AN INVESTIGATION INTO THE DETERMINANTS OF CREDIT CARD DEFAULT IN KENYA

(A case of the Imperial Bank Limited)

BY

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DECLARATION

This is my original work and has been not submitted for a degree in any other University.

Signed .....

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Date 7th October 2008

This project has been submitted for examination with my approval as the University supervisor

Signed .....

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Date 27-11-08

Dedicated to my Mama Warura Michinji

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ABSTRACT

Credit risk is important to any financial institution as the aim is to reduce the risk of non payment by ensuring efficient collection of customer's payments. This study analyzes the factors that determine the default of credit cardholders in Imperial Bank based on a sample of cardholders. Secondary data comprising 50 defaulters and 50 non defaulters was collected from applications and customer's statements for the period of one year.

Analysis was done on the scoring of cardholders and their subsequent performance in relation to the following variables: gender, age, income, marital status, number of credit cards held, area of residence, type of employment, home ownership, percentage of limit utilized, payment pattern, number of cash withdrawals, percentage of amount due paid, card limit and number of dependants. The performance of the cardholders in relation to each of the variables was assessed.

Currently Imperial Bank uses a scorecard where the variables are based on the applicant's personal information. It is important for the bank to give the variables weights with emphasis on: cash advances, limit utilized, age, income and type of employment as identified by the study

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

This paper will investigate the determinants of default on credit card debt by users of credit cards in Kenya. It focuses on the relationship between default and the outcomes of financial choices consumers make within the constraints of the contract terms set by credit card issuers and looks into the factors that therefore will play a part in determining default. The project will attempt to obtain information on the behavioral aspects of the credit card users in Kenya.

A credit card system is a type of retail transaction settlement and credit system, named after the small plastic card issued to users of the system. A credit card is different from a debit card in that the credit card issuer lends the consumer money rather than having the money removed from an account. It is also different from a charge card (though this name is sometimes used by the public to describe credit cards) in that charge cards require that the balance be paid in full each month. In contrast, a credit card allows the consumer to 'revolve' their balance, at the cost of having interest charged. Most credit cards are the same shape and size, as specified by the ISO 7810 standard (Visa, 2000).

A credit card, is therefore, simply, a plastic card issued by either a commercial bank or any other institution that allows the holder to purchase goods and services on credit up to an agreed limit at specific places where these cards are accepted. Credit cards have also become the primary source of unsecured open ended revolving credit, and they have largely replaced the installment purchase that were important to the sales volume at many retail; stores in the earlier decade (KCB, 2006).

In Kenya today, commercial banks and petroleum companies are the main issuers of different forms of plastic money. Commercial banks - ATM cards, Visa Electron Debit cards, the Total Kenya's Voyage fueling cards, and the Barclaycard are some forms of plastic money that exists in the Kenyan market (The Daily Nation, 30th March, 2004).

The three new financial variables which we find to have the most significant impact on default are (1) the ratio of total minimum required payment from all credit cards to household income; (2) the percentage of total credit line which has been used by the consumer; (3) the number of credit cards on which the consumer has reached the borrowing limit. All three of these quantities result from consumers' charging behavior under the unique arrangements of credit card loans whereby a line of credit is issued which consumers may choose to use to a greater or lesser extent.

1.2 History and the Evolution of Plastic Money

With more expensive goods demanded, it became a hassle to carry bagsful of coins and notes just to make their payments. This posed a security risk as well as when everyone in the streets became a potential target for robbers. Businessmen who traveled regularly also saw the need to a system of credit where they could charge their business related travel and entertainment expenses to the company they worked for.

According to Timberlake (1987), the lack of adequate denominations of cash in the USA currency, as well as the importance of coal mining and lumbering in the 1885, stimulated the private production of money, which was known as scrip money. Timberlake (1987), considered the scrip to be an undeveloped form of plastic money as it took the dimensions of a fuel and a pre-paid card or entertainment cards, because it was honored at local general stores (fuel pre-paid cards and entertainment cards are honored only at establishments that

have issued the cards). Scrip money took the form of printed cards, which were later replaced by metallic money.

According to Timberlake (1987), scrip money was developed to serve as a medium of exchange due to the fact that the regions around the coalmines were hilly and with marginal agriculture and commercial development. The mining companies therefore set up to establish infrastructure, residence, churches, schools, water works and company stores or commissionaires. Effectively, this meant that the companies became buyers of labour from the coal miners, as well as sellers of commodities to the very coalminers and their households as workers received scrip money, in the form of wages due to them.

All these developments led to the birth of the first modern credit card issued by Diners Club in 1950, that was developed by two Americans, namely Frank McNamara and Ralph Schneider. Interestingly, in the year before that, McNamara had dined at a restaurant in New York, after the meal he realized that he had forgotten his wallet, and his wife had to pay for him to get him put of the embarrassing situation. This incident made him determined to come up with a payment system that requires only a card to pay for all the purchases. (Diners Club website July 2007).

In the modern commerce, credit and debit cards served as a payment device in lieu of cash or cheques for millions of routine purchases as well as for many transactions that would otherwise be inconvenient or perhaps impossible, making retail purchases by telephone or over the internet possible.

1.3 The Situation of Plastic Cards in the Kenyan Market

Although the cash-less society has been predicted for decades, paper based payments instruments such as cash and cheques continue to be the main forms of settling indebtedness in Kenya.

The Central Bank of Kenya however was reported to have no policy on electronic money products, though the East African National payment system harmonization committee (EANPSHC) on which the bank is represented, has issued development guidelines for licensing and regulating e-money schemes and products in East Africa.

The first credit card in Kenya was launched in 1967 by Diners Club Africa Ltd. The total VISA cardholders' expenditure was at $169 Million in 2002, an increase of 28% over the previous year. The same cards had a total of 2.46 million transactions; this was a 30% increase over the previous year (E.A Standard, 3rd December, 2004).

The chronology of the launch of plastic cards and other financial institutions in Kenya included;

In 1984, the Southern Credit Banking Corporation issued a credit card called the Senator, in 1990 Barclays Bank introduced the Barclaycard, In 1995 Kenya Commercial Bank (KCB)issued its first credit card and in 1996 Commercial Bank of Africa (CBA) issued its credit card and many more other banks have issued credit cards. These include; Cooperative Bank NIC bank, Fidelity Commercial Bank, Prime bank, National bank, CFC bank, Imperial bank, Post bank and I&M bank.

Kenya is Visa's fastest growing market in Africa outside South Africa, with $452 million processed through the Visa credit and Electron debit cards in 2003. That was a 43 per cent growth over the previous year, increasing the number of Visa cards in the market to 557,000, with acceptance in over 500,000 outlets. "Based on the phenomenal growth over the past 18 months, we anticipate over two million Visa cards will be in use in Kenya within the next three years," said Mr. Winter (VISA International). Industry figures show that only 40,000 of Kenya's 30

million people have credit cards, through which about Ksh17 billion ($217.9 million) changes hands annually. With merchants paying an average 2 per cent commission to card issuers, the banking industry made $340 million from credit card usage alone. Charges on credit and debit cards are liberalized, creating competition among the 10 issuing banks. (The East African May 10, 2004).

In Kenya in 2004, Barclays doubled the number of credit cards it had issued. In 2004 just seven Kenyan banks were issuing credit cards and now in 2007 there are sixteen. The reason being they are big money makers. Interest rates on Kenyan cards are between 36 percent and 50 percent per year. (US cards typically have 18 percent to 22 percent annual rates.)There has been a dramatic growth in card use and electronic payments since the turn of the century, despite a large proportion of Kenya's population not being formally banked. Between 2003 and 2005 the average growth rate of VISA debit cards issued was 179% per annum. In the same period the amount of money processed using VISA debit cards soared to USD 153 million in June 2006 from USD 43 million in June 2002. VISA International member banks in Kenya have used more than 1 million VISA cards (Daily Nation August 22 2006)

1.4 Statement of the Problem

The research to date on credit card default has provided information about trends in this market, while there is a lack of detailed data on credit card default. This has limited the understanding of consumer behavior and motivational factors in the use of credit cards and subsequently in understanding the reasons for default and its impact on all the parties concerned.

The present paper is important for three reasons. First, many previous studies and financial institutions have focused on the relationship between lenders' decision and the characteristics of the consumer credit applicants rather than

the relationship between payment performance of the consumer credit clients and their characteristics. It is, of course, important to get some information about the relationship between characteristics of people apply for consumer credit (applicants) and to whom the credit will be given. However, it is equally beneficial to have an idea about the relationship between the characteristics of people that are already accepted (clients) and whether they are paying back their loans on time or not i.e. payment performance.

Secondly much of the early work on consumer debt focused on traditional loans which are unlike credit card loans in several key respects. Whereas traditional loans involve predetermined loan amounts and fixed payment schedules, with credit card loans, the actual borrowing decision is at the consumer's discretion after receiving a fixed line of credit. Debt repayment on credit cards is flexible, with the minimum monthly repayment being a fixed percentage of the total balance.
Finally, unlike many traditional loans, credit card borrowing does not require consumers to post collateral which may place a greater risk on the lender.
Jaffee and Russell (1976) and Stiglitz and Weiss (1981), as well as others, studied the tradition loan market theoretically using the tools of asymmetric information and adverse selection.

By ranking customers according to predicted default probabilities, a bank will have a chance to minimize the expected default or misclassification rate subject to some exogenous acceptance rule (Carling et al., 1998).
No research has been done on characteristics consumer credit applicants and/or clients of any Kenyan financial institution in order to develop credit scoring criteria for the banking sector in.
Not many studies are done to investigate the relationship between

characteristics of people that are already accepted (client) and whether they are paying back their loans on time or not.

Previous results of studies have been contradictory for example Carling K., Jacobson T., and Roszbach K (1998) examines the Swedish consumer credit clients' payment loans faster. They found a negative relationship between incomes and default risk and the size of limit having no influence on payment performance, whereas increasing the loan size delay payback. Sexton D. E. (1977) analyzes the credit risk in two types of American families: (*i*) low-income families; (*ii*) high-income families. The numerical results of the study indicate that credit default risk decreases when the income and age increase.

This study will investigate the determinants of credit card default by users in Kenya. This study will therefore attempt to investigate the factors and answer the question, what determines credit card default among users in Kenya?

1.5 Objectives of the Study

The objective of this study is to identify the factors that determine credit card defaulting in Kenya.

1.6 Significance of the Study:

The study is significant in many ways:

1. The findings and recommendations in this study will be useful to all levels of managers in all financial institutions by highlighting the factors that should be considered in the appraisal and vetting of credit card applications so as to reduce debt.
2. This study will enable financial institutions reduce the credit card bad debt thus increasing profitability.
3. The study will contribute to the available pool of knowledge on the

4. Determinants of credit card defaulting and providing research data from the commercial banks from Kenya.

CHAPTER TWO

LITERATURE REVIEW

2.1 History of Credit Cards

About the year 1914 a number of companies in the United States of America (USA) issued the first credit cards to their customer for the purchase of gasoline and oil in local departmental stores, air travel and railway companies also started to issue the cards around the same time. In the 1950s the Diners club was the firs company to issue an all purpose credit card and other organizations followed suit. In the UK Barclays Bank introduced credit cards in 1966 which was known as 'Barclaycard' and the other banks introduced the credit cards later. Each bank was responsible for the issue of credit cards to its own customers and the fixing of credit limits.

The major causes of serious banking problems continues to be directly related to lax credit standards for borrowers, poor portfolio risk management ,or lack of attention to changes in the economic circumstances and competitive climate. Central bank Annual supervision report 2000).

In Kenya the level of non-performing loans has continued to increase over the years from 9.55% in 1997 to 38.4% in 2001 (Market intelligence banking survey 2002 pp 122).

Existence of non performing loans reduces the profitably of a banking institution and thus their sustainability or survival (Srorons 2002 Sichei 2000 and Omuodo 2002.

2.2 Special Features of Credit Cards

Much of the early work on consumer debt focused on traditional loans, which are unlike credit card loans in several key respects. Whereas traditional loans involve predetermined loan amounts and fixed payment schedules, with credit card loans, the actual borrowing decision is at the consumer's discretion after receiving a fixed line of credit. Debt repayment on credit cards is flexible, with the minimum monthly repayment being a fixed percentage of the total balance.

Finally, unlike many traditional loans, credit card borrowing does not require consumers to post collateral which may place a greater risk on the lender. Jaffee and Russell (1976) and Stiglitz and Weiss (1981), et al studied the tradition loan market theoretically using the tools of asymmetric information and adverse selection.

However, with the growth of credit card debts in the U.S. economy in the last decade, researchers have increasingly turned their attention to various aspects of this unique credit instrument. Ausubel (1991), who was one of the first to carry out an empirical study of this market, found that abnormally high profit and high and sticky interest rates exist in the industry in spite of its seemingly competitive structure with over 6,000 card issuers. He speculated that search/switching costs and a type of irrational consumer behavior might be involved in these paradoxical market outcomes.

Responding to Ausubel's argument, Brito and Hartley (1995) introduced the aspect of the liquidity service of credit cards, which saves consumers the opportunity cost of holding money for payment. Therefore they argue that it is rational for consumers to hold positive credit card balances even in the face of the high interest rates.

Mester (1994) also pointed that high and sticky interest rates could exist without irrationality on the part of consumers because of information problems for the credit card banks. Park (1997) explains the situation by referring to the open-ended nature of the credit card loan and the high risk involved with this for banks; while Stavins (1996) found that defaulters had higher interest elasticities, and this could induce banks to keep their interest rates high.

After a lull in credit card defaults in the early 1990's, default and personal bankruptcy began to increase sharply after 1995; and this phenomenon has become a serious issue for banks and policy makers (Domowitz and Eovaldi (1993)). Work by Ausubel (1997) and Domowitz and Sartain (1999) both find a strong positive correlation between credit card debt and personal bankruptcy filings.

The potentially serious impact of credit card default on the general state of the economy has prompted a number of researchers to explore the default issue. Calem and Mester (1995) test the argument of Ausubel's 1991 paper that irrational consumer behavior and adverse selection problems account for the failure of competition in the credit card market. They also examine default in this market and find that cardholders with higher balances have a higher probability of default.

Laderman (1996) concludes that although cyclical factors in the economy affect charge-offs by banks, the aggressive marketing of card issuers since the mid-1980's has deteriorated the quality of the cardholders' pool and contributed to the high rate of charge-offs seen in the 1990's. Morgan and Toll (1997), using a permanent income/life-cycle approach, and Black and Morgan (1998) also attribute rising default to socioeconomic and demographic characteristics of cardholders.

The Survey of Consumer Finances (SCF) has provided previous researchers the most comprehensive view of consumer debt (Jappelli, 1990; Callem and

Mester, 1995; Yoo, 1997, 1998; Black and Morgan, 1998). However, some critical features of the consumer situation are not available in the SCF.

It is well accepted that borrowing limits on collateralized loans are primarily determined by the amounts of collateral pledged by the borrowers. However, for no collateralized loans, such as those on credit cards, the information about borrowers' repayment abilities plays a crucial role in determining their credit card borrowing limits or credit limits. Asymmetric information between borrowers and lenders and the lack of collateral to mitigate that informational asymmetry are mainly responsible for the existence of credit rationing in some credit markets. Imperfect information about borrower risk induces banks to refuse credit to some borrowers even if the latter would accept higher interest rates for their loans. Credit bureau reports provide some critical information about borrower riskiness, which banks use to alleviate some of the informational asymmetry and to improve the quality of their loan-supply decision.
Publicly available information about borrowers' creditworthiness helps banks sort their client pool into broad risk classes. Banks do not, however, have perfect knowledge about individual borrower risk. In the case of lines of credit, such as credit cards, banks particularly do not know how much a borrower will actually borrow on the line, which is a key determinant of the borrower's repayment probability. Therefore, credit rationing persists in the unsecured credit card market. (Subhasis 2005)

2.3 Aspects of Credit Card Holder's Behavior

We should point out that in most previous work, the data used for credit card balances includes both convenience-use balances, which will be paid off as well as carried balances, which actually form true revolving credit (Stavins, 1996; Ausubel, 1999).

Previous researchers have pointed out that independent behavior among many banks (Bizer and DeMarzo, 1992) makes this situation possible. If there

were only one card-issuing bank in the economy and it was maximizing profits, then presumably the credit line issued to any consumer should accurately reflect that consumer's ability to manage that level of credit (given the consumer's income, obligations, education and earning ability which should all be known to the bank).

However, "sequential banking" (Bizer and DeMarzo, 1992) has made it possible for consumers to max-out on more than one card, and this influences their ability to handle that level of debt increases their default probability.

2.4 Benefits of Credit Cards to the Economy

Research conducted all around the world has show that there is a strong and very positive correlation between the increased use of card and electronic payment and growth in an economy (Rob Clark Senior Vice President for sub-Saharan Africa at VISA International).

Credit cards beneficial to the economy of a country in the following ways:

Reduce costs associated with currency handling and printing – the increased use of credit cards in an economy leads to reduction in the costs of printing currency. This is because there is a reduced demand of money due to the increased use of plastic money.

Increased tax revenue – the increased usage of cards translates to increased revenue for merchants who accept credit cards and increased income for the banks issuing credit cards which in turn increases the government's tax revenue.

Reduced crime – use of credit cards contributes to the reduction of the crime rate in two perspectives. One is from the merchant's point of view. As a result of increased purchase through credit cards the merchants have reduced cash and this reduces the risk of theft either internally or due to robbery. Secondly,

from the cardholders' point of view, having a credit card reduces the need to carry cash and this in turn reduces the risk of being attacked by robbers.

Reduction of unemployment - Studies commissioned by APACS,the UK payments association plastic money produced by independent research company Economy.com – revealed, the positive impact of credit card ownership in the UK at national, regional and individual levels. Top-line findings from the report show how the credit card industry directly contributes to the British economy:

• The industry directly employs more than 30,000 people across the UK, with a further 80,000+ working in related businesses.

• £8.2 billion a year is contributed to the government's bottom line by the credit card companies themselves and from private taxpayers employed by the industry.

• Without consumer credit, GDP gains could be reduced by nearly £22 billion over three years.

• Card issuers forego about £1.2 billion per year by providing interest-free periods on purchases – which benefit UK consumers and can help them to manage short term borrowing with little or no added cost.

2.5 Challenges of Issuing Cards

Despite the fact that credit cards are beneficial they pause quite a number of challenges to the issuing banks which include some of the following:

Poverty – more than 50% of Kenya's population lives below the poverty level. This means that only a small percentage of Kenya's is able to afford a credit card. Currently there are fifteen banks issuing credit cards, who can afford have more than two credit cards. This then means that issuers have to come up with loyalty programmes to give their cardholders incentive to use their cards as

opposed to their competitors. Loyalty programmes are an extra expense to the bank.

Lack of adequate legislation – currently there is no legislation pertaining o plastic money. This is a serious challenge to issuing banks especially in regard to card related cases that are taken to court. The criminal offenders get off with light fines because there is no legislation for the crime that they are charged with.For now, perpetrators are only fined the cost of the card's plastic, according to Kenya's credit card association. (The Christian Science Monitor – February 14, 2005).

Lack of knowledge – credit cards are relatively new in the market having been introduced in the early 90's. Until recently having a credit card was a status symbol only for the very rich. Therefore many people still have the perception that a credit card is not for the common man and is only for the well to do.

Negative publicity – the media has portrayed a very poor image of credit cards being debt traps. The media has intimated that use of a credit card only encourages you to leave beyond your means by spending money that you don't have and then charging you high interest on the balances you roll over. The banks are facing an uphill task of educating consumers on the advantages of having a credit card and can be seen from the advertisements on credit cards from banks that have bombarded the media in the recent past.

Bad Debts – One of the major challenges facing issuers of credit cards is bad debt. There are various reasons why cardholders default on their card payments. Poor consumer education – as result of an increase in the number of banks issuing credit cards, credit cards are now more accessible to the common man. Therefore you find many cardholders who don't realize that a credit card is a form of unsecured loan which they have to payback by a certain date and if they don't repay the amount in full then they will be

charged interest. So banks having to grapple with cardholders who have used their card but cannot pay because they have no money.

Economic recession – another factor contributing to increased number of bad debts is the economic recession the country is presently under going. So you find that a cardholder who has been previously servicing their card payments regularly goes badly due to loss of a job or the business going bad.

Fraud - this is unauthorized account activity by a person for which the account was not intended. There are various kinds of credit card fraud which include the following (Burns & Stanley 2002):

Application fraud Application fraud can take two forms, "familiar" and "unfamiliar." The "familiar" version occurs when a family member, roommate or personal acquaintance with easy access to an individual's mail and personal information (i.e., social security number, date of birth, etc.) fills out a credit card application sent to the individual and then upon receiving the card, uses it as if he were the true cardholder.

Application fraud from an "unfamiliar" source occurs when a person unknown to the victim gains personal information about the victim, obtains a card in the individual's name and proceeds to use it without the individual's knowledge. Personal information used in the fraudulent application is secured using a variety of illegal tactics, often aided by technology.

Counterfeit cards. A counterfeit card is created when a criminal gains possession of a valid card number. This information can then be encoded on a blank card's magnetic stripe or manually changed on the face of a stolen plastic.

Skimming usually occurs in businesses where the normal transaction requires the cardholder to give up possession of the card, such as in a restaurant. Manual

counterfeit occurs when a valid account number is stolen or is created using card number generation software and then manually embossed on the front of a blank card. The perpetrator will then erase any data stored on the magnetic stripe of the blank card and present it to a merchant for a purchase.

2.6 Credit Risk Assessment

According to Abedi (2000) a bank uses the 6 C's to evaluate a customer as a potential borrowers. The 6 C's help banks to reduce the risk of default as they get to know their customers. They include;

Character – a person of good character will pay their debt whether it is secured or not. When in problems such a borrower will adhere to the credit manager's risk for alternative arrangement to pay for his debt instead of hiding from the bank.

The business of credit cards is based primarily on the character of cardholders. A person's character can be established through personal interviews, reference from people who know the client and records of past performance.

Capacity – This is an assessment of the client's ability to repay the debt a client's capacity can be determined by retrieving his returns of resources and netting of his commitments.

Contribution – questions asked are; is the client committed to the project at hand? Is he willing and able to make a contribution? If a client is having difficulties raising the deposit, he is likely to be unable to pay his installments regularly

Common sense – this is the natural ability to make good judgment and behave sensibly

2.7 Variables Influencing Default behaviour

In recent times, credit card portfolios have been very profitable for banks, largely due to the booming economy of the late nineties. However in the case of credit cards, such high returns go hand in hand with risk, since the business is essentially one of making unsecured (uncollateralized) loans, and thus dependent on borrowers to not default in large numbers. A new and more complex picture of cardholders' behavior has emerged.

The total minimum required payment to income ratio performs better as a predictor of default than the more traditional debt to income ratio. The debt to income ratio has greater long-run significance as an indicator or a consumer's overall debt condition. The total minimum required payment to income ratio, on the other hand, is more relevant to a consumer's immediate month-to-month ability to avoid default.

Credit counselors report that many consumers are more likely to make debt decisions based on the resulting minimum required payment than on the overall cost of the item purchased on credit. The widespread and the availability of revolving credit have changed the nature of budget constraint for consumers. Many consumers using revolving credit are maximizing utility subject to the minimum required monthly payment constraint rather than an overall income constraint. Therefore it is not surprising that the minimum required payment to income variable was more powerful in predicting default behavior than the debt to income variable.

Another variable that is found to influence default behavior is the percentage of the total credit line, which the consumer has used. The total credit card balances carried forward and total credit line. The ratio of these two quantities is a critical variable.

A high debt balance to credit line ratio should increase the probability of default for a card user. A strategic factor exists for consumers in this variable. A consumer facing default may try to obtain more credit line in order to avoid this situation. Which consumers can actually obtain additional credit is, however, also dependent on bank's assessment of their risk level. Hence the balance to credit line ratio works to lower the probability of default in two ways.

- First it provides the consumer an additional opportunity to move their current repayment obligation to a future period.
- Secondly, the balance to credit line variable reflects information that banks have about the credit-worthiness of the consumer and this works to lower the denominator (i.e., raise the value of the ratio) for consumers who are known to be high risk.

Although decreases in the balance to credit line ratio lessen the probability of default, this should be a short-run phenomenon. As with all such pyramid schemes, there will undoubtedly be a limit to the ability of consumers to pay off old debt with new debt. So this behavior should be a "second order effect" on default probability. The first variable discussed above – the minimum required payment to income ratio – should be the ultimate factor determining a consumer's ability to avoid default.

The number of cards on which a consumer has charged to the credit limit captures a unique aspect of credit card behavior. In our study, we refer to this variable as "maxcards". It reflects the way in which consumers manage their credit card purchases. It is also an indication of the consumer's willingness to take on debt beyond the bank's assessment of their ability to handle that level of debt.

There is some previous research that investigates influences on default in cardholder's revolving credit.

Although one of the most important variable usually is debt-to-income ratio, Dunn and Hill (1999) find that the default on household credit and card debt is also increased with the increase of the following variables: (i) the ratio of total minimum required payment from all credit cards to household income; (ii) the percentage of total credit line which has been used by consumer; (iii) the number of credit cards on which consumer has reached the borrowing limit. They also find that default risk is inversely related to the age of cardholders, default is less likely for married cardholders but its likelihood increases with number of children.

Calem and Mester (1995) find that cardholders with higher balances have a higher probability of default.

Dey, Mumy (2005) find that the higher creditworthiness of the borrower, the lower is their likelihood to default.

Black and Morgan (1998) reveal that the default is increased by higher income, debt payments/income ratio and total debt/income ratio and by lower liquid asset.

Delinquency rate is lower with executive and managers then with operators and laborers. Also, the default is lower if a client is more educated, older, married, owns a house and if she/he stays longer with one firm and at the same home address.

Curtis (2003) investigates important variables in behavior scoring. He founds that cash advances, convenience cheques and balance transfer are characteristics that make a significant improvement to the scorecard performance.

Hamilton, Khan (2001) find that the most important discriminating variables between those who defaulted and didn't default are behavior characteristics: cash advances, minimum payment due and interest paid in previous period. There are some papers that emphasize importance of incorporating economic conditions into credit scoring models either by developing different scoring

models for different economic conditions or by building scoring models that will incorporate some economic indicators, Thomas (2000). Avery, Calem, Canner (2004) say that unemployment rate is positively associated with estimated likelihood of default, that there is higher probability of default to individuals who have resided in areas that are recovering from a local economic downturn. Marriage status also influences probability of default – for example long term married individuals have lower probability of default compared to never married individuals.
Also, likelihood of default is higher in lower income tracts compared with higher income tracts. (Aouette,J.B.,Altman,E.I., Arayanan,P., Managing credit risk, John Wiley & Sons, New York, 1998.)

2.8 Empirical Studies Conducted in Kenya

Kegode (2006) conducted a study on factors that determine credit worthiness in Kenya Post Office Savings Bank. According to her findings married customers, were found to be more credit worthy than the single ones, the longer a client had stayed in employment the more credit worthy they were, savings account holders were more credit worthy than current account holders, client's with house telephones defaulted twice as much as those who had none, cardholders between the ages of 22 and 45 paid better than those older than 46, singles with dependants defaulted more than those without, married clients with less than five dependants defaulted less than those with more than five dependants, the highest default rate was among those earning between kshs 50,000 and 70,000.

Kegode's findings are consistent with previous studies done on the factors that influencing default behavior or credit worthiness of borrowers.

Mucheke J.G (2001) also did a study on the determinants of non performing loans in Kenya. His findings were as follows;

Banks with no government shareholding

Delays in approval - were sighted as critical in the creation of non performing loans. Project timing is critical especially in continuing projects that need extra funding.

Decline in economic growth - has impacted on the purchasing power of the customers and this has adversely affected the business's ability to repay their loans.

Poor management of business – several banks explained that a number of businesses lacked the requisite managerial skills

Banks with government shareholding

Government influences – this is the most critical factor in the creation of non performing loans (NPL's). The influence some respondents explained ranged from interference at the approval level, documentation of security and even at the realization of those securities when the facility goes sour. The judicial systems were seen as neither effective nor efficient.

Exchange rate fluctuations – this emanates from the inadequacy of the banks to prudently hedge against foreign exchange exposures. Consequently heavy losses are incurred in the trade related finance business.

Niche market banks

A number of banks that essentially serve the corporate market and high net worth individuals have less than 1% in NPL. A senior manage in one of the banks surveyed identified the following as the reasons contributing to this phenomenon;

Extremely stringent lending policies – these banks identify their credit appetite industries within which to operate. An application must thus fall within the chosen industries and evaluated against the respected top players in the industry.

Accumulated experience and skills – a number of the niche markets have operated for over 200 years and have branches spanning the entire globe. Consequently there is a wealth of credit related lessons that have been learnt over the years and this becomes extremely useful in the evaluation and monitoring of facilities.

Ratio of customers to a relationship manager - due to the low number of customers that are served, the relationship managers for the various customers are able to closely monitor the facilities and take quick corrective action when the need arises.

Strict reward/ punitive system- that rewards for good facilities granted (as well as good relationship management and heavily penalizes the facilities that are poorly appraised or managed.

CHAPTER THREE

RESEARCH METHODOLGY

3.1 Introduction

This section presents the methodology used in this study. It also specifies the research design, the study population, target sample, data collection methods, measurement of variables, processing and analysis of data.

3.2 Research Design

The survey utilized specifically captured certain complex characteristics that are noticeable in credit card users/holders. The study used cross-sectional survey design.

3.3 Study Population

The study population comprised of 2,500 credit card users issued with the Imperial Bank credit card as of 30th June 2007. The researcher is an employee of the bank and therefore had access to the information.

3.4 Sampling

The sample size comprised of 100 credit card holders was randomly selected; 50 cardholders who had defaulted and 50 card holders who had never defaulted. This is considered a large enough representation of the population as it may not be feasible to sample the entire 2,500 cards.

3.5 Data Collection

The study used secondary data source, that is, credit card holder's application forms and cardholders' statements over a period of one year. The information on the application form represented the bio and demographic data (Numbers

1 to 8 in the data collection form). While the statements were used to capture the payment history number (Numbers 9 to 12 of the data collection form). Data collection form was used as a method of collection (attached as appendix 1).

3.6 Variables

This study focuses on variables like: - The ratio of total minimum required payment from all credit cards to household income; the percentage of consumption the consumer uses credit card which had been used by the consumer; the number of times when user of credit cards had reached the borrowing limit; the demographic characteristics of the credit card holder that impacted on the level and rate of default on the credit cards in Kenya.

Other variables includes: (see data collection form attached appendix 1)

- Number of payments skipped
- Payment history of each cardholder
- Number of months defaulted
- Marital status of cardholder
- Home ownership
- Number of credit cards
- Type of employment

The following hypothesis were tested

1. H_1: Age has a positive correlation with default
2. H_2: Gender has a positive correlation with default
3. H_3 Marital status has a positive correlation with default

4. H_4: Income has a positive correlation with default
5. H_5: Number of other credit cards has a positive correlation with default
6. H_6: Number of dependants has a positive correlation with default
7. H_7: Cash withdrawal by a cardholder has a positive correlation with default
8. H_8 Area of residence has a positive correlation with default
9. H_9: Home ownerships has a positive correlation with default
10. H_{10}: Credit card limit utilized has a positive correlation with default
11. H_{11}: Payment history has a positive correlation with default
12. H_{12}: Amount paid has a positive correlation with default
13. H_{13}: Type of employment has a positive correlation with default

CHAPTER FOUR

DATA ANALYSIS, FINDINGS AND INTERPRETATION

4.1: Introduction

The chapter presents data analysis, findings and discussion of the study in line with the research objective. The objective of this study was to identify the factors that determine credit card defaulting in Kenya. The data was collected from 50 card holders who had not defaulted and 50 who had defaulted. Secondary data was reviewed in relation to the following variables:

Discriminant analysis was used to establish the relationships between the study variables. Discriminant analysis is a procedure for identifying relationships between qualitative criterion variables and quantitative predictor variables Discriminant analysis is used to analyze relationships between a non-metric dependent variable and metric or dichotomous independent variables. Discriminant analysis attempts to use the independent variables to distinguish among the groups or categories of the dependent variable

The first step in analyzing the data was through descriptive measures. The gender , age , income, marital status, number of credit cards held, area of residence, type of employment, home ownership, percentage of limit utilized, payment pattern, number of cash withdrawals, percentage of amount due paid, card limit and number of dependants.

The data was coded and captured into an excel spreadsheet and analysis was done using SPSS package. A descriptive approach was used in the analysis to make inferences and conclusions to the study findings. Frequency tables and charts have been extensively used to present findings, according to the study objective.

Credit cardholder default is examined in an analysis where the missed number of minimum payments in the last six months (taken as an indicator of default) is fitted to key financial aspects of card use and a variety of socioeconomic variables. A defaulter is defined as a client who skips more than 5 payments.

The following dummy variables were used in the analysis;

Qualitative variable	Categories	Variable
Gender	Male	0
	Female	1
Age of cardholder	18-30	0
	30-40	1
	40-50	2
Income per annum	41,000 - 63,000	0
	64,000 – 83,,000	1
	+ 84,000	2
Marital Status	Single	0
	Married	1
Card limit utilized	0 – 30 %	0
	31 – 60%	1
	61- 100%	2
Number of credit cards held	0	1
	1	2
	more than 2	3
Type of employment	Employed	0
	Self employed	1
Number of dependants	0	0

	1	1
	2	2
	2+	3
Payment patterns	Pay on time	1
	Late payment	
	1 -4	2
	3 – 9	3
	10 -12	4
Cash withdrawal on credit card	Yes	0
	No	1
Percentage paid on the due date	15 %	0
	16 – 40%	1
	41 – 100%	2
Area of residence	Area A	0
	Area B	1
	Area C	2
Home ownership	Owns	0
	Rented	1
Card Limit	20 -149	1
	150 - 299	2
	300 - 450	3
	>450	4

4.2 Respondent profile

4.2.1 Age of cardholders

The table below shows the respondent distribution by age

Table 1: Age of card holders

	Frequency	Percent
18 - 30	7	7
30 -40	35	35
40 -50	28	28
+50	30	30
Total	**100**	**100**

Source Research Data

The findings imply that the highest number of respondents is in the age group between 30 and 40 years that is 35% followed by over 50 which is 30 %.

4.2.2 Monthly Income

Table 2: Average monthly Income

Kshs	Frequency	Percent
41,000 – 63,000	7	7
64,000 – 83,000,	24	24
+ 84,000	69	69
Total	**100**	**100**

Source Research Data

The table above shows that majority of the respondents 69% earn more than kshs 84,000 per month.

4.2.3 Marital status

As shown in table 3 majority of the respondents were married, 63% with singles comprising 37%e

Table 3: Marital status

Marital status	Frequency	Percent
single	37	37
Married	63	63
Total	**100**	**100**

Source Research Data

4.2.4 Gender

Table 4: Gender

Marital status	Frequency	Percent
Female	17	17
Male	83	83
Total	**100**	**100**

Source Research Data

83% of the respondents were males as compared to females who were 17%. This could imply that females are more cautious about taking up credit cards.

4.2.5 Area of Residence

Table 5: Area of residence

Kshs	Frequency	Percent
Area A -	29	29
Area B	56	56
Area C	15	15
Total	**100**	**100**

Source Research Data

Approximately 56% of the respondents live in rent area B which includes Parklands, Westlands, Kilimani in Nairobi while In Mombasa it includes areas like Kiziingo.

29% of the respondents live in rent area A which includes areas like Runda, Muthaiga, Karen, Lavington in Nairobi and Nyali in Mombasa.

4.2.6 Number of Cards

Table 6: Number of cards

Kshs	Frequency	Percent
Nil	74	74
1	23	23
+ 2	3	3
Total	**100**	**100**

Source Research Data

As shown in Table 6 above most of the respondents 74% did not have cards at the time of applying cards with Imperial Bank, while only a small percentage 23% had a card.

4.2.7 Type of Employment

Table 7: Type of employment

	Frequency	Percent
Employed	36	36
Self Employed	64	64
Total	**100**	**100**

More than half 64% of the respondents in this study were self employed while only 36% were employed.

4.2.8 Number of Dependants

Table 8: Number of dependants

	Frequency	Percent
0	15	15
1	22	22
2	16	16
+2	47	47
Total	**100**	**100**

Source Research Data

The table above shows that slightly less than half of the respondents 47% have more than 2 dependants with respondents having no dependants being the lowest percentage 15%

4.2.9 Home Ownership

Table 9: Home ownership

Kshs	Frequency	Percent
Owns	55	55.
Rented	45	45
Total	**100**	**100**

Source Research Data

It can be seen from table 9 that there was no major difference in the respondents between those who own homes 55% and those who rent 45%

4.2.10 Limit Utilized

Table 10: Limit utilized

Kshs	Frequency	Percent
0 -30 %	38	38
31 – 60%	15	15
61 – 100%	47	47
Total	**100**	**100**

Source Research Data

The number of cardholders who utilize more than 60% of their credit card limit is slightly less that half 47, and 38 of the respondents utilize less than 30% of their credit card limit.

4.2.11 Number of Cash Withdrawals

Table 11: Number of cash withdrawals

	Frequency	Percent
0	64	64
1- 5	30	30
6 -9	3	3
10 - 12	3	3
Total	**100**	**100**

Source Research Data

Most of the respondents do not make cash withdrawals on their card 64% the reason for this could be that there are very high charges on this while a smaller percentage 30 made between 1 to 5 cash withdrawals over the period of one year.

4.2.12 Payment Patterns

Table 12: Payment patterns

	Frequency	Percent
Pay on time	29	29
Late 1- 4	19	19
Late 5 -9	28	28
Late 10 - 12	24	24
Total	**100**	**100**

Source Research Data

As shown in table 11 slightly less than a third; 29 respondents made their payments on time with 52 % having paid late more than 5 times over the period of one year.

4.2.13 Percentage Paid on Due Date

Table 13: Percentage paid on due date

	Frequency	Percent
Less than 15%	10	10
Minimum – 15%	7	7
16 – 40%	14	14
41- 100%	70	70
Total	**100**	**100**

Source Research Data

The table above shows that majority of the respondents 70% pay more than 40% of the amount spent on the due date, with 17% paying the minimum or less.

4.2.14 Card Limit

Table 14: Card limit

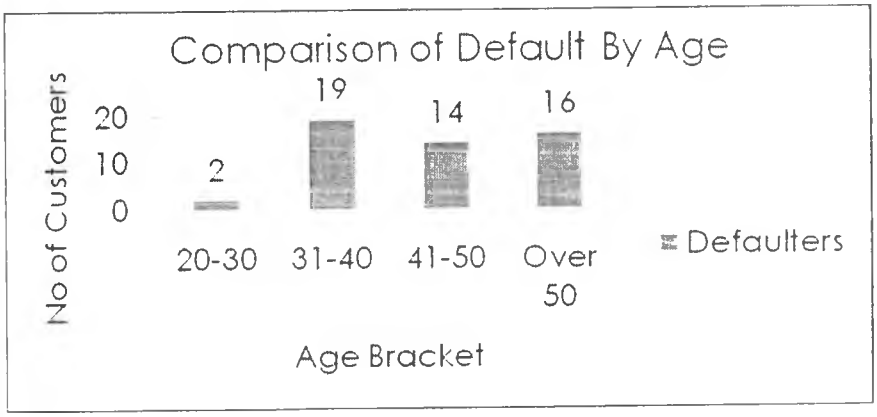
	Frequency	Percent
20,000 – 149,000	47	47
150,000 - 299,000	6	6
300,000 – 449,000	38	38
+ 450,0000	9	9
Total	**100**	**100**

4.3 Client's Characteristics and Defaulting

4.3.1 Customer's Age and defaulting

The study among other factors sought to determine whether the age of the cardholder had a bearing on the possibility of defaulting. The figure 1 shows the relationship between age and defaulting

Figure 1

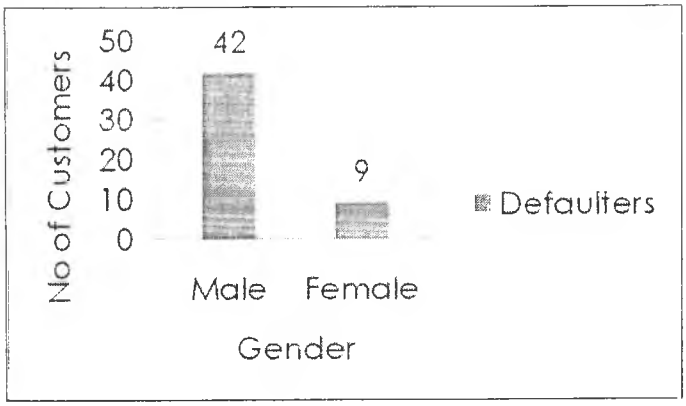


Source Research Data

As illustrated on the figure above the findings suggest that the highest numbers of defaulters are aged between 31 and 40 followed closely by those aged over 50. Whereas the largest number of defaulters were between 41 and 50 years.

4.3.2 Gender of customer and defaulting

Figure 2



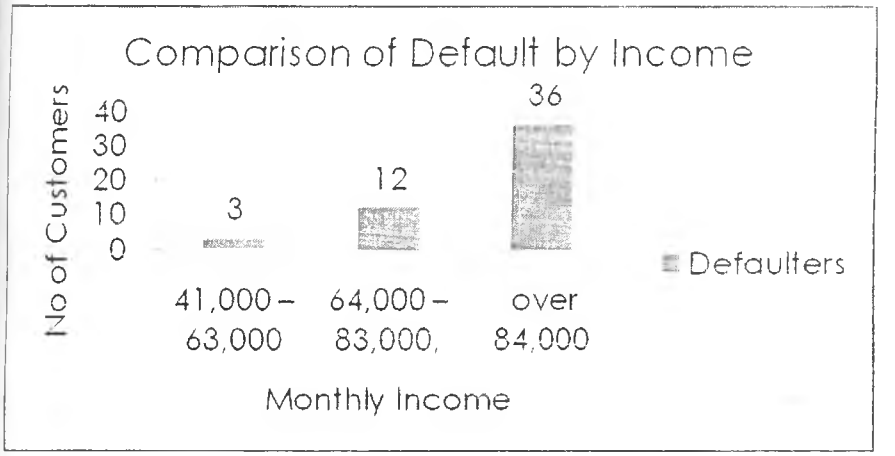
Source Research Data

Based on the study the largest number of defaulters was the males 42 out of the possible 50. .

4.3.3 Customer's income and defaulting

Illustrated in Figure 3 below the highest number of defaulters 36 are those who earn over kshs 84,000 per month while the lowest were those earning between kshs 41,000 and kshs 63,000. This implies that the default rate increases as the income increases.

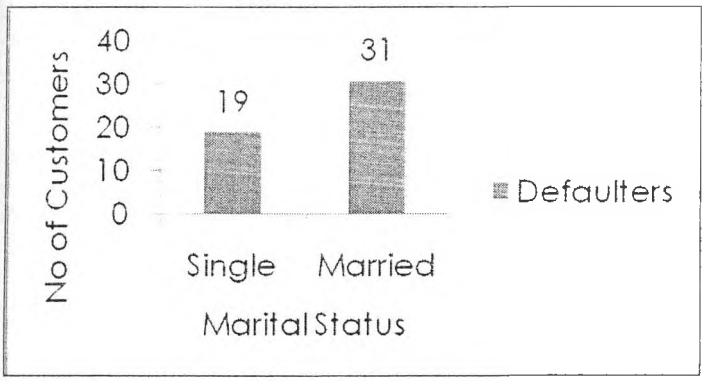
Figure 3



Source Research Data

4.3.4 Marital status of the client and defaulting

Figure 4

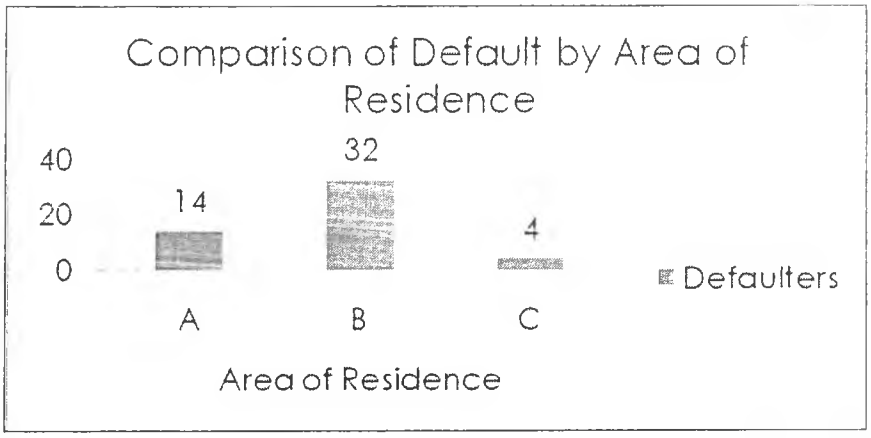


Source Research Data

The research undertaken indicates that the married customers default more than the single customers. The reason for this could be that they have more financial obligations as compared to the singles.

4.3.5 Residence of the client and defaulting

Figure 5

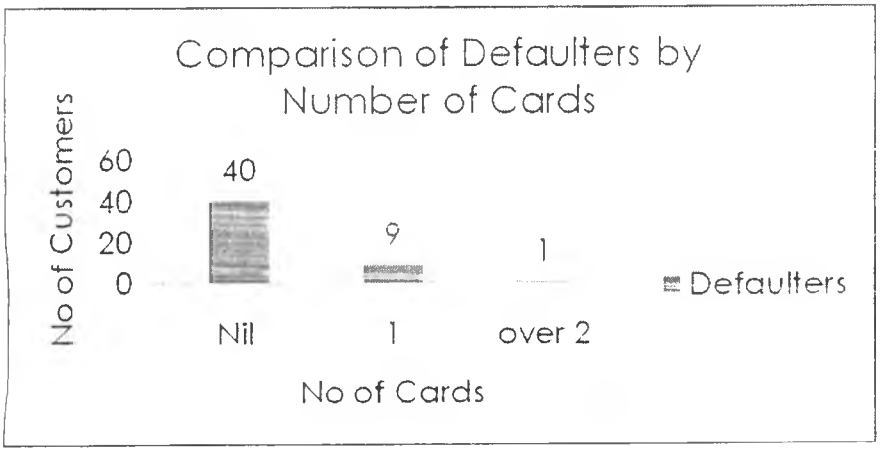


Source Research Data

As illustrated in Figure 5 above those who live in areas like Kilimani, South B, Bondeni in Nairobi and Mombasa tend to default more than those who live in areas like Runda, Muthaiga, Lavington and Nyali. The reason for this is that those who live in Rent area A earn higher incomes than those in rent Area B who are more of the middle income group and hence are least likely to default.

4.3.6 Number of cards held and defaulting

Figure 6



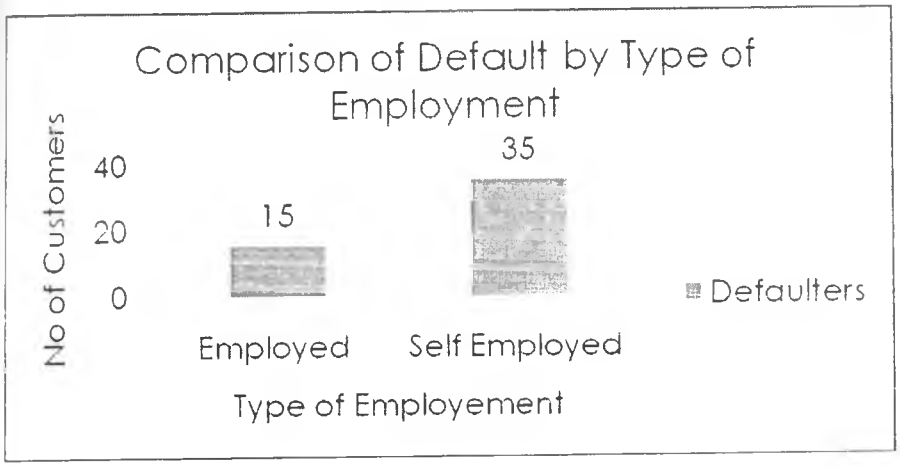
Source Research Data

The figure above indicates that the number of cards held has an effect on the default rate as the highest numbers of defaulters were those who previously had no credit cards. The reason for this could be that they were not very conversant with the concept of credit cards, as this was their first credit card.

4.3.7 Type of employment and defaulting

As illustrated in below the self employed default more than those who are employed. This could be because the self employed don't have regular income therefore have a high probability of skipping payments which may then end up in default.

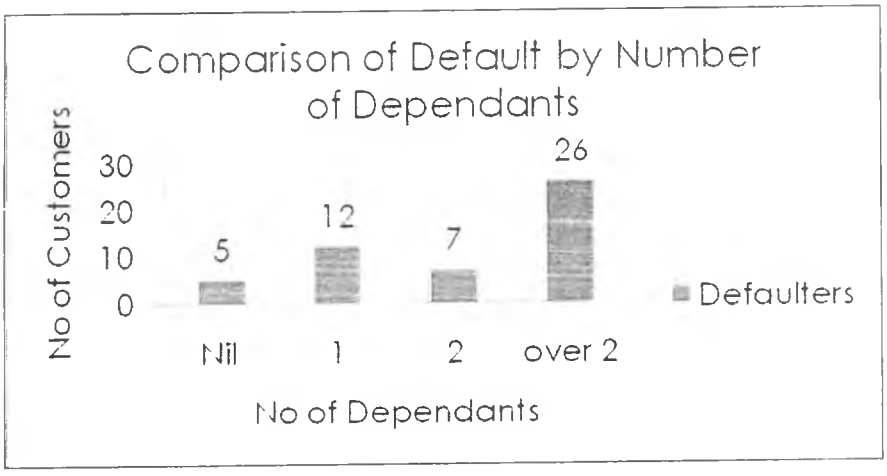
Figure 7



Source Research Data

4.3.8 Number of dependants and defaulting

Figure 8



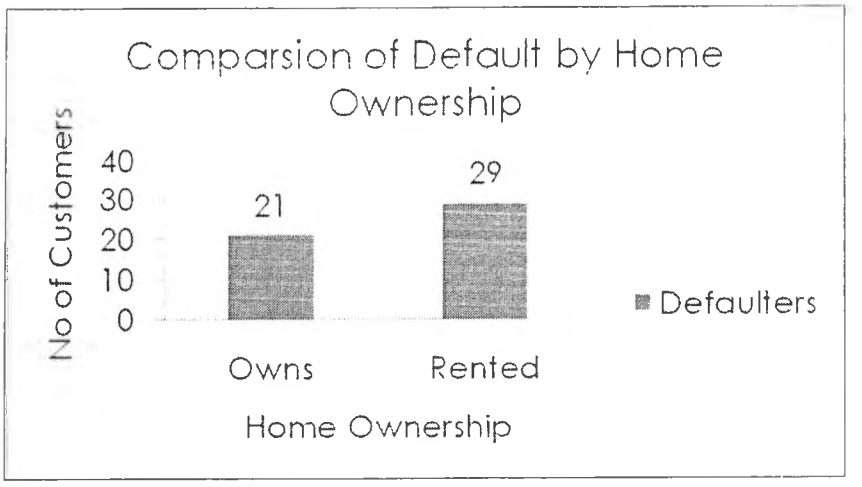
Source Research Data

The customers who have more than two dependants constituted the highest number of defaulters. This could be attributed to the fact that because they have more 'mouths to feed' then making credit payments would not be at the top of their priority list. Interesting to note is that the customers with no

dependants ranked second, this could be because they are alone they tend to be more financially undisciplined.

4.3.9 Home ownership and defaulting

Figure 9

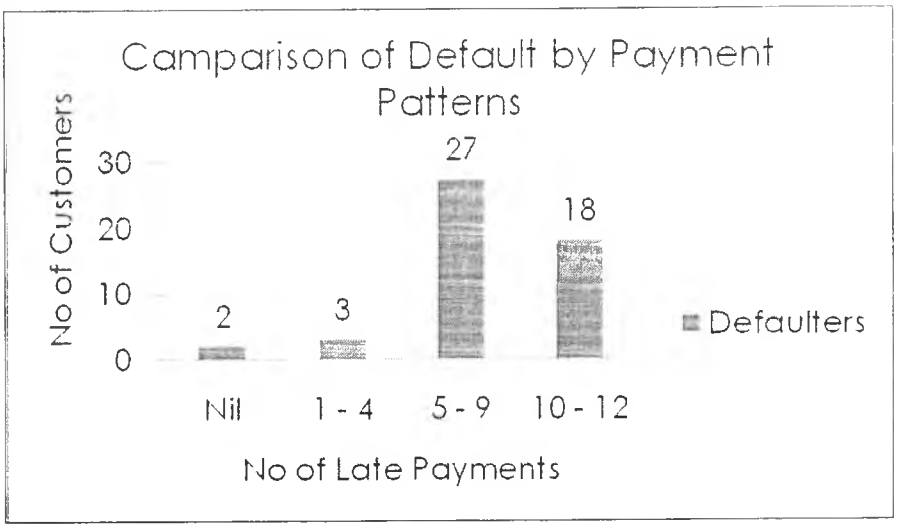


Source Research Data

Figure 9 above illustrates that the customers who didn't own houses default more than those who do.

4.3.10 Payment patterns and defaulting

Figure 10

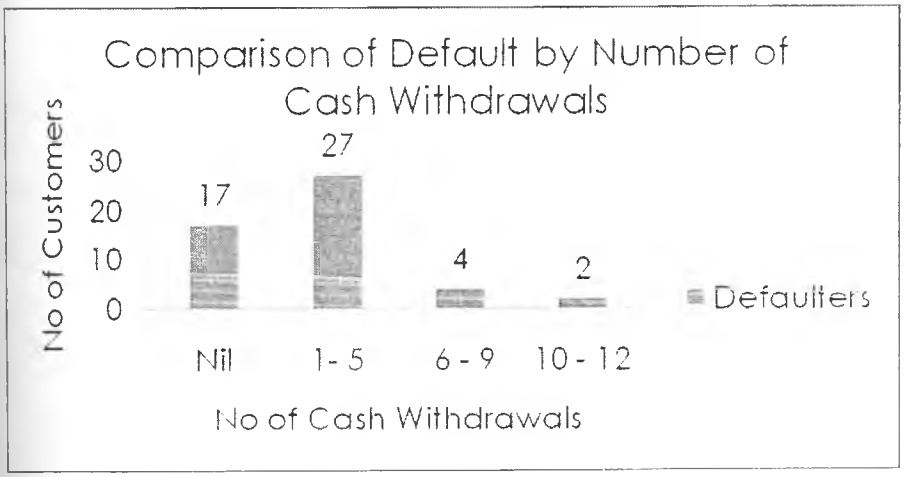


Source Research Data

The figure above *illustrates the relationship between the payment patterns* and default, which in this case is that the higher the number of payments skipped the higher the probability of default.

4.3.11 Number of cash withdrawals and defaulting

Figure 11



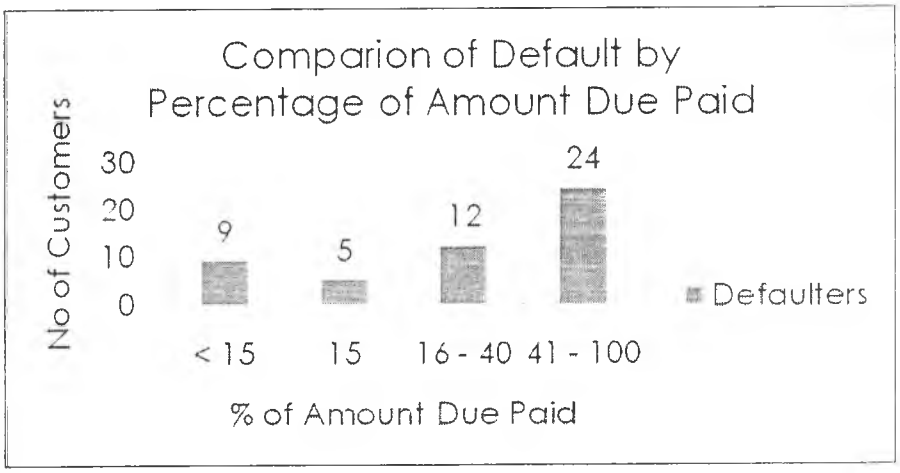
Source Research Data

The figure above illustrates that the largest number of defaulters were those who made between 1 and 5 cash withdrawals on their credit cards in the period of one year.

4.3.12 Percentage paid and defaulting

The findings below are very interesting in that most of the defaulters paid more than 41% of the amount spent on their cards whereas we would have expected them to have been paying less than the minimum due.

Figure 12

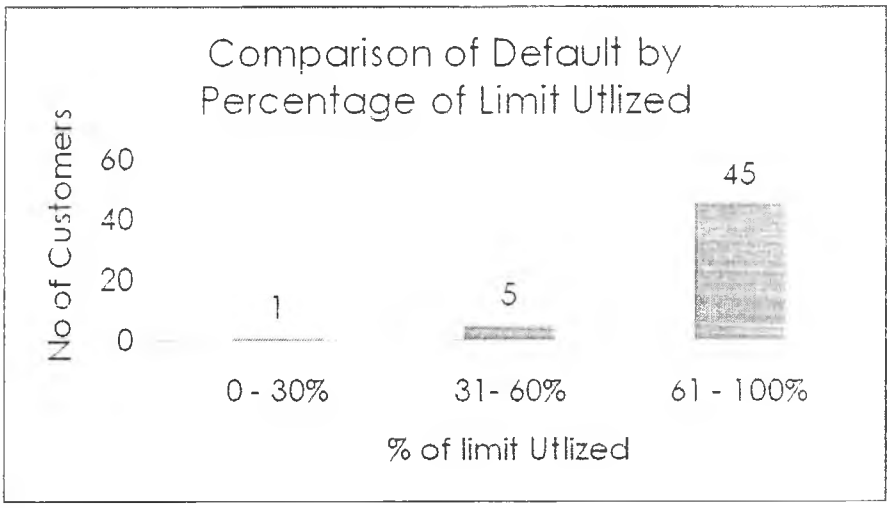


Source Research Data

4.3.13 Limit utilized and defaulting

There is a very significant relationship between the limit utilized and default. As illustrated in the figure below the higher the utilitized limit on the card the higher the probability of default will be,

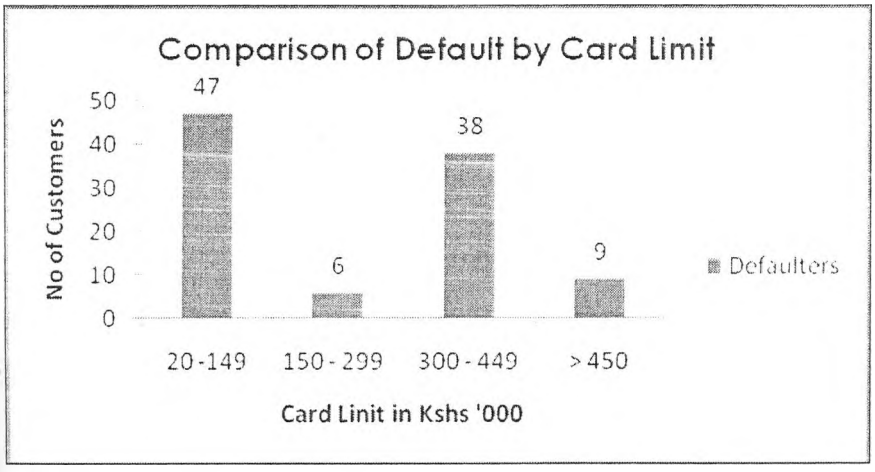
Figure 13



Source Research Data

4.3.14 Limit of card and defaulting

Figure 14



Source Research Data

Figure 14 above indicates that slightly less than half 47 of the customers have card limits ranging between kshs 20,000 and kshs 149,000 with only 6 having card limits between kshs 150,000 and 299,000.

4.4 Discriminant Analysis

The results from descriptive statistics (mean) of each variable in each group (default and payments) facilitated the process of carrying out discriminant analysis on the data. The results were as follows

The performance of the cardholder's results is shown below

PAYMENTS		Mean	Std. Dev	Valid N	
				Unweighted	Weighted
.00	Gender	.8235	.38501	51	51.000
	Age	2.8627	.91694	51	51.000
	Income	2.6471	.59409	51	51.000
	Marital	.3529	.48264	51	51.000
	Residence	1.8431	.61229	51	51.000
	Cards	1.2745	.53211	51	51.000
	Employment	.3137	.46862	51	51.000
	Dependants	2.0980	1.08176	51	51.000
	Home	.4118	.49705	51	51.000
	Limits	2.8824	.43114	51	51.000
	Cash	1.8627	.80049	51	51.000
	Percentage Paid	3.0392	1.14823	51	51.000
	LIM	151.767	121.73259	51	51.000
1.00	Gender	.8400	.37033	50	50.000
	Age	2.7800	.99571	50	50.000
	Income	2.6000	.63888	50	50.000
	Marital	.4000	.49487	50	50.000
	Residence	1.9800	.68482	50	50.000
	Cards	1.3000	.50508	50	50.000

	Employment	.4000	.49487	50	50.000
	Dependants	1.8000	1.22890	50	50.000
	Home	.6800	.47121	50	50.000
	Limits	1.3400	.65807	50	50.000
	Cash	1.0600	.23990	50	50.000
	Percentage paid	3.8200	.59556	50	50.000
	limit	277.000	188.30338	50	50.000
Total	Gender	.8317	.37601	101	101.000
	Age	2.8218	.95285	101	101.000
	Income	2.6238	.61403	101	101.000
	marital	.3762	.48686	101	101.000
	Residence	1.9109	.64960	101	101.000
	Cards	1.2871	.51646	101	101.000
	Employment	.3564	.48133	101	101.000
	Dependants	1.9505	1.16083	101	101.000
	Home	.5446	.50049	101	101.000
	Limits	2.1188	.95171	101	101.000
	Cash	1.4653	.71504	101	101.000
	Percentage paid	3.4257	.99344	101	101.000
	Limit	213.762	169.53968	101	101.000

4.4.1: Box's Test of Equality of Covariance Matrices

Log Determinants

PAYMENTS	Rank	Log Determinant
.00	13	-4.421
1.00	13	-6.141
Pooled within-groups	13	-2.905

The ranks and natural logarithms of determinants printed are those of the group covariance matrices.

There are 13 independent variables (Rank). The larger the log determinant, the more that group's covariance matrix differs. The log determinants are large; this confirms that the group's covariance differs.

Test Results

Box's M		234.40
F	Approx.	2.219
	df1	91
	df2	30,692.19
	Sig.	.000

Tests null hypothesis of equal population covariance matrices.

Discriminant analysis assumes homogeneity of covariance matrices between groups; the determinants should be relatively equal. Box's M, provides a good tests the homogeneity of covariances assumption. From the data above, the test is significant so we conclude the groups do differ in their covariance matrices, violating an assumption of DA.

4.4.2: Summary of Canonical Discriminant Functions

Eigen values

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	2.672(a)	100.0	100.0	.853

First 1: canonical discriminant functions were used in the analysis.

Eigenvalue shows the variance in the independent variables, the larger the eigenvalue, the more of the variance in the dependent variable is explained by that function. The dependent in this example has only two categories; there is only one discriminant function. The second column lists the percent of

variance explained by each function. The third column is the cumulative percent of variance explained. The last column is the canonical correlation, where the squared canonical correlation is the percent of variation in the dependent discriminated by the independents in DA.

Squared canonical correlation of 0.853 or 85.3% shows that the independent variables can explain 85.3% of the changes in the dependent variable leaving only 14.7% unexplained. In general the DA model is valid for forecasting.

Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.272	120.309	13	.000

Wilks's Lambda tests the significance of the eigenvalue for each discriminant function. The eigenvalue is significant.

Standardized Canonical Discriminant Function Coefficients

	Function
	1
Gender	.059
Age	.220
Income	.136
Marital	-.053
Residence	-.051
Cards	.019
Employment	.109
Dependants	.088
Home	-.134
Limits	.765
Cash	.463
Percentage paid	-.285

Limit	-.156

The standardized discriminant function coefficients serve the same purpose as beta weights in multiple regressions, that is, they indicate the relative importance of the independent variables in predicting the dependent. Therefore age, limits on the card and number of cash withdrawals are important in predicting default.

Canonical Discriminant Function Coefficients

	Function
	1
Gender	.156
Age	.230
Income	.221
Marital	-.108
Residence	-.078
Cards	.036
Employment	.226
Dependants	.076
Home	-.276
Limits	1.378
Cash	.780
Percentage paid	-.311
Limit	-.001
(Constant)	-4.079

Unstandardized coefficients

The unstandardized discriminant function coefficients are used like unstandardized b (regression) coefficients in multiple regression models, that is,

they are used to construct the actual prediction equation is used to classify new cases. The established discriminant analysis model is as follows

DA= -4.079 + 0.156G + 0.230A + 0.221I – 0.108M - 0.078R + 0.036C + 0.226E + 0.076D - 0.276H + 1.378L + 0.78CA - 0.311P – 0.01LIM

Classification Function Coefficients

	PAYMENTS	
	.00	1.00
Gender	6.000	5.495
Age	3.045	2.301
Income	8.891	8.175
Marital	1.360	1.709
Residence	6.050	6.304
Cards	4.454	4.337
Employment	4.807	4.077
Dependants	1.302	1.056
Home	.995	1.888
Limits	12.895	8.436
Cash	4.073	1.548
Limit	.005	.009
(Constant)	-59.616	-46.467

Fisher's linear discriminant functions

The structure matrix shows the correlations of each variable with each discriminant function. In this case, there is only one discriminant function. The correlations serve like factor loadings in factor analysis, that is, by identifying the largest absolute correlations associated with each discriminant function the researcher gains insight into how to name each function.

Amongst those who default card payments, the key factors are: gender, age, income, employment, number of cards, and number of dependants, limits and cash. Of those who pay their cards, the key factors are: marital status, residence, home, and limits.

4.4.3 Comparison of Discriminant Forecast with Actual

In order to determine the validity of the discriminant model, the researcher compared the result of the developed discriminant models with the actual rate of defaulters. The findings are presented below.

DA= -4.079 + 0.156G + 0.230A + 0.221I – 0.108M - 0.078R + 0.036C + 0.226E + 0.076D - 0.276H + 1.378L + 0.78CA - 0.311P – 0.01LIM

Defaulter's data

DA= -4.079 + 0.156[1] + 0.230[2] + 0.221[3] – 0.108[0] - 0.078[2] + 0.036[2] + 0.226[1] + 0.076[1] - 0.276[0] + 1.378[2] + 0.78[1] - 0.311[2] – 0.01[2]

DA = 0.31 (closer to zero hence a defaulter)

Those who pay their cards

DA= -4.079 + 0.156[1] + 0.230[4] + 0.221[2] – 0.108[0] - 0.078[1] + 0.036[1] + 0.226[0] + 0.076[3] - 0.276[1] + 1.378[2] + 0.78[1] - 0.311[2] – 0.01[4]

DA = 2.979 (Greater than 1 hence the person will pay for the card)

The deviations are less significant. The developed model can be recommended for forecasting of those who will pay or defaulter in the card amongst the potential customers.

CHAPTER FIVE SUMMARY OF FINDINGS AND CONCLUSION

5.1 Introduction

This section gives a summary of the study finding, it also gives the recommendations, conclusions and areas for further research. The broad objective was to determine the factors that determine the credit defaulters in Imperial Bank. The study also sought to analyze factors considered in issuance of credit cards to selected performing and non- performing cardholders of Imperial Bank. Random sampling methods were used to select the individual respondents, data analysis was done using the Statistical Package for Social Sciences (SPSS)

5.2 Discussion of Findings

Majority of the customers were found; to be over 30 years old, earned over kshs 84,000, more than 60 % were married, majority were male 84%, most of the customers had not previously had credit cards 75%, slightly less than half 48% had more than 2 dependants, 65% were self employed and slightly more than half 56% own their own houses.

In terms of the relationship between the variables and default; the males tend to default more than the females, most of the defaulters were in the higher come group earning over Kshs 84,000 per month, the highest number of defaulters were those who previously had no credit cards, the self employed tended to default more than the employed, the singles defaulted less than the married customers and those with more than 2 dependants formed the highest number of defaulters, the customers who had utilized more than 61% of their limit defaulted most.

The discriminant model was determined as:

DA= -4.079 + 0.156G + 0.230A + 0.221I – 0.108M - 0.078R + 0.036C + 0.226E + 0.076D - 0.276H + 1.378L + 0.78CA - 0.311P – 0.01LIM

The absolute values are used in applying the model

Where:

G – Gender

A - Age

M – Marital status

I – Income per annum

L – Limit utilized

C - Number of cards

D – Number of dependants

E – Type of employment

CA - Cash – withdrawal

P - Percentage paid

R- Area of residence

H - Home ownership

LIM - Card Limit

Therefore cash advances, limit utilized, age, income and type of employment were the most discriminating variables between the defaulter and non defaulter groups.

The most significant predictor of default is the limit utilized with a coefficient of 1.378. It was found that the higher the limit utilized the higher the probability of default. The reason for this is that because the cardholder is most probably having cash flow problems they tend to use the card more and pay only the minimum due, Hence by the time they are defaulting they have exhausted their card limit.

The number of cash withdrawals with a coefficient of 0.780 was also found to be a significant predictor of default. When a cardholder withdraws cash on their card there is usually a fee which is percentage of the cash withdrawn, for this reason card holder's only draw cash on their cards as a last resort. Therefore when card holder does many cash withdrawal this is an indicator that they are having cash flow problems and are using the card to supplement their income. In such a case the probability that the cardholder will skip payments and end up defaulting are very high.

Age with a coefficient of 0.230 was also found to be a significant predictor of default though not as significant as the limit utilized and number of cash withdrawals. The highest number of defaulters was found to be in the age bracket of 31 – 40. These are people in middle management and aggressively trying to climb the corporate ladder and for this reason tend to have expensive lifestyles that they can ill afford. A credit card comes in handy to support this lifestyle but because they are living beyond their means they cannot afford to keep up with the payments and hence end up defaulting. The second highest number of defaulters was found in the age bracket over 50. The reason for this could be that this group mainly comprises retirees and because they may not

have a regular source of income, they may be unable to keep up with the payments due and end up defaulting.

Income of the card holders with a coefficient of 0.221 was also found to be a significant predictor of default. The lower the monthly income of a client the higher the probability of default will be. The reason being that those with lower income have many financial commitments which may not be adequately catered for by their income and thus card payment would be at the bottom of their list of priorities. Therefore they will be a higher probability of default.

The type of employment is a significant predictor of default. The self employed tend to default more than the employed. The reason for this could be that the self employed don't have regular sources of income and therefore may not be able to make payments when they are due. Secondly because their income is not fixed they may not be able to budget and end up putting card payment as the last of their priorities. So in a case where the cash inflow is lower than the outflow they choose to skip card payments in order to meet other obligations and then end up defaulting

Marital status, area of residence, home ownership, percentage of amount due paid and the limit of the card were found to have an inverse relationship to default. This means that the singles defaulted less than the married clients. The reason for this could be that the singles have fewer financial obligations and are therefore to able to keep up with their card payments. The more posh the areas of residence the lower the probability of default, those who live in the up market areas tend to default less because they have more disposable income then the middle income groups and are therefore able to meet their card obligations and in most case pay the full amount due as opposed to the minimum due.

The percentage of the amount due had an inverse relationship to default that is the higher the amount paid by a client the lower the probability of default.

It was also found that the credit limit had an inverse relationship to default, the reason for this being that is limits are normally assigned based on the client's disposable income. Thus the higher the income the higher the limit assigned and therefore those with high limits are higher net worth clients and therefore less likely to default. The reverse is true those with lower limits are in the middle income group and are more likely to struggle with payments hence increasing the likelihood of default.

Home of ownership has an inverse relationship with default. It was found that those who owned their homes defaulted less than those who rented. The reason for this is that home owners are more financially stable than those who rent and thus less likely to default.

The variables that were found to be least significant as predictors of default are: gender, number of credit cards held, and number of dependants

5.3 Conclusion

Imperial Bank needs to rank the criteria used for application assessment and place emphasis on the variables identified as most important. Currently it correctly places emphasis on the levels of income. However the ranking is important in order to ensure that emphasis is placed on the variables that are considered to be most important,

As long as institutions give credit facilities there will always be defaulting. Such institutions should therefore strive to use good risk analysis systems to minimize the default rate. Any such systems need to be dynamic and inclusive of all emergent factors that are likely to affect defaulting. Such methods must be revised regularly to enable the institution to give credit cards to customers who are creditworthy.

5.4 Limitations of Study

The degree to which the findings of this study may be generalized should be ascertained in the light of the following limitations

- The effectiveness of judgmental analysis in relation to making the extension was not critically assessed as the study focused on objective credit analysis.
- The study only focused on the scoring criteria used by imperial bank
- The study only focused on the factors that determine default of credit card holders and not all forms of credit.

5.5 Areas for Further Research

Further research may be done to include other banks that issue credit cards as this study only focused on Imperial Bank to draw conclusions for the entire card sector.

Further research could also be done on the effectiveness of judgmental credit analysis in determining the credit worthiness of card holders.

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APPENDIX 1: DATA COLLECTION FORM

1. Gender of the respondent;

   Male or Female

2. Age of the cardholder;

   18-29 30-40 40-50 50+

3. Income per month:

   Kshs 41,000 -63,000 kshs 64,000 – 83,000 kshs + 84,000

4. Marital status;

   Single or married

5. Area of residence;

   A, B or C

6. Number of cards held by the client;

   1, 2, 2+

7. Is the cardholder employed or self employed

8. Number of dependants ;

   0, 1, 2, 2+

9. Is the house owned or rented?

10. Limit utilized

    0- 30% 31 - 60% 61 - 100%

11. Number oft times the cardholder pays late;

    Nil, 1-4 tomes, 5 -9 times, 10 -12 times

12. Number of cash withdrawals;

    Nil, 1 -5, 6 -9, 10 - 12

13. Amount paid on the due date;

    <15%, 15%, 16-40%, 41-100%

14. Credit card limit

GENDER	AGE	INCOME	MARITAL	RESIDENCE	CARDS	EMPLOYEMENT	DEPENDANTS	HOME	LIMIT	PAYMENT	CASH	% PAID	LIMIT
0	1	2	0	1	2	0	1	2	3	4	1	4	100
1	1	3	0	2	1	0	1	2	3	3	2	4	300
0	2	3	1	2	2	0	2	2	2	2	1	2	30
0	2	3	1	2	2	0	3	1	3	3	2	4	70
0	2	3	1	2	1	0	2	1	3	3	2	4	30
0	2	3	1	2	1	1	4	1	3	4	2	4	30
0	2	3	1	1	1	1	4	1	3	3	1	1	100
0	2	2	1	1	1	0	2	1	3	3	2	4	100
0	2	3	1	2	2	0	1	2	3	3	3	4	30
0	2	3	1	1	1	1	4	2	3	3	2	1	30
0	2	2	0	2	1	1	2	2	3	3	2	3	30
0	2	3	1	2	1	0	2	2	3	3	2	1	30
0	2	2	0	2	2	0	1	2	3	3	2	3	100
0	2	3	1	2	2	1	4	1	3	4	3	3	100
0	2	3	1	2	1	1	3	2	3	3	2	4	50
0	2	2	0	3	1	1	4	2	3	4	2	3	300
0	2	2	1	2	1	1	4	2	3	3	3	4	300
0	2	2	0	2	1	1	2	1	3	4	2	1	300
1	2	3	0	2	3	0	2	1	2	4	2	4	300
1	2	1	1	2	1	1	3	2	3	3	4	3	300
1	2	2	0	3	1	1	4	2	3	3	2	3	300
0	3	3	1	2	1	1	4	1	2	3	1	2	100
0	3	3	1	2	2	1	4	2	3	3	1	1	100
0	3	2	0	3	2	0	4	2	3	3	2	4	80
0	3	3	1	2	2	1	4	2	3	3	1	1	30
0	3	3	1	2	1	1	4	2	3	4	1	2	100
0	3	3	0	1	1	1	4	2	3	4	1	3	100
0	3	2	0	3	1	0	4	2	3	2	2	4	100
0	3	3	1	2	1	1	4	2	3	1	1	1	70
0	3	3	1	1	1	1	2	1	3	1	2	1	200
0	3	3	1	2	1	1	4	1	3	4	2	3	100
0	3	3	0	1	1	1	1	2	3	3	3	3	300
0	3	3	0	1	1	1	3	1	3	4	4	4	500
1	3	2	0	2	3	1	4	1	3	4	1	1	300
1	3	2	1	1	1	1	4	1	3	3	2	4	300
0	4	3	1	1	1	1	4	2	3	4	2	4	30
0	4	3	1	2	1	1	3	2	4	4	1	4	100
0	4	3	1	2	1	1	3	1	3	3	2	4	100
0	4	1	0	2	1	1	3	2	3	4	1	4	30
0	4	3	1	1	1	0	4	1	3	3	1	3	100
0	4	3	1	2	1	1	4	2	3	3	1	4	20
0	4	3	1	2	1	1	4	2	3	4	2	4	100
0	4	3	0	1	1	1	4	1	3	3	2	4	50
0	4	3	1	2	1	1	4	1	3	4	2	4	50
0	4	3	1	2	1	1	2	1	3	4	1	2	50
0	4	1	1	3	1	1	2	2	3	3	2	3	300
0	4	3	1	1	1	1	4	1	3	4	2	4	300
0	4	3	1	1	1	1	4	2	1	3	1	4	300
1	4	3	0	2	1	0	4	2	2	2	4	4	300
1	4	3	1	3	1	1	2	1	2	3	2	2	300
1	4	3	0	2	2	1	2	2	3	4	1	3	300

0	2	3	2	2	2	1	3	2	1	2	1	4	250
0	2	2	0	1	1	0	1	1	1	1	1	4	150
0	2	2	2	2	1	0	3	2	1	1	1	4	100
1	2	3	2	1	1	1	3	1	1	2	1	4	100
0	1	2	0	2	1	0	1	1	1	1	1	4	50
0	1	3	0	2	1	1	1	2	2	2	1	3	100
0	2	2	0	2	1	0	1	2	1	2	1	4	150
0	4	1	2	2	1	0	2	2	1	4	1	4	150
0	1	2	0	2	1	1	1	2	4	4	2	4	70
0	3	2	2	2	1	1	4	1	1	4	1	4	100
1	3	2	2	2	1	0	4	2	2	2	1	3	100
0	2	1	2	2	1	0	4	1	2	1	1	4	60
0	1	2	0	2	1	1	1	2	2	2	1	4	30
0	2	3	2	2	1	1	4	1	1	2	1	4	100
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0	1	3	0	2	2	0	1	2	1	1	1	4	60
0	2	3	0	2	1	0	2	1	1	1	1	4	500
0	4	3	2	3	1	1	4	1	1	1	1	4	500
0	3	3	2	2	1	0	2	1	1	1	1	4	500
0	4	3	2	3	1	1	4	1	3	1	1	2	300
0	2	3	0	3	1	1	4	1	1	1	1	4	300
0	4	3	0	1	2	0	4	1	2	1	1	4	300
1	4	3	2	1	1	0	4	1	1	1	1	4	300
1	4	3	0	1	2	1	4	1	3	1	2	2	300
0	3	3	0	2	1	1	1	1	1	2	1	4	300
0	3	3	0	3	1	1	4	1	1	2	1	4	300
0	3	1	0	1	1	0	4	1	1	1	1	4	1m
0	3	3	0	3	2	0	4	1	1	2	1	4	300
1	3	3	0	2	1	0	1	1	1	2	1	4	300
0	4	3	2	3	1	1	2	2	1	1	1	4	300
0	4	3	2	3	3	0	4	1	1	1	1	4	300
1	2	1	2	3	1	0	2	2	1	1	1	4	300
0	3	3	2	2	2	1	4	1	1	1	1	1	300
0	3	3	2	1	2	1	4	1	1	2	1	4	300
0	4	3	2	2	2	1	2	1	1	1	1	4	500
0	2	3	0	3	1	1	2	1	1	4	1	4	300
0	4	3	0	1	2	1	2	1	1	1	1	4	300
0	4	3	2	2	2	1	1	1	1	1	1	4	300
0	3	3	2	1	1	1	2	1	1	1	1	4	300
0	4	3	2	2	2	1	3	2	2	1	1	4	300
0	2	3	2	1	1	1	2	1	2	3	1	4	300
0	3	3	2	3	2	1	3	1	1	4	1	4	300
0	4	3	2	2	1	0	4	2	1	2	1	4	750
0	2	3	2	1	2	1	3	1	1	2	2	4	500
0	4	2	2	2	1	1	4	1	1	1	1	4	300
0	2	3	2	2	1	1	4	1	1	4	1	4	500
0	4	2	2	1	1	1	4	1	1	2	1	4	500