

**FACTORS THAT DETERMINE CREDIT WORTHINESS OF VISA
CARD HOLDERS: A CASE STUDY OF KENYA POST OFFICE
SAVINGS BANK**

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**A MANAGEMENT RESEARCH PROJECT SUBMITTED IN
PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE
DEGREE OF MASTERS OF BUSINESS ADMINISTRATION OF
THE UNIVERSITY OF NAIROBI.**

JUNE, 2006

DECLARATION

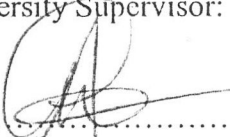
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DEDICATION

This project is dedicated to my family – my husband Eric and my children
Vicky, Tim and Angela whom I love.

ACKNOWLEDGEMENTS

I would like to acknowledge various people who supported me as I undertook this study.

I would like to thank my husband Eric and my children Vicky, Tim and Angela who were a great source of support.

I am grateful for the support and guidance received from my supervisor, Mrs Angela Kithinji. Her constructive criticisms and advice contributed to the successful completion of this project. Thanks also go to the staff of the Department of Business Administration and Accounting, Faculty of Commerce, University of Nairobi.

I would also like to acknowledge my parents (my late father) and my mother. I would also like to acknowledge my parents-in-law (my late father-in-law) and my mother-in-law.

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ABSTRACT

Credit risk management is important for any financial institution, as the focus is to ensure efficient collection of customer payments and to reduce the risk of non-payment. This study analyses the factors that determine credit worthiness of Visa Card holders of the Kenya Post Office Savings Bank through review of performance of a sample of cardholders. Secondary data comprising 30 non-defaulters and 30 defaulters was collected from existing customers application forms. The classification was based on those who have ensured prompt repayment of amounts due and those who have ever defaulted.

Analysis was done of the scoring of the card holders and their subsequent performance in relation to the variables: age, marital status, average monthly income, time at current employment, housing type, type of bank account, number of unpaid cheques, employer's guarantee, other card issuer's remarks, time at residence and availability on phone. The performance of the card holders in relation to each of the variables was assessed and their overall performance in relation to their scoring was also analysed. Younger customers aged between 22 and 45 were found to be good payers. Married customers were found to be more credit worthy than those who were single. A general trend was established whereby the longer a customer had stayed in their current employment the more credit worthy they were. However, there was an exception with the longest serving (those who had been with their employer for over 140 months) whereby 50% were defaulters and 50% were non-defaulters.

Currently Postbank uses a scorecard where the variables are scored based on the applicant's personal information. The factors are not weighted although more marks are lost where a cardholder has issued unpaid cheques or has adverse comments from other card issuers. It is important for Postbank to give the variables weights with emphasis on marital status, time at current employment, number of unpaid cheques, other card issuers remarks and type of bank account as identified by the study.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Credit risk is the possibility that the actual returns on a loan or debt investment may differ from what the lender expected, the difference of which constitutes a financial loss (Thygersson, 1995). On the other hand, credit risk management refers to the systems, procedures and controls which a company has in place to ensure the efficient collection of customer payments (McMenamin, 1999).

It focuses on ensuring efficient systems are in place to ensure that customer payments are promptly received when they fall due. Credit risk management aims at ensuring that there is a reduction in the default risk by debtors.

An important aspect in credit risk management is credit risk assessment. Due to the dire effects of credit risk (whereby if not properly managed can lead to bank failure), it is important for a bank to have capacity to assess, administer, supervise, control, enforce and recover loans, advances, guarantees and other credit instruments (Kabiru 2002).

A credit policy helps to define the framework within which credit will be extended and managed. Hempel et al (1994) states that there are two credit evaluation systems in relation to banks assessment of loan applications. Judgemental credit analysis which relies on the consumer loan officer's experience in assessing the loan and empirical credit analysis also referred to as credit scoring which assesses applicants based on scores applied to various applicant characteristics. These evaluation systems can also be applied to credit cards as it involves extension of credit and therefore a system of assessing an applicant's ability to pay needs to be in place. Examples of applicant characteristics assessed include age, employment history, performance on loans currently held and types of accounts held (Shubhasis, 2005).

Commercial banks issue credit as a means of earning revenue through interest charges. In order to ensure customers that are given credit cards are credit worthy banks aim at having in place an assessment system that will enable them to identify and offer credit cards to credit worthy customers. Banks therefore aim at

reducing the credit risk and therefore have measures in place to assess and vet credit card applicants. The objective assessments offered by credit scoring systems should help lead to a greater consistency in lending decisions (Federal Trade Commission on Credit Scoring, 2000).

The Kenya Post Office Savings Bank being a savings bank issues credit cards to its customers. This Savings bank was established in 1910 as a savings department within the East African Common Services. When the East African Community broke up in 1977, the Kenya Government established its own savings services and incorporated the Bank in 1978 by an Act of Parliament, the Kenya Post Office Savings Bank Act, CAP 493B of the laws of Kenya. The Bank was to mobilise savings for national development, but retained the agency services of the then Kenya Post and Telecommunications (KP&TC), and now its successor Postal Corporation of Kenya (PCK).

The bank is wholly owned by the Government of Kenya and reports to the Ministry of Finance. The bank was established primarily to encourage thrift and mobilise savings, and has carried out this mandate quite successfully, through expansion of its outreach and development of products and services that meet the expectations of customers. Governance of the bank is vested in the Board of Director's and the office of the Managing Director, supported by three directorates (Operations, Human Resources and Finance and Administration).

The Bank's vision is, "To be the leading savings and micro-finance bank in Kenya." While its mission is, "To sustainably provide savings and other financial services to the customers through a wide branch network by use of modern technology in the delivery of efficient and effective customer service and to the satisfaction of all stakeholders" (Kenya Post Office Savings Bank, Corporate Development Plan, 2005).

The bank offers its products through a network of 67 own branches and over 400 outlets operated on agency agreement with the Postal Corporation of Kenya, besides the over 4,000 outlets countrywide for the local Visa card and over 1

million outlets worldwide for the International Visa card (KPOSB, Corporate Development Plan, 2005).

The bank currently offers seven (7) savings and payments products to clients. Each product has its distinctive features, which are reviewed from time to time as dictated by the prevailing business environment (KPOSB, Corporate Development Plan, 2005). These products are Ordinary Savings Scheme, Save-As-You-Earn, Fixed Deposits Scheme, Premium Savings Scheme, Bidii, Money Transfer Services and Visa Card.

Visa Credit Card: The bank offers both the local and international Visa Cards. Postbank Visa Credit card was introduced in 1995. Card holders are liable for all charges incurred on the card which include interest, over limit fee (1,200 per month), late payment fee (6% on the minimum payable) and annual subscription fees. Amounts in excess of credit limit are expected to be cleared within seven days.

There were four main objectives of introducing the credit card in Postbank . Firstly, was to diversify Postbank's product portfolio so as to be cushioned from negative effects that might arise from economic and financial fluctuations in the country. Secondly, was to improve the bank's performance through simulation of products demand. Thirdly, was to diversify the bank's investment portfolio and to improve on the return on investment. The final objective was to extend more comprehensive banking services to its customers eg a credit scheme acceptable within the current Kenya Post Office Savings Bank Act. The Visa Card product is therefore important to the bank in relation to its strategy of product diversification within an increasingly competitive environment.

1.2 Statement of the Problem

Credit risk assessment is an important aspect of credit risk management. It seeks to reduce the occurrence of bank failure caused by non-payment of amounts due from debtors. In arriving at the decision to extend credit an important aspect is assessment of the applicants. This is with a view to extending credit to credit

worthy customers. Poor credit assessment is likely to lead to high default rate and thus high levels of non-performing credit card holders.

Financial institutions grant customers credit as a means of generating revenue from credit repayments as well as from interest charged on the credit. As a financial institution Postbank needs to extend credit to credit worthy customers. Credit card applicants should thus be evaluated to minimise the risk of default.

Using appropriate measures to separate those who are likely to repay from would be defaulters is therefore important.

In the year 2004, the bad debts expense for Visa Card amounted to Kshs 16,563,684 of the total direct expenses amounting to Kshs 20,435,059 (constituting 81.06% of the total direct expenses for Visa) This was offset by a writeback of provision of Kshs 7,247,525 bringing the net position to Kshs 9,316,159. Total Visa debtors as at 31.12.04 amounted to Kshs 116,731,784 of which amounts overdue as at 31.12.04 amounted to Kshs 65,780,422 which is 56.4% of Visa debtors, (Kenya Post Office Savings Bank Annual Accounts, 2004).

Due to the level of overdue amounts and the bad debts expense, it is imperative that the issue of credit assessment is reviewed. Ensuring the existence of credit worthy applicants is therefore important to minimise the risk of overdue amounts. There is therefore a need to identify the factors that determine credit worthiness of customers which should be used when vetting credit card applicants, as well as making an assessment as to whether the Visa credit scored card of Postbank is effective with a view to suggesting appropriate variables to include in the scorecard.

1.3 Objectives of Study

- To identify the factors that determine credit worthiness of Postbank Visa card holders.
- To analyse factors considered in issue of credit cards to selected performing and non-performing credit card holders of Kenya Post Office Savings bank.

1.4 Justification of Study

- The study will enable Kenya Post Office Savings Bank in identification of key factors that should always be included in assessing credit card applicants to enable the Bank to improve on vetting of credit card applicants and this in turn should help to ensure that more credit worthy customers are given credit cards.
- The study should also help the bank to reduce the bad debts expense and improve on profitability of the Visa card through improved vetting of credit card applicants. Where credit worthy customers are given credit cards they would then be expected to perform better and ensure prompt payment of amounts due.
- At a broader level it will encourage credit managers in financial institutions to conduct prudent credit risk assessment.
- The study will enable policy makers to focus on key assessment criteria that should be used in vetting credit card applicants.
- The study may highlight to academicians the trends in terms of characteristics for assessing credit worthiness for credit card applicants in the Kenyan environment.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Credit Risk Management

Stanghellini (2003) states that consumer credit is any of the many forms of commerce under which an individual obtains goods or services on condition of a promise to pay for their value, along with a fee (the interest), at some specific future date (s). The author further states that the need to cope with a vast demand for credits forced the credit grantors to implement automatic techniques for deciding whether to grant an application or not. Different information coming from application forms, records of past behaviour and credit reference bureaux, are processed to produce a score, that is a measure of the credit worthiness of each potential client or risk.

Risk is exposure to a proposition of which one is uncertain (Holton, 2004). The Basle Committee (1999) states that a number of the world's major banks have developed sophisticated systems to quantify and aggregate credit risk.

Credit risk management refers to the systems, procedures and controls which a company has in place to ensure the efficient collection of customer payments and minimise the risk of non-payment, (McMenamin, 1999). An organisation aims at establishing a framework which will ensure that there are adequate controls to ensure prompt payments of amounts due from customers. Where a bank issues credit cards then, control measures are put in place right from the stage of vetting credit card applicants to ensure that those who are given credit cards will be likely to promptly repay amounts as they fall due. Control mechanisms are put in place to minimise default and also to do prompt follow up for amounts due.

2.2 Credit Risk Assessment

Kabiru (2002) quoting Greuning and Bratanovic (1999) states that despite innovation in the financial services sector, credit risk is still the major single cause of bank failures. The reason is that more than 80% of a bank's balance sheet generally relates to this aspect of risk management. Greuning and Bratanovic (1999) identify aspects

of credit risk management function as constituting: credit portfolio management, lending function and operations, credit portfolio quality, non-performing loan portfolio, credit risk management policies, policies to limit or reduce credit risk, asset classification and loan loss provisioning policy.

McMenamin (1999) and Mutuma (2004) states that a common approach to customer credit selection and analysis is the use of the five Cs of credit as an initial screening and risk assessment device which include:

Capacity: This is an assessment of the potential customer's ability to repay the debt. The assessment would include a financial analysis of the customer's accounts with a particular emphasis on liquidity and borrowings. Information is also likely to be sought from sources such as bankers relating to the customers payment record elsewhere. Here the organisation seeks to ensure that the credit applicant has the financial resources to repay amounts as they fall due.

Capital: Here one assesses how substantial are the potential customer's capital resources. The customer's capital structure is also assessed. Campsey (1985) states that this is measured by the general financial position of firms as indicated by a financial ratio analysis which include the debt/assets ratio and the current ratio.

Character: This is a particularly important aspect of the overall credit review. It relates to an assessment of the personal character, honesty and integrity of the customer(s) and their willingness to comply with credit terms and conditions. Character references may be sought from bankers, including establishing if there are any outstanding legal judgements against the customer. Campsey (1985) states that this factor is of considerable importance, because every credit transaction implies a promise to pay. He states that experienced credit managers frequently insist that the moral factor is the most important issue in credit evaluation.

Collateral: This relates to an evaluation of the assets which the customer has available as security for the debt if required.

Conditions: The decision to grant credit to a customer could be influenced by current economic and business conditions generally, or by special business conditions relating to the applicant or to the firm itself.

Campsey (1985) states that the five C's of credit represent the factors by which the credit risks are judged. He states that information on these items is obtained from the

firm's previous experience with customers, supplemented by a well developed system of information-gathering groups. Credit information is obtained from the bank, financial accounts, business contacts and credit agencies.

Watson and Brigham (1966) and Cooperman, Gardner and Mills (2004) state that the central task in formulating credit policy is an evaluation of the credit worthiness of the potential customer. The authors state that to evaluate the credit risk, the credit manager considers the C's of credit to get an indication of the credit worthiness of the borrower.

Madura and Theodore (1988) state that the credit worthiness of customers can change over time, so it should be evaluated periodically using updated information.

2.3 Credit Policy

A credit policy is important for defining the framework within which credit will be extended and managed. McMenamin (1999) states that credit policy includes all the company's systems and procedures governing the determination of the following:

Credit selection: This is the process of selecting the customers who will be granted credit and determining their individual credit limits. Usually a set of criteria or checklists will be available to perform the initial credit screening.

Credit standards: These will specify the minimum acceptable standards of financial viability and creditworthiness which a customer must reach before credit is allowed. It is essentially an assessment of a potential customer's credit quality.

Credit terms: This sets out the credit period allowed and any discount terms for early payment.

Collection policy: This refers to the company's systems and procedures for collecting payment from customers when it becomes due. Edwards (1997) states that in setting any credit policy all areas of the business need to be aware of the type of credit offered, the company's high-level lending and risk policy and the procedures which are involved in the whole process. This should involve sales staff, credit administration and customer service staff. Detailed written instructions and procedures are essential. These should include the key roles and responsibilities for all areas involved in the selling and supporting of credit services.

2.4 Credit Evaluation Systems

Hempel et al (1994) state that there are two credit evaluation systems in relation to banks assessment of loan applications. Judgemental credit analysis and Empirical credit analysis.

Judgemental Credit analysis: This system of consumer credit analysis relies on the consumer loan officers experience and insight when appraising a borrowers ability and willingness to pay. The consumer loan officer also must assess the applicant's character, use of funds, primary source of repayment and any secondary or collateral sources of repayment. In the judgemental method of credit analysis, character can be evaluated through the applicant's credit history and from the degree of dependability demonstrated through length and consistency of employment, length and type of residence and other factors. The loan officer must be as objective as possible and must not apply subjective values or personal biases. In using judgemental systems, the applicant's age is not directly used (Hempel et al, 1994).

The applicant's income is almost always the primary source of the repayment of consumer loans. Income must be adequate in relation to the borrowers debts and other financial obligations. The loan officer must also evaluate secondary sources of repayment and establish the present and probable future value of collateral offered (Hempel et al, 1994).

Empirical Credit Analysis: This is also referred to as credit scoring. It assigns points values to various applicant characteristics. The points are then added up to award the applicant a numerical score which is then compared with a pre-determined accept-reject score and credit is denied to those whose scores are below this level. Unlike judgemental systems, empirical systems of analysis do consider age and credit worthiness is deemed to increase with age.

The appeal of a credit scoring system is that its alleged pure objectivity clearly precludes discriminatory evaluation of credit applications. The objective of credit scoring is to predict from applicant characteristics whether a borrower is good (creditworthy) or bad (not creditworthy) risk (Hempel et al, 1994).

Statistically derived credit scoring systems have two technical flaws. First, the borrower data used are historical and might be obsolete in detecting current predictors of credit worthiness. Secondly, the data consists of only those loan applications that have been accepted and omit applications that have been rejected. There can never be an actual record of the credit worthiness of rejected applications (Hempel, et al, 1994).

Hempel et al (1994) further notes that in comparing their effectiveness for evaluating consumer loan applications it is important to consider their ability to predict the credit worthiness of an applicant. If credit worthiness can be predicted, the bank is protected against abnormal losses on its loans and is assured of a dependable flow of repayments.

Credit scoring considers only characteristics that historically have been associated with creditworthiness. In practise many banks use a combination of judgemental and empirical credit scoring systems. Credit scoring readily isolates clearly non-credit worthy and clearly credit worthy applicants. The applicants that fall between these groups are then subjected to further information inquiries and to judgemental evaluation.

Edwards (1997) states that performance scoring provides the platform for informed rather than subjective decision-making, in the areas of credit limit management additional credit granting and authorisations on established accounts as well as debt collection. He further states that performance scoring is dynamic and the scores allocated to individual accounts must be regularly updated to reflect change over time. Use of performance scoring enables credit management to influence behaviour of account by timely intervention thus providing a much tighter control on credit risk.

2.5 Credit Scoring

Chandler and Coffman (1977) as quoted by Mbijiwe state that credit scoring systems are in wide use today. Avery et al (2000) states that credit scores are statistically derived measures of the credit risk associated with an application for consumer, mortgage or small-business credit and are widely used as predictors of future loan performance. Evidence indicates that credit scores are predictive of future loan

performance and suggests that scoring increases the accuracy of risk assessment.

Guillen (1992) states that credit scoring systems created for the evaluation of new applications are based on the available statistical information which is related to the behaviour of former clients with credit.

Credit scores are calculated by assigning points to factors indicative of repayment. Thomas (2000) as quoted by Mbijiwe states that the objective of credit scoring is to find a rule that separates good credit risks from bad credit risks. Credit scores are based on data rather than human judgement, making credit scoring an objective risk assessment tool as opposed to a subjective, possibly discriminatory, human interpretation of information.

Lending institutions use two kinds of credit scores; those based solely on the credit histories of individuals as reflected in credit-bureau records, and those that weigh other factors along with credit history. The former are generally referred to as “bureau scores” or “credit history scores” while the latter are often referred to as “applications scores” or “origination scores” (Avery et al, 2000).

Bureau scoring models are built on the premise that past performance in repaying debts is the best predictor of future performance. They are designed to rank individuals on the basis of their relative credit worthiness and quantify the likelihood that a given individual will default. Nearly all evaluation of bureau scoring models have focussed on their ability to predict relative credit worthiness.

Concerns have arisen in relation to use of bureau scores only, as there may be omitted variables. These include; rent and utility payment histories have not typically been included in credit scoring models in part because credit-bureau records have not historically included such items comprehensively. Also various types of recurring payment obligations such as those to certain local retailers and neighbourhood lenders have not traditionally been fully recorded by all credit bureaus (Avery et al, 2000).

An example of variables included in a credit report of a credit bureau as quoted by Shubhasis (2005) is where personal information would be assessed to include the

name, current and previous address, social security number, telephone number, date of birth and current and previous employers.

In relation to Credit history assessment variables evaluated would include; types of accounts, details on retail credit cards, bank loans, finance company loans, mortgages, bank credit cards, account numbers, amounts borrowed and amounts owed, dates when accounts were opened, updated or closed, timeliness of payments and late payments.

Other areas which would be assessed are public records (issues such as if there have been any court judgements) and inquiries in relation to a listing of all parties who have requested a copy of the credit report (Shubhasis, 2005)

In a statement of the Federal Trade Commission on Credit Scoring (2000) it stated that typically a credit score is a number generated by a statistical model that is used to evaluate the degree of risk posed by a consumer seeking credit. Credit scoring has been used by credit card issuers for many years as a tool for making credit decisions. With credit scoring, lending decisions are likely to be more objective, faster and less costly than traditional "judgemental" decisions. The objective assessments offered by credit scoring systems should lead to a greater consistency in lending decisions. In addition scoring models use factors that have proven to be predictive of credit worthiness as opposed to judgemental assumptions and should lead to better lending decisions.

While credit scores obtained from consumer reporting agencies are based solely on credit report information, other credit scores are available that are based upon additional or different information eg some creditors have developed custom scoring models. These scoring models may be developed based on the lending experience of a specific creditor and are designed to be used by that creditor to make its credit decisions. These are also scores specifically designed to predict the risk of delinquency for a particular type of credit such as credit cards (Federal Trade Commission on Credit Scoring, 2000).

Gestel (2003) states that internal credit scoring is a key building block of the capital allocation strategy of a financial institution. It is therefore important for financial institutions to ensure that where credit is extended that valid credit scoring systems are in place to assess the credit worthiness of applicants. Hayden (2003) states that when we try to predict credit risk we actually are interested to predict the potential risk that we may incur losses. Kosbach (1998) states that to evaluate loan applicants banks use a variety of systems. The objective of such credit scoring models typically is to minimise default rates or the number of incorrectly classified loans. Mbijiwe (2005) states that even a good credit scoring technique will not always predict with certainty all individual cardholders performance, but it should give a fairly accurate prediction of the likelihood that a loan applicant with certain characteristics will default.

2.6 Evaluating the Credit Applicant

The credit evaluation process involves three related steps which include obtaining information on the applicant; analysing this information to determine the applicant's credit worthiness; and making the credit decision. Sources of information include financial statements, credit ratings and reports (these usually exist in developed countries for businesses), bank checking and exchange of information – credit information is frequently exchanged among companies (Horne et al, 1981).

2.7 Credit Limits

Asymmetric information between borrowers and lenders and the lack of collateral to mitigate the informational asymmetry are mainly responsible for the existence of credit rationing (Shubhasis, 2005).

Publicly available information about borrower's credit worthiness 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 on the borrower's repayment probability. Therefore credit rationing persists in the unsecured credit card market. Borrowers with no or "bad" credit reports are more unlikely to have access to credit cards by banks. Those credit card holders who have "better" credit worthiness are perceived to

have higher repayment abilities and therefore are likely to be provided with higher credit card borrowing limits. Self employed households face higher variations of income and are likely to have higher default risks (Shubhasis, 2005).

2.8 Credit Cards

Credit cards provide a means for the institutions that issue them to earn revenue through interest charges that are levied. It is therefore important to ensure that credit is extended to customers who will keep up to the required repayments and where there is any delay, penalty charges are promptly repaid.

Consumer credit has become an enormous business in industrialised countries. Recently finance agencies have started to develop new products aiming not only to widen their portfolio but also to keep active relationships with good clients already taken on file and to prevent bad clients from becoming a loss for the agency (Stanghellini, 2003).

Credit cards are personal customer instruments but some organisations allow the use of cards by individual company employees. The market (globally) has been traditionally dominated by Visa, Mastercard and American Express. With cards issued by these organisations, money transmission has always played a very important part. About half of bank cardholders do pay their balances in full at the end of the month, effectively using their credit card as a means of payment as opposed to a means of credit. Credit cards offer revolving credit where cardholders can repay outstanding balances and incur new borrowing every month without the need to arrange a fresh agreement with their issuers provided they stay within the specified credit limit and meet regular monthly payments (Edwards, 1997).

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Research Design

The survey design was used. This study aimed at establishing the factors that determine credit worthiness of Visa card customers of the Kenya Post Office Savings Bank.

3.2 Population

The target population of this study was Visa Card holders of Kenya Post Office Savings Bank. As at 31.12.04 there were 1,501 active credit card holders as per the (Visa Card Listing, 2004).

3.3 Sampling

The sample frame was the cards listings for Visa Card holders for Postbank as at 31.12.04. Random sampling was used to select 60 Visa cardholders (30 who have never defaulted and 30 who have defaulted) from the 1,501 active card holders on the Visa Cardholders listing as at 31.12.04. Secondary data was reviewed in relation to their scoring on 10 variables and their subsequent performance on their credit cards.

3.4 Data Collection Method

Data was collected using a data collection sheet from existing records of the card holders. This is because the factors studied were based on actual performance which is documented. Credit scores obtained on application by individual applicants and their subsequent performance on their credit cards as evidenced by their statements of account were obtained from the records of the bank.

Existing records were examined in this study. Use of existing records has the advantage of having moderate cost, documenting actual performance and being easy to randomise. However, one may need agency cooperation and certain data may be unavailable and incomplete.

3.5 Data Analysis

The research was set out to determine the key factors that determine credit worthiness of Visa card holders of Kenya Post Office Savings bank. Data analysis was done through use of descriptive statistics such as means, percentages and tabulations with the help of the SPSS package.

Review of the credit card holders application forms and scoring sheets was done to determine their total scores and their scores in relation to the following 10 variables:

- Age
- Marital status
- Average monthly income
- Time at current employment
- Housing Type: Time at current residence
- Referee's comments
- Type of bank account
- Number of Unpaid cheques ever issued
- Employer's guarantee
- Other card issuer's remarks

Their scoring was then compared to their actual performance on their credit cards in order to establish whether there is any correlation within the respective groups that is, those who have never defaulted and those who have defaulted. A discriminant analysis model was used to discriminate characteristics of those who defaulted from those who did not default. Review was also done for whether there is correlation of scoring between the two groups that is defaulters and non-defaulters. Tests of significance were undertaken to find out whether there are significant differences in scoring between those who have ever defaulted versus those who have never defaulted. Appropriate factors for assessment of card applicants were then recommended for Postbank.

CHAPTER FOUR
FINDINGS, INTERPRETATION AND DISCUSSION

4.1 Introduction

In this chapter, the results of the study are presented and discussed. The data was collected from 60 Visa Card holders (30 who had never defaulted and 30 who had defaulted). Secondary data was reviewed in relation to their scoring on the following 10 variables: age, average monthly income, marital status, time at current employment, type of account, availability on house phone, housing type, number of unpaid cheques, employer's guarantee and other card issuer's remarks.

The data collected was coded and captured into an excel spreadsheet and analysis was done by use of SPSS package. A descriptive approach was used in the analysis to make inferences and conclusions to the study findings. Frequency tables, charts and cross tabulations are extensively used to present the findings, according to the study objectives.

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
23-30	9	15.0
31-45	38	63.3
46-50	1	1.7
50+	10	16.7
Not disclosed	2	3.3
Total	60	100.0

Source: Research Data

It can be seen that majority (63.3%) of the card holders were aged between 31-45 years. The 46-50 age bracket had the least with 1.7% of the respondents.

The findings imply that credit cards are most popular among the middle aged. This is the time most people are at the peak of their careers and is also the time when their productivity is at the highest.

4.2.2 Average Monthly Income of the Cardholders

It was anticipated that credit cards would be instruments used among the economically well off. The table below shows the average monthly income of the card holders.

Table 2: Average monthly income

Kshs	Frequency	Percent
20,001-30,000	7	11.7
30,001-50,000	8	13.3
50,001-70,000	15	25.0
70,000+	30	50.0
Total	60	100.0

Source: Research Data

The table above shows that 50%of the card holders had monthly income exceeding Kshs 70,000. The trend observable is of increased credit card use with rise in monthly income.

4.2.3 Marital Status

As shown on Table 3, majority of the respondents (73.4%) were married while 26.6% were single.

Table 3: Marital status

Marital status	Frequency	Percent
Single	16	26.6
Married	44	73.4
Total	60	100.0

Source: Research data

4.2.4 Time at Current employment

As shown in Table 4 most of the respondents had been with their current employer for 16-60 months. This was followed by those who had been with their employer for 61-139 months. Those who had been with their employer for over 140 months constituted 16.7% of the respondents.

Table 4: Time at current Employment

Time at Current Employment	Frequency	Percent
1 – 15 Months	7	11.7
16 – 60 Months	23	38.3
61 – 139 Months	20	33.3
140+ Months	10	16.7
Total	60	100.0

Source: Research Data

4.2.5 Type of Bank Account

From Table 5 below most (63.3.%) of the respondents have current accounts compared to 36.7% who have savings accounts.

Table 5: Type of Bank Account

Type of Bank Account	Frequency	Percent
Savings	22	36.7
Current	38	63.3
Total	60	100.0

Source: Research Data

4.2.6 Number of Unpaid Cheques

From Table 6, 90% of the card holders had never issued unpaid cheques and 8.3 % had issued less than 2 unpaid cheques. 1.7% had issued between 3 and 5 unpaid cheques.

Table 6: Number of Unpaid Cheques

Number of Unpaid Cheques	Frequency	Percent
None	54	90
<2	5	8.3
3-5	1	1.7
Total	60	100

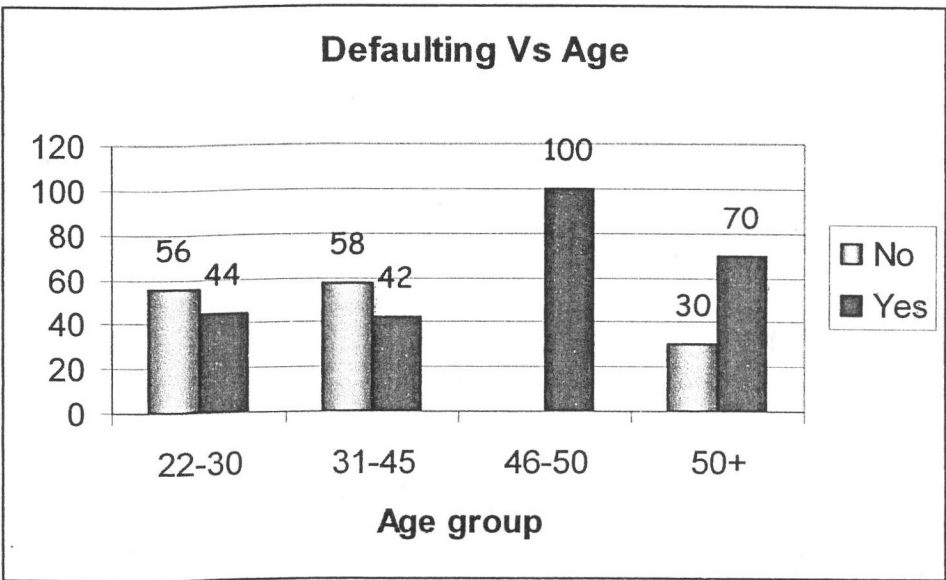
Source: Research Data

4.3 Customers Characteristics and Defaulting

4.3.1 Customer’s Age and Defaulting

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

Figure 1: Relationship between age and defaulting

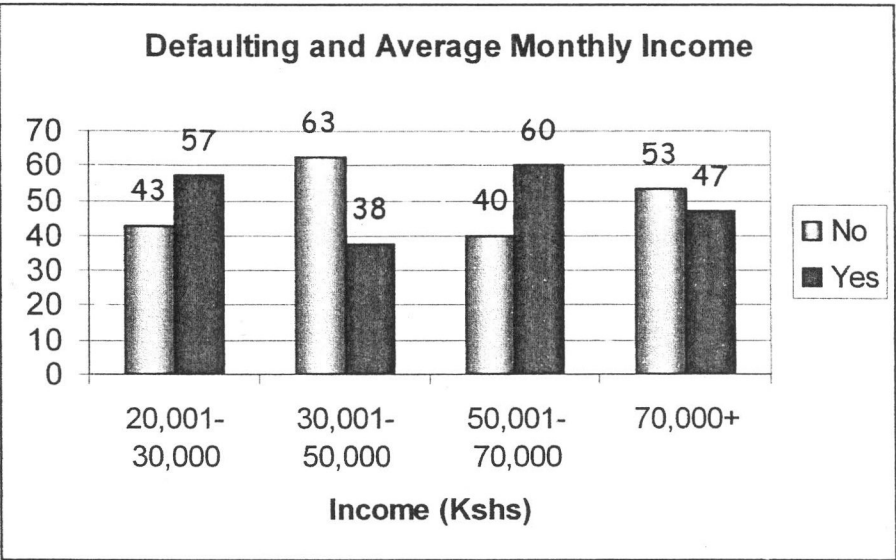


Source: Research data

As clearly illustrated on the figure above, 44% of the customers aged between 22 – 30 years defaulted compared to 42% of those in the 31-45 years age category. 70% of those aged above 50 years defaulted as did all those who were in the 46-50 years age category. The findings suggest that older customers i.e. those aged above 46 years, were more prone to defaulting while the young customers aged between 22 and 45 years were better payers.

4.3.2 Customer’s Average Monthly Income and Defaulting

Figure 2: Relationship between average monthly income and defaulting

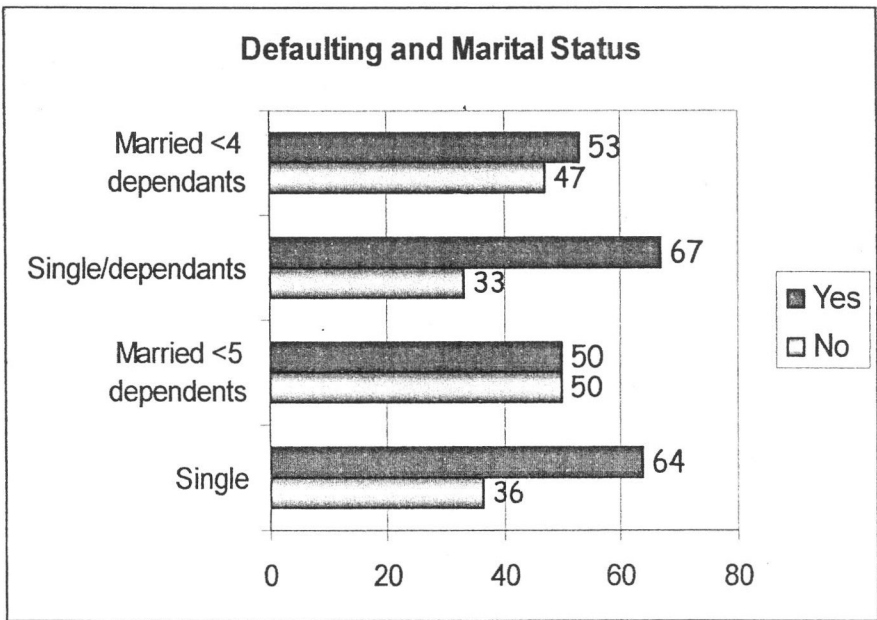


Source: Research data

As shown above, the highest defaulting rate (60%) was observed amongst the customers with a monthly average income of between Kshs 50,000 – 70,000 while the lowest was in the Kshs 30,000 – 50,000 income range at 38%. 47% of the customers with income over 70,000 defaulted whereas 57% of the customers with income between 20,001-30,000 defaulted.

4.3.3 Customer’s Marital Status and Defaulting

Figure 3: Relationship between marital status and defaulting

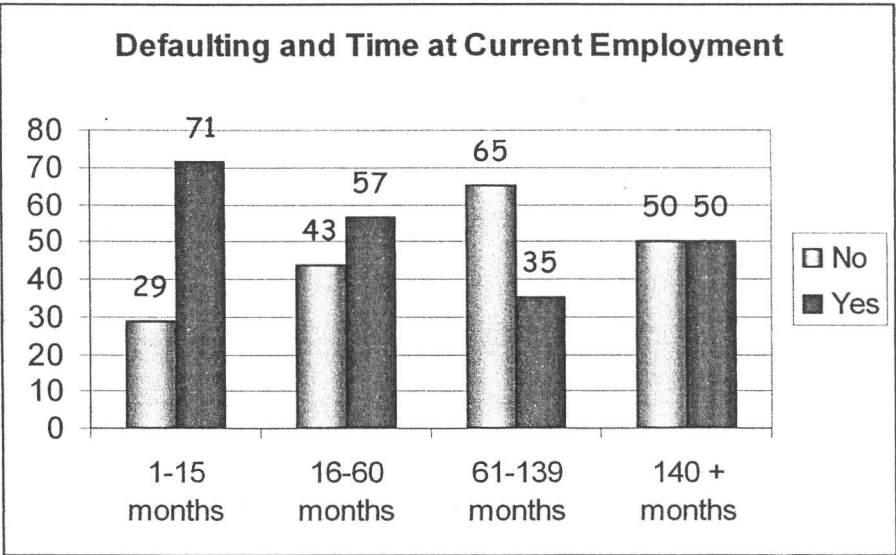


Source: Research data

Figure 3 illustrates that 67% of the customers that were single with dependants defaulted while 64% of the single (without dependants) defaulted. The lowest rate of defaulting (50%) was observed among those that were married and had less than 5 dependants. 53% of those who were married with less than 4 dependents defaulted. The most credit worthy based on marital status were those who were married with less than 5 dependents (50% paid amounts when due) and those who were married with less than 4 dependents as 47% of them paid amounts promptly when they fell due.

4.3.4 Customer’s Time at Employment and Defaulting

Figure 4: Relationship between time at current employment and defaulting

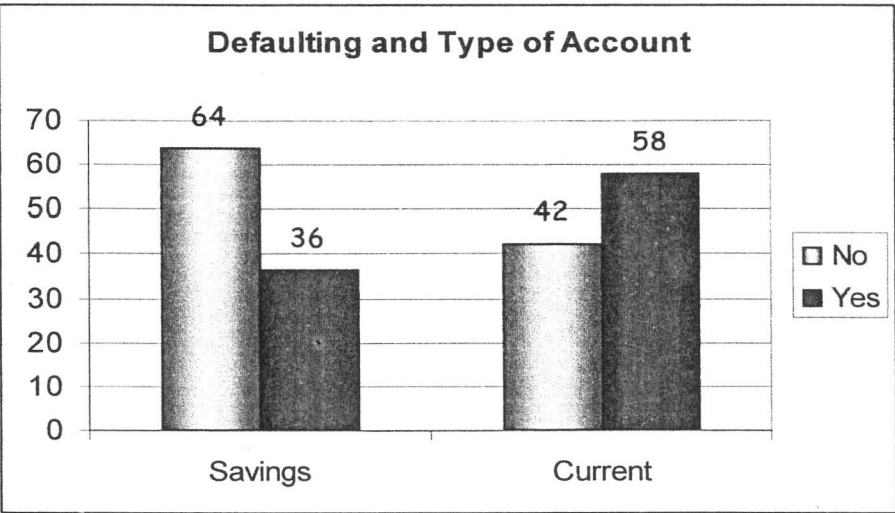


Source: Research data

According to the figure 4 above, 71% of the customers that had stayed in their current employment for less than 15 months defaulted likewise to 57% of the customers in employment for 16 -60 months. The lowest rate was observed among those in their current employment for 61-139 months. The findings indicate a general trend that the shorter the period a customer had stayed in employment the higher the risk of defaulting.

4.3.5 Customer’s Type of Account and Defaulting

Figure 5: Relationship between account type and defaulting

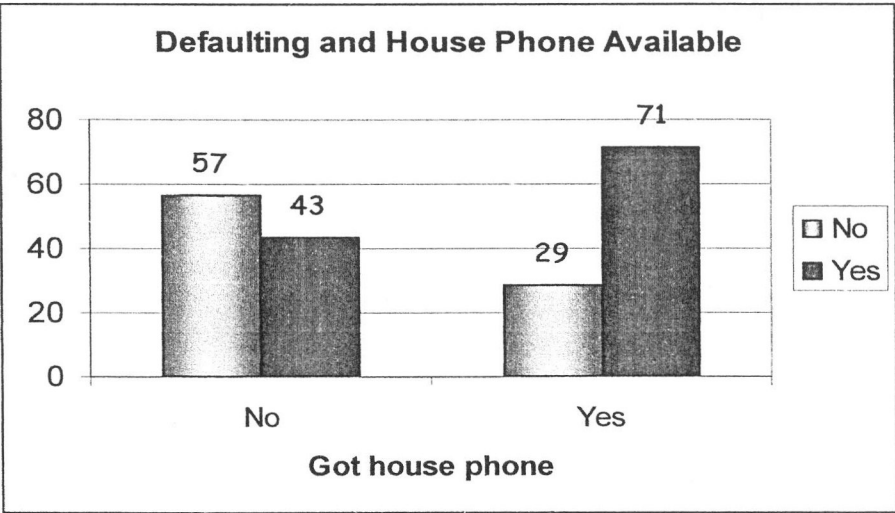


Source: Research data

As shown on the figure above, 58% of the current account holders defaulted, compared with 36% of those with savings accounts. The findings indicate a higher defaulting risk among card holders with current accounts.

4.3.6 Customer’s Availability of House Phone and Defaulting

Figure 6: Relationship between house phone availability and defaulting



Source: Research data

The figure above shows that 71% of the customers that had a house phone defaulted while those that defaulted but had no house phone were 43%. This is the opposite of

what would be expected since those with house phones are expected to be more stable and more credit worthy.

4.4 Test of significance

A chi-square test was used to test significance between defaulting and each of the customer characteristics given. The results obtained are as shown on the table 7 below.

Table 7: Chi-square test results A

Characteristic	Pearson Chi-square		
	Value	df	Asymp. Sig.
Age	3.593787	3	0.3088
Marital status	5.170339	6	0.522159
Average monthly income	1.37619	3	0.711125
Time at current employment	3.477019	3	0.323755
Housing type	1.980952	3	0.57637
Type of bank a/c	2.583732	1	0.107967
No. of unpaid cheques	3.096296	2	0.212641
Employer's guarantee	1.963636	1	0.161125
Other card issuers remarks	1.071429	1	0.300623
House phone available	3.354037	1	0.06704

Source: Research data

Testing at 95% significance level.

As evidenced on the table 7 above, none of the characteristics exhibited a significant relationship with defaulting. However, at 90% level of significance, type of bank account and time at current employment was found to be significantly related to defaulting. As shown in the table 8:

Table 8: Chi-square test results B

Characteristic	Pearson Chi-square		
	Value	df	Asymp. Sig.
Type of bank a/c	4.444	1	0.035
Time at current employment	7.965	3	0.047
House phone available	3.354037	1	0.06704
Employer's guarantee	1.963636	1	0.161125
Other card issuers remarks	1.071429	1	0.300623
Age	3.593787	3	0.3088
Marital status	5.170339	6	0.522159
Housing type	1.980952	3	0.57637
Average monthly income	1.37619	3	0.711125

Source: Research data

Testing at 90% significance level.

The factors that had little significance to defaulting were average monthly income and housing type.

4.5 Test of difference in Means of Total of the two groups

A t-test was used to compare means of the total on the score sheets between the defaulters and non defaulters. The mean total for non-defaulters was found to be 55.67 while that of defaulters was 47.93.

Table 9: Independent Samples t-test results

	Defaulters	Non-defaulters
Number of observations	30	30
Mean	47.93	55.67
Standard deviation	15.090	9.578

Source: Research Data

The t-test results reveal a significant difference in the means of the total of the two groups at 95% confidence level.. This indicates that the average points scored by eventual non-defaulters were higher than the average scores of eventual defaulters. This implies that the scores sheet used to evaluate the creditworthiness of Postbank Visa card applicant is a relatively reliable instrument. However, continuous analysis is required in setting the cut-off point.

4.6 Discriminant Analysis

Discriminant analysis was used to generate a discriminant function based on the variables that best provide the best discrimination between the two groups. The results are as shown on the table 10 below.

Table 10: Discriminant function coefficients

	Variable	Function
x1	Age	-.182
x2	Marital status	.450
x3	Average monthly income	.290
x4	Time at current employment	.633
x5	Housing type	-.138
x6	Type of bank a/c	-.490
x7	No. of unpaid cheques	.349
x8	Employer's guarantee	-.221

x9	Other card issuers remarks	.385
x10	Time at residence	-.242
x11	House phone available	-.542

Source: Research Data

The discriminant model can thus be described as:

$$D = -0.182x_1 + 0.450x_2 + 0.290x_3 + 0.633x_4 - 0.138x_5 - 0.490x_6 + 0.349x_7 - 0.221x_8 + 0.385x_9 - 0.242x_{10} - 0.542x_{11}$$

Using absolute values the results indicate the conclusion deduced from the coefficients is that time at current employment is the most important variable than the other factors in classifying a Visa card customer as a defaulter or non-defaulter.

4.7 Discussion of Findings

All the variables in the study are emphasized on by Postbank. Each variable is scored and each score contributes to the total score. An applicant qualifies for a credit card if their total score is 40 and above. However, an applicant obtains significantly low scores where they have issued unpaid cheques or have adverse card issuer remarks implying they have previously been delinquent or have legal cases.

The discriminant model was estimated to be:

$$D = -0.182x_1 + 0.450x_2 + 0.290x_3 + 0.633x_4 - 0.138x_5 - 0.490x_6 + 0.349x_7 - 0.221x_8 + 0.385x_9 - 0.242x_{10} - 0.542x_{11}$$

The absolute values are used in applying the model.

Where:

- x1 – Age
- x2 - Marital status
- x3 - Average monthly income
- x4 - Time at current employment
- x5 - Housing type

- x6 - Type of bank a/c
- x7 - No. of unpaid cheques
- x8 - Employer's guarantee
- x9 - Other card issuers remarks
- x10 - Time at residence
- x11 – Availability of house phone

The model developed has identified the important factors for classifying a customer as a defaulter or non defaulter as being: time at current employment, type of bank account, number of unpaid cheques, marital status, other card issuers remarks and house phone availability. On the other hand age, average monthly income, housing type and employers guarantee are least important.

From the preceding it can be seen that two variables which Postbank has considered significant in their scoring are some of the important variables that should be considered. These are number of unpaid cheques and other card issuers remarks. However, more emphasis should be placed on the other factors included above. It is interesting that average monthly income appears not to be important. However, this model cannot be used in isolation and other factors would need to be considered. It is generally considered that income is a good indicator on one's ability to repay borrowed amounts. Most financial institutions consider having regular income as a key requirement when considering loan applications. Availability on house phone though considered important by the model may not be so relevant now, as with the advent of mobile telephones most people may not have landlines, in addition the relationship for this factor to credit worthiness showed that those who lacked landlines were more credit worthy than those who had them.

CHAPTER FIVE

5.0 SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This section gives a summary of the study findings. It also bears the recommendations, conclusion and areas for further research. The broad objective was to identify the factors that determine credit worthiness of Postbank Visa card holders. The study also sought to analyze factors considered in issuance of credit cards to selected performing and non-performing credit card holders of Kenya Post Office Savings bank. The study was conducted among Postbank Visa card holders, defaulters and non defaulters while random sampling methods were used to select the individual respondents, data analysis was done using the Statistical Package for Social Sciences (SPSS).

5.1 Summary of Findings and Conclusions

5.1.1 Summary of Findings

Majority of the Visa card customers were found to be aged between 31-45 years. Defaulters exceeded non defaulters in the age groups beyond 46 years and vice versa. Visa card usage was found to increase with increasing income levels. The highest defaulting rate (60%) was amongst customers with income Shs 50,001 – Shs 70,000. Married customers were found to be more credit worthy than those who were single.

The longer a customer had stayed in their current employment the more credit worthy they were. The exception were the longest serving (above 140 months), where 50% were defaulters and 50% were non-defaulters. This notwithstanding it appears that stability of employment enables a customer to be more reliable in making prompt repayments of amounts that are due.

Savings account holders were found to be more credit worthy than current account holders. Another curious finding made was that customers with a house telephone defaulted nearly twice as much as those that had none. This is interesting because the reverse is what was expected, that is customers score higher when they have a house

phone than when they do not. As highlighted earlier this variable may no longer be relevant with the advent of mobile phones accessibility to most customers.

The means of the total scores for the two groups were found to be significantly different. This implies that the scoring criteria used to evaluate visa card applicants generally distinguished between the defaulters and non defaulters. The total individual scores were however not mutually exclusive to the two groups.

The discriminant model was determined as:

$$D = -0.182x_1 + 0.450x_2 + 0.290x_3 + 0.633x_4 - 0.138x_5 - 0.490x_6 + 0.349x_7 - 0.221x_8 + 0.385x_9 - 0.242x_{10} - 0.542x_{11}$$

Therefore time at current employment, marital status, number of unpaid cheques, other card issuers remarks and type of bank account were the most discriminating variable between the defaulter/non defaulter groups. Time at current employment as mentioned earlier gives a person more stability and this is reflected in increased credit worthiness. Number of unpaid cheques is also a reflection of the level of financial stability of a customer whereby if one has issued unpaid cheques then they are less financially stable. Other card issuers remarks give information on the credit history of a customer where one has been delinquent and/or had legal cases relating to late credit payments then this reduces their credit worthiness.

5.2 Conclusion

Kenya Post Office Bank criteria needs to rank the criteria used for credit card application assessment and place emphasis on the variables identified as most important. Currently it correctly places high emphasis on number of unpaid cheques, average monthly income and other card issuers remarks. As the means of the total scores for defaulters and non-defaulters were found to be significantly different this implies that the scoring criteria used to evaluate visa card applicants generally distinguished between defaulters and non-defaulters. 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 strive to put in place better risk analysis systems to minimize the rate of defaulting. Any such systems or formula need to be dynamic and inclusive of all emergent factors that are likely to affect defaulting. Such methods must be revised and from time to time so that may yield higher levels of accuracy and enable the institution to give credit cards to customers who are credit worthy.

5.3 Recommendations

Following the study findings, the following are the recommendations that need to be put in place to more accurately determine the credit worthiness of a Visa card applicant.

Availability on phone and referees comment should be struck off the score sheet or be accorded minimum weights as all applicants are likely to receive favourable ratings.

The score sheet needs to be continuously revised by altering the weights and including other factors. All this should target to make it a more accurate instrument for measuring credit worthiness.

The various characteristics should be weighted based on the discriminant model above with emphasis on time at current employment, number of unpaid cheques, other card issuers remarks, marital status and type of bank account as they were found to be the most discriminating variables.

5.4 Limitations of Study

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

- This study focussed on the case of Kenya Post Office Savings Bank and the credit scoring criteria applied by this financial institution.
- The study focussed on credit worthiness in relation to credit card holders and not all forms of credit extension eg loan financing in the market.

- The study focussed on objective credit analysis therefore the effectiveness of judgemental analysis in relation to making the credit extension decision was not critically assessed.

5.5 Areas for further research

This study focused on the Kenya Post Office Savings Bank to draw conclusions for the entire credit card sector. Further research may extend this analysis to include all other credit card issuers such as KCB and Standard Chartered Bank.

Further study could be carried out in other financial institutions that do lending to further analyse factors for consideration in making the lending decision.

Further research can also be undertaken in relation to other variables and criteria which are used by other financial institutions in relation to assessing credit worthiness in order to determine their effect on the credit worthiness of cardholders.

Further research can also be done on the effectiveness of the use of judgemental credit analysis in determining the credit worthiness of cardholders.

REFERENCES

- Avery R.B. et al. (2000), "Credit Scoring, Statistical Issues and Evidence from Credit Bureau Files." Real Estate Economics.
- Chandler and Coffman (1977), "The Value of Credit Reports versus their Costs."
- Dey Shubhasis and Gene Mumy (2005), "Determinants of Borrowing Limits on Credit Cards." Bank of India Working Paper.
- Edwards, B. (1997), "Credit Management Handbook." Fourth Edition. Gower Publishing.
- Gestel T.V. et al. (2003), "A Support Vector Machine Approach to Credit Scoring."
- Greuning H.V. and Bratanovic S.B., (1999), "Analysing Bank Risk, A Framework for Assessing Corporate Governance and Financial Risk Management." The World Bank.
- Guillen M and Artis M (1992), "Count Data Models for a Credit scoring system."
- Hayden E. (2003), "Are Credit Scoring models sensitive with respect to Default Definitions? Evidence from the Austrian market." University of Vienna.
- Hempel G.H., Simonson D.G and Coleman A.B. (1994), "Bank Management: Text and Cases." Fourth Edition. John Wiley & Sons Inc.
- Holton G. (2004), "Defining Risk." Financial Analysts Journal, Volume 60. No. 3.
- Horne, J.C., Dipchand C.R, Hanrahan J.R.(1981), "Financial Management and Policy." 5th Edition. Prentice Hall.
- Kenya Post Office Savings Bank. Corporate Development Plan. (2005).
- Kenya Post Office Savings Bank. Annual Accounts. (2004).
- Kabiru, J.M.G. (2002), "The Relationship Between Credit Risk Assessment Practices and the Level of Non-performing Loans of Kenyan Banks." MBA Unpublished Project. University of Nairobi.

- Kosbach K. (1998), "Bank Lending Policy, Credit Scoring and Loan Survival." Stockholm School of Economics.
- Mbijiwe J.M. (2005) , "Application of Multiple Discriminant Analysis Credit Scoring Model for Credit Card Consumers – The Case of Barclaycard Kenya." MBA Thesis.
- McMenamin J. (1999), "Financial Management." Routledge.
- Federal Trade Commission (2000), "Statement of the Federal Trade Commission on Credit Scoring, Before the House Banking and Financial Services Committee, Subcommittee on Financial Institutions and Consumer Credit. Washington, D.C., September 21."
- Stanghellini, E. (2003), "Managing the Behaviour of Credit Card Holders with Graphical Chain Models." Journal of Business Finance and Accounting, Volume 30, Issue 9-10. December.
- Thomas L.C. (2000), " A Survey of the Credit and Behavioural Scoring: Forecasting Financial Risk of Lending Consumers." International Journal of Forecasting, Vol 16 pp 149-172.
- Wetson J.F. and Brigham E.F., (1966), "Managerial Finance." Second edition. Published by Holt, Rinehart and Winston Inc.

APPENDIX

VISA SCORING ON VARIABLES

DEFAULTERS CODED DATA

Number	Age	Marital status	Av. Monthly Income	Time at current employment	Housing Type	Referee's comment	Type of bank a/c
1	3	-5	10	0	3	4	3
2	3	-5	10	2	2	4	3
3	3	2	20	0	3	4	3
4	5	4	20	4	3	4	3
5	3	5	10	4	3	4	2
6	3	3	20	2	3	4	3
7	5	2	20	6	3	4	3
8	3	0	30	6	8	4	3
9	4	5	8	2	8	4	2
10	4	4	20	0	3	4	3
11	4	-5	8	4	3	4	3
12	4	-5	10	2	3	4	3
13	4	4	30	0	3	4	3
14	2	-5	10	2	3	4	3
15	4	4	4	0	3	4	2
16	4	1	30	4	8	4	2
17	2	-5	4	2	3	4	3
18	4	5	10	4	3	4	3
19	3	4	30	4	3	4	3
20	4	5	30	2	3	4	3
21	4	5	4	2	3	4	2
22	4	5	4	6	3	4	3
23	4	4	10	2	8	4	2
24	6	5	8	6	8	4	3
25	2	5	20	4	3	4	3
26	4	4	20	2	3	4	2
27	2	-5	20	2	3	4	3
28	4	4	20	6	8	4	3
29	4	4	10	2	3	4	3
30	4	5	10	2	3	4	2

Number	Other card Issuer's	Time at Residence	Avail on Tel	House Phone Avail	Applicant' Tel Enquiries	Total on Scoresheet
	Remarks					
1	0	2	7	0		23
2	0	0	7	0		29
3	0	5	7	0		40
4	0	5	7	5		48
5	0	5	7	5		36
6	0	5	7	5		23
7	0	2	7	5		3
8	0	5	7	0	0	59
9	0	5	7	0	0	38
10	0	5	7	0	0	18
11	0	5	7	5	0	26
12	0	2	7	0	0	26
13	0	5	7	0	0	53
14	10	2	7	0	0	24
15	0	2	7	0	0	26
16	0	5	7	0	0	58
17		5	7	5	0	18
18	0	5	7	0	0	38
19	0	2	7	0	0	56
20	0	5	7	0	0	56
21	0	5	7	0	0	29
22	0	5	7	5	0	9
23	0	2	7	5	0	44
24	0	2	7	5	0	45
25	0	5	7	5	0	46
26	0	5	7	0	0	44
27	0	2	7	0	0	34
28	0	5	7	0	0	54
29	0	2	7	0	0	15
30	0	5	7	0	0	35
						0

APPENDIX ONE
VISA SCORING ON VARIABLES

NON DEFAULTERS CODED DATA

Number	Age	Marital status	Av. Monthly Income	Time at current employment	Housing Type	Referee's comment	Type of bank a/c	No. Of Unpaid cheques	Employer's Guarantee
1	4	5	20	2	3	4	3	5	0
2	4	-5	30	4	3	4	3	5	0
3	2	5	10	4	0	4	2	5	0
4	4	5	30	2	3	4	3	5	0
5	4	5	8	4	3	4	3	5	5
6	2	5	30	2	8	4	2	5	0
7	2	5	30	2	3	4	3	5	0
8	4	5	10	0	3	4	3	5	0
9	4	5	20	4	3	4	3	5	0
10	4	5	10	4	3	4	2	5	0
11	3	4	30	2	3	4	2	5	0
12	4	5	30	6	8	4	3	5	0
13	4	5	20	4	3	4	3	5	0
14	2	5	30	2	8	4	2	5	0
15	3	4	8	6	8	4	2	5	0
16	4	5	30	4	2	4	3	5	0
17	4	-5	30	2	8	4	3	5	0
18	4	2	10	4	8	4	3	5	0
19	4	-5	30	4	3	4	3	5	0
20	4	5	10	6	3	4	2	5	0
21	4	4	4	2	3	4	2	5	0
22	2	-5	20	2	3	4	3	5	0
23	4	4	8	6	8	4	3	5	0
24	3	1	20	4	8	4	3	-20	0
25	4	4	4	4	3	4	2	5	0
26	4	5	8	4	3	4	2	5	0
27	4	4	8	0	3	4	2	5	0
28	4	4	4	6	8	4	2	5	0
29	4	5	10	4	3	4	2	5	0
30	4	4	20	2	3	4	2	5	0

Number	Other card Issuer's	Time at Residence	Avail on Tel	House Phone Avail	Applicant' Tel Enquiries	Total on Scoresheet
	Remarks					
1	0	2	7	0	0	46
2	0	5	7	0	0	48
3	0	5	7	5	0	32
4	0	2	7	0	0	56
5	10	2	7	0	0	41
6	0	2	7	5	0	58
7	0	0	7	0	0	54
8	0	5	7	0	0	34
9	0	5	7	0	0	48
10	0	5	7	0	0	37
11	0	2	7	0	0	53
12	0	5	7	0	0	65
13	0	5	7	0	0	48
14	0	2	7	5	0	58
15	0	5	7	5	0	40
16	0	5	7	0	0	57
17	0	5	7	0	0	51
18	0	5	7	0	0	40
19	0	2	7	0	0	48
20	0	5	7	0	0	39
21	0	5	7	0	0	28
22	10	2	7	0	0	34
23	0	2	7	0	0	42
24	10	2	7	0	0	23
25	0	5	7	0	0	30
26	0	5	7	0	0	35
27	0	5	7	0	0	30
28	0	5	7	0	0	37
29	0	5	7	0	0	37
30	0	5	7	0	0	44

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