is therefore a qualitative measure. The degree of debt burden has been rated in a scale of low to high by Liv (2013) and Schicks (2012).

Secondly, delinquency and default rate on debt has been used by Bicakova et al. (2011) and Gathergood (2012). This is operationalised by the number of months in arrears. For example, Gathergood (2012) dichotomised loan outstanding balances into more than two month in arrears or less. Thirdly, the number of different loans owed by a borrower has also been used. When debtors have more than one loan commitment, they have been referred to as multiple borrowers. It is common to find individuals with more than one loan, even from one financial institution (Liv, 2013). Fourth, several studies have measured indebtedness using ratio analysis. Researchers on indebtedness have used the ratio of total debt to gross income (Malaysia, 2011), debt repayment to gross income (Hurwitz & Luiz, 2007; Liv, 2013) and total debt to total asset or wealth (Frade & Lopes, 2009; Prinsloo, 2002). Several studies have measured indebtedness using the debt repayment to net income ratio which they have referred as either Debt Service Ratio (DSR) or Debt Burden Ratio (Bicakova et al., 2011; Dey et al., 2008; Djoudad, 2011; Dynan, Johnson & Pence, 2003 and Liv, 2013). This study adopted the term Debt Service Ratio (DSR). DSR used in this study is the ratio of loan repayments to the total   disposable income.

According to Liv (2013), DSR has three thresholds. First, when DSR is greater than 100% the person is considered 'insolvent'. Secondly, if DSR is between 76% and 100% the person is considered to be 'at risk' and finally, if it is less than or equal to 75% the person is considered 'solvent'. DSR is a measure of short-term indebtedness. However, Liv (2013) concludes that DSR as rule of thumb should be less than 30%. The ratio of total outstanding debt to total disposable income has also been used by several researchers (Bicakova et al., 2011; Herceg & Sosic, 2010; Liv, 2013). This ratio has been referred to as the Debt Income Ratio (DIR) in the literature. According to Bicakova et al. (2011), the range of 450% to 600% indicates moderate financial vulnerability. This study also used DIR, which is a measure of long-term indebtedness.

Other ratios used by researcher on indebtedness are total debt to financial assets, total debt to GDP and personal bankrupcy rates (Bicakova et al., 2011). The most popular ratio is DSR. Majority of the studies on indebtedness have used more than one dimension. For example, Santos and Abreu (2013) by a probit model computed three dependent variables; odd ratios for financial stress, arrears and foreclosure while a study on the micro-borrowers in Cambodia by Liv (2013) employed DSR, DIR and self-assessed debt burden as dependent variables. This study used DSR and DIR; borrowing heavily from Liv (2013). However, computations of the DSR and DIR were adapted to the Kenyan context so as to be consistent with the current payroll policy.

2.4   Empirical Literature Review

This section covers review of selected empirical studies within the domain of debt literacy and indebtedness. It is organised based on each variable in the study. It also

includes a critique of the study reviewed. The review also attempts to identified research gaps and areas that would have improved the concerned study.

2.4.1 Debt Experiences and Indebtedness

Lusardi and Tufano (2009) analysed a national sample of Americans with respect to debt literacy, financial experience and their level of indebtedness. The study measured financial knowledge through a set of multiple questions testing their understanding of debt related issues. The study reported that all segments of the populace have dismal financial knowledge but the most affected were women and the elderly. Foremost, the study reported a strong relationship between debt literacy and both financial experience and debt load. Further, logit model results show age groups had a negative and significant coefficients to debt literacy and positive and significant relationship with financial experiences. The overall model of the study when the dependent variable was self-assessed debt burden produced a "pseudo" R-squared of 21.1%. Although the study is similar to this study, the debt experiences operationalized are contextually not applicable to Kenya and the models used were not statistically robust.

Winchester (2011) using data collected during the 2007 recession in USA, examined the impact of professional financial advice on investors' commitment to long-term financial goals during changing market conditions. Results of the study suggest that investors who use a financial advisor are about one and a half times more likely to adhere to their long-term investment decisions despite market volatility than those who do not purchase financial advice. Additionally, investors who have the ability to self-regulate, as measured by having a written financial plan, are almost twice as likely to make optimal long-term financial decisions. The study found that age of

investors aged less than 44 years was negatively correlated with seeking financial advice while it was positively correlated for those aged above 44 years. The study examined financial advice when investing and not when making borrowing decisions.

Chawla and Uppal (2012) used the 2009 Canadian Financial Capability Survey dataset. The survey received responses from 15,519 persons aged 18 years and over. During the study socio-demographic characteristics and debts owed by the respondents were collected. They found that the incidence and level of household debt are higher in certain population groups such as the younger homeowners, young families with children, the better educated, and those with higher household incomes. Indeed, over 60% of household debt was held by those under 45 years of age. The study also found that both financial literacy and self-assessed financial knowledge were associated with higher absolute debt levels. The study concluded that higher levels of debt corresponded to a higher likelihood of receiving financial advice. The study's conclusion contradicts the general rule that borrowers who seek advice are likely to make optimal debt decisions.

Disney et al. (2014) used UK survey dataset of indebted individuals in which questions on financial literacy were fielded. The study compared the individual's indebtedness to financial literacy, and the financial literacy to exposure to credit counselling. The study found that, for a given debt problem, financial literacy decreased the likelihood of seeking professional counselling. The study found that when credit counselling was regressed against age and income, the coefficients were negative while when regressed with debt holding, it was positive. Foremost, the study concluded that the likelihood of seeking credit counselling decreases with age and income but increases with debt holding. The study also concluded that credit

counselling is a substitute, and can be used as a safety net, for poor financial literacy. The study only related credit counselling to indebtedness.

2.4.2   Borrowing Behaviours and Indebtedness

Georgarakos et al. (2010) using comparable survey data from 12 European countries from 1994 to 2001 investigated households' attitudes towards mortgage indebtedness. Using age category as a reference groups, the results from the study suggest a similar pattern for the 12 countries. Age groups had significant margin effects on indebtedness. The study found that Household's indebtedness is a function of the relative debt load of reference households. Thus, the study concluded that households evaluate their own debt burden partly in comparison with the debt position of their peer group. The study only looked at the "peer effects" on mortgage indebtedness. What are the "peer effects" on personal debt generally?

Disney and Gathergood (2011) using dataset released quarterly by Yougov Debt Track did a study in September 2010 in United Kingdom. The study examined the association between consumer credit and financial literacy. The study employed 85 questions to proxy debt literacy. The study found the debt illiterate households used higher cost credit and are more likely to report credit arrears or difficulty paying their debts; a weak and negative relationship. However, debt literate households are more likely to hold liquid savings. The study also found that financial confidence generally increased into mid-age with a slight deterioration near retirement. The young were found to have high numeracy skills but low levels of financial confidence. The study only related self-confidence and numeracy skills to indebtedness as measured by high-cost borrowing.

Disney and Gathergood (2012) using survey dataset collected in October 2010 from a sample of UK households analysed the relationship between financial literacy and consumer credit portfolios. The study found that individuals who borrow on consumer credit exhibit worse financial literacy than those who do not. Borrowers with poor financial literacy held higher shares of high cost credit than those with higher literacy. The study also found that individuals with poor financial literacy are more likely to lack self-confidence when interpreting credit terms, and to exhibit confusion over financial concepts. Another finding by the study was that financially illiterate people were also less likely to engage in financial behaviour which might help them to improve their awareness of the credit market. Their finding show positive correlation between self-confidence in credit decision and financial literacy score. The study also found positive correlation between reading financial press and financial literacy score. The study linked some financial literacy indicators to indebtedness as measured by the odd ratio of making poor credit choices.

Gathergood (2012) examined the relationship between self-control, financial literacy and over-indebtedness on consumer credit debt among UK consumers. The study found that lack of self-control and financial illiteracy are positively associated with non-payment of consumer credit and self-reported excessive financial debt burden. Consumers who exhibit self-control problems showed high impulsiveness and had higher debts. The study found that individuals with self-control problems easily suffered financial shocks. Regression results from the study between over-indebtedness against age groups show that only respondents in the 18-25 years age-group had negative but significant coefficients. The study concluded that lack of self-control had a stronger relationship than financial illiteracy in explaining consumer over-indebtedness. The study only linked self-control and indebtedness.

A study by Brown and Graf (2013) examined how financial literacy is related to household investment and borrowing in Switzerland using about 1,500 respondents surveyed by telephone interviews. The study found that half of the respondents were able to answer three questions on basic financial concepts correctly. The study also found that the young households and retirees less familiar on basic financial concepts. On the hand, impulsive household were more likely to have a consumer loan. The study concluded that financial literacy is strongly positively correlated with mortgage borrowing but negatively correlated with consumer loan. Respondents in the age group 41-50 year had the highest numeracy test score while those of 20-30 years age group had scored higher than those 61-74 years. They concluded that the young people are able to make sound decisions just as the rest of the populace. The study linked self-control and numeracy skills with indebtedness as measure by the odd ratio of having credit.

Fasianos et al. (2014) employed the Household Finance Consumption Survey dataset from the European Central Bank to assess the role of household's demographic and financial characteristics in determining the level of household indebtedness and the possibility of facing financial pressures. The study conducted interviews in Greece, Spain, France, Germany, Italy and Portugal. Tobit models were used to assess the impact of household characteristics on secured and unsecured debt and Probit models to account for the likelihood of becoming financially fragile. The findings from the study indicate that age is a significant determinant of household debt while peer-income effects are robust determinant of financially stressed households. The study also found that young people are most probable to take on unsecured credit. The study related age and peer effects of household with its financial fragility which is conceptually different from indebtedness.

Arellano et al. (2014) using dataset from the Programme for International Student Assessment report of 2012 analysed whether self-confidence affects financial abilities of young people in Spain. The study hypothesised that non-cognitive factors such as self-confidence are important to establish young people's financial literacy and that financial knowledge, together with other personal attitudes, determines people's financial behaviour. The study found students with higher levels of self-confidence score higher in financial literacy tests. However, those with very high levels of self-confidence ran the risk of over-confidence. Although self-confidence improves wellbeing, they argue that the likely existence of diminishing returns by this virtue could lead to loss of wellbeing. The study did not link self-confidence to indebtedness.

Farrell et al. (2015) collected random responses from Australian women via an online survey in 2013. The survey collected responses from 2192 women. After allowing for non-response, largely for the survey questions relating to income, responses from 1542 women were used. The survey used six financial self-efficacy statements tapped on a likert-type scale. Multivariate probit model results from the study show that women who have higher levels of financial self-efficacy are more likely to have an investment, mortgage or savings account, while being less likely to have a credit card or loan. Further regression results show age of the women had positive and significant coefficients when regressed against the odd-ratio of having a loan. The study related self-confidence with indebtedness as measure by odd ratio of having a loan.

2.4.3   Debt Capability and Indebtedness

Nurcan and Bicakova (2010) using administrative data from a major credit counselling agency in the UK analysed the determinants of debt repayment

performance of approximately 60,000 borrowers who were enrolled on a debt management plans (DMP). The study assumed that borrowers who reported poor financial management and self-control problems were significantly more likely to fall on a DMP. The study found that the probability of falling on a DMP increased by 31% and 12% percent if a respondent admitted having bad financial management and self-control problems respectively. The study concluded that self-control considerations and financial management play a significant role in households' indebtedness and consequently repayment difficulties. The study targeted only borrowers in the DMP while this study targeted all borrowers working in the formal sector.

Nyamute and Maina (2011) collected survey data via a structured questionnaire from 192 employees in Commercial banks in Kenya. The study focused on the effect of financial literacy on personal financial management including debt management. The study found that those who are financially educated do practice standard financial behaviours. The study found that one can still practice standard financial management behaviours regardless of whether or not one is financially literate. The study concluded that there may be other avenues of acquiring financial knowledge. However, the study concluded that there is significant difference between those who are perceived to be financially educated and those perceived otherwise. The study only used standard financial management practises to measure financial literacy. It is also noteworthy that the study did not link the financial management practises to indebtedness.

Ajzerle et al. (2013) surveyed personal debt in Australia by interviewing 680 individuals. The objective of the study was to examine whether financial capability

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affects the effectiveness of utilizing the personal debt obtained. The study fielded likert scale financial capability questions on managing money, planning ahead, choosing financial products, staying informed and obtaining assistance when required. Responses to these questions were aggregated to generate a financial capability core. The study found high personal debt use and attributed it to the relaxation of the financial market regulations. The study found that people with greater financial capability were more likely to use debt effectively. The study related debt capability score to indebtedness as measured by effective use of personal debt.

Idris et al. (2013) examined the relationship between financial literacy and financial distress among Malaysian youth using quantitative approach. Questionnaires were used to determine the levels of financial literacy and financial distress of 430 employees aged less than 40 years. The findings show that the levels of respondents' financial distress and financial literacy were moderate. The study also shows that there is a negative but weak Pearson's correlation between financial literacy and level of financial distress. They posits that organizations would do well if they invest in human resources, in particular, personal financial management skill of their employees as such knowledge would reduce financial distress among employees and ultimately, the organizations will achieve its own objectives of high productivity. The study surveyed young people and related financial literacy with indebtedness as measured by self-assessed debt burden.

Santos and Abreu (2013) conducted a study using dataset from the 2009 National Financial Capability in United States and fielded questions focusing on eight financial topics. The study found that financial literacy contributed to the prevention of over-indebtedness since individuals with higher levels of financial literacy were less likely

to be over-indebted. In addition, age of the respondent was found to have a positive coefficient to having arrears in the overall probit model. Also, individuals who engage in positive financial practises, such as spending less than their own income, setting a precautionary fund, using credit wisely or looking for financial advice, were less likely to experience severe financial difficulties. The study related age and financial literacy of borrowers to their indebtedness as measured by having debt arrears.

French and McKillop (2014) interviewed 499 households in Northern Ireland, UK from January to April 2014 by use of a local market research company. The study examined the importance of money management skills among credit union members in socially disadvantaged areas. The study found that those with superior money management skills had reduced debt-to-income ratios and were less likely to borrow from high cost lenders and were more likely to have used fewer lenders. The study concluded that credit unions should promote awareness and encourage members to manage loans more effectively by improving their budgeting skills. The study only link the debt capability score to DIR. What about DSR?

Jang (2015) in a study conducted by interview in South Korea investigated whether financial capability leads to financial stress reduction. He focused on community welfare centre users. The study conducted a survey in six community welfare centres from January to March 2014. The survey questions included information on financial literacy, financial management competency and self-esteem among others factors that were expected to influence financial stress. This study analysed total of 204 responses using structural equation modelling. First, the study found that financial management competency had the biggest influence on financial stress, followed by self-esteem. Second, enhancement of financial literacy appears to contribute to financial stress

reduction by improving self-esteem through strengthening financial management competency. The study concluded that financial capability-building programs such as financial education and counselling can contribute significantly to financial stress reduction among community welfare centre users. The study had uniquely different respondents, namely community welfare centre users.

2.4.4   Debt Knowledge and Indebtedness

Ironfield-Smith et al. (2005) using International Institute of Banking and Financial Services' Financial Wellbeing Survey reached 1325 respondents by post in UK. The study found that the number of consumers experiencing financial difficulty due to debt was on the increase and that respondents admitted that poor money management may be largely to blame and that financial education is lacking. The study related financial management skills to indebtedness as measured by self-assessed debt burden.

Robb and Sharpe (2009) collected data from 6,520 students by electronic mail at Midwestern University in United States. The objective of the study was to examine whether financial knowledge affects the credit card decisions. The study found that financial knowledge is a significant factor in the credit card decisions. Results of a double hurdle analysis indicated that students with relatively higher levels of financial knowledge were not significantly different from students with relatively lower levels in terms of the probability of having a credit card balance. The study had a unique finding that those with higher levels of financial knowledge had significantly higher credit card balances. The study used numeracy skills to proxy financial knowledge and also measure indebtedness using credit card balances.

Wickramasinghe and Gurugamage (2012) using five point's likert questionnaires studied 177 individuals in Colombo, Sri Lanka by convenience sampling. The sample of the study was restricted to individuals with credit card from financial institutions that allow the cardholder to use the card for payments and as a source of revolving credit. The individuals were identified through the directories and personal networks. The study employed structural equation modelling. The objective of the study was to assess the effects of credit card users' knowledge about credit cards on expected credit card usage outcomes including indebtedness. The study found that personal financial knowledge is negatively related to indebtedness. The study used knowledge about credit cards to proxy financial literacy and also measure indebtedness using credit card practices. The study did not relate age of the card holder to credit card practices

Zuroni and Lin (2012) using questionnaire and simple random sampling surveyed 100 working adults in Ipoh, Perak in Malaysia. The objective of the study was to relate personal financial knowledge to credit card practices. The study using Pearson's correlation found there was no significant relationship between personal financial knowledge and credit card practices. Therefore, the study uniquely concluded that personal financial knowledge does not influence the credit card practices. The study used numeracy skills to proxy financial knowledge and also measure indebtedness using credit card practices. The study did not relate age of the employees to credit card practices.

Brown et al. (2013) studied the effects of exposure to financial training on debt outcomes in early adulthood using dataset from Consumer Credit Panel for the years 1999 to 2012 in US. The study revealed significant effects of financial education on

debt-related outcomes of youth. They found financial literacy education resulted to improvement in repayment behaviour. It also led to greater creditworthiness, less debt balance and less delinquency. The study concluded that financial education has a negative correlation with debt-related outcomes such as having a student loan, debt balance and loan delinquency among others. The study linked financial education of the young people to several measures of indebtedness but not as operationalized in this study.

Lusardi and de Bassa-Scheresberg (2013) using the 2009 National Financial Capability dataset examined high-cost methods of borrowing in the United States. The dataset had over 26,000 respondents. They study found that about one in four Americans had used high-cost borrowing method. The study found many young adults engage in high-cost borrowing. The study also found that most high-cost borrowers display very low levels of financial literacy; they lack numeracy skills and do not possess knowledge of basic financial concepts. Another finding by the study was that those who were more financially literate were much less likely to have engaged in high-cost borrowing. The study concluded that it is not only the shocks inflicted by the financial crisis or the financial system but also the level of financial literacy can explain the use of high-cost borrowing methods. This study related numeracy skills to indebtedness as measured by access to high cost debt.

de Bassa-Scheresberg (2013) used dataset from the 2009 National Financial Capability Study to examine financial literacy in a sample of approximately 4,500 young adults aged 25 to 34 years in America. The study found that most young adults lacked basic financial knowledge. In addition, the study found that self-assessed financial knowledge does not mirror the numeracy skill score. The results from the

study also show that respondents who display higher financial knowledge have better financial outcomes. For example, they are less likely to use high-cost borrowing methods, and are more likely to set aside savings for emergencies. The study linked numeracy skills to indebtedness as measured by use of high-cost borrowing methods.

Ibrahim and Alqaydi (2013) examined financial literacy and personal debt among a sample of individuals residing in the United Arab Emirates (UAE). The study used a questionnaire distributed conveniently to 412 working individuals and the usable responses were about 45%. The results indicate that individuals with strong numeracy skill and financial capability tend to borrow less from credit cards. The results also show UAE nationals are more likely to borrow from banks than using credit cards or borrowing from friends and family members. The study related numeracy skills to indebtedness as measured by credit borrowing.

2.5 Critique of the Existing Literature Relevant to the Study

Most of the reviewed studies have weaknesses. First, most of the studies analyse one or a few indicators of debt literacy (Copur, 2011; Disney et al., 2014; Gathergood, 2012). Second, most of the studies have relied on datasets (Arellano et al., 2014; Barba & Pevitti, 2009; Disney & Gathergood, 2012; Fasianos et al., 2014; Ironfield-Smith et al., 2005; Thaicharoen et al., 2004). Third, majority of the studies on indebtedness are on households (Barba & Pivetti, 2009; Comelli, 2014; Disney & Gathergood, 2012; Fasianos et al., 2014; Krah et al., 2014; Mashigo, 2006; Nguyen, 2007; Thaicharoen et al., 2004).

Other studies are on all individuals whether working or not (Disney et al., 2014; Lusardi & Tufano, 2009). Some studies are on students (Arellano et al., 2014; Copur, 2011; Munyoki & Okech, 2012) and young people (Brown et al., 2013; Arellano et

al., 2014; de Bassa-Scheresberg, 2013) or working women (Farrell et al., 2015; Gupta & Madan, 2016). During the extensive empirical review, this researcher came across two studies on employees working in the formal sector (e.g. Ibrahim & Alqaydi, 2013; Idris et al., 2013) but their operationalization of debt literacy and indebtedness was not robust; not well dimensioned to indicators.

Four and very important, most of the studies are on financial literacy and do not linked it to indebtedness (Asaad, 2015; Disney et al., 2014; Krah et al., 2014; Nyamute & Maina, 2011). Fifth, some studies have looked at only one type of personal debt (Brown & Graf, 2013; Disney et al., 2014; Georgarakos et al., 2010; Liv, 2013). Sixth, samples used by some studies (Mashigo, 2006; Nguyen, 2007; Zuroni & Lin; 2012) were very small. Seven, some researchers examined supply side factors (Disney et al., 2008; Munyoki & Okech, 2012). Eight, most studies did not use either DIR or DSR to measure indebtedness (Ibrahim & Alqaydi, 2013; Idris et al., 2013). Finally, the statistical models used in most studies are not robust (Herceg & Sosic, 2010; Liv, 2013; Lusardi & Tufano, 2009).

2.6 Summary of Literature

Empirical and theoretical literature review explains the relationship between debt literacy and indebtedness of employees. Debt literacy has four dimensions, namely, debt knowledge, debt capability, borrowing behaviours and debt experiences. First, researchers have agreed that high financial literacy, and by extension debt literacy lead to numerous economic outcomes such as wealth, indebtedness, saving and retirement planning (Alessie et al., 2011; Hastings et al., 2013). However, due to differences in debt knowledge, capability, borrowing behaviours and experiences among individuals, the financial outcomes are different. Second, from the empirical

review, high debt literacy is associated with good financial outcomes. Third, researchers have enumerated myriad of debt literacy indicators. For example, seeking debt advice and counselling are named as debt experiences, which harness debt literacy. Finally, almost all studies on financial literacy or debt literacy and their associated outcomes, for instance indebtedness have collected data on socioeconomic characteristics especially age of the respondent.

2.7 Research Gaps

From the foregoing, it is evident that conceptual, contextual and methodological gaps exist. The first key research gap is that majority of the studies reviewed only describe financial literacy of individuals, students or households without relating it to any dependent variable. For example, a study by Bhushan and Medury (2013) in India only described financial literacy of employees. Second, most studies reviewed assess the relationship between financial literacy and different economic outcomes such as retirement planning (Lusardi & Mitchell, 2014), wealth accumulation and stock market participation (van Ooijen & van Rooij, 2014). Although there are a few studies relating debt literacy to indebtedness (Ibrahim & Alqaydi, 2013; Idris et al., 2013; Lusardi & Tufano, 2009) the concepts, context and methodology used are radically different from those employed in this study.

Third, none of the studies reviewed has attempted to model the relationship among debt literacy (independent variable), age of employees (moderating variable), and indebtedness (dependent variable). This study employed a moderated multiple regression (MMR) model to assess the moderating effect of age of employees in the relationship between debt literacy and indebtedness. Fourth, no study was found during the review relating debt restructuring experiences with indebtedness except

Lusardi and Tufano (2009) who studied financial experiences which were not affecting the loan terms and tenure.

Lastly, the bulk of existing research on personal indebtedness are concentrated in developed and a few emerging economies and the recommendations and policies ensuing from these studies are not suitable to developing economies like Kenya. This is because the technological, economic, and socio-demographic conditions of developed and emerging economies are different from those of developing countries. Besides, key findings from these studies have been contradictory. Moreover, only a few of those studies address the menace of personal debt. Even the few studies on personal debt from developing countries specifically India, South Africa and Tunisia did not critically relate personal indebtedness to debt literacy. The research gaps were identified from the extensive empirical literature review. This study filled these gaps.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter covers the following; research philosophy that guided the study; the research design for the study, the population of the study, the sampling methodology, how the variables were operationalised and measured, the sources of data, collection of data, data reliability and validity considerations, data processing and finally data analysis.

3.2 Research Philosophy

The study was based on the positivism philosophy. Research philosophy is the underlying fundamental belief that underpins the choices that require to be made in making a research position. The research philosophy has implications on what, how, and why research will be carried out (Carson, Gilmore, Perry & Gronhaug, 2001). The selection of the research philosophy was a choice between two options: positivism and phenomenology.

Under the positivism paradigm the researcher is independent and detached and does not allow personal experience and feelings to contaminate the research process. The positivism philosophy also aims at empirical testing of theories and hypothesized relationship by describing the situation as it is and offering possible explanations. The researcher should also employ sample surveys, questionnaires and statistical models for data analysis (Carson et al., 2001). Positivism is characterized by a belief in theory before research and statistical justification of conclusions from empirically testable hypothesis, which is the core of social science (Cooper & Schindler, 2011). The main features of the two alternatives are shown in Appendix 5.

3.3 Research Design

This study used descriptive research design which was mainly survey, cross sectional, and correlational. Research design is the blueprint used to guide a research study to ensure that it addresses the research problem (Kothari, 2009). There are three types of research designs; namely exploratory, causal and descriptive. Exploratory research designs are aim at discovering ideas and insights. Causal designs are used to establish the cause-effect relationship while descriptive designs are interested with describing a population with respect to certain important variables. Further, descriptive design can be divided into survey studies which aim at describing the status quo; correlation studies which investigate the relationship between variables and developmental studies which measure change over time (Field, 2013; Kothari, 2009).

On the other hand, descriptive design can be referred as either cross sectional or longitudinal. A cross sectional design involves collecting and analysing data at a point in time while a longitudinal design involves measuring the variable repeatedly over time (Field, 2013; Sekaran, 1992). This study described the relationship between debt literacy and indebtedness. The strength of the relationship among the study variables was assessed at one point in time. Therefore, descriptive research design which was mainly cross-sectional, survey and correlational was used to describe the relationship as well as either reject or fail to reject the hypothesised relationships.

3.4 Population and Sampling Frame

The population of the study was all the employees in the formal sector in Kenya. Data available from KNBS (2016) reveal that there are about 2,478,000 employees in the formal sector in Kenya. These are broken down as 1,759,600 (71%) employees in the private sector and 718,400 (29%) employees in the public sector. KNBS (2016) have

classified these employees by occupation as shown in Appendix 6. The rationale for targeting the employees in the formal sectors is because they are the most affected by over-indebtedness (Woods, 2010).

3.5 Sample and Sampling Technique

This study used a two stage cluster sampling technique. Cluster sampling is a probability technique. A probability sampling technique involve selecting a large number of units from a population in a random manner where every member of the population have equal chance of been selected. The aim of probability sampling is to achieve representativeness, which is the degree to which the sample accurately represents the entire population (Kothari, 2009; Teddlie & Yu, 2007). Probability techniques may involve more than one probability sampling techniques (Teddlie & Yu, 2007).

According to Teddlie and Yu (2007), cluster sampling occurs when the researcher wants to generate a more efficient probability sample in terms of monetary and time resources. This is especially where units of interest are spread geographically over great distances. In random sampling, each unit of interest in the population has an equal chance of being included in the sample, and the probability of a unit been selected is not affected by the selection of other units because the selections are made independently (Teddlie & Yu, 2007). This study used two-stage cluster sampling. In the first stage of sampling, the clusters are selected randomly while in the second stage of sampling, the units of interest are randomly sampled within the selected clusters (Teddlie & Yu, 2007). It is a common sampling technique in most studies of debt literacy and indebtedness where regions (the clusters) are randomly selected and

then the borrowers (the units of interest) in those selected regions are randomly sampled (e.g. Liv, 2013).

Therefore, the first stage in this study was to cluster Kenya into 47 counties and also to randomly select counties. Twelve counties in the historical Central, Coast and Nairobi provinces were selected which was 25.5% of the clusters. Secondly, random sampling was be used to identify the final respondents from the selected counties. A study by Liv (2013) selected 44 villages out of the 14,074 villages in Cambodia and proceeded to select randomly the micro-borrowers from the 44 villages. A breakdown of the 337 responses by county is shown as Appendix 8.

According to Cochran's 1977 formulae (as cited in Bartlett, Kotrlik & Higgins, 2001) the sample size for a population of more than 10,000 respondents can be computed using the formula below:

$$n = \frac{pqz^2}{\varepsilon^2} \quad \text{.. (3.1)}$$

Where, n = Sample size

p = Population proportion with given characteristic

q = Population proportion without given characteristic

z = Standard normal deviation at the required confidence level

ε = Error margin

They recommend that p and q (since are p and q unknown) be set at 50%. At a confidence level of 95% that was used for this study, $z = 1.96$ and the sampling error, $\varepsilon = 5\%$.

$$n = \frac{50 \times 50 \times (1.96)^2}{5^2} = 384 \quad \text{.. (3.2)}$$

In view of the foregoing, the optimal sample size was 384 employees. This is consistent with Gupta (2005) who says a sample size of between 30 and 500 is appropriate for most research. An optimum sample is one that fulfils the requirements of efficiency, representativeness, reliability and flexibility (Kothari, 2009). Therefore this study distributed 384 self-administered questionnaires.

3.6 Data Collection Instruments

In this study primary data was collected using a self-administered questionnaire as the only research instrument. Several studies on indebtedness have used questionnaires to collect their data (Bicakova et al., 2011; Liv, 2013; Nguyen, 2007). The questionnaire statements were adapted from extant studies. For example, OECD (2011) has provided numerous question statements which researchers have modified to suit their environments. The questionnaire was preferred because it can be interpreted in the same way by all respondents thus achieving consistency (Saunders, Lewis & Thornhill, 2003) and data collection using questionnaires is easier to analyse (Cooper & Schindler, 2003). The research team explained the nature and importance of the study to the respondents during both the pilot and main study. Confidentiality was also assured to the respondents through the letters of transmittal that accompanied the questionnaires.

According to Diamantopoulos and Schlegelmilch (1997, as cited in Saunders et al., 2003) there are four scales of measurement, namely nominal, ordinal, interval and ratio. Nominal scales deals with variables that are non-numeric and it is hardly a measurement; for example when respondents are classified as either male or female. Ordinal scale refers to ranked order in measurement; for example where attributes are low, medium or high. Interval scales provides information about order and also

possesses equal interval; for example where responses are tapped on a five point or more likert scale. In addition to the qualities possessed by nominal, ordinal and interval scale, a ratio scale has an absolute zero; where zero has meaning. Ratio scale is therefore used to measure quantifiable variables. The sturge's rule was used where applicable.

The questionnaire in Appendix I was administered to employees randomly by the research team. In very few instances, permission to administer the questionnaires to employees was sought from the institutions' heads. In which case, the research team would then proceed to administer the questionnaire randomly. Respondents were given a period of 7 days to respond to the questionnaires. The filled up questionnaires were collected on the appointed dates.

3.7 Reliability and Validity Considerations

According to Sekaran (1992) reliability of a measure has two parts; its stability over time and the consistency of the instrument in measuring the concept. The stability of a measure can be assessed by use of test-retest reliability and parallel-form reliability. Internal consistency can be assessed using inter-item consistency, with the most popular being the Cronbach's alpha coefficient. It is used for multi-scaled items and measures the extent of correlation of all the items in the instrument and whether they can be used to measure the same concept (Sekaran, 1992). Cronbach's alpha coefficient was therefore used to test reliability of the measures in the questionnaire with Cronbach's alpha of above 0.70 aimed at.

Validity is divided into content validity, criterion-related validity and construct validity (Sekaran, 1992). Content validity is concerned with inclusion of a sufficient number of study items and dimensions to capture the concept being studied. Criterion-

related validity is comprised of concurrent and predictive validity. If concurrent validity holds, items known to be different should have dissimilar scores. Predictive validity refers to how well the results of using the measure can discriminate in a future criterion. Construct validity refers to how well the results of using the measure fit in to the theory which informed the study (Sekaran, 1992). For validity considerations to hold water, a detailed questionnaire was constructed and piloted. The content of the questionnaire was borrowed heavily from question statements used by extant studies and which were found to fit in the theories and the debt literacy and indebtedness discourse. The questionnaire is shown as appendix 1.

The questionnaire was pre-tested using a sample size of 38 respondents in February 2016. This is consistent with the recommendation by Mugenda and Mugenda (2003) that a successful pilot study can use 1% to 10% of the actual sample size. The respondents in the pilot survey were 10% of the targeted sample size (384). The results of the pilot study were used to refine the questionnaire. To increase likelihood of external validity, the pilot sample was selected randomly.

3.8 Operationalization of Study Variables

Operationalization is the process of developing operational definitions of the variables in a quantitative research study (Sekaran, 1992). The operation definitions for the sub-variables used in this study are shown as Appendices 2, 3 and 4. This study explored four debt experiences namely multiple loans, loan restructuring, debt advice and credit counselling. Borrowing behaviours was measured by ten likert scale questions on the extent of the respondents' self-control, self-confidence and peer influence. Debt capability was operationalised using personal budgeting, budgetary control and planning practices of the respondents.

On the other hand debt knowledge was measured using self-assessment, numeracy test, debt education and debt training scores of the respondents. This study used age of the respondents to moderate the relationship between debt literacy and indebtedness. The dependent variable was measured using DSR and DIR. The independent, moderating and dependent variables in this study were operationalised in accordance with extant studies as shown in Appendices 2, 3 and 4.

3.9 Data Processing and Analysis

Once the data was collected, it was inspected for completeness and then coded. Consistent with Byran et al. (2010) and Liv (2013), data was analysed in three steps. First, computation of indebtedness score of employees was done using the equations 3.3 and 3.4 in sub-section 3.9.1. Second, the components of debt literacy were each aggregated to yield a mean score. Debt experiences is an arithmetic mean of multiple loans and likert scale questions relating to debt restructuring, debt advice and counselling. Borrowing behaviours is arrived at by an arithmetic mean of likert scale questions relating to self-control, self-confidence and peer influence. Debt capability is arrived at by an arithmetic mean of likert scale questions relating to personal budgeting, personal budgetary control and personal planning. Debt knowledge was arrived at by an arithmetic mean of self-assessment, numeracy test, debt education and debt training. Lastly, aggregate debt literacy was an arithmetic mean of debt experiences, borrowing behaviours, debt capability and debt knowledge. Before any analysis, outliers were removed. According to Field (2013) data usually have large outliers, especially when the variables are expressed in ratios. An outlier is a score very different from the rest of the data. It is important to identify and remove outliers prior to modelling and analysis, advices Field.

Third, preliminary analysis using descriptive statistics were done. In this case various descriptive statistics were computed, including arithmetic mean and measures of dispersion such as standard deviation, kurtosis and skewness. Analysis of Variance (ANOVA) statistics were also used. Fourth, indebtedness was related to the other study variables. Pearson's correlation, simple and multiple regression analysis were also done. The fourth stage is explained in sub-sections 3.9.3 through 3.9.7. Several prior studies on indebtedness have used correlation and regression analysis (Comelli, 2014; Gathergood, 2012; Liv, 2013; Nguyen, 2007). Data analysis was done with the help of IBM SPSS Statistic 21 which was the most current version in the market.

F-test was used to assess the significance of the study variables against a selected variable. The coefficient of correlation (R) was computed to assess goodness of fit. Coefficient of determination (R^2) was computed to explain the percentage of variation in indebtedness explained by debt literacy. Conversely, the coefficient of non-determination (K^2) was computed to explain the percentage of variation in indebtedness which was not explained by debt literacy. The degrees of freedom are k and n-k-1, where, k=number of predictor variables and n=number of predictor observations. The null hypotheses of no effect were rejected or failed to be rejected based on results of ANOVA's p-values. Where p-values were less than 0.05 the null hypothesis was rejected. The respective slope coefficients of the study constructs and sub-constructs were also tested individually for their statistical significance and direction using Pearson's correlation and regression analysis. Similar past studies have used ANOVA, correlation and regression analysis (e.g. Brown et al., 2013; Zuroni & Lin, 2012). The overall regression models and conceptual framework were revised, foremost, in view of the statistical significance of the constructs and next

using the statistical significance of the sub-constructs. The revised regression models and conceptual frameworks are shown in sections 4.10 and 4.11.

3.9.1   Computation of Indebtedness

DSR was computed for each respondent by use of the formulae in equations 3.3 borrowing heavily from the work of Liv (2013), Schicks (2012) and Bicakova et al. (2011).

$$DSR_i = \frac{\sum R_i}{\sum Y_i} \quad \text{.. (3.3)}$$

Where,   DSR$_i$ is the debt service ratio of the employee $_i$ (Where, DSR$_i$ > 0)

R$_i$ is the loan monthly repayment of employee i

Y$_i$ is the total disposable income for employee i

On the other hand, DIR was computed for each respondent by use of the formulae in equations 3.4 borrowing heavily from the work of Herceg and Sosic (2010) and Bicakova et al. (2011).

$$DIR_i = \frac{\sum B_i}{\sum Y_i} \quad \text{.. (3.4)}$$

Where,   DIR$_i$ is the debt income ratio of the employee $_i$ (Where, DIR$_i$ > 0)

B$_i$ is the loan outstanding balance of employee i

Y$_i$ is the total disposable income for employee i

Therefore, DSR is the proportion of disposable income that is committed to debt monthly. Whereas DIR refers to as the number of times a borrower has committed his disposable income. DSR is a short-term (monthly) measure of indebtedness while DIR is long term. DIR can be interpreted in terms of several months or years.

3.9.2 Diagnostic Testing

Diagnostic tests aim at detecting statistical bias that would affect the parameter estimates, standard errors, confidence level, test statistics and p-values. In most cases statistical bias appears when the assumptions of statistical test are violated. The main assumptions are additivity and linearity, normality, homoscedasticity and independence (Field, 2013). It is important diagnostic test are carried out prior to data modeling and analysis, advices Field. Therefore, this study tested for normality, linearity, homoscedasticity and independence.

Data can follow either a normal distribution or not. Normality is important because it aid in knowing the shape of the distribution. Further, when data is normally distributed the significance test, confidence intervals and the parameter estimates will be accurate (Ben-Gal, 2005; Field, 2013). The assumption of linearity means that the dependent variable is linearly related to any independent variable. This assumption is the most important because if it is not met, even when all the other assumptions are met, the model is invalid (Field, 2013).

According to Field (2013) homoscedasticity means that the variance around the regression line is the same for all the values of the predictor variable. When all the residue values at each point have equal variance, this is called homogeneity of variance while the complimentary notion is called heteroscedasticity. Finally, the assumption of independence basically means that for any two observations, the residual values should be uncorrelated. This will mean lack of multi-collinearity. When the assumption of independence is violated, the confidence intervals and the significance tests will be invalid. For example, perfect collinearity exists when an

independent variable is a perfect linear combination of another and they have a correlation coefficient of 1 (Field, 2013).

3.9.3   Hypotheses Testing

This study sought to establish the effect of debt literacy on the indebtedness of employees in the formal sector in Kenya by testing five null hypotheses. However, following separate computation of DSR and DIR in section 3.9.1, the study finally tested ten hypotheses which were generated from the five specific objectives. Hence the null hypotheses of the study were;

H_{01a}: There is no significant effect of debt experiences on DSR of formal sector employees in Kenya.

H_{01b}: There is no significant effect of debt experiences on DIR of formal sector employees in Kenya.

H_{02a}: There is no significant effect of borrowing behaviours on DSR of formal sector employees in Kenya.

H_{02b}: There is no significant effect of borrowing behaviours on DIR of formal sector employees in Kenya.

H_{03a}: There is no significant effect of debt capability on DSR of formal sector employees in Kenya.

H_{03b}: There is no significant effect of debt capability on DIR of formal sector employees in Kenya.

H_{04a}: There is no significant effect of debt knowledge on DSR of formal sector employees in Kenya.

H_{04b}: There is no significant effect of debt knowledge on DIR of formal sector employees in Kenya.

H_{05a}: There is no significant moderating effect of age on the relationship between debt literacy and DSR of formal sector employees in Kenya.

H_{05b}: There is no significant moderating effect of age on the relationship between debt literacy and DIR of formal sector employees in Kenya.

The null hypothesis is that $b_i = 0$ and has insignificant (p>.05) contribution to the dependent variable, DSR and DIR. On the other hand, rejection of the null hypothesis $[H_0 : b_i = 0, p > .05]$ signals existence of a significant effect of debt literacy on indebtedness of formal sector employees in Kenya (Field, 2013).

3.9.4   Regression Analysis of Indebtedness Against Debt Experiences

The simple ordinary least square (OLS) regression models in this study were adapted from Mukras (1993). Simple OLS regression model was used to determine the effect of debt experiences on indebtedness of formal sector employees in Kenya. This model tested hypothesis H_{01} and was as follow;

$$y_i = b_0 + b_1 x_1 + \varepsilon_i \quad .... (3.5)$$

Where: y_i = Indebtedness where y_1 = DSR and y_2 = DIR

b_0 = Level of indebtedness in the absence of debt experiences

b_1 = Intercept for debt experiences

x_1 = Debt experiences

ε_i = Error term

3.9.5   Regression Analysis of Indebtedness Against Borrowing Behaviours

Simple OLS regression model was used to assess the effect of borrowing behaviours on indebtedness of formal sector employees in Kenya. This model tested hypothesis H_{02} and was as follow;

$$y_i = b_0 + b_2 x_2 + \varepsilon_i \ \text{..} \ (3.6)$$

Where: y_i = Indebtedness where y_1 = DSR and y_2 = DIR

b_0 = Level of indebtedness in the absence of borrowing behaviours

b_2 = Intercept for the independent variable

x_2 = Borrowing behaviours

ε_i = Error term

3.9.6   Regression Analysis of Indebtedness Against Debt Capability

Simple OLS regression model was used to establish the effect of debt capability on indebtedness of formal sector employees in Kenya. This model tested hypothesis H_{03} and was as follow;

$$y_i = b_0 + b_3 x_3 + \varepsilon_i \ \text{..} \ (3.7)$$

Where: y_i = Indebtedness where y_1 = DSR and y_2 = DIR

b_0 = Level of indebtedness the in absence of debt capability

b_3 = Intercept for the independent variable

x_3 = Debt capability

ε_i = Error term

3.9.7   Regression Analysis of Indebtedness Against Debt Knowledge

Simple OLS regression model was used to determine the effect of debt knowledge on indebtedness of formal sector employees in Kenya. This model tested hypothesis H_{04} and was as follow;

$$y_i = b_0 + b_4 x_4 + \varepsilon_i \ \text{..} \ (3.8)$$

Where: y_i = Indebtedness where y_1 = DSR and y_2 = DIR

b_0 = Level of indebtedness in the absence of debt knowledge

b_4 = Intercept for debt knowledge

x_4 = Debt knowledge

ε_i = Error term

3.9.8 Regression Analysis of Indebtedness Against Debt Literacy

The general research objective was to establish the effect of debt literacy on the indebtedness of formal sector employees in Kenya. The OLS multiple regression models used in this study and shown as equation 3.9 were adapted from Mukras (1993). The Multiple OLS regression model examining the general objective was as follow;

$$y_i = b_0 + b_1 x_1 + b_2 x_2 + b_3 x_3 + b_4 x_4 + \varepsilon_i \,\text{...(3.9)}$$

Where, y_i = Indebtedness score of the employee where y_1 = DSR and y_2 = DIR

x_1 = Debt experiences score of the employee

x_2 = Borrowing behaviours score of the employee

x_3 = Debt capability score of the employee

x_4 = Debt knowledge score of the employee

b_0 = Intercept, a sample-wide constant

b_i = Coefficients of the debt literacy components

ε_i = error term

3.9.9 MMR Analysis of Indebtedness Against Debt Literacy and Age

The fifth research objective was to assess the moderating effect of age of formal sector employees in Kenya on the relationship between debt literacy and

indebtedness. Age of employees is a categorical ordinal variable. This study dichotomised age as 1 if aged less than 36 years, 2 if 36 to 45 years and 3 if over 45 years. A moderator is a variable that modifies the form or strength of the relationship between an independent and dependent variable. A moderating variable is critical whenever a researcher wants to assess whether the two variables have the same relation across the group before any generalisation of research findings to sub-groups are made. It is desirable the moderator be uncorrelated with both variables so that it can provide a clearly interpretable interaction term. It is always better to measure the moderating effect, not by correlation coefficient but by unstandardised regression coefficient (Baron & Kenny, 1986).

Most literature on moderating variables has concentrated on single moderators but there are instances of joint moderation by two or more variables (Stone-Romero & Liakhovitski, 2002). The interpretation of a categorical moderator is usually easier than that of a continuous moderator (Baron & Kenny, 1986; Mackinnon, 2011).This study used a single moderator, namely age of employees which was dichotomized as an ordinal categorical variable. To test the main effect and to find whether age of the employees moderates the relationship between debt literacy and indebtedness (y_i), the stepwise procedure of SPSS was carried out. The first step involved entering debt literacy (x_1) and age of employees (z_1) into the multiple regression (model 1) in SPSS while step two involved entering the interaction term ($x_1.z_1$) between debt literacy and age into the multiple regression (model 2). The step wise or hierarchical moderated multiple regressions (MMR) analysis was carried out to establish the moderating effect of age of the employees on the relationship between debt literacy and indebtedness.

An interaction effect exists when the effect of the independent variable on the dependent variable differs significantly depending on the value of the moderator. The test for moderation relies on the variance in y_i that is explained by the product of $x_1.z_1$ in the MMR model. The null hypothesis is that $b_3=0$ and has insignificant (p>.05) contribution to the dependent variable, y_i. Rejection of the null hypothesis $[H_0 : b_3 = 0, p > .05]$ signals existence of a moderating effect (Field, 2013; Stone-Romero & Liakhovitski, 2002).

The OLS moderated multiple regression (MMR) model used in this study and shown as equation 3.10 was advocated by MacKinnon (2011) and Stone-Romero and Liakhovitski (2002).The model testing hypothesis H_{05} was as follow;

$$y_i = b_0 + b_1 x_i + b_2 z_i + b_3 x_i z_i + \varepsilon_i \quad \text{... (3.10)}$$

Where; y_1 = Indebtedness where y_1 = DSR and y_2 = DIR

$\quad x_1$ = Aggregate Debt literacy

$\quad z_1$ = Age of the employees

$\quad b_0$ = Intercept, a sample-wide constant

$\quad b_1$ = Coefficients of the aggregated debt literacy

$\quad b_2$ = Coefficients of age

$\quad b_3$ = Coefficients of the interaction term

$\quad \varepsilon_i$ = Error term

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

This chapter presents results of descriptive analysis of the variables of the study. This includes a discussion of pilot test, a review of the response rate, diagnostic tests and frequency distribution of socioeconomic characteristics. Detailed descriptive statistics on debt experiences, borrowing behaviours, debt capability, debt knowledge and age of the respondents using frequency distributions, mean, standard deviation, kurtosis, skewness, T-test, ANOVA and F-test among others are also covered. In addition, the chapter also covers correlation and regression analysis of the study variables. The findings of this study are also compared with extant studies in this section.

4.2 Pilot Test

A pilot study was conducted to ensure that the questionnaire was effective in collecting the required information. A preliminary version of the questionnaire was first discussed with the supervisors before piloting. Pilot testing was done so as to improve the validity of the data collection instrument. The questionnaire was pretested with 38 employed, Masters of business administration first years students, from the University of Nairobi (Mombasa campus) in February, 2016. To establish the content validity of the data collection instrument, the pre-testing respondents were requested to help evaluate the clarity of the questions and to make the content more comprehensive. Based on their input, a few items of the initial draft of the questionnaire were re-written so that respondents could understand the questions similarly. No item was dropped from the questionnaire. The findings for the pilot test are shown as Table 4.1.

4.3 Response Rate

The targeted respondents in the study were employees working in the formal sector in Kenya. This study distributed 384 questionnaires; only 337 were returned. The returned questionnaires yielded a response of 87.8%. According to Mugenda and Mugenda (2003), a response rate of 50% or more is adequate. Twenty seven (27) questionnaires were rejected because they were unsatisfactorily complete while eighteen (18) questionnaires were deleted because they contained data which was considered outlier. Therefore, this study used 292 self-administered questionnaires in data analysis. High number of respondents in a study increases statistical power (Stone-Romero & Liakhovitski, 2002).

In this study a questionnaire was rejected if it was not fully filled up. This was unlike Herceg and Sosic (2010), who only rejected questionnaires of those who did not respond to the income questions. Among the rejected questionnaires in this study, 19 did not have income and debt data. This was similar to a study by Grohmann, Kouwenberg and Menkhoff (2014) where 45 respondents refused to report their income and debt parameters. Grohmann et al. attributed this to those with low financial literacy since they may not know how much debt they have and those with high-embarrassing debts.

4.4 Diagnostic Tests

Diagnostic tests are intended to detect bias that would affect the parameter estimates, standard errors, confidence level, test statistics and p-values. Most of the potential sources of bias come in the form of violation of assumptions of statistical test. The main assumptions are additivity and linearity, normality, homoscedasticity and

independence. Other diagnostic tests usually done are on reliability of data and presence or not of outliers (Field, 2013).

4.4.1 Reliability and Validity Tests of the Study Variables

Cronbach's alpha was used to measure the reliability (internal consistency) of the data collection instrument where the emphasis was on all likert scale questions in the questionnaire. Kothari (2009) recommends that for testing the internal consistency and reliability of the likert scales, the Cronbach's alpha is the best summary measure. Table 4.1 below indicates the pilot test reliability statistics for debt experiences, borrowing behaviours, debt capability and debt knowledge. The pilot test results for the four variables were found reliable since the Cronbach's alpha reliability coefficients were all greater than 0.7. The rule of the thumb for Cronbach's alpha is that the closer the alpha is to 1, the higher the reliability (Kothari, 2009). Cronbach's alpha of less than 0.5 is unacceptable, between 0.5 and 0.6 is poor, between 0.6 and 0.7 is questionable, between 0.7 and 0.8 is acceptable, between 0.8 and 0.9 is considered good while over 0.9 is excellent (George & Mallery, 2003). The reliability statistics of the data used in the main study are shown separately in section 4.6.

Table 4.1: Pilot test reliability analysis

Scale	Number of Items	Cronbach's Alpha (α)
Debt experiences	15	0.843
Borrowing behaviours	10	0.764
Debt capability	10	0.889
Debt knowledge	6	0.852

4.4.2 Outliers Tests of the Study Variables

Outliers in data distribution are detected in various ways on SPSS, namely frequency distribution, histogram and box plots (Ben-Gal, 2005; Field, 2013). To eliminate outliers in the variables of the study, a two-step procedure was applied. In the first

step, the mean of each variable was calculated. Secondly, those respondents shown as extreme scores on the box plot were removed from the database. Figure 4.1 show box plots for debt literacy before and after extreme scores were removed respectively; five respondents were deleted as outliers.
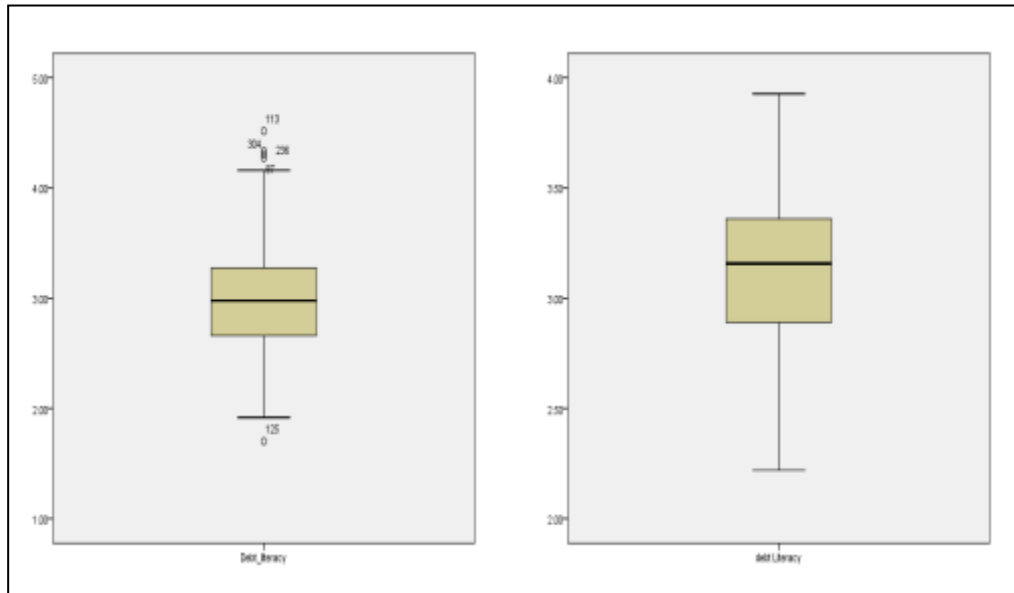
Figure 4.1: Box plot for debt literacy before and after removing extreme scores

Figure 4.2 show box plots for DSR before and after extreme scores were removed respectively; four respondents were deleted as outliers.
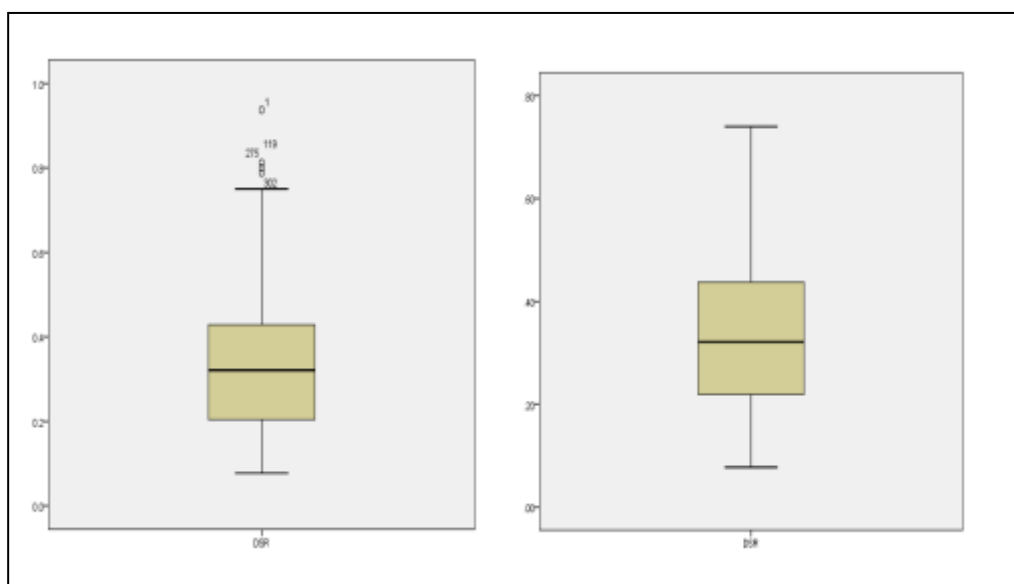
Figure 4.2: Box plot for DSR before and after removing extreme scores

Figure 4.3 show box plots for DIR before and after extreme scores were removed respectively; nine respondents were deleted as outliers.
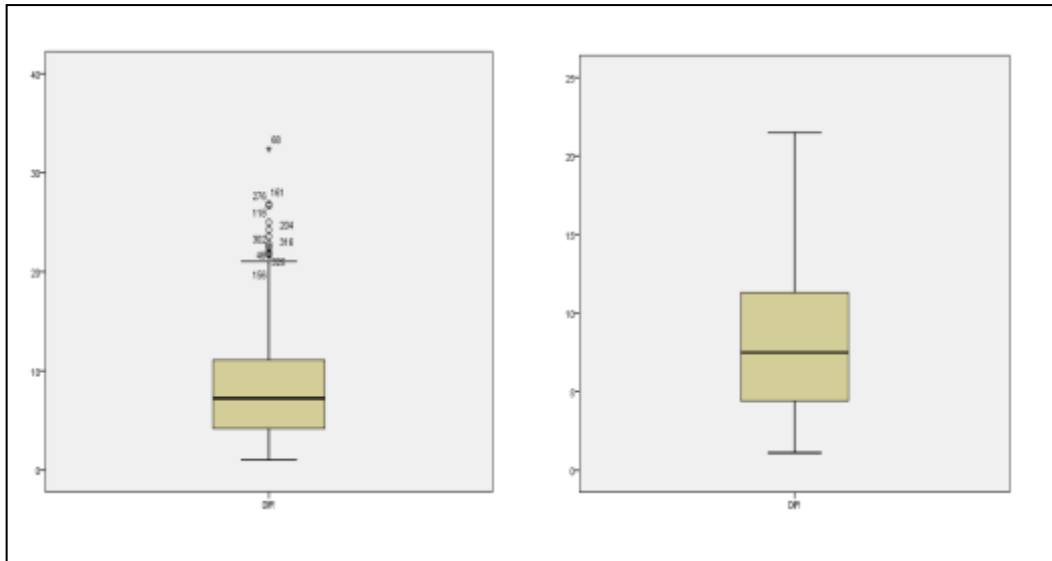
Figure 4.3: Box plot for DIR before and after removing extreme scores

4.4.3 Normality Tests of the Study Variables

Normality of a distribution is tested in various ways on SPSS: P-P (probability-probability) plots, histograms, checking the values of skewness and kurtosis and quantile-quantile (Q-Q) plots. Other ways of testing for normality of distribution on SPSS include the non-parametric tests such as Kolmogorov-Smirnov (K-S) test and Shapiro-Wilk (S-W) test (Field, 2013). Figures 4.4 to 4.12 show the distribution of the study's main variables.

Table 4.2: Kolmogorov-Smirnov Test and Shapiro-Wilk Test results.

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	do	Sig.
Debt Literacy	0.033	292	.090	0.994	292	.361
DSR	0.081	292	.000	0.964	292	.000
DIR	0.111	292	.000	0.919	292	.000

According to Field (2013), when the significance levels of K-S and S-W tests are insignificantly (p>.05) different; it indicates that the assumption of normality has been

meet and vice versa. The results in Table 4.2 therefore show that debt literacy did not significantly (p>.05) deviate from normal but DSR and DIR were significantly (p=.000) non-normal. This indicated that debt literacy was normally distributed while DSR and DIR were not normally distributed.

Table 4.3: Distribution of study variables

	Debt literacy	DSR	DIR
Mean	3.1155	.3401	8.6504
Median	3.1472	.3214	7.5000
Mode	2.14[a]	0.38	5.00[a]
Standard deviation	0.38724	0.15312	5.43475
Skewness	-0.280	0.530	0.801
Kurtosis	-0.052	-0.328	-0.282

a . Multiple modes exist. The smallest value is shown, n=292

The skewness of a normal distribution is zero. Negative skewness implies a long left tail, and positive skewness means a long right tail. Kurtosis of a normal distribution is three. If it exceeds three, the distribution is peaked (leptokurtic) relative to the normal. If the kurtosis is less than 3, then the distribution is flat (platkurtic) relative to the normal (Santos & Abreu, 2013). Results in Table 4.3 show that debt literacy, DSR and DIR are skewed to the right and they are flat. West, Finch and Curran (1995) recommend concern if skewness exceeds two and kurtosis exceeds seven. Therefore, the normality of the study variables was found within the recommended ranges. According to West et al. ANOVA and Pearson's correlation can be used in hypothesis testing when skewness and kurtosis are within recommended range.

Figure 4.4 shows that DSR was not normally distributed since it has a tail on the right. This confirms Kolmogorov-Smirnov (K-S) Test and Shapiro-Wilk Test results shown in Table 4.2 and the skewness shown in Table 4.3 above
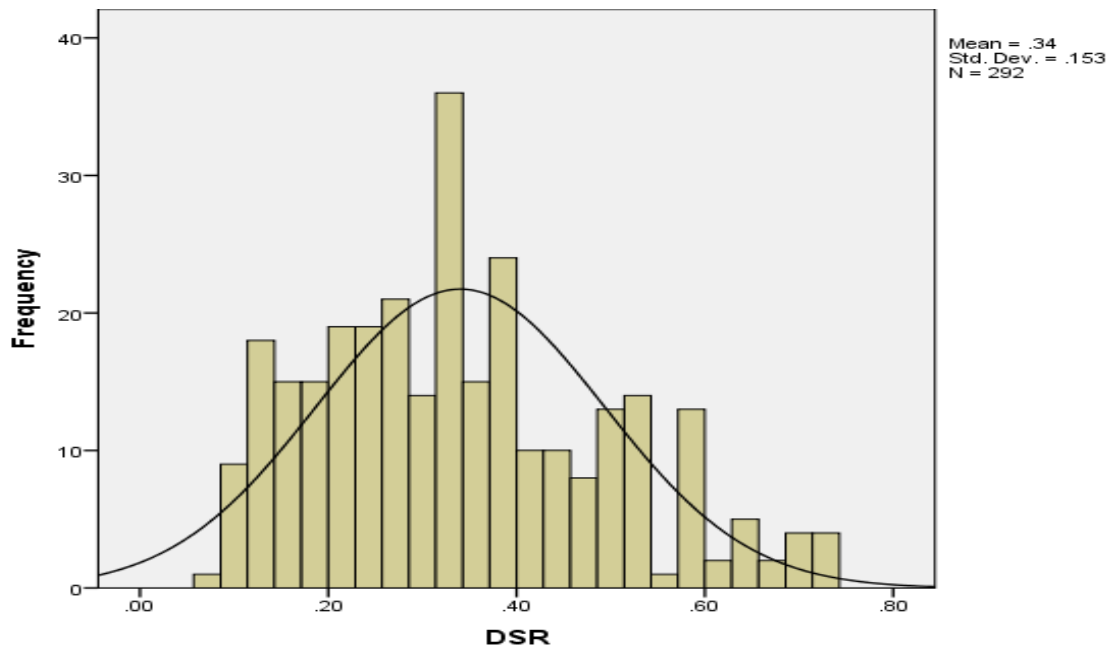
Figure 4.4: Histogram – Debt service ratio

Figure 4.5 indicate that DSR was not normally distributed since the scatter did not map the ideal diagonal line. This was confirmed by the results of Kolmogorov-Smirnov (K-S) Test and Shapiro-Wilk Test shown in Table 4.2.
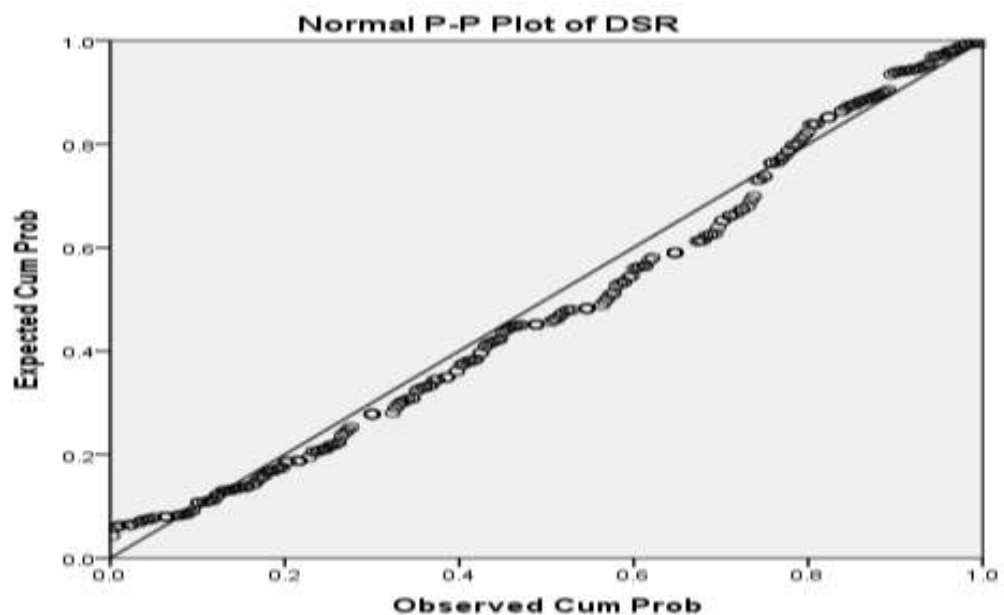
Figure 4.5 : Normal P-P plots for DSR

Figure 4.6 below shows that DIR was not normally distributed because it has a tail in the right. This was confirmed by Kolmogorov-Smirnov (K-S) Test and Shapiro-Wilk Test results shown in Table 4.2 and skewness shown in Table 4.3
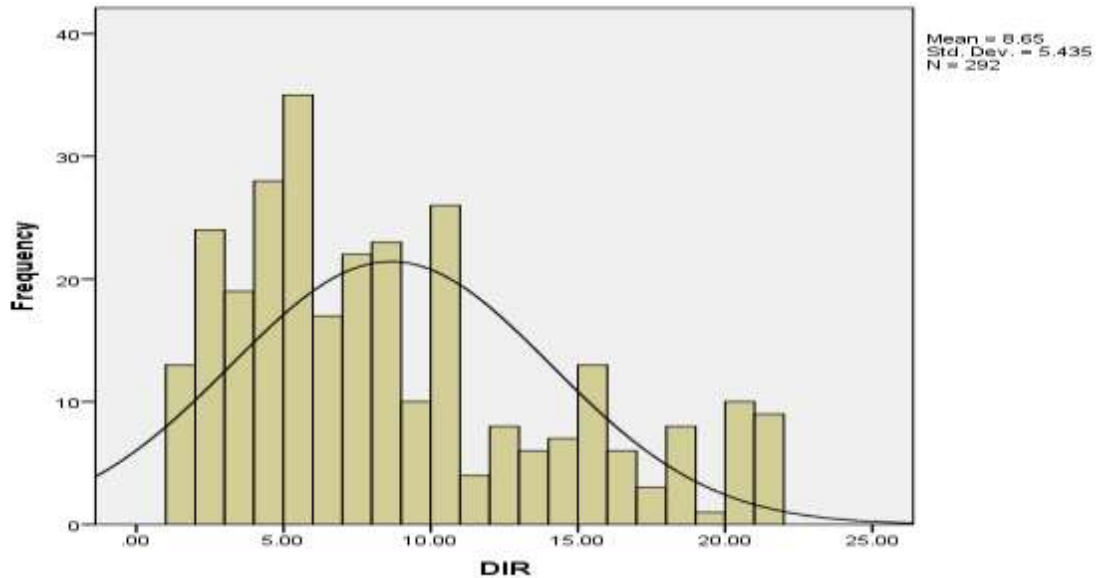
Figure 4.6: Histogram – Debt income ratio

Figure 4.7 shows DIR was not normally distributed because the scatter did not map on the ideal diagonal line. This was confirmed by Kolmogorov-Smirnov (K-S) Test and Shapiro-Wilk Test results shown in Table 4.2.
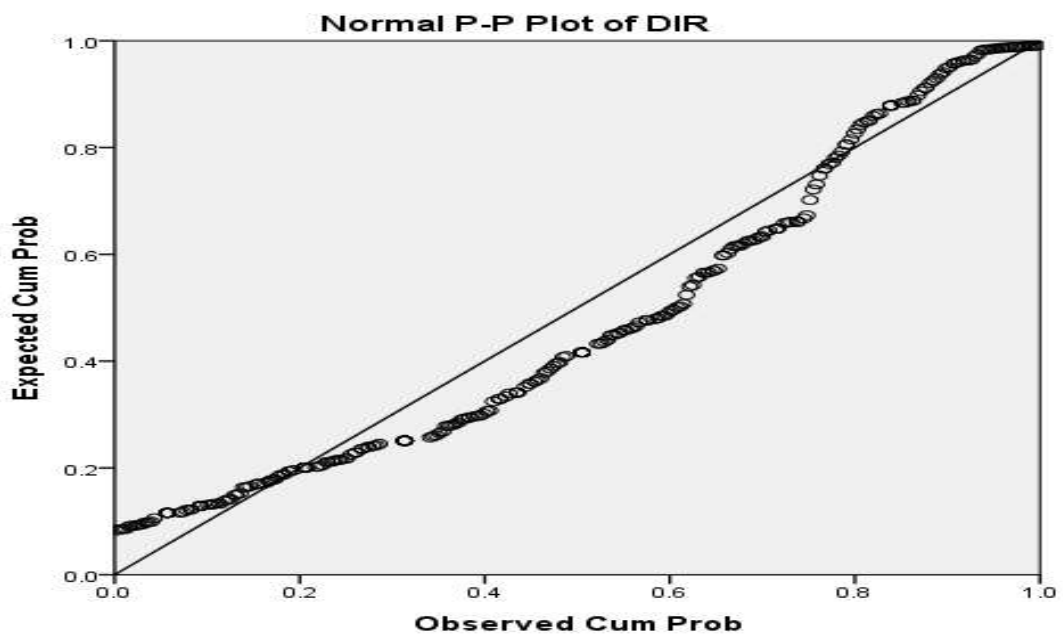
Figure 4.7: Normal P-P plots for DIR

Figure 4.8 shows debt literacy was normally distributed. This was confirmed by Kolmogorov-Smirnov (K-S) Test and Shapiro-Wilk Test results shown in Table 4.2.
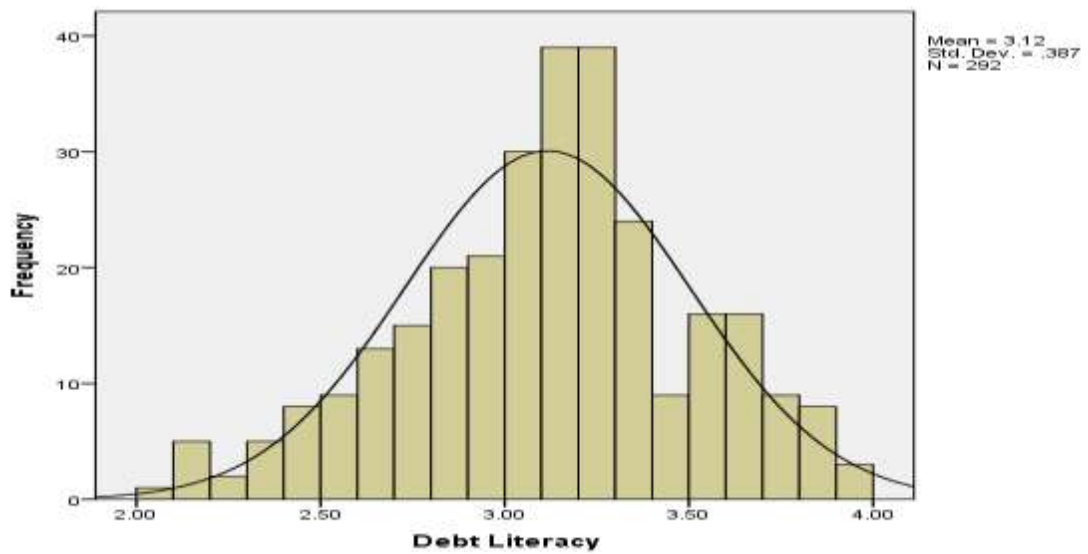
Figure 4.8: Histogram- Debt literacy

Figure 4.9 shows debt literacy was normally distributed because it falls very close to the ideal diagonal line. This was confirmed by Kolmogorov-Smirnov (K-S) Test and Shapiro-Wilk Test results shown in Table 4.2.
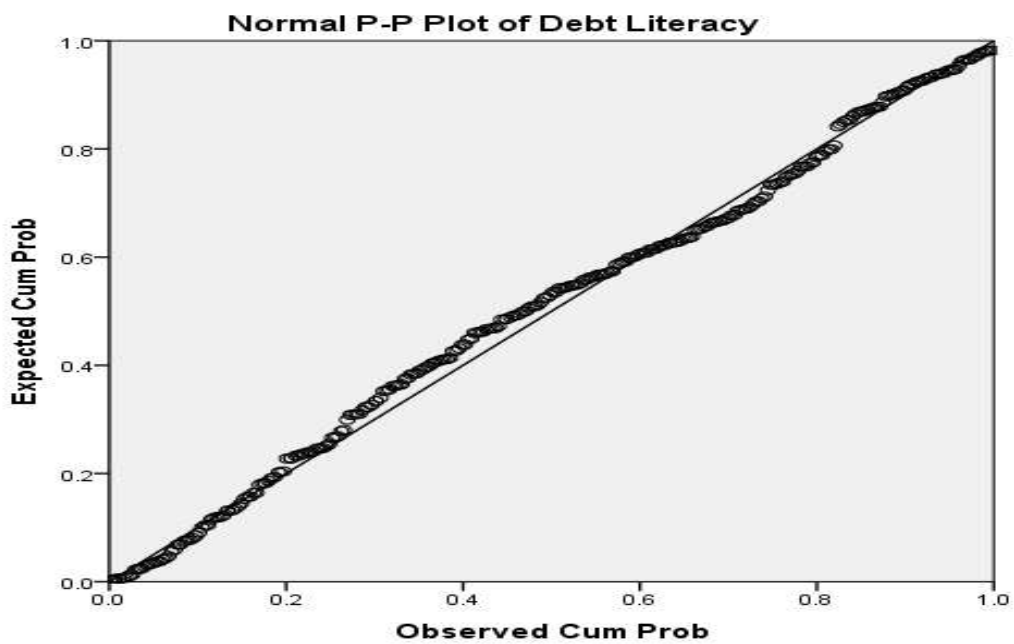
Figure 4.9: Normal P-P plots for debt literacy

4.4.4   Linearity Tests of the Study Variables

Linearity is shown by use of scatter plot and curve estimation on SPSS (Field, 2013). Figure 4.10 and 4.11 shows the scatter plots and the estimated linear regression plot model for debt literacy against DSR and DIR respectively. In addition, Field (2013) also states that issues of linearity are also fixed by removing outliers. Since this was done, linearity of the study variables was assumed. However, SPSS is also able to conduct linearity test. On SPSS, when the p-values for the deviation from linearity are less than the significance level (.05), the relationship between the predictor and outcome variable cannot be linear. This can be cause for serious concern because it affects the root of modelling (Field, 2013). Results on deviation from linearity for all the OLS regression models used in this study shown as Appendix 7 indicate that the assumption of additivity and linearity was obeyed. Figure 4.10 shows a regression line of DSR against debt literacy. The slope is downward sloping (negative).
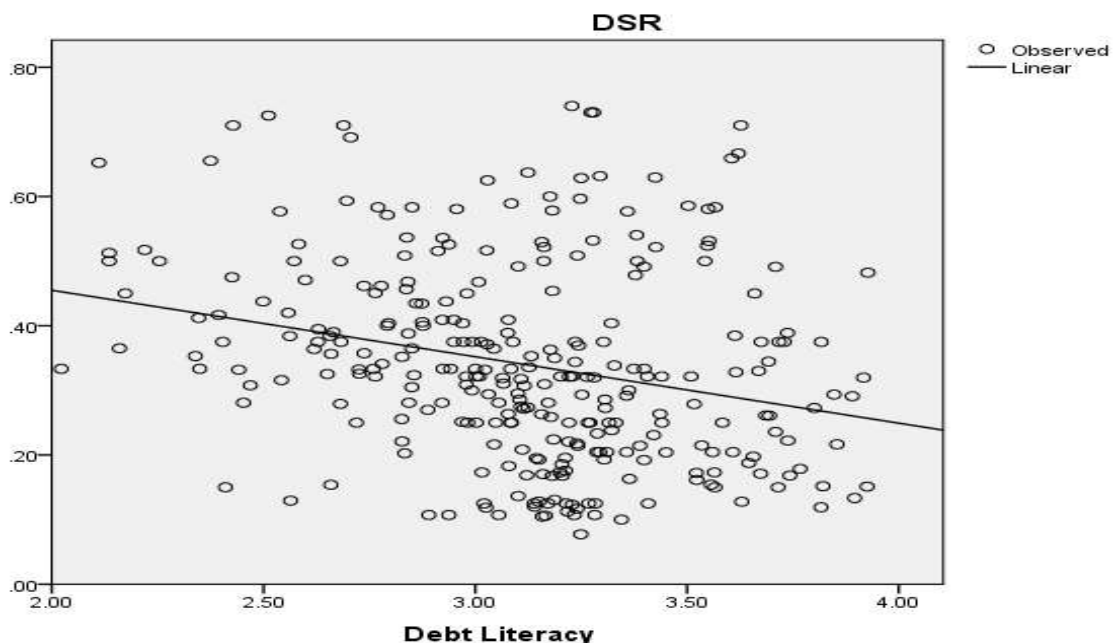
Figure 4.10: Scatter plot of DSR against debt literacy

Figure 4.11 shows a regression line of DIR against debt literacy. The slope is downward sloping (negative).
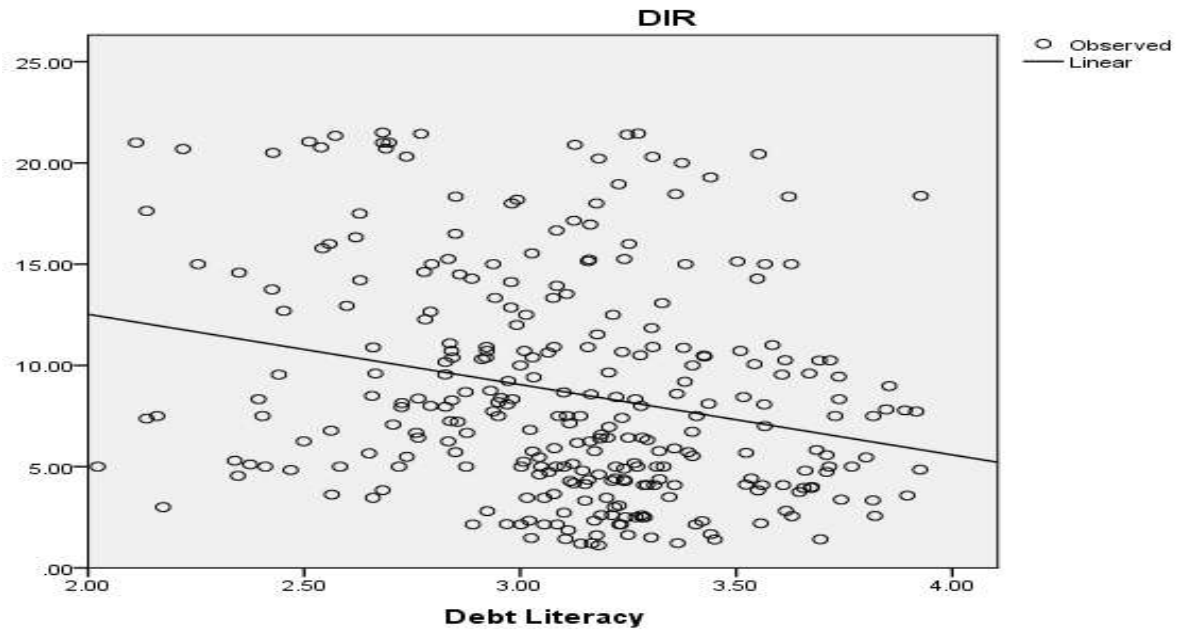
Figure 4.11: Scatter plot of DIR against debt literacy

4.4.5 Homoscedasticity Tests of the Study Variables

Homoscedasticity is checked in various ways on SPSS. For instance, by scatter plot, Levene's homogeneity of variance Test and Hartley's F_{max} (also called the variance ratio). This study used the scatter plots and Levene's test. The results of the scatter plot are shown above as Figure 4.10 and 4.11. Levene's homogeneity of variance Test checks whether the variances in different groups are equal. Levene's test is simple and uses one-way ANOVA. To use ANOVA, the variables should be integer values and the dependent variable quantitative and the sample should come from population with equal variance. Levene's test is denoted by letter F and there are two different degrees of freedom (Field, 2013). In this study, the Levene's Test results for the main variables of the study shown in Table 4.4 depict insignificant (p>.05) difference between the variance of the male and female respondents. Thus, the assumption of homoscedasticity was obeyed.

Table 4.4: Test of homogeneity of variance

		Levene statistic	df1	df2	sig.
DSR	Based on Mean	.031	1	290	.860
	Based on Median	.056	1	290	.813
	Based on Median and with adjusted df	.056	1	289.832	.813
	Based on trimmed mean	.040	1	290	.841
DIR	Based on Mean	.926	1	290	.337
	Based on Median	.897	1	290	.344
	Based on Median and with adjusted df	.897	1	288.413	.344
	Based on trimmed mean	.916	1	290	.339
Debt literacy	Based on Mean	.637	1	290	.425
	Based on Median	.411	1	290	.522
	Based on Median and with adjusted df	.411	1	284.821	.522
	Based on trimmed mean	.528	1	290	.468

$p < .05$

4.4.6 Independence Tests of the Study Variables

Collinearity diagnostics on SPSS are correlation matrix, variance inflation factor (VIF) and tolerance statistics (Field, 2013). Results on collinearity diagnostics covered in section 4.7 and 4.8 show that the assumption of independence was obeyed.

4.5 Sample Characteristics

The researcher collected social and economic information on respondents' work-station province, sector, occupation, management level, gender, age, marital status, family size, level of education, number of years worked, housing category, region and level of income. The sample characteristics of 292 respondents were analysed and the frequency distributions are presented from Table 4.5 to 4.18.

Table 4.5: Distribution of respondents by province

Provinces	Frequency	Percent
Central	95	32.6
Coast	107	36.6
Nairobi	90	30.8
Total	292	100.0

Finding in Table 4.5 indicates that the respondents were drawn almost equally from the target provinces.

Table 4.6: Distribution of respondents by sector

Sectors	Frequency	Percent
Private	124	42.5
Public	168	57.5
Total	292	100.0

According to KNBS (2016), the formal sector employees were made up of 71% in private sector and 29% in public sector. Yet Table 4.6 show public sector respondents were more than those from private sector; probably this is because salary related information are treated more confidential in the private sector.

Table 4.7: Distribution of respondents by management level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Low	118	40.4	41.3	41.3
	Middle	147	50.3	51.4	92.7
	Top	21	7.2	7.3	100.0
	Total	286	97.9	100.0	
Missing		6	2.1		
Total		292	100		

Table 4.7 shows majority of the respondent were in middle level of management. Six respondents did not indicate their level of management.

Table 4.8: Distribution of respondents by gender

Gender	Frequency	Percent
Female	90	30.8
Male	202	69.2
Total	292	100.0

Finding in Table 4.8 indicates that male respondents were more than female. A substantial number of female respondents decline to take the questionnaire, when approached. According to KNBS (2016), the formal sector employees were made up

of 65.4% male and 34.6% female. The distribution on Table 4.8 shows that the sample

was representative by gender.

Table 4.9: Distribution of respondents by marital status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Single	65	22.3	22.3	22.3
	Married	214	73.3	73.5	95.8
	Separated/divorced	4	1.4	1.4	97.2
	Widow/Widower	8	2.7	2.8	100.0
	Total	291	99.7	100.0	
Missing		1	0.3		
Total		292	100		

Finding in Table 4.9 indicates that majority of the respondents were married. Only

one respondent failed to disclose his or her marital status.

Table 4.10: Distribution of respondents by occupation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agriculture	11	3.8	3.8	3.8
	Health	8	2.7	2.8	6.6
	Education	62	21.2	21.6	28.2
	M & C	10	3.4	3.5	31.7
	PA & S	44	15.1	15.3	47.0
	W&R	19	6.5	6.6	53.6
	FI&P	84	28.8	29.3	82.9
	Others	49	16.8	17.1	100.0
	Total	287	98.3	100.0	
Missing		5	1.7		
Total		292	100		

M&C=Manufacturing and construction, PA &S=Public administration and security,
W &R =Wholesale and retail, FI& P = Financial, insurance & professional services

Finding in Table 4.10 indicates the respondents were sampled almost proportionately

with their numbers in the occupations as shown in Appendix 6. Only five respondents

did not disclose their occupation.

Table 4.11: Distribution of respondents by age

Age group	Frequency	Percent
below 25 years	5	1.7
25-30 years	70	24.0
31-35 years	72	24.6
36-40 years	66	22.6
41-45 years	39	13.4
46-50 years	23	7.9
51-55 years	14	4.8
above 55 years	3	1.0
Total	292	100.0

Table 4.11 show all age groups were represented since the distribution follows the expected pyramid.

Table 4.12: Distribution of respondents by family size

Family size	Frequency	Percent
1	57	19.5
2	38	13.0
3	67	22.9
4	65	22.4
5	50	17.1
More than 5	15	5.1
Total	292	100.0

Finding in Table 4.12 indicates all family sizes were well represented.

Table 4.13: Distribution by respondents' level of education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Primary	1	0.3	0.3	0.3
	Secondary	30	10.3	10.3	10.6
	Diploma	63	21.6	21.7	32.3
	Bachelor	126	43.2	43.3	75.6
	Masters	49	16.8	16.9	92.5
	Ph.Ds	3	1.0	1.0	93.5
	Prof. certificate	19	6.5	6.5	100.0
	Total	291	99.7	100.0	
Missing		1	0.3		
Total		292	100.0		

Prof. certificate = Professional certificate

Finding in Table 4.13 show 43.3% of the respondents were bachelor degree holders.

Only one respondent failed to disclose his/her levels of education.

Table 4.14: Distribution of respondents by length of employment

Years	Frequency	Percent	Cumulative Percent
less than 5	57	19.5	19.5
5-10 years	114	39.0	58.5
11-15 years	55	18.8	77.3
16-20 years	32	11.0	88.3
21-25 years	18	6.2	94.5
over 25 years	16	5.5	100.0
Total	292	100.0	

Finding in Table 4.14 indicate that 58.5 % of the respondents had worked for less than

10 years. Yet 5.5 % of the respondents were close to the retirement age.

Table 4.15: Distribution of respondents by housing type

Housing type	Frequency	Percent
Owner occupier	73	25.0
Tenants	190	65.1
Mortgagors	8	2.7
Housed by parents/guardian	5	1.7
Housed by employer	16	5.5
Total	292	100.0

Results in Table 4.15 indicate that 65.1% of the respondents were tenants. On the

other hand, 2.7% of the respondents had mortgages.

Table 4.16: Distribution of respondents by location of work station

		Frequency	Percent	Cumulative Percent
Valid	less than 5 Km	111	38.0	38.0
	5-10 Km	73	25.0	63.0
	11-15 Km	39	13.4	76.4
	16-25 Km	42	14.4	90.8
	over 25 Km	27	9.2	100.0
	Total	292	100	

Km=kilometres

Findings in Table 4.16 show the distribution of respondents by distance of their

workstation from the county offices so as to be classified as either rural or urban.

Table 4.17: Distribution of respondents' disposable salary incomes

Categories	Frequency	Percent	Cumulative Percent
less than Kshs. 20,000	28	9.6	9.6
between Kshs. 20,001-40,000	96	32.9	42.5
between Kshs. 40,001-60,000	84	28.8	71.3
between Kshs. 60,001-80,000	33	11.3	82.6
between Kshs. 80,001-100,000	21	7.2	89.8
between Kshs. 100,001-120,000	10	3.4	93.2
between Kshs. 120,001-140,000	6	2.1	95.3
between Kshs. 140,001-160,000	5	1.7	97.0
between Kshs. 160,001-180,000	2	0.7	97.7
between Kshs. 180,001-200,000	4	1.3	99.0
between Kshs. 200,001-220,000	0	0.0	99.0
over Kshs. 220,000	3	1.0	100.0
Total	292	100.0	

Table 4.17 indicate that 71.3% of the respondents had disposable salary of less than Kshs. 60,000. The distribution of disposable income followed the expected pyramid distribution. In October 2015, 73.5% of the 2.37 million formal sector workers were on a salary of between Kshs.10,000 and Kshs. 50,000 per month. Only 68,676 formal sectors workers earned more than Kshs.100,000 per month representing 2.89% of formal sectors employees (KNBS, 2015a).

Table 4.18: Distribution of respondents' other disposable incomes

Categories	Frequency	Percent	Cumulative Percent
Zero	86	29.6	29.6
less than Kshs.10,000	64	21.9	51.5
between Kshs. 10,001-20,000	55	18.8	70.3
between Kshs. 20,001-30,000	36	12.4	82.7
between Kshs. 30,001-40,000	15	5.1	87.8
between Kshs. 40,001-50,000	17	5.8	93.6
between Kshs. 50,001-60,000	7	2.4	96.0
between Kshs. 60,001-70,000	5	1.7	97.7
between Kshs. 70,001-80,000	1	0.3	98.0
between Kshs. 80,001-90,000	3	1.0	99.0
over Kshs. 90,000	3	1.0	100.0
Total	292	100.0	

Table 4.18 indicate that 70.3 % of respondents had non-employment disposable income of less than Kshs. 20,000. As expected, the income structure followed the pyramid distribution.

In summary, the socio-economics characteristics of the 292 respondents demonstrate a well distributed sample. This was because most characteristics except gender, marital status and housing category had no single class representing more than 60% of the respondents. Gender, marital status and housing category had male, married and tenants representing 69.2%, 73.3% and 65.1% of the respondents respectively. Therefore, generalisation of the results needs to take this into consideration.

4.6   Descriptive Analysis of the Study Variable

This section covers descriptive analysis of the responses to each of the study variable. Consistent with Chawla and Uppal (2012), Disney et al. (2008) and Liv (2013), income, monthly repayment, loan balances among other items collected by the questionnaire were aggregated to fewer groups so as to be comparable to extant studies. Frequency distribution, mean, ANOVA and parametric tests such as T-test and F-test were used in this section. ANOVA uses the group mean; if the group mean are almost the same the F-ratio is small and the ability to predict is poor while if they differ materially; F-ratio will be big and it is easy to discriminate between samples. So basically ANOVA and F-test tell whether the group mean are significantly different or not. Significance value of the prediction is denoted by p-values (Field, 2013). For this section, significance level was set at 5%, hence ANOVA and F-test results whose significance value were less than .05 were considered significantly different.

4.6.1 Descriptive Statistics on Indebtedness

Table 4.19: T-test Statistics on disposable income and indebtedness

	T	df	Sig	95% Confidence Interval		
				Mean	Lower	Upper
Disposable income	25.039	291	.000	72,727.40	67,010.89	78,443.92
Repayment	18.360	291	.000	25,055.60	22,369.76	27,741.45
Loan balance	17.613	291	.000	631,446.10	560,884.29	702,008.01
DSR	37.960	291	.000	0.34015	0.3225	0.3578
DIR	27.199	291	.000	8.65041	8.0244	9.2764

Test value=0, n=292, p<.05

DSR is the ratio of total debt repayment and total disposable income while DIR is the ratio of total loan outstanding and total disposable income. Table 4.19 show that all the 292 respondents disclose their total income, monthly repayment and debt balances respectively. Table 4.19 also show the mean monthly total income, loan repayment and balance together with average indebtedness indicators. Table 4.19 shows using long-term indebtedness (DIR), respondents in this study had leveraged their disposable income 8.65 times. Fortunately, a study by Yoo and Hwang (2013) in Korea estimated households had leveraged their disposable income more than 10 times. They also found that although household leverage was increasing, the number of borrowers remained the same.

Table 4.20: Distribution of respondents' by indebtedness

Thresholds	DSR	DIR
Percent below threshold	41.8	40.7
Percent above threshold	58.2	59.3

As a rule of thumb DSR should be less than 0.3 (Liv, 2013) while moderate DIR should ranges from 4.5 to 6.0 (Herceg & Sosic, 2010). Results in Table 4.20 show that 58.2 % of the respondents had DSR of more than 0.3 whereas 59.3% had DIR of more than 6.0. Based on both dimensions of indebtedness, the respondents were over-indebted.

Table 4.21: Distribution of respondents' by monthly loan repayment

Repayment class	Frequency	Percent
Below Kshs.19,999	160	54.8
Kshs 20,000 to 29,999	48	16.4
Over Kshs 30,000	84	28.8
Total	292	100.0

Table 4.21 shows distribution of loan repayments by the respondents in the study. The mean loan repayment was Kshs. 25,055.60 (Table 4.19). Table 4.21 show 54.8% of the respondents had a monthly debt burden of less than Kshs. 20,000. This implies majority of the respondents were not over-indebted monthly.

Table 4.22: Mean indebtedness by monthly Loan repayment

Repayment classes		DSR	DIR
Low	below Kshs.19,999	.2710	7.0659
Medium	Kshs 20,000 -29,999	.3874	9.6357
High	over Kshs 30,000	.4449	11.1056
Mean		.3401	8.6504
ANOVA	F(2,289)	51.536	18.055
	sig.	.000	.000

p<.05

Reviewing results in Table 4.22 show that monthly debt burden could significantly (p=.000) explain both dimensions of indebtedness. Pearson's correlation confirmed the relationship between loan monthly repayment and both dimensions of indebtedness as significantly (p=.000) strong and positive; DSR (r=.537) and DIR (r=.358). This implies that the monthly repayment can predict indebtedness significantly. In addition, it means as the amount repaid monthly increases, chances of over-indebtedness also increases.

Table 4.23: Distribution by loan outstanding balance

Loan balance class	Frequency	Percent
Below Kshs. 499,999	152	52.1
Kshs. 500,000 - 699,999	41	14.0
Over Kshs. 700,000	99	33.9
Total	292	100.0

Results in Table 4.23 show that 52.1 % of the respondent had loans of below Kshs. 500,000. The mean loan outstanding was Kshs. 631,446.10 (Table 4.19). This supports Yoo and Hwang (2013) in a study in Korea which also found that household leverage was increasing but the borrowers affected were not many.

Table 4.24: Mean indebtedness by loan balance

Class	Loan balance		DSR	DIR
Low	below Kshs. 499,999		.2895	5.6015
Medium	between Kshs. 500,000 -699,999		.3422	9.5220
High	over Kshs. 700,000		.4171	12.9707
Mean			.3401	8.6504
ANOVA		F(2,289)	24.110	289.698
		Sig.	.000	.000

p<.05

Reviewing results in Table 4.24 show loan outstanding balance were significantly (p=.000) different by both dimensions of indebtedness. Pearson's correlation confirm the relationship as significantly (p=.000) strong and positive; DSR (r=.377), DIR (r=.619). This implies that the loan outstanding balance can predict indebtedness significantly. Also, it means as the loan balance increases, chances of over-indebtedness also increase. Similarly, Liv (2013) found a significant relationship between loan outstanding balance and indebtedness, but on isolating the "multiple loan effect" the relationship disappeared.

4.6.2   Descriptive Statistics on Debt Experiences

Respondents in this study supplied data on debt experiences such as membership to SACCOs, number of current commitments and nature of security used. Data was also collected using 15 likert scale questions shown in part B of Appendix 1. A five rating scale was employed.

Table 4.25: Membership to SACCOs

	Frequency	Percent
Member	258	88.4
Non-member	34	11.6
Total	292	100.0

Finding ensuing from Table 4.25 show that 88.4 % of the respondents were members of SACCOs. Membership to SACCOs is profitable since they mobilise savings and lend at lower rate of interest compared to commercial banks. Therefore, borrowers planning to use credit in future may be deemed debt literate if they join SACCOs (Gloukoviezoff, 2007). A study by Nguyen (2007) in Vietnam found that debt access was uniformly distributed among the respondents.

Table 4.26: Mean indebtedness by membership to SACCOs

		DSR	DIR
Member		.3452	8.7178
Non-member		.3016	8.1389
Mean		.3401	8.6504
ANOVA	F(1,290)	2.446	.340
	Sig.	.119	.560

p<.05

Results in Table 4.26 show members of SACCOs had highest indebtedness by both dimensions. Further, ANOVA results shown in Table 4.26 indicate that indebtedness between members and non-members of SACCOs was insignificantly (p>.05) different by both dimension of indebtedness. Gloukoviezoff (2007) contends that joining

SACCOs so as to access affordable credit is related with both financial inclusion and finance access. Since majority of the respondents were members of SACCOs (Table 4.25), then the problem was not financial access but loan products "use difficulty" which ultimately leads to over-indebtedness.

Table 4.27: Distribution of respondents' loans

Number of loans	Frequency	Percent
1	129	44.2
2	99	33.9
3	43	14.7
4	18	6.2
>5	3	1.0
Total	292	100.0
Mean =1.86 Std deviation= 0.955		

This study targeted employees with debt. Therefore, questionnaires received from respondents without debt were rejected at data coding stage. This was similar to a study by Disney et al. (2014) which targeted indebted individuals only. Table 4.27 shows that 44.2% of respondents had one loan while the other 55.8 % of the respondents had more than one loan regardless of provider. A study by Liv (2013) in Cambodia found that respondents had one or more loans because of predatory banking and harsh economic times.

Table 4.28: Mean indebtedness by multiple loans held by respondents

Number of loans		DSR	DIR
1		.2806	7.2908
2		.3722	8.9460
3		.3761	10.0019
4		.4758	12.8062
>5		.5121	13.0536
Mean		.3401	8.6504
ANOVA	F(4,287)	12.819	6.309
	Sig	.000	.000

p<.05

ANOVA results in Table 4.28 show that multiple loans significantly (p=.000) predicts indebtedness by both dimensions. In fact as the number of loans increased, indebtedness using both dimensions increased; with those with higher number of loans more indebted. Similarly a study by Liv (2013) in Cambodia found multiple loans to have a positive relationship with over-indebtedness.

Table 4.29: Distribution of respondents' debts by source

Sources	No. of loans	Percent	Cumulative Percent
SACCOs	280	51.7	51.7
Banks	153	28.2	79.9
Mortgage	8	1.5	81.4
Employers	29	5.4	86.8
Hire purchase	3	0.6	87.4
Insurance	9	1.7	89.1
HELB	29	5.4	94.5
Credit cards	18	3.3	97.8
Others	12	2.2	100.0
Total	541	100.0	

Table 4.29 shows that 79.9 % of the respondents had borrowed from either banks or SACCOs. Indeed, 1.5% of respondents had mortgage. In the same breath, a dismal 0.6% of respondents reported hire purchase debts. This supports Njiru and Moronge (2013) who observes that there is low uptake of mortgages in Kenya. In the same line Kariuki (2012) found hire purchase dealers had reduced in number.

Table 4.30: ANOVA - Debt source

		DSR		DIR	
	df	F	sig.	F	sig.
SACCOs	4,287	5.501*	.000	2.973*	.020
Banks	3,288	5.157*	.002	8.708*	.000
Mortgage	1,290	3.358	.068	0.304	.582
Credit cards	1,290	2.722	.100	3.332	.069
Employers	2,289	1.123	.327	1.602	.203
Hire purchase	1,290	1.087	.298	0.201	.654
Insurance	1,290	1.117	.292	1.161	.282
HELB	2,289	2.175	.115	0.262	.770

*p<.05

Results in Table 4.30 show respondents from SACCOs and banks were significantly different by both dimensions of indebtedness. Most of respondents with mortgages were deleted as outliers.

Table 4.31 : Distribution of security of respondents' debts

	Frequency	Percent	Cumulative Percent
Personal Guarantors	204	40.0	40.0
Payslips	193	37.9	77.9
Log books	8	1.5	79.4
Title deeds	17	3.3	82.7
Personal guarantors and security	33	6.5	89.2
Employer guarantees	55	10.8	100.0
Total	510	100.0	

Table 4.31 shows that 77.9% of the debt facilities were secured by personal guarantors and payslips. Therefore, majority of the loans were unsecured. Loans taken on the strength of personal guarantee are deemed unsecured (Liv, 2013). According to Canada Mortgage and Housing Corporation (CMHC, 2011), secured lines of credit are used for housing, business, investments and student loans while unsecured loans are directed towards consumption and personal transport. Durable goods such as homes and vehicles collateralise debts, says Campbell and Hercowitz (2006).

Table 4.32: ANOVA-Nature of debt security

		DSR		DIR	
	Df	F	sig.	F	sig.
Guarantors	1,290	5.322*	.022	0.014	.904
Payslip	1,290	2.971	.086	16.160*	.000
Logbook	1,290	0.611	.435	0.127	.722
Title-deed	1,290	11.142*	.001	10.229*	.002
Employer Guarantee	1,290	1.283	.258	3.853	.051

$*p<.05$

ANOVA results in Table 4.32 show that respondents who used personal guarantors and title deeds were significantly ($p<.05$) different by DSR. On the other hand, respondents who used payslips and title deeds as security to borrow were significantly ($p<.05$) different by DIR.

Table 4.33: Mean indebtedness by respondents' debt security

		DSR	DIR
Unsecured loans		.3321	8.3814
Secured loans		.4346	11.7966
Mean		.3401	8.6504
ANOVA	F(1,290)	9.793	8.585
	Sig	.002	.004

p<.05

ANOVA results in Table 4.33 confirm findings in Table 4.32. Respondents with secured loans had higher indebtedness. However, this finding contradicts Disney et al. (2008) who found respondents with unsecured loans more indebted. Yet Liv (2013) found there was no significant relationship between lending methodology (unsecured or secured) and over-indebtedness. This finding also contradicts the hypothesis that providing collateral aids in curbing the borrower's own incentive for moral hazard; meaning collaterized borrowers should have lower indebtedness (Campbell & Hercowitz, 2006).

Table 4.34: Respondent's debt purpose

Loan Purpose	Mean
Investment /Development	4.04
Car-loan	1.66
Debt repayment	1.75
Education	3.17
Housing	2.33
Business	2.67
Consumption	1.77
Others	2.25
Mean	2.46

Reviewing results in Table 4.34 show that respondents mainly took debt for investment, development, education and business; since these purposes were above the mean score. Only a meagre amount was use in debt repayment, car purchase and consumption. Other purposes for loan money listed by respondents included medical bills, donations, dowry and funeral expenses. Malaysia (2011) contends that the

largest percentage of debt repayment goes to paying off housing loans, personal car loans, personal use, purchase of securities and credit cards. A study by CMHC (2011) found that consumer credit was used mainly for car loan (46%), debt repayment (17%), investment (11%) and student loan (11%). Highly debt capable individuals are more likely to be effective in loan products selections and may prefer home loans, investment loans and education loans (Ajzerle et al., 2013).

Table 4.35: ANOVA: Loan Purpose

	DSR		DIR	
	F	**sig.**	**F**	**sig.**
Investment	1.365	.238	1.290	.268
Car loan	0.766	.575	0.244	.943
Debt repayment	1.457	.204	2.255*	.049
Education	1.081	.371	1.493	.192
Housing	0.350	.882	1.190	.314
Business	1.074	.375	1.327	.253
Consumption	3.148*	.009	1.835	.106

*$p<.05$, df = 5,286

ANOVA results in Table 4.35 show most of the borrowing purposes were insignificantly ($p>.05$) different by both dimensions of indebtedness. This supports Liv (2013) who found there was no significant relationship between loan use and over-indebtedness. However, debt repayment and consumption were significantly ($p<.05$) different by DIR and DSR respectively.

Debt experiences was also operationalised using the respondent's practical exposure in the debt market, namely, debt restructuring experiences, interaction with debt advisors and counsellors. Along with other theories, social learning theory provided the theoretical underpinning of this research thesis. All debt experiences will lead to some degree of debt literacy. Data on debt experiences was collected using 15 likert scale questions shown in part B of Appendix 1. A rating scale of five levels was used. The reliability coefficient using Cronbach's Alpha for all the 15 items was 0.627 but

after deleting 4 items, Cronbach's Alpha improved to 0.768. The pilot test's reliability Cronbach's alpha was 0.843 (Table 4.1). Cronbach's alpha of between 0.7 and 0.8 is acceptable (George & Mallery, 2003). The debt experiences questions shown as (b), (c), (e) and (o) in part B of Appendix 1 were the ones deleted.

Table 4.36: Responses on debt experiences

Items	VLE %	LE %	ME %	GE %	VHE %	Mean	Std. Dev
Debt restructuring							
(a) I have paid an extra loan instalment so as to reduce my loan burden and loan period	53.8	11.8	16.0	5.9	12.5	2.11	1.433
(d) I have repaid or retired old debt obligation so that i can re-borrow at lower interest rates	62.3	7.7	8.5	10.6	10.9	2.00	1.456
Debt advice							
(f)Before any loan application, I usually seek loan advice from finance experts	50.3	10.1	12.5	7.3	19.8	2.36	1.606
(g)Before any loan application, I usually seek loan advice from the prospective lender(s) e.g. SACCO, bank, etc.	26.8	9.9	20.8	14.7	27.8	3.07	1.560
(h)Before any loan application, I consult a member of my family e.g. spouse and children, where applicable	34.6	7.8	17.0	14.1	26.5	2.90	1.632
(i)Before any loan application, I consult my close friends	57.8	18.4	13.8	2.8	7.2	1.83	1.202
(j)Before any loan application, I consult my parents or guardian	78.5	7.4	6.7	3.9	3.5	1.46	1.020
Debt counselling							
(k)When I have problem with my debts, I usually seek debt counselling services from a finance expert	72.0	8.4	7.7	4.2	7.7	1.67	1.247
(l)When I have problem with my debts, I seek solutions from my lender(s). e.g. SACCO, bank, etc.	40.1	11.6	20.5	7.9	19.9	2.56	1.551
(m) When I have problem with my debts, I consult a member of my family e.g. spouse and children, where applicable for counsel	40.4	9.5	14.7	10.5	24.9	2.70	1.653
(n)When I have problem with my debts, I consult my close friends	67.4	13.1	11.7	3.9	3.9	1.64	1.082

n=292, Cronbach's alpha=.768; VLE=Very Low Extent, LE=Low Extent, ME=Moderate Extent, HE=High Extent, VHE=Very High Extent

Results in Table 4.36 show that majority of the respondents had very minimal debt experiences (*M*=2.19, *SD*=0.6872). The respondents scored higher in debt advice (*M*=2.35, *SD*=0.9165), followed by debt counselling (*M*=2.15, *SD*=0.8807) while debt restructuring (*M*=2.07, *SD*=1.1447) trailed. The low debt restructuring experiences is disadvantageous since borrowers are not able to improve borrowing practices and reduces status quo bias. Status quo bias with respect to borrowing is the reluctance to switch from the current loan term structure to another, which would be ultimately cheaper (Finke, 2011). Further, social learning theory proposes that learning occurs because of interaction with the environment (debt market) and that new experiences are evaluated by means of past experiences. This means debt experiences for the respondents are likely to remain low, *ceteris paribus*.

Results in Table 4.36 above show that majority of the respondents do not seek any assistance in the form of advice before any loan application. Professional experts were consult the least for advice (*M*=2.36, *SD*=1.606), compared with proportion that consulted family (*M*=2.90, *SD*=1.632) and lenders (*M*=3.07, *SD*=1.560). This supports Krah et al. (2014) and Dowling, Corney and Hoiles (2009) who found that majority of their respondents did not seek professional advice. To make the matter worse, respondents do not adequately seek help from non-professionals such as friends, family, parents and guardians. Family is consulted reasonably (*M*=2.90, *SD*=1.632). This supports a study by Ajzerle et al. (2013) which found family as the most used source of financial information.

Results in Table 4.36 show respondents in this study consulted the lenders for advice the highest (*M*=3.07, *SD*=1.560). Beside the conflict of interest of the lender, there is information asymmetry between the borrower and the lender. Debt institutions will

lend to anyone for profit (Russell et al., 2011). In most cases, the lending agents will give biased advice which favours the lender; popularly called the framing bias. This unfortunately is supposed to be a *caveat emptor* to borrowers when consulting any provider of credit (Ironfield-Smith et al., 2005). Predictably, van Ooijen and van Rooij (2014) concluded that debt advice does not automatically lead to better mortgage choices; especially when it is received from a lender due to conflict of interest.

Results in Table 4.36 show that majority of the respondents do not seek professional counselling (*M*=1.67, *SD*=1.247). Interestingly, respondents consulted their family (*M*=2.70, *SD*=1.653) more than experts, lenders (*M*=2.56, *SD*=1.551) and friends (*M*=1.64, *SD*=1.082). According to Agarwal et al. (2010) borrowers who undergo counselling programs have lower default rate. Generally, it appears that respondents in this study consulted neither the professional counsellor nor the non-professional persons like family and friends.

Table 4.37: ANOVA: Debt experiences

		DSR		DIR	
	Df	F	sig.	F	sig.
Debt restructuring	8,253	1.103	.361	0.836	.571
Debt advice	25,266	1.020	.441	0.622	.922
Debt counselling	19,272	0.666	.851	0.932	.543
Multiple loans	4,287	12.879*	.000	8.309*	.000
Aggregate debt experiences	136,155	1.059	.324	0.979	.549

*p<.05

ANOVA results in Table 4.37 show debt restructuring, debt advice, debt counselling and aggregate debt experiences insignificantly (p>.05) predicted both dimension of indebtedness. Only multiple loans significantly (p=.000) predicted both dimensions of indebtedness.

4.6.3 Descriptive Statistics on Borrowing Behaviours

Data on borrowing behaviours was collected using ten likert scale questions shown in part C of Appendix 1. A rating scale of five levels was used. Borrowing behaviours was operationalised using the respondent's self-control, self-confidence and peer influence. The reliability coefficient, using Cronbach's alpha, for all the ten items of borrowing behaviours was 0.593 but after deleting item (a) and (e), the Cronbach's alpha improved to 0.817. This compares favourably with pilot test's reliability Cronbach's alpha in Table 4.1 of 0.764. Cronbach's alpha of between 0.8 and 0.9 is good (George & Mallery, 2003).

Table 4.38: Responses on borrowing behaviours

Item	VLE %	LE %	ME %	GE %	VHE %	Mean	Std. Dev.
Self-control							
(b)* I sometimes borrow to balance my personal budget (expenses and incomes)	52.7	9.2	20.2	10.3	7.6	3.89	1.347
(c) I compare loan products among different lenders before final decision to borrow.	19.5	8.2	14.4	17.5	40.4	3.51	1.550
(d)* I have obtained salary advances to bridge my financial deficit	63.1	11.0	8.6	6.6	10.7	4.09	1.393
Self-confidence							
(f) My ability to manage my loan finances is excellent	12.1	14.1	33.3	19.9	20.6	3.23	1.264
(g)Whenever I make debt plans, they work as planned	11.1	16.1	36.9	17.8	18.1	3.16	1.220
Peer influence							
(h)* I observe and discuss debt matters with peers before deciding to borrow	63.7	16.8	10.6	5.5	3.4	4.32	1.083
(i)* I select loan products recommended by friends and workmates	59.7	20.3	10.3	4.1	5.5	4.24	1.143
(j)* I have borrowed to acquire assets recommended or commonly owned by my friends and workmates	61.3	15.8	9.2	6.8	6.9	4.18	1.253

n=292, Cronbach's alpha=.817; VLE=Very Low Extent, LE=Low Extent, ME=Moderate Extent, HE=High Extent, VHE=Very High Extent,*recoded

High self-control in the utilization of debt is synonymous with debt literacy (Gathergood, 2012). For this relationship to hold, self-control statements (b) and (d) in the questionnaire were re-organised during data coding; meaning respondents who indicated they had very low degree of impulsiveness were coded to have high self-control. However, statement (c) was not re-organised. Results in Table 4.38 show that majority of the respondents had above average borrowing behaviours (M=3.74, SD=0.5542). Specifically, respondents had high self-control (M=3.83, SD=0.9037). A study by Gathergood (2012) in UK found respondents were impulsive. High self-control refers to rational borrowing behaviour, which utilises fully the cognitive ability of the individual. Such persons are less likely to prefer instant gratification to long-term goals (Gathergood, 2012).

Self-confidence in the use of debt is synonymous with debt literacy (Farrell, et al., 2015). Reviewing findings in Table 4.38 above, majority of the respondents had moderate self-confidence (M=3.19, SD=0.9540). A study by Disney and Gathergood (2012) in UK found that individuals with poor financial literacy are more likely to lack self-confidence when interpreting credit terms, and to exhibit confusion over financial concepts. High peer influence in the use of debt is synonymous with debt illiteracy (Finke, 2011). Statements (h), (i) and (k) measuring peer influence were re-coded; meaning respondents who indicated, "very low extent" on the statements were considered to have low degree of peer influence (hereafter referred as peer independence) and were re-coded as having "very high extent" of debt literacy.

Reviewing findings in Table 4.38 show that a good majority of the respondents took the very low extent for the three items on peer effects (M=4.21, SD=0.8115). Therefore, majority of the respondents had high peer independence when making debt

decisions. Theoretically, individual will prefer behaviour of their reference group to outsiders, a phenomenon called in-group bias. In-group bias is due to peer pressure. Peer influence emanated from unconscious external influence, which affects the quality of decisions made. Often, peer influence in personal finances affects spending decision due to social comparison (Finke, 2011). Relative income hypothesis proposes that lower income earners are more likely to become tempted to borrow so as to compete with higher income earners.

Table 4.39: ANOVA- Borrowing behaviours

		DSR		DIR	
	Df	F	sig.	F	sig.
Self-control	12,279	2.205*	.012	1.534	.111
Self-confidence	8,283	1.105	.360	0.608	.771
Peer independence	11,280	1.536	.118	4.146**	.000
Aggregate borrowing behaviours	58,233	1.222	.153	1.228	.147

$**p<.01, *p<.05$

ANOVA results in Table 4.39 show self-control significantly (p=.012) predicted DSR. Consistent with Legge and Heynes (2009), those with low self-control are more indebted. Low self-control has a positive relationship with indebtedness due to myopia and framing biases (Legge & Heynes, 2009). In the same line a study by Zakaria et al. (2012) found, using Pearson's correlation (*r*=.237), that household's net worth was dependent on its locus of control among other factors. Locus of control represents the degree of control the household has on financial matter. Similarly, Gathergood (2012) found self-control problems positively related with indebtedness, but unfortunately, individuals cannot be educated on self-control.

ANOVA results in Table 4.39 show insignificant (p>.05) difference in respondents indebtedness using their self-confidence score. Generally, self-confidence is vital in debt decisions. A study by Arellano et al. (2014) in Spain found students with higher

levels of self-confidence score higher in financial literacy tests. However, those with very high levels of self-confidence run the risk of over-confidence. Over-confidence usually blur debt literacy and is only positively associated with over-indebtedness. This is because such over-confident respondents are likely to act on subjective probability in the debt market (Farrell et al., 2015). It is important to mention that this study did not measure over-confidence. ANOVA results in Table 4.39 show peer effect score could significantly (p<.01) differentiate respondents' DIR. This is in line with Jiang and Lim (2012), and also confirms the current trend of peer to peer lending platforms - in Kenya popularly known as *"chamas".* These platforms rely on trust among members. But aggregate borrowing behaviour score of the respondents was insignificantly (p>.5) able to discriminate respondents' indebtedness.

4.6.4 Descriptive Statistics on Debt Capability

Respondents supplied data on financial management practices such as preparing personal budget, budgetary control and planning. Data on debt capability was collected using ten likert scale questions shown in part D of Appendix 1. A ranking scale of five was employed. Table 4.40 lists the ten likert scale statements that were fielded to respondents. The reliability coefficient of these debt capability statements was Cronbach's alpha of 0.829. This compares favourably with pilot test's reliability Cronbach's alpha in Table 4.1 of 0.852. Cronbach's alpha of between 0.8 and 0.9 is good (George & Mallery, 2003).

Table 4.40: Responses on debt capability

Items	VLE %	LE %	ME %	GE %	VHE %	Mean	Std. Dev.
Personal budgeting							
(a) I prepare a budget for the amount borrowed which I follow strictly	13.7	13.8	28.2	22.7	21.6	3.25	1.313
(b) I discuss the budget for the borrowed money with my family	28.4	17.5	19.5	16.1	18.5	2.79	1.475
(c) I periodically, e.g. yearly, review my total financial position/net-worth before any borrowing decision	19.2	13.3	25.0	22.3	20.2	3.11	1.388
Personal budgetary control							
(d) I track all my expenses using the budget monthly	24.3	22.3	25.2	15.5	12.7	2.70	1.333
(e) I usually compare my pay-slip deductions with the loan statement provided by the lender	16.5	10.3	23.6	21.2	28.4	3.35	1.412
(f) I usually confirm whether my pay-slip deductions are per the signed loan contract	13.1	6.6	14.8	22.8	42.7	3.76	1.401
Personal planning							
(g) I am able to plan a regular borrowing schedule in line with my financial goals	16.5	10.7	24.7	21.0	27.1	3.32	1.403
(h) I am able to implement a regular and predictable borrowing schedule	16.4	16.5	29.9	18.5	18.7	3.06	1.329
(i) I honour my debt obligation as scheduled so as to avoid extra interest charges, penalties and fees	3.8	5.1	13.7	21.6	55.8	4.21	1.213
(j) I keep emergency funds enough to cover three month's expenses	34.9	24.3	20.2	9.3	11.3	2.38	1.343

n=292, Cronbach's alpha=.829; VLE=Very Low Extent, LE=Low Extent, ME=Moderate Extent, HE=High Extent, VHE=Very High Extent.

Table 4.40 also shows that respondents scored above average on all items except on the last statement (j) on emergency funds (*M*=2.38, *SD*=1.343). The highly favoured practice was statement (i) on honouring debts (*M*=4.21, *SD*=1.100). This is similar to

a study by Mbekomize and Mapharing (2015) which found the practice of paying debt duly one of the highly scored. Majority of the respondents in this study had inadequate emergency funds. Funfgeld and Wang (2009) contends that respondents who score low on the emergency funds statement find it difficult to have some financial savings to cover unforeseen events and are vulnerable to financial shocks. Aggregate debt capability was satisfactory (M=3.18, SD=0.8016).The respondents scored high in personal budgetary control (M=3.26, SD=1.1089), followed by personal planning (M=3.24, SD=0.9469) and trailing was personal budgeting (M=3.05, SD=0.9832). A study by Lusardi (2009) found Americans were financially incapable.

A study by Cynamom and Fazzari (2008) found that respondents did not have borrowing plans but only mimic the behaviour they observe around them. Winchester (2011) shows that having written goals increase the ability to overcome impulsiveness. A study by Ajzerle et al. (2013) found that the 97.1% highly financially capable person had goals while 90.8 % of the low financially capable person had goals; of this, only 33.1% had written goals. They concluded that high debt capability leads to effective use of debt.

Table 4.41: Responses on personal budgeting format

Format	Frequency	Percent
Written	63	21.6
Mental	68	23.3
Both written and mental	157	53.8
None of the above	4	1.3
Total	292	100.0

Review of Table 4.41 finds that 21.6 % of the respondents maintained a written budget, the rest maintain partially written budget or none at all. This supports studies

by Ajzerle et al. (2013) and Krah et al. (2014) who found that majority of their respondents did not prepare personal budgets. A personal budget is an individual's plan expressed in financial term. It is used to allocate future incomes towards expenses, savings and debt repayments within the budget constraints. Most individuals make borrowing and spending decisions by means of simple mental representations which cannot qualify as personal budgets. This 'representations' only fit the cognitive capacity of the budgeter (Schicks, 2012).

Table 4.42: Mean indebtedness by personal budgeting format

	DSR	DIR
Written budget	.3270	7.3020
Other budgets	.3442	9.0515
Mean	.3405	8.6727
ANOVA F(1,431)	0.617	5.197
sig.	.433	.023

$p < .05$

Results in Table 4.42 show that respondents who wrote their budget had the least indebtedness by both dimensions. However, the budget format only significantly ($p < .05$) explained indebtedness by DIR. This supports Kamleitner et al. (2010) who contends that mental budgeting is related to indebtedness since it only conveys a false sense of control over spending. Therefore, individual operating unstructured, vague and mental budget can easily slip into debt. Similarly, Winchester (2011) found investors who self-regulate more likely to make optimal long term financial decisions.

Table 4.43: Responses on adequacy of emergency funds

Likert scale	Frequency	Percent	Cumulative Percent
1	102	34.9	34.9
2	71	24.3	59.2
3	59	20.2	79.5
4	27	9.2	88.7
5	33	11.3	100.0
Total	292	100.0	
	Mean = 2.38	Std. deviation =1.343	

The size of the emergency fund was rated on a likert scale of 1 to 5. Results in Table 4.43 show respondents held inadequate precautionary funds with 59.2% indicating they held either very low (scale 1) or low (scale 2) emergency kitty.

Table 4.44: Indebtedness by size of emergency fund

Emergency fund class		DSR	DIR
Inadequate (scale 1 and 2)		.3642	9.6449
Adequate (scale 3, 4 and 5)		.3052	7.2047
Mean		.3401	8.6504
ANOVA	F(1,290)	10.814	14.852
	Sig	.001	.000

p<.05

Findings in Table 4.44 show that both dimensions of indebtedness could be explained significantly (p<.05) by size of emergency fund with respondents holding inadequate precautionary funds more indebted. This supports Lusardi et al. (2010) who found that respondents with inadequate emergency funds were financially vulnerable and hence prone to indebtedness. Separate Pearson's correlation results between emergency fund and self-confidence showed significant and negative (p=.000, r=-.218) relationship; with those having inadequate emergency fund more self-confident. This supports Finocchiaro et al. (2011) who argues that people may take more debt than rational because they are debt illiterate. They continue to argue that people hold insufficient precautionary saving or too much debt because they are over-confident and therefore underestimate the "variance of future shocks".

Table 4.45: ANOVA- Debt capability

		DSR		DIR	
	df	F	sig.	F	sig.
Personal budgeting	12,279	0.931	.534	0.576	.861
Personal budgetary control	13,278	2.267	.008	2.563*	.002
Personal planning	18,273	0.951	.517	1.276	.203
Aggregate debt capability	134,157	1.002	.494	1.002	.493

*p<.05

ANOVA results in Table 4.45 show personal budgetary control score of the respondents significantly (p=.002) predicted DIR. However, aggregate debt capability, personal budgeting and personal planning insignificantly (p>.05) isolated respondents who were indebted by any of the dimension.

4.6.5 Descriptive Statistics on Debt Knowledge

Data on debt education and training was collected using six likert scale questions shown in part E of Appendix 1. A five scale rating was adopted as shown in Table 4.46. A numeracy test containing seven questions was also conducted. Respondents were also requested to rate their debt knowledge on a scale of 1 to 7. Therefore, debt knowledge was operationalised using self-assessment, numeracy test, debt education and debt training.

Table 4.46: Responses on debt knowledge

Item	VLE %	LE %	ME %	GE %	VHE %	Mean	Std. Dev.
Debt education							
(a) My educational background in school, college and university was devoted to business, economics and finance	28.1	11.0	20.8	14.4	25.7	2.99	1.553
(b) I enjoy reading financial articles and publication in the newspapers, magazines and internet	15.1	17.1	27.4	19.5	20.9	3.14	1.338
(c) I enjoy conversation about financial matters with friends, colleagues	12.3	8.2	29.8	24.7	25.0	3.42	1.286
Debt training							
(d) I have attended training seminars and conferences on debt management while in employment	44.2	16.1	16.8	10.6	12.3	2.31	1.434
(e) I interact with financial planners, advisors, and accountants in my work place	26.0	16.4	22.6	17.8	17.2	2.84	1.431
(f) The nature of my job makes me familiar with debt related issues such as interest rate, pricing, etc.	23.6	11.6	20.5	19.6	24.7	3.10	1.497

n=292, Cronbach's alpha=.831; VLE=Very Low Extent, LE=Low Extent, ME=Moderate Extent, HE=High Extent, VHE=Very high Extent.

Table 4.46 above list the six likert scale statements that were fielded to respondents. The reliability coefficient of these debt knowledge statements is 0.831. This compares favourably with pilot test's reliability Cronbach's alpha in Table 4.1 of 0.879. Cronbach's alpha of between 0.8 and 0.9 is good (George & Mallery, 2003). Table 4.46 also show that respondents had scored above average on all items except the statement (d) on debt training seminar attendance (*M*=2.31, *SD*=1.434). Reading (*M*=3.14, *SD*=1.338) and conversations on financial matters (*M*=3.42, *SD*=1.286) were the highest scored. This supports finding in a study by Funfgeld and Wang

(2009) which found that reading and conversation on financial matters had strong factor loading. They concluded that such respondents are likely to have sound financial knowledge.

It was also vividly clear from Table 4.46 that the three socialisation agent; school (*M*=2.99, *SD*=1.553), media (*M*=3.14, *SD*=1.338) and peers (*M*=3.42, *SD*=1.286) had satisfactory scores; meaning they are good sources of debt knowledge. This is in line with Bandura (1991) who contends that people learn through observation, and imitation from role models they come into frequent contact with. Surprisingly, peer groups had the best positive influence on debt knowledge of the respondents. According to Copur (2011) as people age they establish autonomy from their parents and discuss and learn from peer groups. Table 4.46 shows that about 28.1% of the respondents had very low levels of debt education while 44.2% had not attended any form of debt training. In a study by Disney and Gathergood (2011), 28.4% reported hardly any education in finance, economics or business; 15.1% reported they had a lot, and only a few households reported any formal financial training.

Table 4.47: Responses to compound interest question

Questions 2a		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	More than 150,000	239	81.8	84.2	84.2
	Exactly 150,000	31	10.6	10.9	95.1
	Less than 150,000	14	4.9	4.9	100.0
	Total	284	97.3	100.0	
Missing		8	2.7		
Total		292	100.0		

Table 4.47 shows that 84.2% respondents answered this question correct. This means they understood basic business mathematics on compound interest rate. This performance compares favourably with 85.1% scored in a similar question in a study by Disney and Gathergood (2011).

Table 4.48: Responses to term structure question

Questions 2bi		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	True	63	21.6	22.5	22.5
	False	217	74.3	77.5	100.0
	Total	280	95.9	100.0	
Missing		12	4.1		
Total		292	100.0		

The responses in Table 4.48 relate to a query which tested the respondent's understanding of the relationship among instalment amount, tenure of a loan and interest expense. The rule is that the higher the instalment payable the less the tenure and interest payable. 77.5 % of the respondents answered this question correctly.

Table 4.49: Responses to the loan guarantee question

Questions 2bii		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	True	225	77.1	80.4	80.4
	False	55	18.8	19.6	100.0
	Total	280	95.9	100.0	
Missing		12	4.1		
Total		292	100.0		

Majority of respondents were members of SACCOs according to findings in Table 4.25. Also results in Table 4.31 show that SACCO loans were dominantly secured by personal guarantors. Responses in Table 4.49 relate to a query that tested the respondent's understanding of the need for sufficient guarantors in a loan contract. 80.4% of the respondents answered this question correctly.

Table 4.50: Responses to the APR question

Questions 2biii		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	True	110	37.7	42.3	42.3
	False	150	51.4	57.7	100.0
	Total	260	89.1	100.0	
Missing		32	10.9		
Total		292	100.0		

Responses in Table 4.50 relates to the question that tested whether respondents have ever come across the term "Annual Percentage Rate" (APR); also called effective interest rate. 57.7% of the respondents apparently were not conversant with APR. Worryingly, it would have been easy to answer this question correctly had respondents bothered to 'google'. However, the performance (42.3%) is better when compared with results of a similar APR question in a study by Robb (2007) where 33% of the respondents answered the question correctly.

Table 4.51: Responses to the rule of 72 question

Questions 2c		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2 years	44	15.1	15.7	15.7
	2-5 years	174	59.6	62.2	77.9
	5-10 years	56	19.2	20.0	97.9
	More than 10 years	6	2.0	2.1	100.0
	Total	280	95.9	100.0	
Missing		12	4.1		
Total		292	100.0		

Responses in Table 4.51 relates to the question that assessed whether the respondents understood simple interest, and especially the "rule of 72". The correct period is "2-5 years", precisely 3.6 years. Review of Table 4.51 shows that 62.2% of the respondents answered this question correct. Surprisingly, this performance was better compared with previous studies by Lusardi and Tufano (2009) and Disney and Gathergood (2011) where the scores were 35.9% and 25.1% respectively using the same question. Yet it was overshadowed by performance of a similar question in a study by van

Ooijen and van Rooij (2014) where the score was 66.9%. 37.8% of respondents who answered incorrectly in this study display rudimentary understanding of the concept of interest accrual.

Table 4.52: Responses to the debt repayment question

Question 2d		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than 5 years	52	17.8	18.9	18.9
	between 5 - 10 years	138	47.3	50.2	69.1
	between 10 - 15 years	52	17.8	18.9	88.0
	you will ever be in debt	33	11.3	12.0	100.0
Total		275	94.2	100.0	
Missing		17	5.8		
Total		292	100.0		

Responses in Table 4.52 relates to the question which tested if respondents understood both simple interest and instalment amortisation. Such knowledge would assist them apportion their loan repayments to both principal and interest charges. Table 4.52 also indicate that only a dismal 12 % correctly answered this question. Unfortunately, this performance was worse compared with that from previous studies by Lusardi and Tufano (2009), Disney and Gathergood (2011) and van Ooijen and van Rooij (2014) where the scores were 35% , 45.7% and 48.3% respectively on the same question.

Table 4.53: Responses on the hire purchase question

Questions 2e		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Option A	40	13.7	14.5	14.5
	Option B	77	26.4	28.0	42.5
	Both are the same	158	54.1	57.5	100.0
Total		275	94.2	100.0	
Missing		17	5.8		
Total		292	100.0		

Responses in Table 4.53 relate to the question which tested the respondent's understanding of time value of money concept, and also APR. The better option is A.

Surprisingly, only 14.5% of respondents answered correctly. However, this performance was better compared with 6.9% scored in a study by Lusardi and Tufano (2009) and 12.1% scored in a study by van Ooijen and van Rooij (2014); both studies had fielded a similar question. These scores show that the time value of money concept is poorly understood.

Table 4.54: Scorecard of the numeracy test

	Scores	Frequency	Percent	Cumulative Percent
Low	0	7	2.4	2.4
	1	10	3.4	5.8
	2	39	13.4	19.2
Medium	3	74	25.3	44.5
	4	104	35.6	80.1
High	5	48	16.5	96.6
	6	9	3.1	99.7
	7	1	0.3	100.0
Total		292	100	
Mean = 3.52; Standard deviation = 1.253				

Results in Table 4.54 show distribution of respondents by correct scores. In total, only one respondent answered all the questions correctly. Similarly, only seven respondents answered all the questions incorrectly. Those with professional accounting qualifications performed the best (M=3.83, SD=1.118). This supports Robb (2007) who found economics and finance students display higher financial literacy. Further, results in Table 4.54 show that the proportion of low, medium and high-score respondents were 19.2%, 60.9% and 19.9% respectively. The mean number of questions answered correctly was 3.52 (50.3%) with a standard deviation of 1.253. This indicated that numeracy skills of the respondents were average.

Using three numeracy questions Disney and Gathergood (2011) got a mean of 1.86 (62%) with a standard deviation of 1.02. Likewise in a study by Liv (2013) which fielded three question those who scored low (0 or 1 answer correct), moderate (2

answers correct) and high score (3 answers correct) were 20%, 46% and 34% respectively. Clearly the respondents in this study performed worse; numeracy skills are strikingly low. Importantly, low level of numeracy skills in the populace is not only a Kenyan problem. Similar findings are reported for Australia, US, Germany, Netherlands, Japan, New Zealand, Russia among others (Lusardi & Mitchell, 2014). According to Finke (2011), respondents who are less likely to evaluate interest rate, levies and penalties before borrowing so that they vary borrowing strategies will always make sub-optimal debt decisions.

Table 4.55: Mean indebtedness of the respondents by numerical test score

Numerical test score class		DSR	DIR
Low	less than 3 scores	.3141	8.7885
Medium	3 and 4 scores	.3592	8.9571
High	above 4 scores	.3069	7.5758
	Mean	.3401	8.6504
ANOVA	F(2,289)	3.617	1.440
	sig.	.012	.239

p<.05

Results in Table 4.55 show that respondents with moderate numeracy skills were more indebted by both dimensions of indebtedness. Finke (2011) found that numeracy score strongly relates to optimal debt and effective credit behaviour. Table 4.55 show the statistical power is significant (p<.05) for DSR meaning the level of numeracy skills significantly predicted DSR. A study by Shicks (2012) concluded that those with cognitive ability limitations were more likely to make irresponsible borrowing decisions. According to Winchester (2011), higher levels of debt knowledge, own or purchased, has been shown to increase the likelihood of exhibiting optimal financial behaviours.

Table 4.56: Report on respondent's debt knowledge self-assessment

Question 2f	Rate	Frequency	Percent	Cumulative Percent
Valid	1	4	1.4	1.4
	2	3	1.0	2.4
	3	18	6.2	8.6
	4	111	38.0	46.6
	5	103	35.3	81.9
	6	43	14.7	96.6
	7	10	3.4	100.0
Total		292	100	

Results in Table 4.56 show that 38.0% of the respondents ranked their debt knowledge neutrally. Self-assessed debt knowledge, also called perceived debt knowledge, refers to what respondents imagine they know on debt matters. Results in Table 4.56 show that the respondents' self-assessed debt knowledge was average (M=4.63, SD=1.043) but Table 4.54 show the actual debt knowledge mean score as 3.52. It is clear that actual and perceived debt knowledge did not mirror meaning there is substantial mismatch. This finding supports the work by de Bassa-Scheresberg (2013) who found that respondents gave themselves high self-assessment scores, yet they did not demonstrate a similar level in numeracy test. The gap between actual and perceived knowledge, says Asaad (2015), is valuable since it motivates learning. In the same line Lusardi and Mitchell (2014) contend that the match between the actual and perceived debt knowledge explain why financial scams are perpetrated against the elderly.

Table 4.57: Mean indebtedness of the respondent by self-assessment scores

Self-assessment classes		DSR	DIR
Low	Less than 4 scores	.3718	12.1335
Medium	4 and 5 scores	.3409	8.9006
High	above 5 scores	.3318	7.5101
	Mean	.3410	8.8117
ANOVA	F(2,213)	0.426	4.369
	Sig.	.655	.014

p<.05

Results in Table 4.57 show that respondents' self-assessed knowledge was significantly (p<.05) different with DIR. Separately, Pearson's correlation between self-assessment score and self-confidence was significant and positive (*r* =.153, p=.006) where respondents with lowest self-assessment score were less confident. This supports a study by Arellano et al. (2014) which found student with higher levels of self-confidence score higher in financial literacy tests. This also in line with Asaad (2015) who found that those with high self-assessed knowledge are over-confident and are likely to engage in risky borrowing decisions such as taking cash from a credit card and making a mortgage payment late. However, over-confidence is beyond the realms of this study.

Table 4.58: ANOVA- Debt knowledge

	df	DSR		DIR	
		F	**Sig.**	**F**	**Sig.**
Debt education	12,279	3.002*	.001	2.439*	.005
Self-assessment	6,209	1.526	.171	3.246*	.005
Numeracy skills	2,289	3.617*	.028	1.440	.239
Debt training	12,279	2.519*	.004	2.328*	.007*
Aggregate debt knowledge	74,217	1.080	.381	1.271	.094

*p<.05

ANOVA results in Table 4.58 show aggregate debt knowledge was statistically insignificant (p>.5) with both dimensions of indebtedness. This means overall debt knowledge did not isolate indebted respondents. However, debt education and debt training were significant (p<.5) with both dimensions of indebtedness. On the other hand, numeracy skills was significant (p=.028) with DSR. Finally, self-assessment was significant (p=.005) with DIR.

Table 4.59: Descriptive statistics on respondents' aggregate debt literacy score

	Frequency	Percent	DSR	DIR
Below DL mean	137	46.9	.3758	9.9577
Above DL mean	155	53.1	.3086	7.4950
Mean			.3401	8.6504
ANOVA		F(1,290)	14.838	15.686
		Sig.	.000	.000
Mean debt literacy (DL)=3.12		Std deviation=3.874		

Results in Table 4.59 show majority of the respondents had debt literacy score above the mean, and were less indebted by both dimensions of indebtedness. On the other hand, F-test results showed the two classes of respondents (those below and above the mean) were significantly (p=.000) different using DSR and DIR. This supports a study by Lusardi and Tufano (2009) which reported a strong relationship between debt literacy and debt load. Similarly, Lusardi and de Bassa-Scheresberg (2013) concluded that respondents who are more financially literate were less likely to engage in high cost borrowing.

4.6.6 Descriptive Statistics on Age of Employees

Majority of the studies reviewed relate financial literacy or debt literacy and indebtedness to socioeconomic characteristics (e.g. Ajzerle et al., 2013; Bicakova et al. 2011; Gathergood, 2012; Lusardi & Tufano, 2009). This study related only age of the employees to their debt literacy and indebtedness. This is regardless of the position of age of the employees in the conceptual framework as a moderator. The relationship between age of employees and the study variables was analysed using mean and ANOVA statistics. In this study, age was constructed as an eight category ordinal variable in the questionnaire (see Appendix 1). For easy of comparison with past studies, age was re-coded as 1 if young (<36 years), 2 if mid-aged (36-45 years) and 3 if elderly (> 45 years). The study is representative of the underlying population

in terms of age because 51.2% of the respondents were aged less than 35 years (young employees) while 48.8% were aged more than 35 years (old employees), Table 4.10 refers. The mean age group was 31-40 years, median age group was 31-35 years and the modal age group was 25-30 years.

Table 4.60: Mean and ANOVA results for age and study variables

	Sub-constructs	Young	Mid-age	Elderly	F	Sig.
*	Disposable income	61,038	91,804	65,608	13.277	.000
*	Loan outstanding	513,161	838,214	523,375	9.915	.000
*	DSR	0.3144	0.3646	0.3707	4.315	.014
	DIR	8.3449	9.2559	8.1836	1.032	.358
	Development loan	4.10	4.04	3.81	1.021	.361
	Car loan	1.66	1.77	1.36	2.496	.084
	Consumption loan	1.72	1.85	1.75	0.620	.539
	Education loan	3.24	3.13	3.00	0.332	.718
*	Housing loan	2.08	2.67	2.36	7.107	.001
	Multiple loan	1.78	1.95	1.90	1.013	.364
*	Loan from Sacco	0.81	1.08	1.20	5.907	.003
	Loan from Bank	0.55	0.56	0.33	2.745	.066
*	HELB Loan	0.16	0.06	0.00	5.668	.004
	Unsecured credit	1.59	1.87	1.55	2.007	.136
	Secured Credit	0.07	0.11	0.03	1.831	.162
	SACCO membership	1.11	1.15	1.03	2.500	.084
	Debt restructuring	2.09	2.04	2.10	0.067	.935
*	Debt advice	2.48	2.26	2.17	3.661	.027
	Debt counselling	2.23	2.09	2.07	1.031	.358
	Debt experiences	2.04	2.08	2.14	0.671	.512
	Self-control	3.89	3.83	3.60	1.653	.193
	Self-confidence	2.99	3.15	3.28	1.699	.185
	Peer influence	4.21	4.11	4.43	1.998	.138
	Borrowing behaviours	3.80	3.69	3.67	1.432	.241
	Budgeting	2.97	3.16	3.06	1.115	.329
	Budgetary control	3.29	3,23	3.27	0.088	.916
	Planning	3.31	3.33	3.29	1.181	.308
	Debt capability	3.17	3.19	3.21	0.033	.966
	Numeracy skill test	3.61	3.47	3.30	1.110	.331
	Self-assessment test	4.69	4.63	4.41	0.840	.433
*	Debt education	3.23	3.17	2.68	5.024	.007
	Debt training	2.91	2.62	2.51	2.765	.065
*	Debt knowledge	3.55	3.35	3.08	5.756	.004
*	Debt literacy	3.17	3.08	3.00	3.764	.024

*p<.05; df =2,289

As revealed in this section, several authors have shown that age has an effect on the amount of debt held by individuals. They have also justified this relationship using theories. For example, Crawford et al. (2012) argues that the demand for credit will vary considerably across borrowers depending on their age among other socioeconomic characteristics. Crawford et al. continues to say that the willingness of the lenders to supply credit will also depend on age of the borrower among other socioeconomic characteristics. On the other hand, Legge and Heynes (2009) justify the relationship between age of the borrower and debt holding using the life cycle theory. Legge and Heynes argue that employees are increasingly likely to borrow over the first half of their working life when they have few resources and many demands on those resources and are decreasingly likely to borrow over their second half of their working life. Therefore, age has a quadratic relationship with indebtedness, Legge and Heynes concludes.
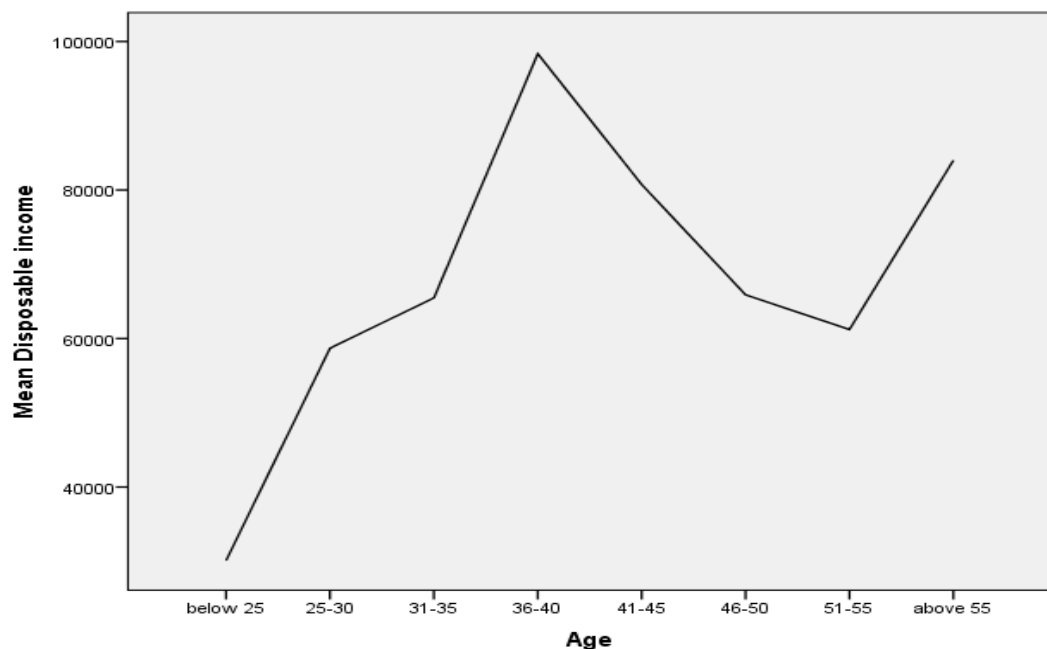
Figure 4.12: The profile for disposable income against age of respondents

Reviewing Figure 4.12 shows the profile for disposable income was typically hump-shaped; higher for middle aged and lower for young and elderly people. The figure supports the Modigliani's life cycle sociological thesis that income has a life cycle pattern which is "inverted U". Further and consistent with permanent income theory, there is evidence that younger people are over-indebted in their attempt to smooth consumption with future income growth. Reviewing results on Table 4.60 show the young employees had the least disposable income and F-test show that age groups were strongly significantly different, $F(2,289)=13.277$, $p=.000$, with respect to disposable income. However, there was an anomalous rise from age 50. On curve estimation using the quadratic model, the graph for disposable income against was as shown in Figure 4.13 below.
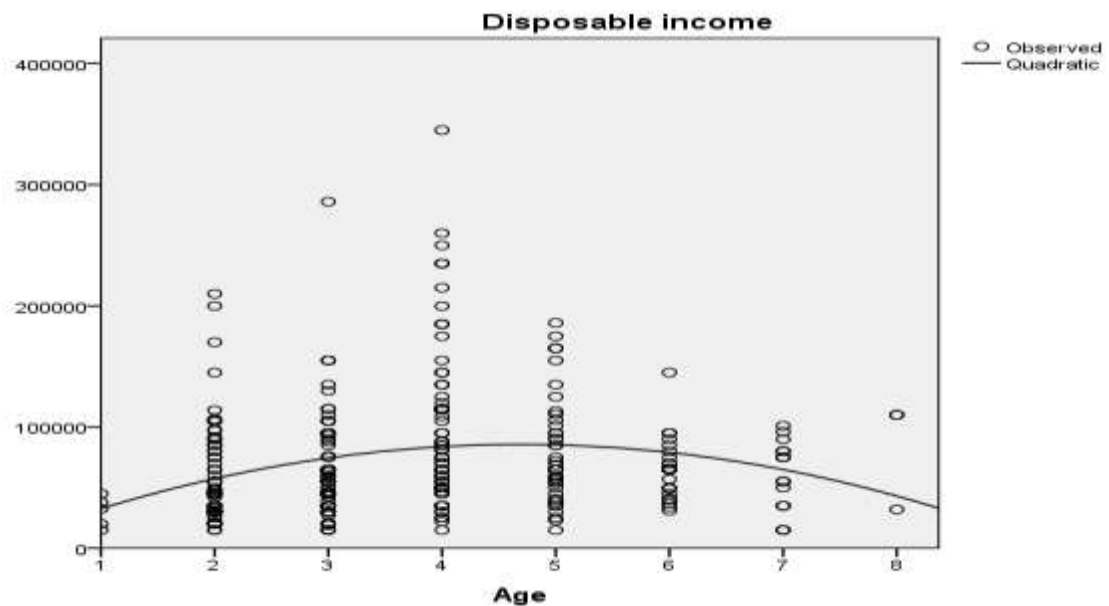
Figure 4.13: Curve estimation for disposable income against age of respondents

Reviewing Table 4.60, the mid-aged employees had the largest loan balance followed by the elderly while the youth trailed. This is consistent with Herceg and Sosic (2010) who concluded that the effect of age on the amount of debt depends on the individual's position in the life cycle. The effect according to Herceg and Sosic is

positive until the person reaches 50 years, afterwards it becomes negative. Indeed, the F-test results in Table 4.60 suggest there was statistically strong and significant difference, $F_{(2,289)}=9.915$, p=.000, in loan balance outstanding within the age groups of the employees. This supports Fasianos et al. (2014) who found age the most significant determinant of debt holding. In the same line, Nguyen (2007) also found age of an individual has an increasing effect on the amount of loan received. In line with this finding, Thaichareon et al. (2004) argues that young people tend to accumulate debt until the age of 50.
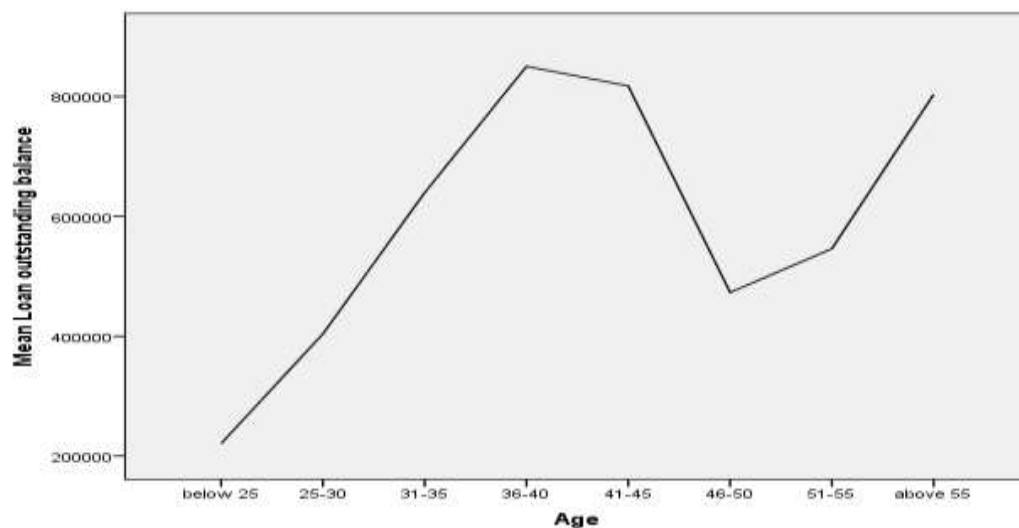
Figure 4.14: Graph of indebtedness against age of employees

Further, Figure 4.14 shows distribution of loan balances along the age groups. This is consistent with prior studies (Bicakova et al., 2011; Dey et al., 2008; Lusardi & Tufano, 2009) which found that debt burden usually increase among the younger population and reduce at old age. It is also consistent with the life cycle and permanent income hypotheses; that debt is for the young and that the curve for indebtedness against age is hump-shaped. According to Mwangi and Sichei (2010) the anomalous rise from age 50 is due to the respondents "topping up" so as to have their obligation terminate at the retirement date. Borrowers are usually afraid they

will be credit excluded after retirement (Mwangi & Sichei, 2010). On curve estimation using quadratic model, the graph for loan balance against age was as shown in Figure 4.15 below.
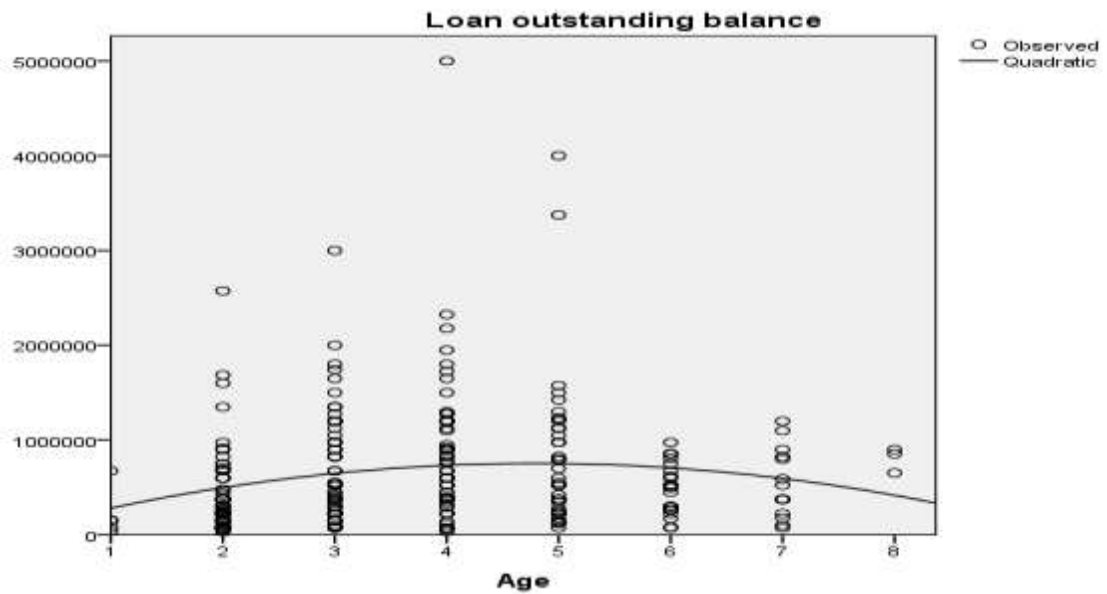
Figure 4.15: Curve estimation for loan balance against age of respondents

Reviewing Table 4.60, the elderly employees had the largest score for DSR followed by the mid aged while the young trailed. Reviewing F-test results in Table 4.60 show DSR was significantly different along the three age groups, $F(2,289)=4.315$, $p=.014$, but DIR was insignificantly different ($p=.358$) across the age groups. The graph for DSR against age was as shown in Figure 4.16. The finding in Figure 4.16 supports a regression model done by Thaichareon et al. (2004) who found a hump-shaped relationship between age and DIR.
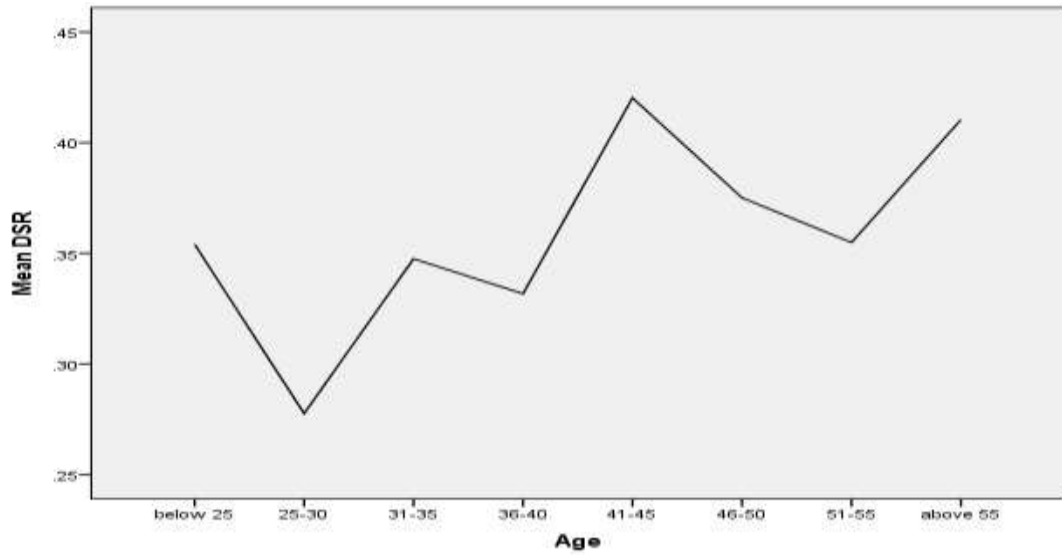
Figure 4.16:Graph for DSR against age of respondents

On curve estimation using quadratic model, the graph for DSR against age was as shown in Figure 4.17 below.
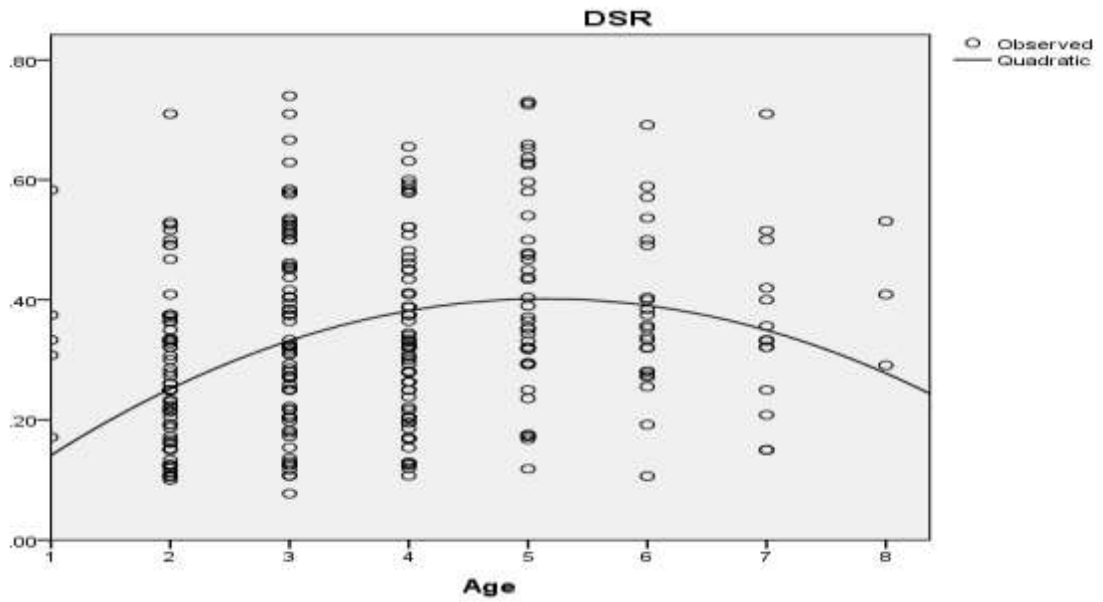
Figure 4.17: Curve estimation for DSR against age of respondents

Reviewing Table 4.60, the mid age employees had the largest score for development loan followed by the young while the middle aged trailed. This supports the finding by Hurwitz and Luiz (2007) who found young people borrowed for short-term loan purpose, often consumption-oriented while older people used credit for income generation activities such as buying assets. Table 4.60 show the mid-age borrowed more for housing purpose while the young employees had car loans. This supports Bakar, Subramaniam and Tan (2013) who found that age has a significant effect on housing purpose but not on car ownership. Bakar et al. contend that the young in Malaysia prefer to drive to their work places. This phenomenon is apparently strange because many workers in developed countries travel to work by public transport (Bakar et al., 2013). However, the F-test results suggest the three age groups of the employees are insignificantly different (p>.05) with respect to loan purpose except for housing loan where the age groups were significantly (p=.000) isolated.

Reviewing Table 4.60, the mid-aged employees had the largest number of loan followed by the elderly while the youth trailed. However, the F-test results suggest there was insignificant difference, F(1,289)=1.013, p=.364, in multiple loans uptake between the young and older employees. This supports the finding by Herceg and Sosic (2010) who found that the probability of having a loan increases with age upto age 50. This particular finding also supports the life cycles quadratic pattern as shown by Figure 4.18 below. The increase of multiple loans after 50 years as well explains the anomolous increase of outstanding loan balances. The anomolous rise is due to fears confirmed by Mwangi and Sichei (2010) who found probability of access to credit drops as one draws closer to the retirement age. The graph for multiple loans against age is shown as Figure 4.18 below.
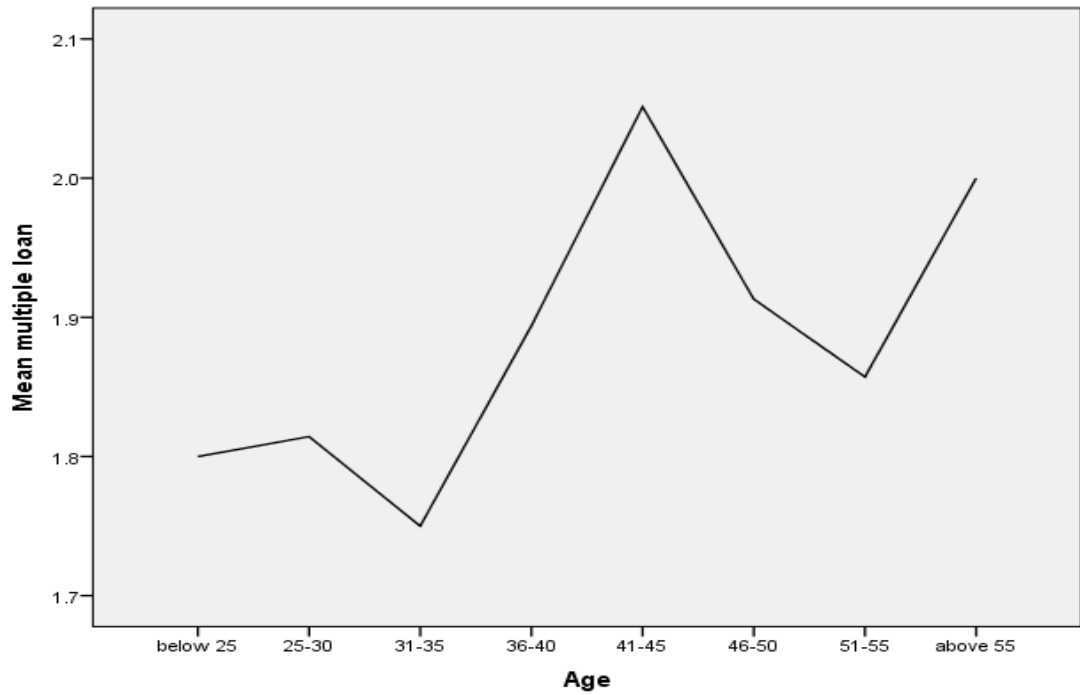
Figure 4.18: Graph of multiple loans against age of employees

On curve estimation using quadratic model, the graph for multiple loans against age was as shown in Figure 4.19 below.
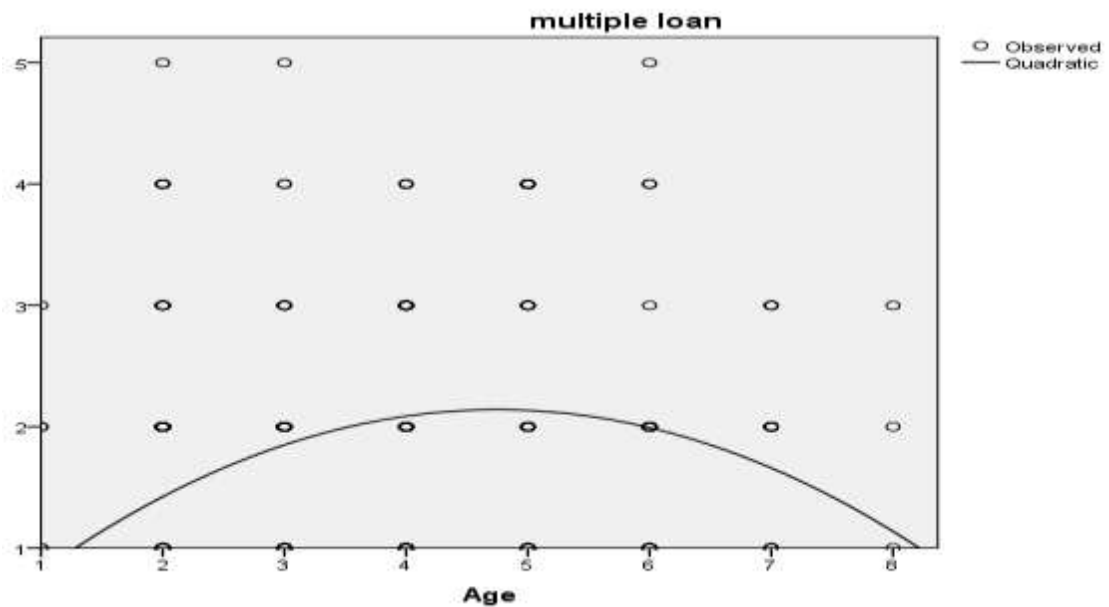
Figure 4.19: Curve estimation for multiple loan against age of respondents

Looking at Table 4.60, the young employees had the highest probability of having a bank loan followed by the mid-aged while the elderly trailed. This supports the finding by Herceg and Sosic (2010) who found that the probability of having a bank loan decrease with age. Similarly, Mwangi and Sichei (2010) found debt access in bank decline with age blaming this to the CAMPARI framework used by banks which ranks elderly applicants as less creditworthy. However, the F-test results in Table 4.60 suggest there was insignificant difference, $F(2,289)=2.745$, $p=.066$, in having a bank loan within the age groups of the employees. Results in Table 4.60 show the elderly employees had the highest number of SACCO loan followed by the mid-aged while the young employees trailed. On the other hand, the F-test results suggest there was a strong and significant difference, $F(2,289)=5.907$, $p=.003$, within the age groups of the employees with respect to having SACCO loan.

Reviewing Table 4.60, the young had borrowed more than the older employees without any security while the mid-aged had the highest score for borrowing with security. This supports Fasianos et al. (2014) who concluded that young people are most probable to have unsecured debt. In the same breath, Bryan et al. (2010) who found that the proportion of respondents with unsecured debt was high among the age group 25-34, and only 1% of those aged over 65 had any unsecured debt. However, the F-test results suggest insignificant difference ($p>.05$) in the distribution of secure or unsecured loan within the age groups of the employees. Mwangi and Sichei (2010) found age had a positive and significant relationship to access to credit from bank and SACCOs while age had a negative relationship with loans from government. This is confirmed by Table 4.60 where F-test results show strong and significant difference, $F(2,289)=5.668$, $p=.004$, across the age groups of the employees with respect to having a HELB loan.

Results in Table 4.60 show that the mid-aged had higher SACCO membership score followed by the young and trailed by the older respondents. This finding support extant studies, (Gloukoviezoff, 2007; Mwangi & Sichei, 2010; Nguyen, 2007; Russell et al., 2011) that it is the young and the elderly who have the most limited access to credit services. The young and the old have increased risk of debt exclusion albeit for different reasons. For example, Nguyen (2007) found age of an individual has an increasing effect on the amount of loan received. In the same line, Mwangi and Sichei (2010) found that increase in age tend to enhance access to credit but the probability of access drops as one draws close to the retirement age. Generally, age of a person has a quadratic relationship with the mid-aged persons having the highest debt access. However, F-test results in Table 4.60 suggest there was insignificant difference, $F(2,289)=2.500$, $p=.084$, in SACCO membership among the age groups of the employees.

Reviewing Table 4.60, the young had highest debt advice score followed by the mid aged and trailed by the elderly respondents. This supports Dowling et al. (2009) who found most young people seek financial information more but they prefer non-professional to experts. Financial experts, argues Winchester (2011), might be particularly useful to individuals who are young. On the other hand, the F-test results in Table 4.60 suggest there was statistically significant difference, $F(2,289)=3.661$, $p=.027$, in debt advice score among the age groups of the employees. A serious review of Table 4.60 show the young had highest debt counselling score followed by the middle-age and trailed by older respondents. This supports Disney et al. (2014) who found that the likelihood of seeking debt counsel decrease with age. However, the F-test results in Table 4.60 indicate the three age groups of the employees were

insignificantly different, $F_{(2,429)}=1.031$, p=.358, with respect to debt counselling score.

Results in Table 4.60 show the elderly employees had the highest aggregate debt experiences score followed by the middle aged while the young trailed. This supports Lusardi and Tufano (2009) who argue that age is positively correlated with debt experiences. Moreover, Lusardi (2009) found older people had better credit practices. In the same line, van Ooijen and van Rooij (2014) found the most experienced mortgagor had better debt contract understanding than first time homeowners. However, the F-test results in Table 4.60 suggest there was statistically insignificant difference, $F_{(2,289)}=0.671$, p=.512, in debt experiences score within the age groups of the employees.

Reviewing Table 4.60, the oldest employees had the highest self-confidence score followed by the middle aged while the young trailed. This supports past studies (e.g. Agarwal et al., 2010; Chio, 2014; Finke, 2011) which found young respondents had the lowest financial confidence arguing that financial confidence is based on experience and it increases with age. Similarly, Disney and Gathergood (2008) found the young had the lowest financial confidence while Lusardi and Mitchell (2014) concluded that confidence increases with age. However, the F-test results in Table 4.60 suggest there was insignificant difference, $F_{(2,289)}=1.699$, p=.185, in self-confidence score among the age groups of the employees.

Reviewing Table 4.60 show that the old employees had highest peer independence score followed by the youth while the mid aged employees trailed. This supports the finding by Gloukoviezoff (2007) who argue that the elderly tend to be highly

resistant to change. Also supported was Fasianos et al. (2014) who found age the most significant determinant of debt and peer income effects. In the same line, Baddeley et al. (2012) found conformity to social influence an inverse function of age and concluded that age may moderate the susceptibility to social influence. However, the F-test results in Table 4.60 suggest there was insignificant difference, $F(2,289)=1.998$, $p=.138$, in peer influence score among the age groups of the employees.

Results in Table 4.60 show the older employees had lowest borrowing behaviours score. This supports the finding by Cynamon and Fazzari (2008) that older people are more risk averse than younger cohorts when making financial decisions. This means risky borrowing behaviours decrease with age. However, F-test results in Table 4.60 suggest there is insignificant difference, $F(2,289)=1.432$, $p=.241$, in borrowing behaviours across the age groups of the employees. Agarwal et al. (2010) argues that financial mistakes decline with age until age 50 years when they begin to increase again. This argument by Agarwal et al. explains the anomolous rise in multiple loans and loan outstanding balances from 50 years.

Findings in Table 4.60 show the old employees had highest personal budgeting scores. This supports the finding by Krah et al. (2014) who found age of individuals had a significant relationship with budgeting behaviour. But F-test results in Table 4.60 suggest there was significant difference, $F(2,289)=1.115$, $p=.329$, in personal budgeting scores among the age groups of the employees. Results in Table 4.60 show the mid-aged employees had higher planning score than the young and the old denoting a hump shaped pattern. This supports the finding by Lusardi (2009) that lack of planning is not only common among young people but also among the elderly.

Although it contradicts Locke and Latham (2013) who contend in their goal setting theory that elderly persons will show higher goal commitment than both medium aged and the young. However, F-test results in Table 4.60 suggest there was insignificant difference, $F(2,289)=1.181$, $p=.308$, in personal planning score within the age groups of the employees. The use of a written customised financial plan might be particularly useful to individuals who are young, argues Winchester (2011).

Results in Table 4.60 show that the old employees had the best debt capability score followed by the mid-age while the young employees trailed. This finding is consistent with a study by Bryan et al. (2010) which indicated that young people have less financial capability than older people and that financial management ability increases with age and experience. Yet a study by Ajzerle et al. (2013) found that those with low debt capability were more often elderly. Similarly, Finke (2011) found age is negatively related to decision making skills since advancement in age leads to predictable decline in cognitive ability. However, the F-test results in Table 4.60 suggest there was insignificant difference, $F(2,289)=0.033$, $p=.966$, in the debt capability scores among the age groups of the employees.
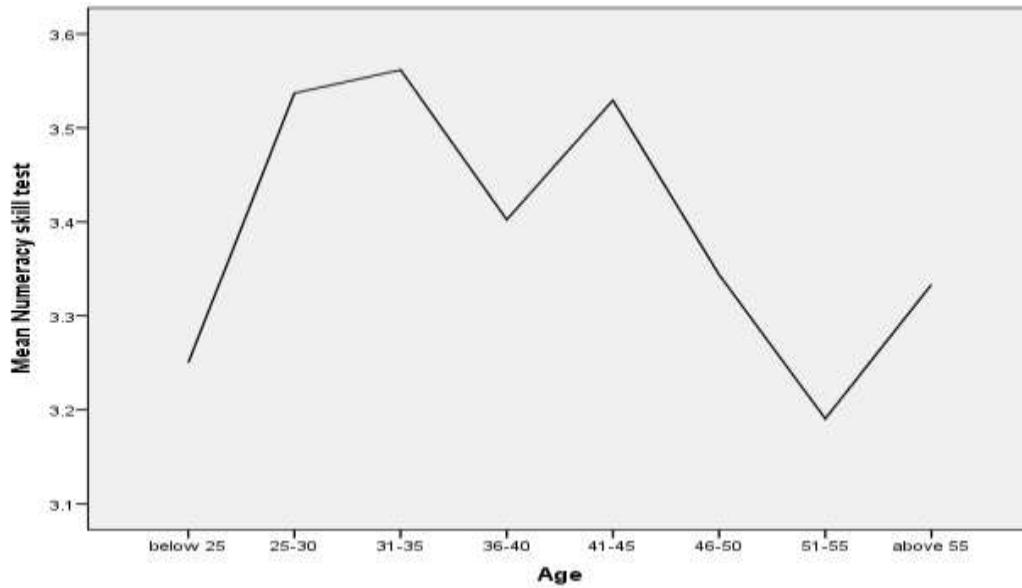
Figure 4.20: Graph of numeracy test score against age of employees

Mean results in Table 4.60 show the old employees had lowest numeracy test scores. This supports prior studies (e.g. Lusardi, 2009; van Ooijen & van Rooij, 2014) which found low rate of numeracy skills in the entire population but the most affected were the young and elderly. This was also confirmed by Figure 4.20. The numeracy test score follow a hump-shaped pattern; lowest for the young and older employees but peaking for the middle-aged employees. This finding is consistent with van Oiijen and van Rooij (2014) who found the relationship between numeracy test score and age was an inverted "U" shaped. This pattern is therefore in line with the life cycle theory that knowledge rise with age but decay at old age safe for the anomalous rise after 55 years. In the same line, Brown and Graf (2013) found those aged 41-50 had higher numeracy score, followed by age group 20-30 while those aged 61-74 trailed. However, on curve estimation using quadratic model, the graph for numeracy test against age was as shown in Figure 4.21 below.

Figure 4.21: Curve estimation for numeracy test against age of respondents

Similarly, Lusardi and Tufano (2009) also found older respondents displayed difficulty in numeracy test with the fraction of correct responses declining with age. However, F-test results in Table 4.60 suggest there was insignificant difference, $F_{(2,289)}=1.110$, p=.331, in numeracy skills score among the age groups of the employees.
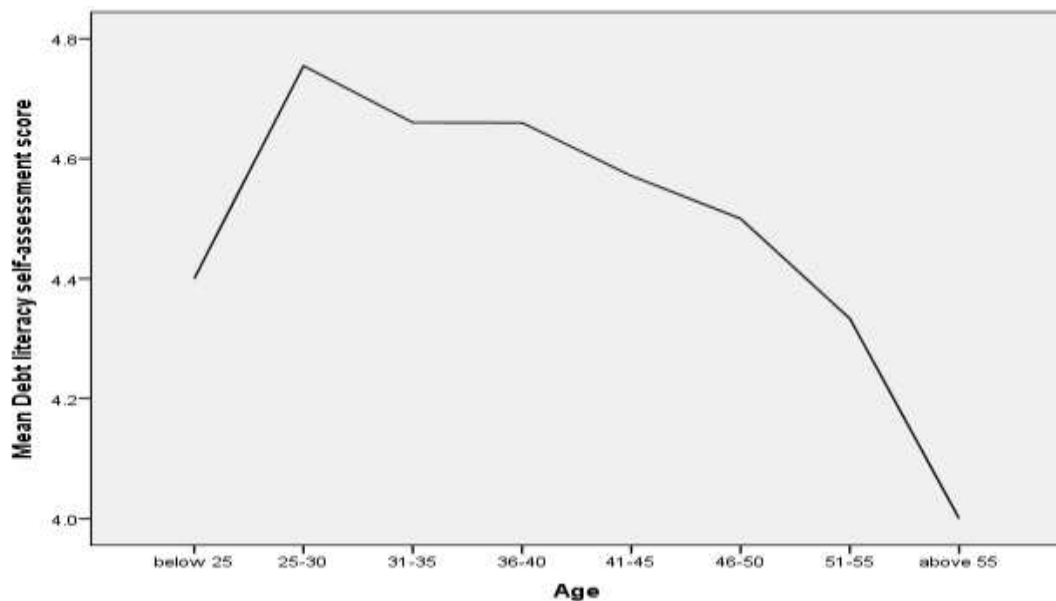
Figure 4.22: Graph of self-assessed debt knowledge against age

Findings in Table 4.60 show the young employees had the highest self-assessment score yet the pattern in Figure 4.22 above was hump shaped. Ambarkhane et al. (2015) argues that older people rate themselves higher but self-assessment by young people is nearer to the actual numeracy test score. However, F-test results in Table 4.60 show the three age groups of the employees were insignificantly different, $F(2,320)=0.840$, $p=.433$, in term of self-assessment score. On curve estimation using quadratic model, the graph for self-assessed knowledge against age was as shown in Figure 4.23 below.
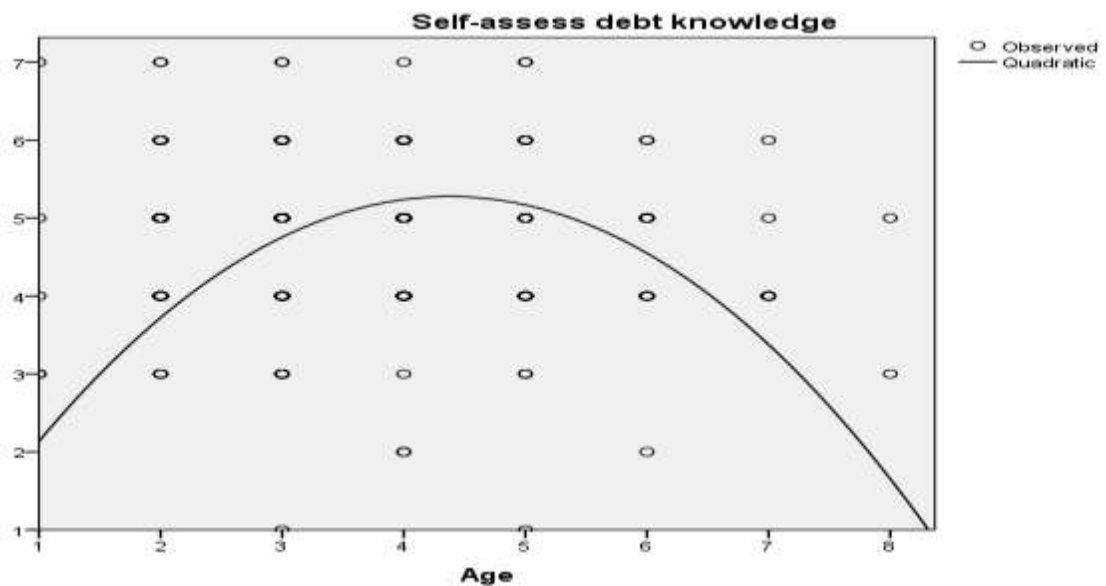
Figure 4.23: Curve estimation for Self assessed Knowledge against age

Reviewing Table 4.60, the young had higher aggregate debt knowledge score followed by the mid-aged and trailed by the older respondents. On the other hand, the F-test results suggest significant difference, $F(2,289)=5.756$, $p=.004$, in debt knowledge level across the age groups of the employees.
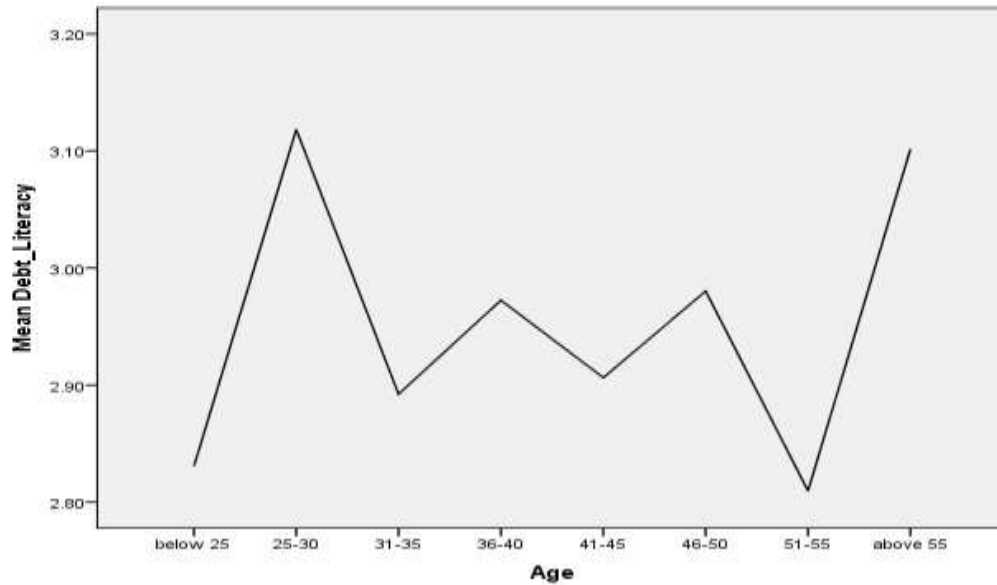
Figure 4.24: Graph of debt literacy against age of employees

Reviewing Figure 4.24, the debt literacy score for the young had an increasing slope while that for older respondents was declining safe for the anomalous rise after 55 years. On the other hand, the F-test results in Table 4.60 suggest there was statistically significant difference, $F(2,289)=3.764$, $p=.024$, in debt literacy among the age groups of the employees. This finding supports Lusardi and Mitchell (2014) who found older people more knowledgeable than the young. On curve estimation using quadratic model, the graph for debt literacy against age was as shown in Figure 4.25 below.
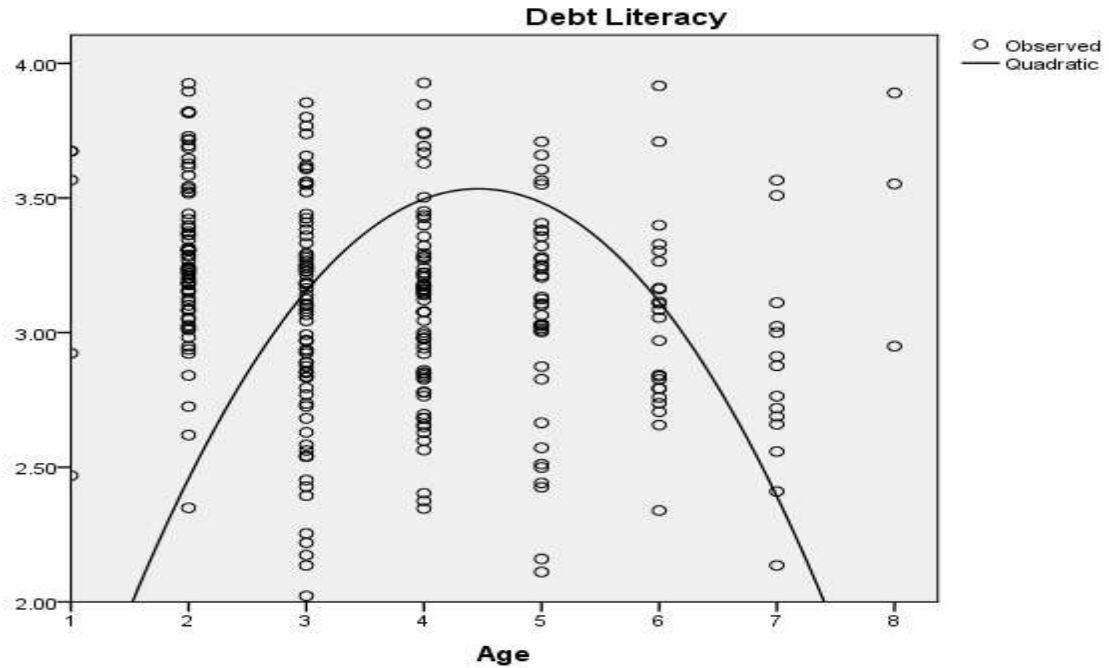
Figure 4.25: Curve estimation for debt literacy against age of employees

This finding confirms the hump-shaped relationship between age of respondent and financial literacy as documented by Brown and Graf (2013) for Switzerland and Lusardi and Tufano (2009), Lusardi and Mitchell (2014) and Lusardi et al. (2010) for America. For instance, Lusardi and Tufano (2009) found the young (<30 years) and the elderly (>65 years) had low levels of debt literacy. The declining slope of the debt literacy curve after 50 years supports the learning theory that there is terminal loss of intelligence due to weakening memory and re-calling ability. Yet Bhushan and medury (2013) found financial literacy higher for those aged over 60, followed by those aged 51-60, and the lowest were those aged 20-30.

4.7 Correlation Analysis Results of the Study variables

This section presents the results of the correlation analysis of study variables using Pearson's correlation. The Pearson's correlation coefficient is a measure of the

strength and direction of a linear association between two variables. The Pearson's correlation coefficient, r, range from +1 to -1. A value equal to 1 indicates perfect positive correlation implying that an increase/decrease in one variable is followed by a proportional increase/decrease in the other variable. On the other hand, a value equal to -1 indicates perfect negative correlation which implies that an increase in one variable is followed by a proportional decrease in the other variable. The stronger the association of the two variables, the closer the Pearson's correlation coefficient, r, will be to either +1 or -1 depending on whether the relationship is positive or negative, respectively. A value equal to 0 indicates that there is no association between the two variables. A value greater than 0 indicates a positive association; that is, as the value of one variable increases, so does the value of the other variable. Whilst a value equal to less than 0 indicates a negative association; that is, as the value of one variable increases, the value of the other variable decreases (Cooper & Schindler, 2003).

The strength of the Pearson's correlation can be weak (less than ±.3), moderate (between ±.3 and ±.5) and strong (greater than ±.5). Pearson's correlation is denoted by italised low case r (shown as r) so that it is not confused with the regression's coefficient of correlation which is denoted by upper case or capital r [shown as R] (Field, 2013). To test for multicollinearity, the correlation between the independent variables was considered. A multicollinearity problem occurs if the correlation coefficient between any two independent variables is greater than 0.8 (Cooper & Schindler, 2003). According to Sekaran (1992), Pearson's correlation is used if the variables of the study are measured using either interval or ratio scales. Correlation results in this study are reported at significance level of 5% and 1% in line with other studies such as Disney et al. (2008) and Liv (2013).

4.7.1 Correlation Between Debt Experience and Indebtedness

Table 4.61: Correlation matrix- Debt experiences and indebtedness

	1	2	3	DSR	DIR
Debt restructuring	1			.095	.052
Debt advice	.037	1		-.006	-.013
Debt counselling	.132[**]	.606[**]	1	.035	.024
Multiple loan	.070	-.079	-.041	.368[**]	.280[**]

** p<.01; *p<.05, n=292

The results in Table 4.61 imply that debt restructuring, debt counselling and multiple loans were positively related to both dimensions of indebtedness while debt advice was negatively correlated. This is in support of findings by Bryan et al. (2010) that receiving debt advice is associated with a small likelihood of escaping over-indebtedness. In line with these findings, Liv (2013) found multiple loans had significant correlation coefficients with over-indebtedness. Similarly, Disney et al. (2014) found probability of seeking credit counselling increase with debt holding.

Results in Table 4.61 show the lowest correlation was between debt advice and debt restructuring ($r=.037$, $p>.05$) while the highest correlation was between debt counselling and debt advice ($r=.606$, $p<.01$). Since none of the correlation coefficients of the indicators of debt experiences was greater than 0.8, it was concluded that the problem of multicollinearity did not exist.

4.7.2 Correlation Between Borrowing Behaviours and Indebtedness

Table 4.62: Correlation matrix-Borrowing behaviours and indebtedness

	1	2	DSR	DIR
Self-control	1		-.249[**]	-.163[**]
Self-confidence	-.181[**]	1	-.153[**]	-.005
Peer independence	.065	-.061	-.145[**]	-199[**]

** p<.01; n=292

The results in Table 4.62 imply that self-control was negatively related to DSR and DIR. This implies as self-control score increases, indebtedness would reduce. Self-control had the highest correlation coefficient with DSR and DIR. This confirms finding by Gathergood (2012) that self-control has more explanatory power of indebtedness. Similarly, a study by Brown and Graf (2013) found impulsiveness had a positive relationship with having a consumer loan. On the same line, Nurcan and Bicakova (2010) found that the probability of falling on a debt management plan increased by 12% if a respondent admitted having self-control problems. Finally, Baddeley et al. (2012) found confident individuals less likely to change their mind due to social influence.

On the other hand, self-confidence was negatively related to DSR and DIR, implying that when self-confidence score increase, DSR would reduce. This supports Farrell et al. (2015) who found women who have higher levels of financial self-efficacy are more likely to have investments, mortgage or savings account and less likely to have loans. Finally, peer independence was found negatively related to both dimensions of indebtedness implying that when peer independence improves indebtedness would reduce. This is in line with Georgarakos et al. (2010) who found a positive association between peer effects and indebtedness.

Results in Table 4.62 show the correlation coefficient between self-control and self-confidence was -.0181 (p<.01). Similarly, the correlation coefficient between self-control and peer influence was .065 (p>.05) while the correlation coefficient between self-confidence and peer influence was .061 (p>.05). Therefore, the problem of multicollinearity did not exist since none of these coefficients of the indicators of borrowing behaviours was greater 0.8.

4.7.3 Correlation Between Debt Capability and Indebtedness

Table 4.63: Correlation matrix-Debt capability and indebtedness

	1	2	DSR	DIR
Personal budgeting	1		-.061	-.073
Personal budgetary control	.460[**]	1	-.289[**]	-.277[**]
Personal planning	.397[**]	.450[**]	-.170[**]	-.141[*]

** p<.01; *p<.05; n=292

The results in Table 4.63 show that personal budgeting, personal budgetary control and personal planning were negatively related to DSR and DIR. This is consistent with a study by Santos and Abreu (2013) found that persons who engage in favourable financial management practises are less likely to experience financial distress. Likewise Nurcan and Bicakova (2010) found the probability of falling on a debt management plan increased by 31% if a respondent admitted having bad financial management. In the same breath, Ajzerle et al. (2013) found that people with greater financial capability are more likely to use debt effectively. Finally, French and McKillop (2014) found that those with superior money management skills had reduced debt-to-income levels and were less likely to borrow from high cost lenders and were more likely to have used fewer lenders.

Further results in Table 4.63 show the correlation coefficient between personal budgeting and personal budgetary control was .460 (p<.01). Similarly, the correlation coefficient between personal budgeting and personal planning was .397 (p<.01) while the correlation coefficient between personal budgetary control and personal planning was .450 (p<.01). Although the correlation coefficients are significant at one percent level, the problem of multicollinearity did not exist since none of the correlation coefficients was greater than 0.8.

4.7.4 Correlation Between Debt Knowledge and Indebtedness

The results in Table 4.64 below show that self-assessment, numeracy test, debt education and debt training were negatively related to both dimensions of indebtedness. These findings supports a study by Brown et al. (2013) found financial training resulted to improvement in repayment behaviour and also leads to greater creditworthiness, less debt balances and less delinquency. On the same line, Nyamute and Maina (2011) found that those who are financially educated practiced better financial management practices.

Table 4.64: Correlation matrix-Debt knowledge and indebtedness

	1	2	3	DSR	DIR
Debt education	1			-.252**	-.228**
Debt training	.476**	1		-.257	-.254**
Numeracy test	.072	.155**	1	-.024	-.072
Self-assessment*	.334**	.341**	.203**	-.104	-.191**

** p<.01;*n=292

These findings in Table 4.64 supports Ibrahim and Alqaydi (2013) who concluded that individuals with strong numeracy skills tend to borrow less from credit cards. In the same breath, two different studies by Lusardi and de Bassa-Scheresberg (2013) and de Bassa-Scheresberg (2013) found young adults who score high in numeracy skills were less likely to use high-cost borrowing methods. Other results in Table 4.64 also show the highest correlation coefficient was between debt education and debt training (r=.476, p<.01). Since none of the correlation coefficients between indicators of debt knowledge was greater than 0.8, it was concluded that the problem of multicollinearity did not exist.

4.6.5 Correlation Between Debt Literacy and Indebtedness

As shown in Table 4.65 below, there was a positive and significant correlation (p<.01) between debt experiences and DSR and DIR. On the other hand, there was negative and significant (p<.01) correlations between DSR and DIR on one hand and borrowing behaviours, debt capability, debt knowledge and aggregate debt literacy on the other. The correlation matrix in Table 4.65 show the strength of the relationships among the independent variables of the study was less than 0.8. Therefore, the problem of multicollinearity did not exist since none of these coefficients is greater than 0.8.

Table 4.65: Correlation matrix- Debt literacy and indebtedness

	DE	BB	DC	DK	DSR	DIR
Debt experiences	1				.215**	.149*
Borrowing behaviours	-.159**	1			-.297**	-.187**
Debt capability	.163**	.274*	1		-.225**	-.213**
Debt knowledge	-.034	-.020	.181**	1	-.237**	-.266**
Debt literacy	.373**	.430**	.768**	.600**	-.268**	-.263**

** p <0.01; *p < .05; n=292;

Pearson's correlation matrix shown in Table 4.65 indicate aggregate debt literacy was positively and significantly (p<.01) related to debt capability (*r*=.768), debt knowledge (*r*=.600), borrowing behaviours (*r*=.430) and debt experiences (*r*=.373) in that order. Prior studies (e.g. Agarwalla, Barua, Jacob & Varma, 2013; Gupta & Madan, 2016) examining the relationship among dimensions of financial literacy confirms that financial behaviour and financial literacy have a positive relationship. These prior studies also found that financial literacy and financial Planning (debt capability) are closely related. In conformity, Lusardi et al. (2010) also found debt literacy strongly linked to cognitive ability. Also in agreement was a study by Lusardi and Mitchell (2008) which found that women with high financial literacy had a habit of planning. The highest correlation coefficient was between debt capability and debt

literacy (r=.768). This supports Finke (2011), who contend that debt capability is the most important component of debt literacy; that is debt education received by low-debt capable persons is ineffective. Learning theory presents a learning cycle which involves experiencing a situation, reflecting on it, planning a course of action or actions which often involves taking risk (Bandura, 1991).

4.8 Regression Analysis Results for the Study Variable

This sub-section covers the Ordinary Least Square (OLS) simple regression analysis of the dimensions of indebtedness against the independent variables of this study. The key objective was to establish the degree, the direction of effect and to assess the statistical significance of the effect of each independent variable on indebtedness. The degree and direction of effect were also used to derive linear models whereas the statistical significance was used to reject or fail to reject the null hypotheses of this study.

In addition, OLS multiple regression models were used to examine the joint effect of the independent variables on indebtedness. Multiple regression analysis was conducted to test the degree and the direction of influence and to gauge the statistical significance of the relationship. OLS Regression analysis will generate R, R^2, adjusted R^2, beta, standard error, t-statistics and p values. Each of these beta values has an associated standard error indicating to what extent these values would vary across different samples. If the standard error is very small then it means that most samples are likely to have beta values similar to the sample of the study concerned because there is little variation across samples (Field, 2013). According to Field (2013), T-statistics tests also determine whether a beta value is significantly different from zero. Therefore, if the t-test associated with beta value is significant then the predictor

variable is making significant contribution to the model. Conversely, if the t-test associated with beta value is insignificant then the predictor variable is making zero contribution to the model. The significance level used in this study was 5%. Variance Inflation Factor (VIF) was used to detect colinearity. VIF nearest to 1 suggest no multi-colinearity; that is there is no linear relationship between independent variables. On the other hand, VIF substantially greater than one mean there is multi-colinearity. VIF more than 10 indicates serious multi-colinearity problem (Field, 2013).

4.8.1 Effect of Debt Experiences on DSR

The model used to test the effect of debt experiences on DSR was;

$$y_1 = b_0 + b_1 x_1 + \varepsilon_i \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \text{(4.1)}$$

Where: y_1 = Debt Service Ratio (DSR)

b_0 = Level of DSR in the absence of debt experiences

b_1 = Intercept for debt experiences

x_1 = Debt experiences

ε_i = Error term

Table 4.66: Regression model summary of DSR against debt experiences

	β	SE	$\hat{\beta}$	T	Sig.
Constant	0.218	0.034		6.415	.000
Debt experiences	0.058	0.016	0.215	3.744	.000
R	.215				
R squared	.046				
Adjusted R squared	.043				
Standard error of the estimates	0.14981				
VIF	1.000				
ANOVA	F(1,290)=14.016, p=.000				

*p<.05

Results in Table 4.66 indicate that debt experiences explain 4.6% of the variation in DSR. It follows that other factors outside debt experiences explain 95.4 % of variation in DSR. The adjusted R^2 is .043 which is close to the R^2, hence the model is well generalized. This means that if the model were derived from the population instead of the sample; it would account only for 0.3% variation, which is fairly low.

Results in Table 4.66 imply the model is valid, $F(1,290)=14.016$, $p=.000$. The F-ratio was significant ($p=.000$). This shows that the regression model has zero likelihood of giving wrong predictions. As per the T-test values and p-values in Table 4.66, the standardised coefficient ($b=0.215$) of debt experiences was highly significant ($p=.000$). The beta values explain the effect of the predictor on dependent variable, DSR. Substituting the standardized beta coefficients in Table 4.66 in the OLS simple regression model $\left(y_1 = b_0 + b_1 x_1 + \varepsilon\right)$, the following DSR equation was obtained;

$$DSR = 0.215DE \text{.. (4.2)}$$

Equation 4.2 implies that for one point improvement in debt experiences (DE), the score of DSR would increase by 0.215 points. Therefore, the null hypothesis ($H_{01a}:b_1=0$) that there is no significant effect of debt experiences on DSR of formal sector employees in Kenya was rejected.

4.8.2 Effect of Debt Experiences on DIR

The model used to test the effect of debt experiences on DIR was;

$$y_2 = b_0 + b_1 x_1 + \varepsilon_i \text{... (4.3)}$$

Where: y_2 = Debt Income Ratio (DIR)

b_0 = Level of DIR in the absence of debt experiences

b_1 = Intercept for the independent variable

x_1 = Debt experiences

ε_i = Error term

Table 4.67: Regression model summary of DIR against debt experiences

	β	SE	$\hat{\beta}$	T	Sig.
Constant	5.635	1.218		4.624	.000
Debt experiences	1.431	0.558	0.149	2.562	.011
R	.149				
R squared	.022				
Adjusted R squared	.019				
Standard error of estimates	5.38351				
VIF	1.000				
ANOVA	F(1,290) = 6.565, p=.011				

*p<.05

Results in Table 4.67 indicate that debt experiences explain 2.2% of the variation in DIR. It follows that other factors outside debt experiences explain 97.8% of variation in DIR. The adjusted R^2 is .019 which is close to the R^2, hence the model is well generalized. This means that if the model were derived from the population instead of the sample; it would account only for 0.3% variation, which is fairly low.

Results in Table 4.67 imply the model is valid, F(1,290)=6.565, p=.011. The F-ratio was significant (p=.011). This shows that the regression model has less than 1.1% chance of giving wrong predictions. As per the T-test values and p-values in Table 4.67, the standardised coefficient (b=0.149) of debt experiences was highly significant (p=.011). The beta values explain the effect of the predictor on dependent variable, DIR. Substituting the standardized beta coefficients in Table 4.67 in the OLS simple regression model $\left(y_2 = b_0 + b_1 x_1 + \varepsilon \right)$, the following DIR equation was obtained;

DIR = 0.149DE.. (4.4)

Equation 4.4 mean that for one point increase in debt experiences (DE), the score of DIR would rise by 0.149 points. Therefore, the null hypothesis (H_{01b}:b_1=0) that there

is no significant effect of debt experiences on DIR of formal sector employees in Kenya was rejected.

The findings in equations 4.2 and 4.4 show there was positive and significant relationship between debt experiences and the dimensions of indebtedness. This supports a study by Liv (2013) in Cambodia which found positive and significant beta values on its proxy for debt experiences (multiple loans). Liv (2013) also arrived at a correlation coefficient of 13.2%. Also supported is a study in UK by Disney et al. (2014) which concluded that the likelihood of seeking credit counselling increases with debt holding. In the same breath, a study by Mashigo (2006) in South Africa concluded that excessive debt access contributed to the debt spiral. Debt access is an experience which this study assumed uniformly distributed since all respondents must have had debt to qualify for data analysis.

Lusardi and Tufano (2009) using cluster analysis in a study in America found respondents' financial experiences positively related to having difficulties with debt repayment. In the same line Chawla and Uppal (2012) in a study in Canada concluded that higher levels of debt corresponded to a higher likelihood of receiving financial advice. Bandura (1991) posits that people learn through experiences, observation and imitation from role models they interact with frequently. Winchester (2011) argues that professionally assisted persons have increased decisions accuracy, reduced delinquency rates and exhibit debt optimal behaviours than their non-assisted counterparts.

4.8.3 Effect of Borrowing Behaviours on DSR

The model used to test the effect of borrowing behaviours on DSR was;

$$y_1 = b_0 + b_2 x_2 + \varepsilon_i \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \text{(4.5)}$$

Where: y_1 = Debt Service Ratio (DSR)

b_0 = Level of DSR in the absence of borrowing behaviours

b_2 = Intercept for the independent variable

x_2 = Borrowing behaviours

ε_i = Error term

Table 4.68: Regression model summary of DSR against borrowing behaviours

	β	SE	$\hat{\beta}$	T	Sig.
Constant	0.647	0.059		11..045	.000
Borrowing behaviours	-0.082	0.015	-0.297	-5.299	.000
R	.297				
R squared	.088				
Adjusted R squared	.085				
Standard error of estimates	0.14646				
VIF	1.000				
ANOVA	F(1,290) = 28.076, p=.000		

*p<.05

Results in Table 4.68 indicate that borrowing behaviours explains 8.8% of the variation in DSR. It follows that other factors outside borrowing behaviours explain 91.2% of variation in DSR. The adjusted R^2 is .085 which is close to the R^2, hence the model is well generalized. This means that if the model were derived from the population instead of the sample; it would account only for 0.3% variation, which is fairly low.

Results in Table 4.68 imply the model is valid, F(1,290) = 28.076, p=.000. The value of F-ratio was significant (p=.000). This shows that the regression model has no chance of giving wrong predictions. As per the T-test values and p-values in Table 4.68, the standardised coefficient (b=-0.297) of borrowing behaviours was highly significant (p=.000). The beta values explain the effect of the predictor on dependent

variable, DSR. Substituting the standardized beta coefficients in Table 4.68 in the OLS simple regression model $\left(y_1 = b_0 + b_2 x_2 + \varepsilon\right)$, the following DSR equation was obtained;

$$DSR = -0.297BB \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (4.6)$$

Equation 4.6 means that for one point improvement in borrowing behaviours (BB), the score of DSR would drop by 0.297 points. Therefore, the null hypothesis (H_{02a}:b=0) that there is no significant effect of borrowing behaviours on DSR of formal sector employees was rejected.

4.8.4 Effect of Borrowing Behaviours on DIR

The model used to test the effect of borrowing behaviours on DIR was;

$$y_2 = b_0 + b_2 x_2 + \varepsilon_i \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (4.7)$$

Where: y_2 = Debt Income Ratio (DIR)

b_0 = Level of DIR the in absence of borrowing behaviours

b_2 = Intercept for the independent variable

x_2 = Borrowing behaviours

ε_i = Error term

Table 4.69: Regression model summary of DIR against borrowing behaviours

	β	SE	$\hat{\beta}$	T	Sig.
Constant	15.530	2.140		7.256	.000
Borrowing behaviours	-1.838	0.566	-0.187	-3.250	.001
R	.187				
R squared	.035				
Adjusted R squared	.032				
Standard error of estimates	5.34762				
VIF	1.000				
ANOVA	F(1,290)=10.559, p=0.001				

*p<.05

Findings in Table 4.69 indicate that borrowing behaviours explains 3.5% of the variation in DIR. It follows that other factors outside borrowing behaviours explain 96.5 % of variation in D1R. The adjusted R^2 is .032 which is close to the R^2, hence the model is well generalized. This means that if the model were derived from the population instead of the sample; it would account only for 0.3% variation, which is fairly low.

Results in Table 4.69 imply the model is valid, F(1,290)=10.559, p=0.001. The value of F-ratio was significant (p=.001). This shows that the regression model has less than 0.01% chance of giving wrong predictions. As per the T-test values and p-values in Table 4.69, the standardised coefficient (b=-0.187) of borrowing behaviours was highly significant (p=.001). The beta values explain the effect of the predictor on dependent variable, DIR. Substituting the standardized beta coefficients in Table 4.69 in the OLS simple regression model $\left(y_2 = b_0 + b_2 x_2 + \varepsilon\right)$, the following DIR equation was obtained;

DIR= -0.187BB.. (4.8)

Equation 4.8 implies that for one point improvement in borrowing behaviours (BB), the score of DIR would decrease by 0.187 points. Therefore, the null hypothesis (H_{02b}:b=0) that there is no significant effect of borrowing behaviours on DIR of formal sector employees in Kenya was rejected.

The findings in equations 4.6 and 4.8 were in support of Gathergood (2012) who in a study in UK found self-control problems positively associated with non-payment of consumer debt and excessive financial burden. These findings were also in line with a study by Farrell et al. (2015) which found women with high levels of financial

efficacy less likely to have a credit card or loan. Similarly, Fasianos et al. (2014) in a study in European countries found household heads with peer influence problem are more likely to become financially fragile; perhaps because of striving to catch up with the joneses. Also in agreement were studies by Disney and Gathergood (2012) and Gathergood (2012) in UK which found persons who lacked self-confidence and self-control were more indebted. Hastings et al. (2013) in a theoretical paper posits that person with poor borrowing behaviours will have unrealistic future expectations which can lead to increased borrowing above rational levels and creates a vicious circle; meaning borrowing followed by partial repayments and then top ups. Finally, Georgarakos et al. (2010) in a study covering 12 European countries concluded that Household's indebtedness is a function of the relative debt load of reference households.

4.8.5 Effect of Debt Capability on DSR

The linear model used to test the effect of debt capability on DSR was;

$$y_1 = b_0 + b_3 x_3 + \varepsilon_i \dots\dots\dots (4.9)$$

Where: y_1 = Debt Service Ratio (DSR)

b_0 = Level of DSR in the absence of debt capability

b_3 = Intercept for the independent variable

x_3 = Debt capability

ε_i = Error term

Table 4.70: Regression model summary of DSR against debt capability

	β	SE	$\hat{\beta}$	T	Sig.
Constant	0.477	0.036		13.298	.000
Debt capability	-0.043	0.011	-0.225	-3.936	.000
R	.225				
R squared	.051				
Adjusted R squared	.047				
Standard error of estimates	0.14944				
VIF	1.000				
ANOVA	F(1,290) = 15.492, p= .000				

*p<.05

Results in Table 4.70 indicate that debt capability explains 5.1% of the variation in DSR. It follows that other factors outside debt capability explain 94.9% of variation in DSR. The adjusted R^2 is .047 which is close to the R^2, hence the model is well generalized. This means that if the model were derived from the population instead of the sample; it would account only for 0.4% variation, which is fairly low.

Results in Table 4.70 imply the model is valid, F(1,290) = 15.492, p= .000. The value of F-test ratio was significant (p=.000). This shows that the regression model had zero probability of giving wrong predictions. As per the T-test values and p-values in Table 4.70, the standardised coefficient (b=-0.225) of debt capability was significant (p= .000). The beta values explain the effect of the predictor on dependent variable, DSR. Details in Table 4.70 were used to fit a linear model. Substituting the standardized beta coefficients in Table 4.70 in the OLS simple regression model $\left(y_1 = b_0 + b_3 x_3 + \varepsilon \right)$, the following DSR equation was obtained;

DSR= -0.225DC.. (4.10)

Equation 4.10 implies that for one point rise in debt capability (DC), the score of DSR would drop by 0.225 points. Therefore, the null hypothesis (H_{03a}:b=0) that there is no

significant effect of debt capability on DSR of formal sector employees in Kenya was rejected.

4.8.6   Effect of Debt Capability on DIR

The model used to test the effect of debt capability on DIR was;

$$y_2 = b_0 + b_3x_3 + \varepsilon_i \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (4.11)$$

Where: y_2 = Debt Income ratio (DIR)

b_0 = Level of DIR in the absence of debt capability

b_3 = Intercept for debt capability

x_3 = Debt capability

ε_i = Error term

Table 4.71:Regression model summary of DIR against debt capability

	β	SE	$\hat{\beta}$	T	Sig.
Constant	13.246	1.217		10.373	.000
Debt capability	-1.443	0.389	-0.213	-3.711	.000
R	.213				
R squared	.045				
Adjusted R squared	.042				
Standard error of estimates	5.31930				
VIF	1.000				
ANOVA	F(1,290) = 13.769, p=.000				

*p<.05

Results in Table 4.71 indicate that debt capability explains 4.5% of the variation in DIR. It follows that other factors outside debt capability explain 95.5% of variation in DIR. The adjusted R^2 is .042 which is close to the R^2, hence the model is well generalized. This means that if the model were derived from the population instead of the sample; it would account only for 0.3% variation, which is fairly low.

Results in Table 4.71 imply the model is valid, $F(1,290) = 13.769$, p=.000. The value of F-test ratio was significant (p=.000). This shows that the regression model has no likelihood of giving wrong predictions. As per the T-test values and p-values in Table 4.71, the standardised coefficient (b=-0.213) of debt capability was significant (p= .000). The beta values explain the effect of the predictor on dependent variable; DIR. Details in Table 4.71 were used to fit a linear model. Substituting the standardized beta coefficients in Table 4.71 in the OLS simple regression model $\left(y_2 = b_0 + b_3 x_3 + \varepsilon\right)$, the following DIR equation was obtained;

DIR= -0.213DC... (4.12)

Equation 4.12 implies that for one point increase in debt capability (DC), the score of DIR would decline by 0.213 points. Therefore, the null hypothesis (H_{03b}:b=0) that there is no significant effect of debt capability on DIR of formal sector employees in Kenya was rejected.

Findings in equations 4.10 and 4.12 show that increase in debt capability scores by an employee will lead to less indebtedness. This finding supports a study by Santo and Abreu (2013) in USA which found that person who are highly debt capable are less likely to be over-indebted; perhaps because they will engage in positive financial management practices such as budgeting, setting aside a kitty for emergency, spend within their means and use credit wisely. Another study supported by the findings of this study was conducted by Jang (2015) in South Korea, which found financial management competency had the highest and positive influence on reduction of financial stress compare to other factor used by the study. The study concluded that financial capability-building programs can contribute significantly to financial stress reduction among community welfare centre users.

In the same line, Nurcan and Bicakova (2010) in UK found that the probability of falling on a Debt Management Program increased by 31% if a respondent admitted having bad financial management. Similarly, Ajzerle et al. (2013) in a study in Australia found that people with greater financial capability are more likely to use debt effectively. Also in agreement were French and McKillop (2014) in their study in Northern Ireland, UK found that households with superior money management skills had reduced debt-to-income levels, were less likely to borrow from high cost lenders and were less likely to have multiple loans. It is in the same breath that Idris et al. (2013) in a study in Malaysia advises organizations to invest in human resources; particularly personal financial management skill of their employees so that there is reduced financial distress among employees and ultimately high productivity for the organizations.

4.8.7   Effect of Debt Knowledge on DSR

The model used to test the effect of debt knowledge on DSR was;

$$y_1 = b_0 + b_4 x_4 + \varepsilon_i \quad\text{.. (4.13)}$$

Where: y_1 = Debt service ratio (DSR)

b_0 = Level of DSR in the absence of debt knowledge

b_4 = Intercept for debt knowledge

x_4 = Debt knowledge

ε_i = Error term

Table 4.72:Regression model summary of DSR against debt knowledge

	β	SE	$\hat{\beta}$	T	Sig.
Constant	0.491	0.037		13.113	.000
Debt knowledge	-0.044	0.011	-0.237	-4.147	.000
R	.237				
R squared	.056				
Adjusted R squared	.053				
Standard error of estimates	0.14903				
VIF	1.000				
ANOVA	F(1,290) = 17.200, p= 0.000]				

*p<.05

Results in Table 4.72 indicate that debt knowledge explains 5.6% of the variation in DSR. It follows that other factors outside debt knowledge explain 94.4 % of variation in DSR. The adjusted R^2 is .053 which is close to the R^2, hence the model is well generalized. This means that if the model were derived from the population instead of the sample; it would account only for 0.3% variation, which is fairly low.

Results in Table 4.72 imply the model is valid, F(1,290) =17.200, p=.000. The value of F-ratio was significant (p=.000).This shows that the regression model had no chance of giving wrong predictions. As per the T-test values and p-values the standardised coefficient (b=-0.237) of debt knowledge was highly significant (p=.000). The beta values explain the effect of the predictor on dependent variable, DSR. Details in Table 4.72 were used to fit a linear model. Substituting the standardized beta coefficients in Table 4.72 in the OLS simple regression model $\left(y_1 = b_0 + b_4 x_4 + \varepsilon\right)$, the following DSR equation was obtained;

DSR= -0.237DK.. (4.14)

Equation 4.14 imply for one point improvement in debt knowledge (DK), the score of DSR would decline by 0.237 points. Therefore, the null hypothesis (H_{04a}:b=0) that

there is no significant effect of debt knowledge on DSR of formal sector employees was rejected.

4.8.8 Effect of Debt Knowledge on DIR

The linear model used to test the effect of debt knowledge on DIR was;

$$y_2 = b_0 + b_4x_4 + \varepsilon_i \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (4.15)$$

Where: y_2 = Debt income ratio (D1R)

b_0 = Level of DIR in the absence of debt knowledge

b_4 = Intercept for debt knowledge

x_4 = Debt knowledge

ε_i = error term

Table 4.73: Regression model summary of DIR against debt knowledge

	β	SE	$\hat{\beta}$	T	Sig.
Constant	14.688	1.319		11.143	.000
Debt knowledge	-1.768	0.376	-0.266	-4.706	.000
R	.266				
R squared	.071				
Adjusted R squared	.068				
Standard error of estimates	5.24743				
VIF	1.000				
ANOVA	F(1,290)=22.146, p=.000				

*p<.05

Results in Table 4.73 indicate that debt knowledge explains 7.1% of the variation in DIR. It follows that other factors outside debt knowledge explain 92.9 % of variation in DIR. The adjusted R^2 is .068 which is close to the R^2, hence the model is well generalized. This means that if the model were derived from the population instead of the sample; it would account only for 0.3% variation, which is fairly low.

Results in Table 4.73 imply the model is valid, F(1,290)=22.146, p=.000. The value of F-ratio was highly significant (p=.000). This shows that the regression model has no chance of giving wrong predictions. As per the T-test values and p-values in Table 4.73, the standardised coefficient (b=-0.266) of debt knowledge was highly significant (p=.000). The beta values explain the effect of the predictor and dependent variable, DIR. Details in Table 4.73 were used to fit a linear model. Substituting the standardized beta coefficients in Table 4.73 in the OLS simple regression model $\left(y_2 = b_0 + b_4 x_4 + \varepsilon\right)$, the following DIR equation was obtained;

DIR= -0.266DK.. (4.16)

Equation 4.16 means that for one point increase in debt knowledge (DK), the score of DIR would decrease by 0.266 points. Therefore, the null hypothesis (H_{04b}:b=0) that there is no significant effect of debt knowledge on DIR of formal sector employees in Kenya was rejected.

Results in equations 4.14 and 4.16 show improvement in debt knowledge levels leads to a decline in indebtedness. This finding supports a study by Bahovec, Barbic and Palic (2015) in Croatia which found respondents with low numeracy test scores were more indebted than borrowers with medium and high numeracy score by use of chi-square test. Also supported by this finding were Lusardi and Tufano (2009) who using multinomial logit in a study in America found respondents self-knowledge assessment score were negatively related to having difficulties with debt repayment. Studies by De Bassa-Scheresberg (2013) and Huston (2012) in America were also supported by this finding; these studies concluded that financially knowledgeable persons will not use high cost credit.

The finding in equations 4.14 and 4.16 were also in support of Wickramasinghe and Gurugamage (2012) who in Sri Lanka found that personal financial knowledge is negatively related to indebtedness. Similarly, a study by Brown et al. (2013) in US found that financial education had a negative correlation with debt-related outcomes. In the same line, Lusardi and de Bassa-Scheresberg (2013) in US found most high-cost borrowers display very low levels of numeracy skills. Finally, Ibrahim and Alqaydi (2013) in United Arab Emirates found individuals with strong numeracy skills borrowed less on credit cards. It is in the same breath that Lusardi and de Bassa-Scheresberg (2013) in US concluded that it is not the financial shocks and crisis in the US economy and greed of the financial system that causes financial distress to individuals but also their levels of financial literacy.

4.8.9 Effect of Debt Literacy on DSR

This section covers the OLS multiple regression analysis of DSR against the four indicators of debt literacy in this study. The primary goal being to achieve the general research objective that debt literacy affects DSR. The second goal was to derive DSR optimal linear models. In addition, the third goal was to revise the DSR conceptual framework. The general linear model used to test the effect of debt literacy on DSR was;

$$y_1 = b_0 + b_1 x_1 + b_2 x_2 + b_3 x_3 + b_4 x_4 + \varepsilon_i \dots\dots\dots\dots\dots (4.17)$$

Where: y_1 = Debt Service Ratio (DSR)

x_1 = Debt experiences

x_2 = Borrowing behaviours

x_3 = Debt capability

x_4 = Debt knowledge

b_0 = Level indebtedness absence of the independent variables

b_1, b_2, b_3 and b_4 = Intercepts for the independent variables

ε_i = Error term

Table 4.74:Regression model summary of DSR against debt literacy

	β	SE	$\hat{\beta}$	T	Sig.	VIP
Constant	0.689	0.077		8.926	.000	
Debt experiences	0.054	0.015	0.197	3.578	.000	1.084
Borrowing behaviours	-0.063	0.016	-0.227	-3.999	.003	1.143
Debt capability	-0.030	0.011	-0.158	-2.735	.007	1.186
Debt knowledge	-0.038	0.010	-0.206	-3.793	.000	1.047
R	.440					
R squared	.194					
Adjusted R squared	.183					
Std error of the estimates	0.13843					
ANOVA	F(4,287)=17.262, p=.000					

*p<.05

Reviewing results in Table 4.74 show that there is a moderate correlation (R=.440) between debt literacy dimensions and DSR. The same Table also indicate that debt experiences, borrowing behaviours, debt capability and debt knowledge explain 19.4% of the variation in DSR. It follows that other factors outside these debt literacy dimensions explain 80.6% of variation in DSR. Table 4.74 show that the adjusted R^2 is .183 which is close to the R^2, hence the model is well generalized. This means that if the model were derived from the population instead of the sample; it would account only for 1.1% variation, which is fairly low. On the other hand, the VIF values were within the acceptable range hence the indicators were uncorrelated and there is no multicolinearity.

Results in Table 4.74 imply the model is valid, F(4,287)=17.262, p=.000. The value of F-ratio was significant (p=.000). This shows that the regression model has no chance of giving wrong predictions. The model in Table 4.74 show coefficients for

the dimensions of debt literacy; debt experiences (b_1=0.197, p=.000), borrowing behaviours (b_2=-0.227, p=.003), debt capability (b_3=-0.158, p=.007) and debt Knowledge (b_4=-0.206, p=.000). Table 4.74 show that the four coefficients of the indicators of debt literacy were significant (p<.05) and therefore affect DSR. The beta values explain the effect of the predictors on dependent variable, DSR.

Details in Table 4.74 were used to fit a linear equation. Substituting the standardized beta coefficients in Table 4.74 in the OLS multiple regression model $\left(y_1 = b_0 + b_1 x_1 + b_2 x_3 + b_3 x_3 + b_4 x_4 + \varepsilon_i \right)$, the following DSR equation was obtained;

DSR = 0.197DE - 0.227BB - 0.158DC - 0.206DK.. (4.18)

Equation 4.18 implies that for one point increase in debt experiences (DE), the score of DSR would increase by 0.197 points by keeping other three variables constant. Similarly for one point increase in borrowing behaviours (BB), debt capability (DC) and debt knowledge (DK), the DSR score will decrease by 0.227, 0.158 and 0.206 points respectively, by keeping other three variables constant each at a time. Thus, all the variables had an effect on DSR. However, the T-value for borrowing behaviours was the highest thus it has the largest effect on DSR. Comparatively, Lusardi and Tufano (2009) in a conceptually similar but shallow study in US arrived at "pseudo" R squared of .146, and .211 in different iterations.

4.8.10 Effect of Debt Literacy on DIR

This section covers the OLS multiple regression analysis of DIR against the four indicators of debt literacy. The primary goal being to achieve the general research objective that debt literacy affects DIR. The second goal was to derive DIR optimal

linear model. Moreover, the third goal was to revise the DIR conceptual framework. The linear model used to test the effect of debt literacy on DIR was;

$$y_2 = b_0 + b_1 x_1 + b_2 x_2 + b_3 x_3 + b_4 x_4 + \varepsilon_i \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (4.19)$$

Where: y_2 = Debt Income Ratio (DIR)

x_1 = Debt experiences

x_2 = Borrowing behaviours

x_3 = Debt capability

x_4 = Debt knowledge

b_0 = the level indebtedness absence of the independent variables

b_1, b_2, b_3 and b_4 = intercepts for the independent variables

ε_i = error term

Table 4.75: Regression model summary of DIR against debt literacy

	β	SE	$\hat{\beta}$	T	Sig.	VIP
Constant	19.030	2.827		6.731	.000	
Debt experiences	1.414	0.548	0.147	2.581	.010	1.084
Borrowing behaviours	-1.225	0.573	-0.125	-2.137	.033	1.143
Debt capability	-1.085	0.404	-0.160	-2.686	.008	1.186
Debt knowledge	-1.558	0.371	-0.235	-4.196	.000	1.047
R	.377					
R squared	.142					
Adjusted R squared	.130					
Std error of the estimates	5.06947					
ANOVA	F(4,287)=11.862, p=.000					

*p<.05

Findings in Table 4.75 show that there is a moderate correlation (R=.377) between debt literacy dimensions and DIR. The same Table also indicated that debt literacy indicators explain 14.2% of the variation in DIR. It follows that other factors outside debt literacy explain 85.8% of variation in DIR. Table 4.75 show that the adjusted R^2

is .130 which is close to the R^2, hence the model is well generalized. This means that if the model were derived from the population instead of the sample; it would account only for 1.2% variation, which is fairly low. The VIF values were within the acceptable range hence the indicators were uncorrelated and there is no multicolinearity.

Results in Table 4.75 imply the model is valid, $F(4,287)=11.862$, $p=.000$. The value of F-ratio was significant ($p=.000$). This shows that the regression model has no chance of giving wrong predictions. Table 4.75 show the standardised coefficients of the dimensions of debt literacy; debt experiences ($b_1=0.147$, $p=.010$), borrowing behaviours ($b_2=-0.125$, $p=.033$), debt capability ($b_3=-0.160$, $p=.008$) and debt Knowledge ($b_4=-0.235$, $p=.000$). The beta values explain the effect of the predictors on dependent variable, DIR. Hence, the standardised coefficients of the indicators of debt literacy were all significant. It means the four indicators are significant predictors of DIR and were used in the ensuing DIR linear model shown as equation 4.20.

Substituting the standardized beta coefficients in Table 4.75 in the OLS multiple regression model, $y_2 = b_0 + b_1 x_1 + b_2 x_3 + b_3 x_3 + b_4 x_4 + \varepsilon$, the following DIR equation was obtained;

DIR = 0.147DE - 0.125BB - 0.160DC - 0.235DK... (4.20)

Equation 4.20 implies that for one point rise in debt experiences (DE), the score of DIR would increase by 0.147 points by keeping other three variables constant. Similarly, for one point rise in borrowing behaviours (BB), debt capability (DC) and debt knowledge (DK), the DIR score will decrease by 0.125, 0.160 and 0.235 points respectively, by keeping the other three variables constant each at a time. Thus, these

four variables had an effect on DIR. However, the T-test value for debt knowledge was the highest thus it had largest effect on DIR.

In sum, the outcome of the multiple regressions of debt literacy against indebtedness show that debt literacy has moderate correlation with indebtedness; R was .440 and .377 for DSR and DIR respectively. On the hand debt literacy has low predictive power on the indebtedness of respondents; R^2 was .194 and .142 for DSR and DIR respectively. Unsurprisingly, previous study linking debt literacy and indebtedness but using different variables have arrived at almost similar results. For instance, Lusardi and Tufano (2009) in a conceptually similar, but shallow study in US arrived at R^2 of .146 and .211 on various iterations. Similarly, Mottola (2013) in a US study of financial literacy against self-reported interest rate on credit card with the largest balance arrived at R^2 of .082. In the same line, de Bassa Scheresberg (2013) also in America arrived at R^2 of from .050 to .161 in five different iterations.

A study in Cambodia by Liv (2013) using a multinomial logistic regression model to predict odd ratio of been over-indebted arrived at "Nagelkerke" R^2 of .13. Yet another study in Germany by Dick and Jaroszek (2013) regressing financial literacy and socioeconomic characteristics against frequency of credit arrived at R^2 =.08, .11, .12, .14 and .16 in different iterations. Whereas Santos and Abreu (2013) in a related study in United States arrived at different "pseudo" R^2 each time but in eight iterations; "pseudo" R^2 ranged from .08 to .17 using three dimensions of indebtedness.

4.8.11 Moderating Effect of Age on the Relationship Between Debt Literacy and DSR

The MMR model in equations 4.21 and 4.23 were adapted from Stone-Romero and Liakhovitski (2002). An interaction effect exists when the effect of the independent

variable on the dependent variable differs significantly depending on the value of the moderator. The test for moderation relies on the variance in y_i that is explained by the product of $x_1.z_1$ in the MMR model. The null hypothesis is that $b_3=0$ and has insignificant (p>.05) contribution to the dependent variable, y_i. Rejection of the null hypothesis $[H_0 : b_3 = 0, p > .05]$ signals existence of a moderating effect (Field, 2013; Stone-Romero & Liakhovitski, 2002).

The MMR model used to test the moderating effect age of employees in the relationship between debt literacy and DSR was;

$$y_1 = b_0 + b_1x_1 + b_2z_1 + b_3x_1z_1 + \varepsilon \ .... \ (4.21)$$

Where: y_1 = Debt Service Ratio (DSR)

x_1 = Aggregate debt literacy

z_1 = Age of the employee (1 if less than 36 years; 2 if aged between 36-45 years, and 3 if aged over 45 years)

b_0 = Level of DSR in the absence of debt literacy, moderator variable and their interaction terms

b_1 = Intercepts for debt literacy

b_2 = Intercepts for the moderator variable

b_3 = Intercepts for the interaction term

ε_i = Error term

Baron and Kenny (1986) advises that it is desirable the moderator be uncorrelated with both variables (x_1 and y_1) so that it can provide a clearly interpretable interaction term. This study found age of employees and debt literacy had weak, negative but significant correlation (r=-.202, p=.001) while it had weak, positive and significant

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correlation (r=.210, p=.000) with DSR. This means age of employees was not correlated with either debt literacy or DSR and hence absence of multicollinearity problem.

Table 4.76: MMR model summary of DSR against debt literacy

Model	R	R^2	Adj. R^2	SE	Change Statistics				
					ΔR^2	ΔF	df1	df2	ΔSig.F
1	.293	.086	.079	.14692	.086	13.536	2	289	.000
2	.423	.105	.096	.14559	.020	6.294	1	288	.013

*p<.05

MMR model 1 in Table 4.76 shows that R=.293, R²=.086 and F(2,289)=13.536, p=.000 implying the model is valid and explains DSR significantly. The value of R² indicates that 8.6% of the variance in the DSR can be accounted for by debt literacy and age of the employees. On the other hand, model 2 shows the results after the interaction term $(x_1 z_1)$ was added into the model. Table 4.76 also indicates that the inclusion of the interaction term resulted into R change of .020, F(1,288)=6.294, p=.013, showing significant moderating effect. Thus the study rejected the null hypothesis [H_{05a}:b_3=0, p>.05] that there is no moderating effect of age on the relationship between debt literacy and DSR of formal sector employees in Kenya.

Table 4.77: MMR model results of DSR against debt literacy

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	0.584	2	.292	13.536	.000
	Residual	6.238	289	.022		
	Total	6.823	291			
2	Regression	0.718	3	.239	11.287	.000
	Residual	6.105	288	.021		
	Total	6.823	291			

*p<.05

The MMR Models 1 and 2 shown in Table 4.77 were found to be valid, $F(2,289)=13.536$, p=.000 and $F(3,288)=11,287$, p=.000 respectively. The models in Table 4.77 show the value of F-ratio were significant (p=.000). These results show both models significantly predict DSR but model 1 was better.

Table 4.78:MMR model coefficients of DSR against debt literacy

Model		Beta	SE	Beta	T	Sig.	Tolerance	VIF
1	b_0	0.605	0.076		7.945	.000		
	x_1	-0.098	0.022	-0.250	-4.382	.000	.975	1.026
	z_1	0.025	0.012	0.118	2.073	.039	.975	1.026
2	b_0	0.698	0.084		8.299	.000		
	x_1	-0.133	0.026	-0.339	-5.079	.000	.698	1.433
	z_1	-0.044	0.030	-0.207	1.463	.145	.156	6.420
	$x_1.z_1$	0.011	0.005	0.352	2.509	.013	.158	6.331

*p<.05

Based on MMR model 2 beta values shown in Table 4.78, debt literacy (x_1) had negative but significant (p=.000) effect on DSR while age of the employees (z_1) had negative and insignificant (p=.145) effect on DSR. Since the coefficient of the interaction term $(x_1 z_1)$ was significant (p=.013), the study rejected the null hypothesis that [H_{05a}:b_3=0, p>.05] that there is no moderating effect of age on the relationship between debt literacy and DSR of formal sector employees in Kenya. Finally, substituting the standardized beta coefficients in the OLS MMR model $(y_1 = b_0 + b_1 x_1 + b_2 z_1 + \varepsilon)$, the following DSR equation was obtained;

DSR= -0.339DL + 0.352 age*DL.. (4.22)

Equation 4.22 implies that for one point improvement in debt literacy (DL) the score of DSR would decrease by 0.339 points keeping the effect of the interaction term

constant which is higher than 0.250 points in model 1 hence presence of the moderating effect.

4.8.12 Moderating Effects of Age on the Relationship Between Debt Literacy and DIR

The MMR model used to test the moderating effect age of employees in the relationship between debt literacy and DIR was;

$$y_2 = b_0 + b_1 x_1 + b_2 z_1 + b_3 x_1 z_1 + \varepsilon \dots \dots (4.23)$$

Where: y_2 = Debt Income Ratio (DIR)

x_1 = Aggregate debt literacy

z_1 = Age of the employees (1 if less than 36 years; 2 if aged between 36-45 years, and 3 if aged over 45 years)

b_0 = Level of DIR in the absence of debt literacy, moderator variable and their interaction terms

b_1 = Intercepts for debt literacy

b_2 = Intercepts for the moderator variable

b_3 = Intercepts for the interaction term

ε_i = Error term

Baron and Kenny (1986) advises that it is desirable the moderator be uncorrelated with both variables (x_1 and y_2) so that it can provide a clearly interpretable interaction term. This study found age of employees and debt literacy had weak, negative but significant correlation (r=-.202, p=.001) while it had weak, positive and insignificant correlation with age (r=.085, p=147) with DIR. This means age of employees was not

correlated with either debt literacy or DIR and hence absence of multicollinearity problem.

Table 4.79: MMR model summary of DIR against debt literacy

Model	R	R^2	Adj. R^2	SE	Change Statistics				
					ΔR^2	ΔF	df1	df2	$\Delta Sig.F$
1	.263	.069	.063	5.26110	.069	10.763	2	289	.000
2	.304	.093	.083	5.20417	.023	7.357	1	288	.007

*p<.05

From Table 4.79, Model 1 indicate that R=.263, R²=.069 and F(2,289)=10.763, p=.000 implying the model can predict DIR significantly. The value of R² indicates that 6.9% of the variance in the DSR can be accounted for by debt literacy and age of the employees. Model 2 in Table 4.79, shows the results after the interaction term (x_1z_1) was added into the model. Table 4.79 also indicates that the inclusion of the interaction term resulted into an R² change of .023 and F(1,288)=7.357, p=.007, showing significant moderating effect. Thus, the study rejected the null hypothesis [$H_{05b}:b_3=0$, p>.05] that there is no moderating effect of age on the relationship between debt literacy and DIR of formal sector employees in Kenya.

Table 4.80: MMR model results of DIR against debt literacy

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	595.839	2	297.919	10.763	.000
	Residual	7999.274	289	27.679		
	Total	8595.113	291			
2	Regression	795.099	3	265.033	9.786	.000
	Residual	7800.014	288	27.083		
	Total	8595.113	291			

*p<.05

The MMR Model 1 and 2 shown in Table 4.80 were found to be valid F(2,289)=10.763, p=.000 and F(3,288)=9.786, p=.000. The models in Table 4.80

show the value of F-ratio were significant (p<.05). These results show both models significantly predict DIR but model 1 was better.

Table 4.81:MMR model coefficients of DIR against debt literacy

Model		Beta	SE	Beta	T	sig	Tolerance	VIF
1	b_0	20.440	2.725		7.501	.000		
	x_1	-3.712	0.803	-0.266	-4.622	.000	.975	1.026
	z_1	-0.144	0.438	-0.019	-0.329	.742	.975	1.026
2	b_0	24.050	3.006		8.000	.000		
	x_1	-5.070	0.939	-0.363	-5.399	.000	.698	1.433
	z_1	-2.841	1.085	-0.373	-2,619	.009	.156	6.420
	$x_1.z_1$	0.441	0.163	0.383	-2.712	.007	.158	6.331

*p<.05

Based on MMR model 2 beta values shown in Table 4.81, debt literacy (x_1) and age of the employees (z_1) had negative but significant (p<.05) effect on DIR. On the other hand, the interaction term (x_1z_1) had positive and significant (p=.007) effect on DIR. Since the coefficient of the interaction term was significant (p<.05), the study rejected the null hypothesis [H_{05b}:b_3=0, p>.05] that there is no moderating effect of age on the relationship between debt literacy and DIR of formal sector employees in Kenya.

Finally, substituting the standardized beta coefficients in the OLS MMR model $\left(y_2 = b_0 + b_1x_1 + b_2z_1 + \varepsilon \right)$, the following DIR equation was obtained;

DIR = - 0.363DL - 0.373Age + 0.383Age*DL …….…………..…..………….... (4.24)

Equation 4.24 imply that for one point rise in debt literacy (DL) the score of DIR would decrease by 0.363 points by keeping the effect of age of the employees and the interaction term constant which is higher than 0.266 points in model 1. In addition, aging of employees had significant contribution to DIR, meaning age of

employees had a reducing effect on DIR. This findings are similar to those by Gathergood (2012) who while examining the relationship between self control, financial literacy and over-indebtedness found age groups negatively and significantly related to over-indebtedness. In line with several studies (e.g. Dick & Jaroszek, 2013; Lusardi & Tufano, 2009), young people emerged vulnerable, at least by DIR.

In summary, the high residual sum of squares in the OLS linear regression models in the SPSS generated results indicates that the study's variables do not explain much of the variation in the indebtedness of the respondents. Other factors therefore account for a higher proportion of the variation. This is also collaborated by the low values of R, R^2 and adjusted R^2 reported in this chapter. On the other hand, the standard errors are indeed very small, showing that the beta values of the sample and that of the population are materially similar. Further, the low VIF values (less than 2) and tolerance values of almost 1 in the linear regression models show there was no multicollinearity. Finally, all the regression models employed in this chapter satisfied the linearity test since the p-values for the deviation from linearity shown as Appendix 7 were insignificant ($p>.05$).

4.9 Optimal Model for Indebtedness

To arrive at the optimal linear model, the respective slope coefficients of the study constructs were analysed individually for their statistical significance. When deriving a linear model, constructs that have insignificant effect on indebtedness should be dropped from the model while the significant constructs should be ranked by the strength of their effect on indebtedness. Beta values, p-values and T-values found on the multiple regression coefficient models shown in Tables 4.74 and 4.75 were used

to rank the effect of the debt literacy dimensions on indebtedness. All the constructs were found significant and hence none was dropped.

4.9.1   Optimal Model for Debt Service Ratio

The optimal DSR model arrived at was;

$$DSR = -0.227BB - 0.206DK + 0.197DE - 0.158DC \quad\text{...................................... (4.25)}$$

Where: DSR = Debt Service Ratio

   BB = Borrowing behaviours

   DK = Debt knowledge

   DE = Debt experiences

   DC = Debt capability

4.9.2   Optimal Model for Debt Income Ratio

The optimal DIR model arrived at was;

$$DIR = -0.235DK - 0.16DC + 0.147DE - 0.125BB \quad\text{... (4.26)}$$

Where: DIR = Debt Income Ratio

   DK = Debt knowledge

   DC = Debt capability

   DE = Debt experiences

   BB = Borrowing behaviours

4.10   Revised Conceptual Framework for Indebtedness

To construct the revised conceptual frameworks the statistical significance of the constructs were analyse and ranked first, followed by the ranking of the sub-constructs on the same basis of their statistical significance. Beta values, p-values and T-test values were used in ranking the construct and sub-constructs. Beta values, p-values and T-test values to rank the constructs are shown in Tables 4.74 and 4.75.

This step yielded the optimal model shown as equations 4.25 and 4.26 for DSR and DIR respectively; where the constructs were arranged in descending order based on their contribution to the dimension of indebtedness concerned. On the other hand, beta values and p-values to rank the sub-constructs are shown in Tables 4.82, 4.83, 4.84 and 4.85 below. The sub-constructs in these Tables are not arranged in the order of their contribution to the overall model. The revised conceptual frameworks for DSR and DIR are show as Figures 4.26 and 4.27 respectively. The OLS multiple regression models shown as equations 4.27, 4.28 and 4.26 were adapted from Mukras (1993).

4.10.1 Effect of Sub-constructs of Debt Experiences on Indebtedness

Two OLS multiple regressions were done with the first involving regressing DSR against the four sub-constructs of debt experiences followed by DIR. The results of these regressions are reported in Table 4.82 below. The general linear model used was:

$$y_i = b_0 + b_{11}x_{11} + b_{12}x_{12} + b_{13}x_{13} + b_{14}x_{14} + \varepsilon_{11} \dots\dots\dots\dots\dots\dots\dots\dots\dots (4.27)$$

Where: y_i = Indebtedness (y_1=DSR and y_2= DIR)

x_{11} = Debt restructuring experiences

x_{12} = Debt advice

x_{13} = Debt counselling

x_{14} = Multiple loans

b_0 = Level of indebtedness in the absence of the independent variables

b_{11}, b_{12}, b_{13} and b_{14} = Intercepts for the independent variables

ε_{11} = Error term

Table 4.82: Regression results of sub-constructs for debt experiences

	DSR		DIR	
	β	Sig	β	Sig.
Constant	0.200	.000	6.065	.000
Debt restructuring	0.009	.251	1.150	.629
Debt advice	-0.001	.911	-0.112	.810
Debt counselling	0.008	.508	0.663	.561
Multiple loans	0.058	.000	6.631	.000
R	.377		.284	
R^2	.142		.081	
Adjusted R^2	.130		.068	
Standard error	0.14282		5.24732	
F(4,287)	11.867	.000	6.290	.000

*p<.05

From the regression results shown in Table 4.82 above, both models reported a significant F-ratio (p =.000). This shows that the regression models have no chance giving wrong predictions. This also implies the models were valid and acceptable. The DSR model had higher F-ratio, $F_{(4,287)}=11.867$, p=.000, than the DIR model, $F_{(4,287)} =6.290$, p=.000. Based on regression model beta values shown in Table 4.82, most of the unstandardised coefficients of the sub-constructs for debt experiences were insignificant (p>.05) except for multiple loans which had p=.000 in both models. The results also show a moderate coefficient of correlation (R), with the highest being in the DSR model.

4.10.2 Effect of Sub-constructs of Borrowing Behaviours on Indebtedness

Two multiple regressions were done; the first involved regressing DSR against the three sub-constructs of borrowing behaviours followed by DIR. The results of these regressions are reported in Table 4.83 below. The general linear model used was:

$$y_i = b_0 + b_{21}x_{21} + b_{22}x_{22} + b_{23}x_{23} + \varepsilon_{21} \dots\dots\dots (4.28)$$

Where: y_i = Indebtedness (y$_1$=DSR and y$_2$= DIR)

x_{21} = Self-control

x_{22} = Self-confidence

x_{23} = Peer independence

b_0 = the level of indebtedness in the absence of the independent variables

b_{21}, b_{22} and b_{23} = intercepts for the independent variables

ε_{21} = Error term

Table 4.83: Regression results of sub-constructs for borrowing behaviours

	DSR		DIR	
	β	Sig.	β	Sig
Constant	0.648	.000	16.854	.000
Self-control	-0.037	.000	-0.928	.008
Self-confidence	-0.020	.034	0.123	.710
Peer independence	-0.025	.015	-1.200	.001
R	.305		.250	
R^2	.093		.063	
Adjusted R^2	.083		.053	
Standard Error	0.14660		5.28901	
F(3,288)	9.817	.000	6.419	.000

*p<.05

From the regression results shown in Table 4.83 above, both models reported a significant F-ratio (p=.000). This implies the models were valid and acceptable. The DSR model had higher F-value, $F_{(3,288)}=9.817$, p=.000 than the DIR model $F_{(3,288)}=6.419$, p=.000. Based on regression model beta weighting shown in Table 4.83, all the unstandardised coefficients of the sub-constructs borrowing behaviours were significant (p<.05) except for self-confidence which had insignificant p-values (p=.710) in the DIR model. The results also show moderate coefficient of correlation (R) with the highest being in the DSR model.

4.10.3 Effect of Sub-constructs of Debt Capability on Indebtedness

Two multiple regressions were done; the first involved regressing DSR against the three sub-constructs of debt capability followed by DIR. The results of these regressions are reported in Table 4.84 below. The general linear model used was:

$$y_i = b_0 + b_{31}x_{31} + b_{32}x_{32} + b_{33}x_{33} + \varepsilon_{31} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (4.29)$$

Where: y_i = Indebtedness (y_1 =DSR and y_2 = DIR)

x_{31} = Personal budgeting

x_{32} = Personal budgetary control

x_{33} = Personal planning

b_0 = Level of indebtedness in the absence of the independent variables

b_{31}, b_{32} and b_{33} = Intercepts for the independent variables

ε_{31} = Error term

Table 4.84: Regression results of sub-constructs for debt capability

	DSR		DIR	
	β	Sig.	β	Sig.
Constant	0.371	.000	10.217	.000
Personal budgeting	0.016	.093	0.357	.229
Personal budgetary control	-0.037	.000	- 0.970	.000
Personal planning	0.005	.243	-0.019	.549
R	.308		.286	
R^2	.095		.082	
Adjusted R^2	.085		.072	
Standard error	0.14646		5.23520	
F(3,288)	10.026	.000	8.535	.000

*p<.05

From the regression results shown in Table 4.84 above, both models reported a significant F-ratio (p=.000). This implies the models were valid and acceptable. The DSR model had higher F-ratio, F(3,288)=10.026, p=.000, than the DIR model, F(3,288)=8.535, p=.000. Based on regression model beta values shown in Table 4.84,

two of the unstandardised coefficients of the sub-constructs for debt capability were insignificant (p>.05) except personal budgetary control which was significant (p=.000) in both models. The results also show moderate coefficient of correlation (R), with the highest being in the DSR model.

4.10.4 Effect of Sub-constructs of Debt Knowledge on Indebtedness

Two multiple regressions were done; the first involved regressing DSR against the four sub-constructs of debt knowledge followed by DIR. The results of these regressions are reported in Table 4.85 below. The general model used was:

$$y_i = b_0 + b_{41}x_{41} + b_{42}x_{42} + b_{43}x_{43} + b_{44}x_{44} + \varepsilon_{41} \dotfill (4.30)$$

Where: y_i = Indebtedness (y_1 =DSR and y_2 = DIR)

x_{41} = Debt education

x_{42} = Debt training

x_{43} = Numeracy test

x_{44} = Self-assessed knowledge

b_0 = Level of indebtedness in the absence of the independent variables

b_{41}, b_{42} and b_{43} = Intercepts for the independent variables

ε_{41} = error term

Table 4.85: Regression results of sub-constructs for debt knowledge

	DSR		DIR	
	β	Sig.	β	Sig
Constant	0.470	.000	15.643	.000
Debt education	-0.022	.011	-0.555	.071
Debt training	-0.023	.007	-0.743	.013
Numeracy test	0.002	.781	-0.089	.722
Self-assessment	-0.001	.944	-0.632	.086
R	.297		.300	
R^2	.088		.090	
Adjusted R^2	.075		.077	
Standard Error	0.14725		5.22052	
F(4,287)	6.921	.000	7.093	.000

*p<.05

From the regression results shown in Table 4.85 above, both models reported significant F-values (p=.000). This implies the models were valid and acceptable. The DSR model had higher F-value, F(4,287)=6.921, p=.000 than the DIR model, F(4,287)=7.093, p=.000. Based on beta values shown in Table 4.85, all of the unstandardised coefficients of the sub-constructs for debt knowledge were insignificant (p>.05) except debt education (DSR model) and debt training (both models) which had p<.05. The results also show moderate coefficient of correlation (R), with the highest being in the DIR model.

4.10.5 Revised Conceptual Framework for DSR

Beta values, p-values and T-values in Tables 4.74 were used to rank the constructs of debt literacy in descending order based on their significance. On the other hand, beta values and p-values in Tables 4.82, 4.83, 4.84 and 4.85 were used to rank the sub-constructs in descending order, where applicable, based on their significance. The sub-constructs with insignificant effect in the DSR linear model were omitted in the revised conceptual framework shown as Figure 4.26.

Independent variables   moderating variable   Dependent variable
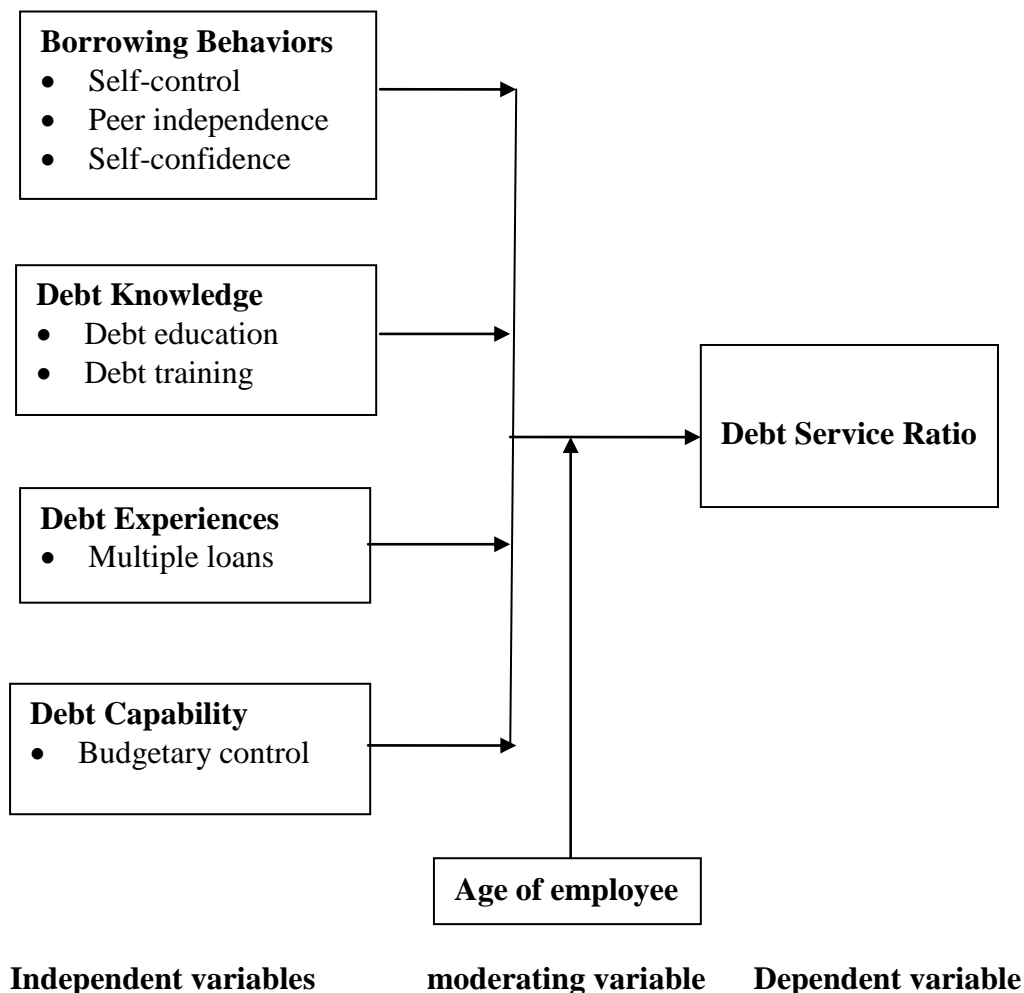
Figure 4.26: Revised conceptual model for DSR

4.10.6 Revised Conceptual Framework for DIR

Beta values, p-values and T-values in Tables 4.75 were used to rank the constructs of debt literacy in descending order based on their significance. On the other hand, beta values and p-values in Tables 4.82, 4.83, 4.84 and 4.85 were used to rank the sub-constructs in descending order, where applicable, based on their significance. Simultaneously, the sub-constructs with insignificant effect in the DIR linear model were omitted in the revised conceptual framework shown as Figure 4.27.

Independent variables   **moderating variable**   **Dependent variable**
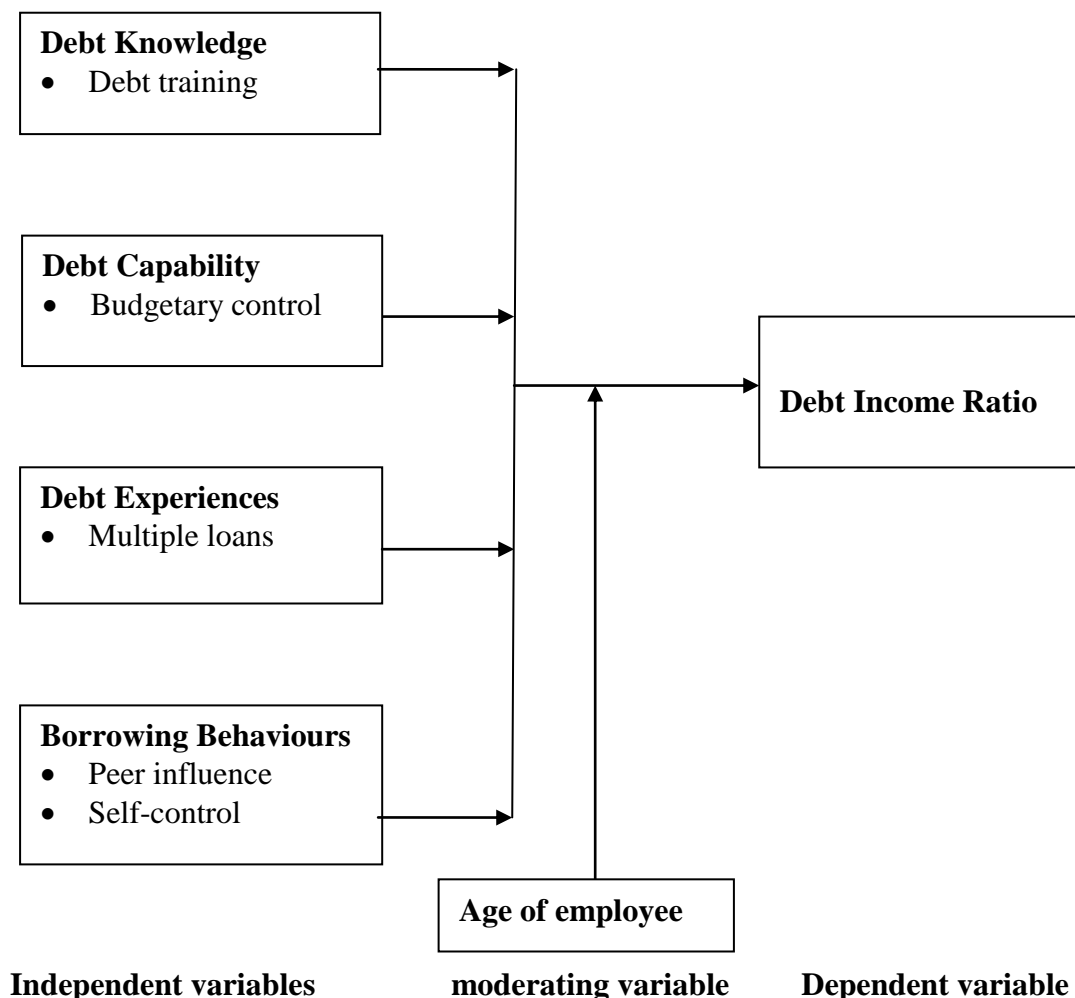
Figure 4.27: Revised conceptual model for DIR

Review of Figure 4.26 and 4.27 found that out of 14 sub-constructs of debt literacy only seven had significant (p<.05) effect on indebtedness. Specifically, multiple loan, self-control, peer independence, personal budgeting control and debt training had significant (p<.05) effect on both dimensions of indebtedness while self-confidence and debt education were only significant (p<.05) in the DSR linear model

Table 4.86: Optimal linear models statistics

Models	DSR	DIR
R	.440	.377
R squared	.194	.142
Adjusted R squared	.183	.130
Standarf error of the estimates	0.13843	5.06947
F-Test ratio	17.262	11.862
P-values	.000	.000

p<.05, n=292, df=4,287

Results in Table 4.86 show selected statistics of the two optimal linear models used in this study. The models statistics were summarised from Tables 4.74 and 4.75. Results in Table 4.86 show both linear models had no likelihood (p=.000) of making wrong predictions. The highest coefficient of determination (R^2 =19.4%) was in the DSR linear model. This means the DSR model can explain the effect of debt literacy on indebtedness better. The DSR model also had the highest coefficients of correlation (R=.440), meaning the DSR model relates debt literacy and indebtedness better. This shows the DSR model had better assessment of "goodness of fit"; implying the DSR model fitted the data used in analysis better. On the other hand, DSR model had the higher F ratio, F(4,287)=17.262, p=.000. This meant the DSR model estimated the parameters better. Further, the DSR model had very low standard errors meaning its parameters would be closest to those of the population. Therefore, the DSR model was found better than DIR model in measuring indebtedness.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1   Introduction

This study set out to determine the effect of debt literacy on indebtedness of formal sector employees in Kenya. This chapter presents a summary of findings from the descriptive statistics, correlation, and regression analysis. The chapter also includes the following; the conclusions from these findings, this study's policy recommendations, its unique contributions, and finally the suggested areas for further research.

5.2   Summary of the Findings of the Study

The general objective of this study was to investigate the effect of debt literacy on the indebtedness of formal sector employees in Kenya. The study was guided by four specific research objectives which examined the effects of debt knowledge, debt capability, borrowing behaviours and debt experiences on the indebtedness of formal sector employees in Kenya. The study also examines the moderating effect of age on the relationship between debt literacy and indebtedness of formal sector employees in Kenya. The study relied on theoretical and empirical studies on debt literacy and personal indebtedness and consequently developed a conceptual framework of the effects between the predictors and the dependent variable. The hypothesized effects were then tested empirically.

Positivism paradigm was used in this study. The study adopted a cross sectional, survey and correlational descriptive research design. The study targeted a population of about 2.5 million employees in the formal sector. Two stage cluster random

sampling was used. The study used primary data collected by use of self-administered questionnaire. A pilot test of the questionnaire was conducted on 38 respondents to check its validity and reliability. During the main study, 384 questionnaires were circulated where 337 were returned. Of the returned, 292 questionnaires were considered usable. Data processing involved computing average score for the sub-constructs first, and then the mean score of the sub-constructs were averaged to yield the constructs' score. Indebtedness was computed according to extant studies.

Prior to the empirical test, statistical assumptions about the data used in the analysis were tested; since most statistical tests rely on them been obeyed. The study found no violation of the assumptions of normality, homoscedasticity, independence and linearity. Reliability tests were also done and found reliable (over 0.7). Outlier detection was also done where extreme scores were deleted. Data analysis used IBM SPSS statistics version 21. Descriptive statistics, Pearson's correlation analysis and OLS Multiple regression models were used to examine the effects of the independent variables on the dependent variable. On the other hand, OLS Moderated Multiple Regression (MMR) models were used to examine the relationships among the independent variable, moderating variable and the dependent variable.

5.2.1 Effect of Debt Experiences on Indebtedness

It was found that majority of the respondents were over-indebted. More than half of respondents held multiple loans that significantly led to increased levels of indebtedness. Majority of the study participants had borrowed from bank and SACCOs. This study found respondents who had borrowed from SACCOs and banks were significantly different by levels of indebtedness. Most of the debts held by respondents were secured by either personal guarantors or payslip; meaning they were

unsecured loans. However, respondents who had secured their debt by either logbooks or title deeds were more indebted; meaning secured borrowers were more indebted.

Majority of the respondents had taken loan for investment, development, education or as business capital. Generally, borrowing purposes insignificantly differentiated indebtedness. The study also found that respondents generally had minimal debt experiences; mainly because majority did not seek debt advice and counselling. In fact, it was vividly clear that respondents did not seek debt advice and counselling from professional experts. Paradoxically, majority sought debt advice and counselling from lenders who are prone to conflict of interest.

A joint regression of sub-components of debt experiences found they significantly explained indebtedness. Of the four sub-constructs of debt experiences, only multiple loans significantly discriminated indebted employees. In summary, descriptive statistics found debt experiences explained indebtedness insignificantly. Regression and correlation analysis results were that debt experiences significantly explains indebtedness. Debt experiences and indebtedness had weak and positive correlation; meaning debt level increases when debt experiences improves.

5.2.2   Effect of Borrowing Behaviours on Indebtedness

The study found that respondents had high levels of self-control when dealing with debt issues because majority had indicated they did not borrow impulsively. Overall, the study found self-control significantly explained indebtedness where respondents who had low self-control were more indebted. Secondly, the respondents had moderate self-confidence; which means respondents were risk neutral on debt matters. Respondents who had high levels of self-confidence were significantly more indebted. Finally, respondents had high peer independence when transacting debt contracts.

ANOVA results for the sub-components of borrowing behaviours found self-control and peer independence significantly explained indebtedness while self-confidence insignificantly discriminated indebtedness. However, results from descriptive statistics show aggregate borrowing behaviours of the respondents insignificantly predicted indebtedness. Regression and correlation analysis findings revealed that borrowing behaviours significantly explained indebtedness. The relationship between borrowing behaviours and indebtedness was weak and negative meaning as borrowing behaviours improve debt level declines. Regression results for the sub-components of borrowing behaviours found self-control and peer independence significantly explained DSR. On the other hand, self-control and peer independence significantly explained DIR while self-confidence insignificantly discriminated DIR.

5.2.3 Effect of Debt Capability on Indebtedness

Results from descriptive statistics indicate that respondents in the study had above average debt capability score on most research statements except saving for emergency. Majority of the respondents did not have adequate emergency funds. The study found the size of the emergency fund explained indebtedness significantly, where those with least amount were found more indebted. Coincidentally, the respondents who had the least emergency saving had high levels of self-confidence. Further, only a minority of the respondents kept written budgets and they were least indebted.

Descriptive statistics therefore found debt capability of the respondents insignificantly predicted their indebtedness. However, only person budgetary control significantly predicted indebtedness. Regression and correlation analysis found debt capability significantly explains indebtedness. The correlation between debt capability and

indebtedness was weak and negative meaning debt level reduces when debt capability improves. A joint regression of sub-components of debt capability found only person budgetary control significantly explained indebtedness.

5.2.4   Effect of Debt Knowledge on Indebtedness

The study found the school, mass media, and peers as possible channels used by the respondents to gain debt knowledge. The study also found majority of the respondents did not have sound debt education and training. Half of respondents in this study scored below average in the numeracy skills test. Respondents with moderate numeracy skills test score were the most indebted, followed by those with low score and trailed by high scorers. Interestingly, respondents ranked their perceived debt knowledge higher compared with their actual numeracy skills test score. This means perceived and actual debt knowledge did not mirror or correspond.

Another finding from the study was that the perceived debt knowledge score insignificantly isolated indebtedness among respondents. On the other hand, respondents with high perceived debt knowledge had the highest self-confidence score. In summary, descriptive statistics found aggregate debt knowledge of the respondents insignificantly isolated indebtedness among respondents. Results from the joint regression of the sub-constructs of debt knowledge indicate they significantly explained indebtedness. However, only debt education and debt training had significant effect on indebtedness. Regression and correlation analysis found debt knowledge significantly explains indebtedness. Debt knowledge and indebtedness had a weak and negative correlation meaning debt level reduces when debt knowledge improves.

5.2.5 Effect of the Debt Literacy on Indebtedness

Debt literacy was an average of arithmetic means of debt experiences, borrowing behaviours, debt capability and debt knowledge. Debt literacy score obeyed the normality and homoscedasticity assumptions among others. Debt literacy level for the respondents was found wanting. Debt literacy score significantly differentiated respondents' indebtedness; those with below average score were found more indebted. Results of Pearson's correlation indicated that debt literacy related positively and significantly to debt experiences, borrowing behaviours, debt capability, and debt knowledge. Debt capability strongly contributed to debt literacy followed by debt knowledge, then borrowing behaviours and trailing was debt experiences. Indebtedness related positively and significantly to debt experiences and negatively and significantly to borrowing behaviours, debt capability, and debt knowledge respectively. Debt literacy had moderate, negative, and significant correlation with indebtedness meaning debt level reduces when debt literacy improves. The study found debt literacy explained indebtedness, albeit conservatively. The DSR optimal linear model and conceptual framework were found better than the DIR's.

5.2.6 Moderating Effect of Age on the Relationship Between Debt Literacy on Indebtedness

The study using hierarchical moderated multiple regression (MMR) models found that the coefficients for interaction term for debt literacy and age of employees had significant moderating effect. This meant age of the respondents had a moderating effect on the relationship between debt literacy and indebtedness. The effect of age was positive and significant for DSR on one hand and negative and significant for DIR on the other. This meant DSR increases with aging of employees while DIR

decreases with aging of employees. In sum, young people emerged vulnerable, at least by DIR.

5.3   Conclusions of the Study

The first specific objective was to determine the effect of debt experiences on the indebtedness of the formal sector employees in Kenya. Emanating from the analyses, debt experiences had a statistically significant influence on indebtedness of formal sector employees in Kenya. This is in line with the learning and life cycle theories which proposes individual learn throughout their life. However, debt experiences are acquired through active and practical participation in the debt environment. Learning theory also shows that learning occurs when a practice is sustained systematically and that past experiences are used to evaluate and approve any new experience. Thus learning is bound to happen when borrower interact with the credit environment. Essentially, debt experiences will improve borrowing activities as well as aid achievement of debt freedom leading to a better overall financial position for the individual. This is also consistent with existing literature.

The second specific objective was to assess the effect of borrowing behaviours on the indebtedness of the formal sector employees in Kenya. Borrowing behaviours had a statistically significant effect on the indebtedness of formal sector employees in Kenya. This is in support of the relative income theory which proposes that the satisfaction of an individual is a derived function of the consumption level of the reference group; implying that the borrowing pattern by individuals depended somewhat on that of peers. The third specific objective was to establish the effect of debt capability on the indebtedness of the formal sector employees in Kenya. Debt capability had a statistically significant effect on the indebtedness of formal sector

employees in Kenya. This is in line with the goal setting theory which centres on self-regulation practices which ensure individuals are committed to their plans as well as assist them avoid distracting and impulsive transactions.

The fourth specific objective was to determine the effect of debt knowledge on the indebtedness of the formal sector employees in Kenya. Debt knowledge had a statistically significant effect on the indebtedness of formal sector employees in Kenya. This is in line with the learning and life cycle theories which proposes individual learn throughout their life. However, debt knowledge is acquired though learner-trainer environment. The general objective was to study the effect of debt literacy on indebtedness of formal sector employees in Kenya. Regression analysis of indebtedness against debt literacy produced negative and significant effects. This means improvement in the debt literacy of the employees would result into lower indebtedness. This study therefore concluded that debt literacy has a significant effect on indebtedness. Finally, since debt literacy indicators dismally explained indebtedness, this study concluded that even the most debt literate person would have debt. Why? This is because there are other factors determining uptake of debt.

The fifth specific objective was to assess the moderating effect of age of formal sector employees in Kenya on the relationship between debt literacy and indebtedness. Results of this study indicated that age of the employees significantly moderated the relationship between debt literacy and indebtedness. The results provide information that deepened the understanding of the life cycle and permanent income theories. Essentially the life cycle theory is centred on age of the individual while permanent income is based on future (life) expectations. Qualitative items on the questionnaire show that most employees borrowed from SACCOs. Since most employees borrow

from SACCOs the government should support and promotes the SACCOs. The government can do this by channelling funds through SACCOs so that borrowers access low cost funds. Further, it was found that borrowers indicated they took on debt for housing, medical and transport purposes while other borrowed to pay dowry. The government should provide avenues for affordable housing, medical insurance programmes and improve the current transport system to reduce dependence on private transport. At personal level, employees need to strengthen their social networks so that alternative free-of-charge sources of funds are available for cultural practises such as dowry.

5.4 Recommendations of the Study

In general, the results provide interested parties with strong insights; that debt literacy is important for sound financial outcome including indebtedness. Specifically, employees should embrace debt literacy by looking for avenue to improve it. On the other hand, the government need to introduce financial education in schools while personal finance should be introduced as a common course in colleges and universities. Similarly, mass media print or otherwise need to re-dedicate special editorials and articles on diverse area of financial interest to their readers.

Organised finance bodies such as Institute of Certified Public Accountant of Kenya (ICPAK) and Kenya Bankers' Association (KBA) should periodically organise financial education seminars or clinics where professional finacial advice and counselling services can be imparted. On the other hand, banks and financial institutions need to invest in sound credit rating technologies to screen borrowers as well as support the credit referencing institutions. The financial institutions should also improve their information sharing. This would reduce adverse selection, tame

over-indebtedness in their clientele, and simultaneously minimise non-performing debts. In addition, these lenders should strive to do full and "utmost good faith" disclosure on the terms and conditions of loan contracts when approached by prospective borrowers.

5.5   Contributions of the Study Findings

The findings from this study contribute to knowledge, policy and practice in the area of debt literacy and indebtedness of formal sector employees in Kenya, and indeed worldwide. The findings of this study add to existing knowledge in the area of debt literacy and indebtedness in four main ways. The first major contribution is the determination and testing of the four dimensions of debt literacy, namely debt experiences, borrowing behaviours, debt capability, and debt knowledge. Although tonnes of literature can be found on financial literacy only few authors have written on debt literacy. However, none of the authors on debt literacy had expressly attempted to determine the appropriate dimensions of debt literacy.

The second contribution of the study is the testing of the moderating effect of age of formal sector employees on the relationship between debt literacy and indebtedness. Although some studies have looked at the relationship between socioeconomic characteristics and either debt literacy or indebtedness, none had introduced any socioeconomic characteristic as a moderator. The findings of this study show that age of the formal sector employees has a moderating effect on the relationship between debt literacy and indebtedness. Third, this study has helped to illuminate the fact that improvement in debt experiences of the employee increases indebtedness while improvement in borrowing behaviours, debt capability, and debt knowledge of the employee leads to reduced indebtedness. This was an outstanding finding.

Fourth, the findings of this study are useful to various stakeholders who include formal sector employees, employers, lenders and the governments. The effects of debt literacy on indebtedness should make employees discover that carrying out basic personal financial management strategies and activities is very crucial. These practises are not only important when done for the short-term horizon but also for the long haul. Since the findings of this study indicate that there is a positive relationship between debt experiences and indebtedness, lenders need to screen repeat borrowers more seriously for risk of default to reduce. Employers need to guard against employees' personal over-indebtedness since it can lead to negative consequences such as fraud and absenteeism. This study found that respondents' debt literacy was wanting. Therefore, the government should roll out financial education programs in schools, colleges, universities and at work places.

5.6   Suggestions for Further Research

Only some employees' internal factors were considered in this study. For example, this study did not examine the debt attitudes of the employees. On the other hand, external factors such as those in debt market environment were ignored completely. Only moderating role of age of the employees was considered in this study. Future research need to consider the moderating role of other socioeconomic characteristics on the relationship between debt literacy and indebtedness. Future studies also need to use other quantitative dimensions of indebtedness such as debt-wealth ratio, debt to saving ratio, amount-in-arrears ratio, delinquency and default rate. Further, qualitative measures also need to be used for future studies. The research instrument used in this study was a self-administered questionnaire. Future researcher can attempt to use the personal interview method. Finally, employees in the informal sector were not targeted by this study; they need also to be studied.

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APPENDICES

Appendix 1: Research questionnaire

GENERAL INFORMATION

This questionnaire is meant to investigate the effect of debt literacy on the indebtedness of employees in the formal sector in Kenya

Note : (a) This questionnaire is prepared to be filled by employees in the formal sector in Kenya.

(b) Kindly note the information that you provide will be used purely for academic purpose.

(c) All responses will be treated strictly confidential.

(d) Just in case an item is not filled up satisfactorily, provide your mobile number so that the researcher can confirm with you.

PART A: BACKGROUND INFORMATION

1. Kenya has 47 counties, where is your work station?:...................................

2. What sector is your institution? Please tick (√) one.

    Private   [   ]
    Public   [   ]

3. What area is your occupation? Please tick (√) once.

    i.   Agriculture   [   ]
    ii.   Health   [   ]
    iii. Education   [   ]
    iv.   Manufacturing and construction   [   ]
    v.   Public administration and security   [   ]
    vi.   Wholesale and retail   [   ]
    vii. Financial, insurance and professional services [   ]
    viii. Other occupations: Specify…………   [   ]

4. In your institution, what level of management do you belong? Please tick (√) one.

    Operative (low) management   [   ]
    Middle management   [   ]
    Top management   [   ]

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5. What is your gender? Please tick (√) one.

        Female   [　]
         Male   [　]

6. What is your age? Please tick (√) one.

    i.   Below 25 years   [　]
   ii.   25- 30 years   [　]
  iii.   31-35 years   [　]
   iv.   36- 40 years   [　]
    v.   41- 45 years   [　]
   vi.   46- 50 years   [　]
  vii.   51- 55 years   [　]
 viii.   Above 55 years   [　]

7. What is your marital status? Please tick (√) one.

    i. Single   [　]
   ii. Married   [　]
  iii Separated/Divorce   [　]
  iv. Widow/Widower   [　]

8. What is the size of your family (self, spouse, if any and children, if any)? Please

  tick(√) one.

    i. one   [　]
   ii. Two   [　]
  iii Three   [　]
  iv. Four   [　]
   v. More than five   [　]

9. What is your highest level of education? Please tick (√) one.

    i.   Primary   [　]
   ii.   Secondary   [　]
  iii.   Diploma   [　]
   iv.   Bachelor degree [　]
    v.   Masters degree   [　]
   vi.   PhD   [　]
  vii.   Professional   [　]   :specify:...........................
            Certificate

10. For how many years have you been in continuous employment? Please tick (√)
   one.

       i. Less than 5 years   [ ]
   ii. 5-10 years   [ ]
   iii 11-15 years   [ ]
   iv. 16-20   years   [ ]
   v. 21-25 years   [ ]
   vi. More than 25 years   [ ]

11. Please tick (√) below the housing category you belong to.

   i. Living in my own house   [ ]
   ii. Living in a rented house   [ ]
   iii Living in a mortgage house [ ]
   iv. Living with parents   [ ]
   v. Others   [ ]   Specify:.......................

12. How far is your work station from the nearest county headquarters? Please tick

   (√) one

   i. Less than 5 kilometres   [ ]
   ii. 5-10 kilometres   [ ]
   iii 11-15 kilometres   [ ]
   iv. 16 - 25 kilometres   [ ]
   v. More than 25 kilometres [ ]

PART B: DEBT EXPERIENCES

1. Are you a member of any SACCO? Please tick (√) one.

   Yes   [ ]
   No   [ ]

2. Are you currently holding any loan or debt from any lending institution? Please

   tick (√) one

   Yes   [ ]
   No   [ ]

3. If yes in 2 above, please indicate the number of loans you are currently holding from the following institutions. Please tick (√) once against each institution.

		0	1	2	3	4	>4
(a)	SACCOs						
(b)	Commercial banks						
(c)	Mortgage/housing companies						
(d)	Your Employer						
(e)	Hire purchase companies						
(f)	Insurance companies						
(g)	Education institution (including HELB)						
(h)	Credit card Companies						
(i)	Other(s): Please specify below.						

4. If, yes in 2 above, please tick (√) "YES" or "NO" to each the following statements.

		YES	NO
(a)	My current loans are secured by personal guarantor(s)		
(b)	My current loans are secured by log book		
(c)	My current loans are secured by title deed		
(d)	My current loans are secured by both personal guarantors and security		
(e)	My current loans are secured by employer guarantee		
(f)	My current loans are secured by current pay-slip		

5. Using the following scale, please indicate (√) the extent to which the statement best

describes your actions. Where, 1= Very low extent, 2 = Low extent, 3 =Moderate

extent, 4 = High extent, and 5= Very high extent. Please tick (√) once.

		1	2	3	4	5
Debt restructuring						
(a)	I have paid an extra loan instalment so as to reduce my loan burden and loan period.					
(b)	I have applied for a loan "top up."					
(c)	I have requested my lender to increase or reduce my loan repayment instalment.					
(d)	I have repaid or retired old debt obligation so that I can re-borrow at lower interest rates.					
(e)	I have consolidated my multiple loans to one loan in the past to ease financial difficulties.					
		1	2	3	4	5
Debt advice						
(f)	Before any loan application, I usually seek loan advice from finance experts.					
(g)	Before any loan application, I usually seek loan advice from the prospective lender(s) e.g. SACCO, bank, etc.					
(h)	Before any loan application, I consult a member of my family e.g. spouse and children, where applicable.					
(i)	Before any loan application, I consult my close friends.					
(j)	Before any loan application, I consult my parents or guardian.					
		1	2	3	4	5
Debt counselling						
(k)	When I have problem with my debts, I usually seek debt counselling services from a finance expert.					
(l)	When I have problem with my debts, I seek solutions from my lender(s) e.g. SACCO, bank, etc.					
(m)	When I have problem with my debts, I consult a member of my family e.g. spouse and children, where applicable.					
(n)	When I have problem with my debts, I consult my close friends.					
(o)	When I have problem with my debts, I consult my parent or guardian.					

PART C: BORROWING BEHAVIOURS

1   Using the following scale, please tick (√) the extent to which you agree with the following statements. Where, 1= Very low extent, 2 = Low extent, 3 =moderate extent, 4 = High extent, and 5= Very high extent. Please tick (√) once.

		1	2	3	4	5
Self-control						
(a)	I am impulsive in the manner in which i borrow and spend the loans					
(b)	I sometimes borrow to balance my personal budget (expenses and incomes).					
(c)	I compare loan products among different lenders before final decision to borrow.					
(d)	I have obtained salary advances to bridge my financial deficit.					
		1	2	3	4	5
Self-confidence						
(e)	When faced with a financial challenge, I have a hard time figuring out a solution.					
(f)	My ability to manage my loan finances is excellent.					
(g)	Whenever I make debt plans, they work as planned.					
		1	2	3	4	5
Peer influence						
(h)	I observe and discuss debt matters with peers before deciding to borrow.					
(i)	I select loan products recommended by friends and workmates.					
(j)	I have borrowed to acquire assets recommended or commonly owned by my friends and workmates.					

PART D: DEBT CAPABILITY

1   In which format do you prepare your personal budget or spending plan? Please tick (√) one.

Written budget   [ ]
Mental budget   [ ]
Both written and mental   [ ]
None of the above   [ ]

2. Using the following scale, please tick (√) the extent to which the statement best describes your actions. Where, 1= Very low extent, 2 = Low extent, 3 =Moderate extent, 4 = High extent, and 5= Very high extent. Please tick (√) once.

		1	2	3	4	5
Personal Budgeting						
(a)	I prepare a budget for the amount borrowed which I follow strictly.					
(b)	I discuss the budget for the borrowed money with my family.					
(c)	I periodically, e.g. yearly, review my total financial position/net-worth before any borrowing decision.					
		1	2	3	4	5
Personal Budgetary control						
(d)	I track all my expenses using the budget monthly.					
(e)	I usually compare my pay-slip deductions with the loan statement provided by the lender.					
(f)	I usually confirm whether my pay-slip deductions are per the signed loan contract.					
		1	2	3	4	5
Personal Planning						
(g)	I am able to plan a regular borrowing schedule in line with my financial goals.					
(h)	I am able to implement a regular and predictable borrowing schedule.					
(i)	I honour my debt obligation as scheduled so as to avoid extra interest charges, penalties and fees.					
(j)	I keep emergency funds enough to cover three month's expenses.					

PART E: DEBT KNOWLEDGE

1   Using the following scale, please tick (√) the extent to which you agree with the following statements. Where, 1=Very low extent, 2 = Low extent, 3 =moderate extent, 4 = High extent, and 5= Very high extent. Please tick (√) once.

		1	2	3	4	5
Debt education						
(a)	My educational background in school, college and university was devoted to business, economics and finance.					
(b)	I enjoy reading financial articles and publication in the newspapers, magazines, mass media and internet.					
(c)	I enjoy conversation about financial matters with friends and colleagues					
		1	2	3	4	5
Debt training						
(d)	I have attended training seminars and conferences on debt management while in employment.					
(e)	I interact with financial planners, advisors, and accountants in my work place.					
(f)	The nature of my job makes me familiar with debt related issues such as interest rate, pricing, etc.					

2. Numeracy skills

(a) Suppose you took a loan of Shs.100,000 and the compound interest rate is 10% per year. After 5 years, how much do you think the loan will be if you defaulted in all repayments? Please tick (√) once.

> More than shs150,000   [   ]
> Exactly Shs.150,000   [   ]
> Less than Shs.150,000   [   ]

(b) Using the table below, please tick (√) whether the following statement is true or false.

		True	False
(i)	A 6 year bank loan typically requires lower monthly payments than a 2 year bank loan but the total interest for 6 year loan is less.		
(ii)	The higher the number of guarantors in a contract of credit decreases the risk in case of default by the borrower.		
(iii)	Annual percentage rate (APR) is the actual rate of interest paid over the life span of the loan.		

(c) Suppose you took a loan of Shs.100,000 and the interest rate you are charged is 20% per year compounded annually. If you didn't pay anything, at this interest rate, how many years would it take for the amount you owe to double? Please tick (√) one.

    2 years   [ ]
    2 to 5 years   [ ]
    5 to 10 years   [ ]
    More than 10 years [ ]

(d) Suppose you owe Kshs.300,000 on your SACCO loan. You pay a minimum payment of Kshs.3000 each month. At annual interest rate of 12% (or 1% per month), how many years would it take to clear your credit loan if you only paid the required minimum amount? Please tick (√) one.

    Less than 5 years   [ ]
    Between 5 and 10 years   [ ]
    Between 10 and 15 years [ ]
    You will ever be in debt   [ ]

(e) Assume you intend to own a TV at shs. 30,000. There are two option: option A is borrow at 20% simple interest per annum and pay back shs.36,000 after one year; option B is to buy at hire purchase terms- nil deposit and 1 years monthly instalment of shs. 3,000. Which option is better? Please tick (√) one.

    Option A   [ ]
    Option B   [ ]
    Both are the same   [ ]

(f) On a scale of 1 to 7, where do you rank your overall debt knowledge?, where 1 = extremely low, 2 = Very low , 3 = low, 4 = Moderate, 5= High, 6= Very high, and 7 = extremely high   [   ]

PART F: INDEBTEDNESS

1   Please indicate your current **net** monthly salary (gross salary minus tax). Please tick (√) once.

i.	Less than shs. 20,000	
ii.	Shs. 20,001 – 40,000	
iii.	Shs. 40,001 – 60,000	
iv.	Shs. 60,001 – 80,000	
v.	Shs. 80,001 –100,000	
vi.	Shs.100,001–120,000	
vii.	shs.120,001 –140,000	
viii.	shs.140,001 –160,000	
ix.	shs.160,001 – 180,000	
x.	shs.180,001 – 200,000	
xi.	shs.200,001 – 220,000	
xii.	More than shs. 220,000 (Please specify amount e.g. shs.250,000)	

2   Please indicate (√) the range of your other incomes (after deducting related expenses) which may include income from business, rent, part-time work, etc. Please tick (√) once.

i.	None	
ii.	Less than shs. 10,000	
iii.	Shs. 10,001 – 20,000	
iv.	Shs. 20,001 – 30,000	
v.	Shs. 30,001 – 40,000	
vi.	Shs. 40,001 – 50,000	
vii.	Shs.50,001 – 60,000	
viii.	shs.60,001 – 70,000	
ix.	shs.70,001 – 80,000	
x.	shs.80,001 – 90,000	
xi.	More than shs. 90,000 (Please specify amount e.g. shs. 98,000)	

3 Please indicate (√) your total monthly loan repayment instalments from SACCOs, banks, employer and other institutions. Please tick once (√) against each institution.

		Saccos	Banks	Employer	Others
i.	Zero				
ii.	Shs. 1 –7,500				
iii.	Shs. 7,501 – 15,000				
iv.	Shs.15,001 – 22,500				
v.	Shs.22,501 – 30,000				
vi.	Shs.30,001 – 37,500				
vii.	Shs.37,501 – 45,000				
viii.	Shs.45,001 – 52,500				
ix.	Shs.52,501 – 60,000				
x.	More than shs. 60,000 (Please specify amount e.g. 72,000)				

4 Please indicate (√) your current total outstanding loan balance from SACCOs, banks, employer and other institutions, Please tick (√) once against each institution.

		Saccos	Banks	Employer	Others
i.	Zero				
ii.	Shs.1 – 150,000				
iii.	Shs.150,001 – 300,000				
iv.	Shs.300,001 – 450,000				
v.	Shs.450,001 – 600,000				
vi.	Shs. 600,001 – 750,000				
vii	Shs.750,001 – 900,000				
viii	Shs. 900,001 – 1,050,000				
ix.	Shs.1,050,001 – 1,200,000				
x.	More than shs. 1,200,000 (Please specify amount e.g. shs.1,500,000)				

5. Using the following scale, please indicate (√) to what extent the borrowed amount was applied in the following purpose. Where, 1= Very low extent, 2 = Low extent, 3 = moderate extent, 4 = High extent, and 5= Very high extent. Please tick (√) once against each purpose.

		1	2	3	4	5
(a)	Investment/development					
(b)	Car loan					
(c)	Debt repayment					
(d)	Education					
(e)	Housing					
(f)	Business					
(g)	Consumption					
(h)	Other(s): Please specify below.					

THANK YOU

Appendix 2: Operationalisation of the age and debt experiences

Indicators	Definitions	Some Source of Literature	Measurement of Variables	Questionnaire Reference
Age	The age of employees will be grouped into three; young, middle age or elderly	Liv (2013) and Schicks (2012)	1 if young; 2 if midaged, and 3 if older	A5
Debt experiences				
Multiple loans	Employees take several concurrent loans even from on institution	Liv (2013)	A ratio scale variable	B3
Debt Restructuring	Request to lending institution to vary the term structure of the debt: instalment and period	Lusardi & Tufano (2009)and Finke (2011)	An interval variable	B5 (a to e)
Debt advice	Debt knowledge can be acquired by seeking debt advise from finance experts before loan application	Winchester (2011)	An interval variable	B5 (f to j)
Debt Counselling	Seeking debt counselling service from finance experts when in financial difficulty	Disney, Gathergood & Jorg (2014)	An interval variable	B5 (k to o)

Appendix 3:Operationalisation of the borrowing behaviours and debt capability

Indicators	Definitions	Some Source of Literature	Measurement of Variables	Questionnaire Reference
Borrowing behaviours				
Self- control	Degree of impulse spending and impatience	(Gathergood, 2012)	An interval variable	C1(a to d)
Self-Confidence	Tendency to estimate future financial shocks hence affecting precautionary savings and self-belief	Finocchiaro et al. (2011), Farrell et al. (2015)	An interval variable	C1 (e, f, g)
Peer influence	Peers as a socialization agent influence how individual behave in the market place	Copur (2011)	An interval variable	C1(h, i, j)
Debt capability				
Personal Budget	Preparation of personal budget for short period	Ajzerle et al. (2013); Winchester (2011)	An interval variable	D2(a,b,c)
Personal Budget control	Implementation and control of personal budget	Ajzerle et al. (2013); Winchester (2011)	An interval variable	D2(d,e,f)
Personal planning	Making goals and borrowing plans for long period	Ajzerle et al. (2013); Winchester (2011)	An interval variable	D2(g to j)

Appendix 4:Operationalisation of the debt knowledge and indebtedness

Indicators	Definitions	Some Source of Literature	Measurement of Variables	Questionnaire Reference
Debt knowledge				
Self-assessment	People are able to estimate how much they know. This is called perceived knowledge and does not equal numeracy skill test	Loke &Hageman (2014); Winchester (2011); Asaad (2015)	An interval variable	E2(f)
Debt education	Debt knowledge can be acquire through formal education	Lusardi & Mitchell (2014); Brown et al. (2013)	An interval variable	E1(a, b, c)
Debt training	Debt knowledge can also be acquire through training at the workplace	Lusardi & Mitchell (2014); Brown et al. (2013)	An interval variable	E1(d, e, f)
Numeracy skills	Knowledge in interest rates, loan tenor, loan products and loan conditions are core for optimal debt contract decisions.	Finke (2011); Lusardi & Tufano (2009)	An interval variable	E2 (a to e)
Indebtedness				
Debt Service Ratio (DSR)	DSR is a ratio of debt repayment to disposable income	Liv (2013); Dey et al. (2008)	A ratio scale variable	F(1, 2, 3)
Debt-Income Ratio (DIR)	DIR is a ratio of outstanding loan to disposable income	Bicakova et al. (2011)	A ratio scale variable	F(1, 2, 4)

Appendix 5: Research philosophy: Positivism and phenomenology

Aspect	Positivism	Phenomenology
Beliefs	Science is value-free.	Science is influenced by human interests.
	Researcher is independent.	Researcher is part of what is being studied.
	Objective measures to be used for researching social reality.	Researcher may introduce bias in measuring reality.
	Single external reality.	No single external reality
Research objectives	Empirical testing of theories.	Understanding actions of human beings.
	Focus on generalization and abstraction.	Focus on specific and concrete issue.
	Concentrates on description and explanation.	Concentrates on understanding and interpretation.
Research methods	Sample surveys.	Case study.
	Uses questionnaires.	Observations and interviews.
	Uses statistical models for data analysis.	Uses non-quantitative data analysis techniques.
Researcher's role	Detached external observer.	Researcher wants to experience what they are studying.
	Clear distinction between reason and feeling.	Allows feelings and reason to govern actions.
	Uses rational, consistent, logical approach.	Uses rational, consistent, logical approach.
	Distinguishes between the research and personal experience.	Accepts influence from both personal and scientific experience.
Respondent's role	Provide information required by the researcher.	Explain their experiences and concepts of the world.

Adapted from Carson et al., 2001

Appendix 6: Summary of population by occupation and sector in 2015

Occupations	Private sector	Public sector	Total	Percent
Agriculture, forestry and fishing	294.0	42.9	336.9	13.60
Mining and quarrying	13.8	0.6	14.4	0.58
Manufacturing	269.0	26.4	295.4	11.92
Electricity, gas, steam and air conditioning supply	0.9	16.0	16.9	0.68
Water supply; sewerage, waste management and remediation activities	1.4	10.1	11.5	0.46
Construction	140.2	7.9	148.1	5.98
Wholesale and retail trade; repair of motor vehicles and motorcycles	230.7	1.6	232.3	9.37
Transportation and storage	64.8	17.8	82.6	3.33
Accommodation and food service activities	74.7	1.4	76.1	3.07
Information and communication	103.8	1.9	105.7	4.27
Financial and insurance activities	62.7	10.0	72.7	2.93
Real estate activities	4.0	0.0	4.0	0.16
Professional, scientific and technical activities	62.6	5.9	68.5	2.76
Administrative and support service activities	5.2	0.0	5.2	0.21
Public administration and defence; compulsory social security	0.0	222.0	222.0	8.96
Education	189.1	318.6	507.7	20.49
Human health and social work activities	91.3	32.7	124.0	5.00
Arts, entertainment and recreation	4.5	2.6	7.1	0.29
Other service activities	31.7	0.0	31.7	1.28
Activities of households as employers	114.1	0.0	114.1	4.60
Activities of extraterritorial organizations and bodies	1.1	0.0	1.1	0.04
Totals	**1759.6**	**718.4**	**2478.0**	**100.00**

Figures are in "000'', **Source: KNBS, 2016**

Appendix 7: Deviation from linearity

Standardised model	Sums of square	df	Mean square	F	Sig
DSR =DE	2.972	135	0.022	0.965	.584
DSR =BB	1.014	57	0.018	0.796	.846
DSR=DC	2.799	133	0.021	0.898	.738
DSR =DK	1.454	73	0.023	0.867	.760
DIR =DE	3781.217	135	28.009	0.939	.646
DIR =BB	1598.623	57	28.046	0.976	.529
DIR =DC	3572.731	133	26.863	0.910	.711
DIR =DK	1989.678	73	27.256	0.986	.516
DSR=DL	6.158	281	0.022	1.138	.455
DIR=DL	7769.261	281	27.649	1.634	.506
DSR = age*DL	6.675	288	0.023	2.344	.347
DIR =age*DL	8580.318	288	29.793	5.429	.168

$p < .05$

Appendix 8: Questionnaire responses by clustered counties

	County	Frequency	Percent	Cumulative Percent
Valid	Mombasa	85	25.22	25.22
	Kilifi	17	5.04	30.26
	Kwale	9	2.67	32.93
	Taita Taveta	7	2.08	35.01
	Lamu	5	1.48	36.49
	Tana River	3	0.89	37.38
	Nairobi	97	28.78	66.16
	Kirinyaga	9	2.68	68.84
	Murang'a	53	15.73	84.57
	Nyeri	11	3.26	87.83
	Kiambu	25	7.43	95.26
	Nyandarua	16	4.74	100.00
	Total	337	100.00	

Appendix 9: Letter of introduction
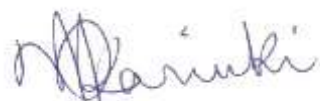
Date: …………………………………………

To …………………………………………

Dear Sir/Madam,

RE: COLLECTION OF RESEARCH DATA

I am a student at Jomo Kenyatta University of Agriculture & Technology (JKUAT) pursuing Ph.D in Business Administration (Finance). I am carrying out a research on *"Effect of debt literacy on the indebtedness of formal sector employees in Kenya"*. I am collecting relevant data for the purpose of this study. You have been identified as one of the key respondents in this study. You are kindly invited to participate in this data collection exercise by setting aside some time from your busy schedule to respond to the attached questionnaire. Your assistance towards making this study a success is invaluable.

The data collected will be kept strictly confidential, and will remain completely anonymous. The final report will be made available to you on request. It will be appreciated if you can fill the questionnaire within the next 7 days to enable early finalization of the study. I thank you very much in advance for your consideration, time and responses.

Yours sincerely,

Morris Irungu Kariuki
Student Number: HD 433-C004/3502/2012; Mobile: +254 722 496 174