

Home loan profitability optimisation in the financial industry

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Abstract

Product profitability needs to remain a competitive advantage to a bank's home loan product. Ever changing customer needs and even more demanding customers today enforce reasons to investigate the profitability of home loans. Other aspects to consider includes transfer pricing, ROA, cost to deliver product to market areas (marketing and distribution cost) and break-even period. Banks are facing immense challenges to achieve sustainable profitability. Historically low interest rates are compressing margins and forcing banks to enhance performance management capabilities (Convery, 2003:39). The presence of both fixed and variable costs make it very difficult to evaluate the real profitability of a product. In the banking environment the normal way of measuring profitability is to deduct the fixed cost and variable cost on average from the income generated through interest and non-interest income per home loan account.

Home loan profitability is influenced by various factors like interest rates, origination fees, fixed cost, variable cost, bad debt, inflation rates, house prizes and income levels of the customer base. The mix of income levels per household in a geographic area influence the profitability of a home loan in that area. A customer that earns a high income is usually more demanding regarding the interest payable on the home loan, for example interest rates of mortgage bond rate (MBR) less 2 percent are demanded. Customers that earn a lower income normally pay interest as set by the bank according to an interest rate matrix that is used in relation to loan to value (LTV).

"Banks' profit margin is increasingly under pressure due to higher interest rates. This necessarily means that banks will have to increase non-interest income." (Gavin Opperman, ME Home loans, 18 March 2007). The sources of home loan applications are originators (65%), channels (25%) and estate agents (10%). At Absa bank who is the leader in home loan finance with 33% market share the channels is represented by Retail Banking, Bank Brokers and Private Bank.

By measuring home loan profitability on a branch level will give a bank the benefit of capitalizing on the strengths of the different product offerings, limiting weaknesses, create more opportunities internally and externally, whilst eliminating threats. The focus will be on operating income, operating expenses versus profitability and ROA (defined as return on net income after tax / balances).

Corporate and Business banking, Small Business and Foreign Exchange will be excluded. The profitability model of a bank has been discussed. It is hoped that through this research the key elements have been identified to optimize product profitability for home loans. The variable interest rate home loan is the most common form of home loan. It is however very difficult to evaluate the real profitability of a home loan due to variable and fixed cost components that might differ from time to time. This apparently prevent banks from offering better home loan rates since the cost to income decreased due to higher variable cost. Banks use mortgage originators because it offers an additional marketing channel in a highly competitive home loan market. The National Credit Act rules dictate that customers have to declare all information pertaining to income and expenditure before a home loan can be approved. The competition further expand on client potential, acquisition costs, product attrition, market penetration and market segmentation as elements that influence the marketing mix problem. When used as a measurement of profitability reporting, contribution margin more clearly shows how cost behaviour impacts on profitability.

In taking a contribution margin approach when reporting profitability focuses the user directly on fixed and variable cost behaviour. While fixed expenses stay the same as volume increases, fixed unit costs actually go down within the relevant volume tolerance range.

The higher the loan value the higher the risk and expected losses in bad debt. Higher capital amounts lend to customers increase the unexpected losses.

“Economic capital” is the capital banks set aside as a buffer against potential losses inherent in any business activity – mortgage lending.

The purpose of the Home Loans Value model is to provide Home Loans business units with a tool to reach some of the most important objectives listed above. This model projects the economic value¹ of new retail mortgage business and enables the business to make strategic and tactical decisions based on future profitability.

The dependable variables used for analysis are average economic profit (EP) per account and return on assets (ROA) per account. The different independent variables are expected to have an influence on home loan profitability and if closer attention can be given to each of these aspects the profitability of home loans in the financial industry will be optimized. The independent variables are categorized in demographical variables, operational variables, financial variables and channel distribution.

The cost components allocated to business generated by mortgage originators and estate agents are high and should impact the profitability of home loans generated through these channels. One of the ways to optimise home loan profitability is to have special sales drives that have the objective of increasing the home loan book and increase market share. Market analyses per area in the different provinces gives a better understanding of your customer base and enable better quality credit decisions to optimise profitability of home loans.

The study showed an inverse relationship between ROA and EP due to credit impairments and overhead costs.

¹ Where value is defined in terms of the trade-off between risk and reward

Abbreviation Index

ABC	Activity Based Costing
EBIT	Earnings before interest and taxes
EBITDA	Earnings before interest, tax depreciation and amortization
EC	Economic Capital
EV	Economic Value
EPS	Earnings per share
EVA	Economic Value Add
HOC	Home Owners Comprehensive Insurance
LTV	Loan to Value
MBR	Mortgage Bond Rate
ME	Managing Executive
MFTP	Matched Fund Transfer Pricing
MO's	Mortgage Originators
NCA	National Credit Act
NI	Net interest income
NII	Non interest income
ROA	Return on Assets
ROE	Return on Equity
SBU's	Strategic Business Units
SOX	Sarbanes-Oxley
SVA	Sales Value Add

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CHAPTER 1

INTRODUCTION

1.1 Background

The face of financial institutions has changed dramatically over the past decade and most have to survive in a fiercely competitive global economy. Survival depends on the ability to satisfy customer needs through high quality, flexible and innovative products. It is important to ensure that product profitability remains a competitive advantage to a bank's home loans division. It is one of the core lending products and a key driver of profitability. Absa (33% market share) finances one out of every three homes that are bought. (Du Toit, 2007: 10). By optimising the profitability of home loans, the bank will be able to do business that is more profitable and at the same time limit bad debt to a minimum.

Ever-changing customer needs and more demanding customers today enforce reasons to investigate the profitability of home loans. Banks need to ensure that pricing of products is an accurate science (Clemens & Hitt, 2000). This is enticed by the implementation of the National Credit Act (NCA), Act No 34 of 2005, which impacts directly on transparency and profitability of home loans. Other aspects to consider includes transfer pricing, return on assets (ROA), cost to deliver product to market areas (marketing and distribution cost) and break-even period. Profitability on home loans in dedicated areas should be researched to ensure a competitive advantage to banks in the different geographical and demographical demarcations in the country.

Accurate determination of profitability is important for banks (Carroll, 1991: 5). According to Lingle (1995: 13) banks also attempt to evaluate the potential profitability of clients. Banks are facing immense challenges to achieve sustainable profitability. Historically low interest rates are compressing margins and are forcing banks to enhance performance management capabilities

(Convery, 2003: 38). The ROA and average profitability per home loan account need to be considered to establish the ROA and profitability of home loans in a certain geographical area. In the banking environment, the normal way of measuring profitability is to deduct the fixed cost and variable cost on average from the income generated through interest and non-interest income per home loan account.

The existence of both fixed and variable costs make it very difficult to evaluate the real profitability of a product. In order to determine if a difference between the national average profit per product and the average profit per area exists, comparisons between the two need to be drawn. The Pretoria area in Gauteng, South Africa, is used as a case study to assess if the home loan product in this area is more profitable than the average home loan on a national basis. Home loan profitability is influenced by various factors like interest rates, origination fees, fixed cost, variable cost, bad debt, inflation rates, house prices and income levels of the customer base. Some of these variables differ from area to area and usually are not taken into account when sales targets are set for the various sales channels.

It is argued that the mix of income levels per household in a geographic area influence the profitability of a home loan in that area. Households with low-income levels normally do not have an own contribution to reduce the risk of the bank. The possibility of default is then higher since the customers tend to loose nothing financially when payments default and the house is sold at an execution auction. This has a direct impact on overall profitability. Customers who earn a high income usually demand more with regard to the interest payable on the home loan. Mostly the affluent customers insist on a mortgage bond rate (MBR) less two percent (2%) interest on a home loan. Lower income earners normally pay interest as set by the bank according to an interest rate matrix that is used in relation to loan to value (LTV).

"Banks' profit margin is increasingly under pressure due to higher interest rates. Thereby the average lifetime per bond becomes shorter, which gives banks less of a chance to recoup the cost, which is incurred to grant a loan to a customer and to pay it out. This necessarily means that banks will have to increase non interest income" (Opperman, 2007: 9). Options to improve income or profitability would include asking higher interest rates when granting loans, review non-interest income composition and to save costs by improving operational effectiveness. Improved quality of loans granted by credit managers can insure that a more sustainable profit margin after impairments is achieved which increases the overall profitability of home loans.

Home loan business is generated through various channels that ensure that the banks get the new sales on the book. Business generated through the "channel" refers to business that is generated through the branch network in retail banking, Absa brokers and Absa Private Bank. The sources of home loan applications are originators (65%), internal banking channels (25%) and estate agents (10%) (Setswe, 2006: 3). The market share of home loans per financial institution is as follows: Absa – 32.3%, Standard Bank – 25%, First National Bank – 17.5%, Nedbank - 20%, Investec – 4.8%, Other – 0.4%. What differentiates a specific financial services provider from competitors is the unique mix of products, options and value add products that are available to the customer. By understanding the market mix of customers in a geographic area and the market share of the different service providers, useful information becomes available to assess and determine the potential of home loan business in that area.

1.2 PROBLEM STATEMENT

The optimisation of profitability in a geographical area is a need of every financial institution in order to increase stakeholder value. To identify certain best practices and anomalies that might add value for use in other branches, a comparison between different branches are done in an effort to optimise home

loan profitability. Measuring home loan profitability on a branch level will give a bank the benefit of capitalising on the strengths of the different product offerings, limiting weaknesses; creating more opportunities internally and externally, whilst eliminating threats.

1.3 AIM OF THE STUDY

The ultimate objective of the study is to investigate optimisation of product profitability through a process of determining which factors of a home loan should be considered at which pricing. The pricing depends on the economic, demographic, operational and financial variables that are built into the application scoring model of the relevant financial institution.

The secondary goal will be to determine the role that accurate assessment and forecasting play in defining a product's potential and profitability. Investigate ways to redefine the way targets are allocated, sales strategies are planned and market growth is executed in targeted segments. In order to achieve this aim, it would be necessary to determine the current real status of product profitability per branch or geographical area and try to reflect the product worth per branch more accurately. Through literature research, solutions are found to fill gaps in home loan banking.

1.4 Scope and boundaries

Given the width of the fields of the study the following boundaries needs to be applied:

- i) The study will focus on a limited number of models that assist in determining profitability of home loans.
- ii) The study will focus on cost and income elements in the financial industry.

- iii) The home loan product is used widely in the economy whereby the housing price index plays a major role in establishing a country's economic climate. It is used in the Reserve Bank's bi-monthly monetary policy decisions. The study will exclude the detail about the influence of the house price index on the overall economy.
- iv) It will include the effect of pricing and legislative decisions on the potential product growth and the influence on optimisation.
- v) Marketing strategies and geographical forecasting will also not be covered in this study, although references will be made to this.
- vi) Different models will be used and explained whereby components of profitability are measured currently.
- vii) The study will focus on suggesting new focus areas to improve profitability based on quantitative criteria as identified in the empirical study.

Specific focus will be placed on the Gauteng geographical area. Other factors that could influence or limit the validity of the research results is access to information and limited literature in this regard. This indicates that one should do more research and not be circumspect about the results.

1.5 Research methodology

When analysing profitability, two possible routes can be followed, namely to immerse oneself in the academic literature on home loans and to conduct a study into the key elements used by profitability analysts and executives. Within this dissertation, both routes will be exploited with more emphasis on the last option. The branches of a bank are used as a case study to compare the different branches against one another to identify area trends. The focus is on operating income, operating expenses versus profitability and ROA. The profitability of the home loan products and some geographical areas is assessed and analysed. The following questions need to be answered:

- What is unique about a home loan as a product?
- What is product optimisation?
- How is profitability determined and what are the elements of cost and income?
- How do the current profitability models work?
- What are the strategic implications of and solutions to the study?

The study has been conducted through collecting management information and literature research. Literature research has focused on international banking trends and measures. Topics researched are: Home loan market trends, product analysis, profitability analysis, systems and processes, information management, and the contribution of SBU's and product houses in product success. The following process is suggested:

Process Step	Supporting Methodology
Step 1: Define the "As is" situation Focus 1: Define home loans and relevant products Focus 2: Drivers of financial performance (Examples are optimisation and profitability analysis assisted by market share, new sales, transactional volumes) Focus 3: Financial performance (Profitability reports per branch)	Activity-based costing Customer profitability Match funds transfer pricing Benchmarking Economic profit Return on assets
Step 2: Analysing profitability based on the profitability model used by financial institution	Same as Step 1

Utilise trends in driver information to optimise profitability through various proposals	
Step 3: Identify initiatives to optimise performance, and monitor and review performance with measurement tools	Same as Step 1

Appendix 1 indicates the correlation matrix. This is a table where statistical correlations are made between the different variables that might influence the profitability of a home loan. The variables are measured against all other variables and statistical correlations are made between the different variables.

1.6 Limitations of the dissertation

A sample of only nine (9) branches was used to investigate the impact of pricing and demographics on profitability. The best result would have emanated from a sample size of preferably fifty branches from various geographical areas that include both rural and metropolitan areas. Due to the complexity of the various demographical areas, attention was focused on different areas in Gauteng that have enough differences to obtain meaningful results.

With a lack of focus on product profitability, especially in the SBU's and product houses, it is difficult to convince retail bank management that implementation of a different approach towards product profitability will enhance quality of business and will lead to more accurate targeting of profitable market segments per product in a geographical area.

Especially in the banking industry, a lack of systems and management information prohibits product management from focusing on the best product solutions in the right geographical areas. Addressing this problem will be a step in the right direction to set up a national market analysis, supported by a profitability analysis per product per geographical area. Currently products are

also measured per product code and a measure per geographical area is suggested as the way going forward.

In order to implement any solution found, it is important to sell the benefits of an enhanced profitability approach for the bank as a whole. Strategic implications and the way forward are also addressed. Corporate and business banking, small business and foreign exchange are excluded.

1.7 Exposition of chapters

The structure of the project includes the executive summary, acknowledgements and a declaration. Chapter 1 provides an introduction about the need for an improved optimisation model that measures performance in successful sales approaches and the channel problem at hand.

Chapter 2 concentrates on the home loan product, optimisation theory and profitability, as well as the literature research in the quest to find solutions to the problem. The profitability model of a bank is discussed. Through this research, the key elements are identified to optimise product profitability for home loans.

Chapter 3 contains an analysis of the variables that influence profitability, as well as the procedure that will be used for research. The results of the empirical study will also be stated in this chapter.

In chapter 4 the various conclusions are discussed and methodologies recommended. It is hoped that the research and recommendations will develop a clear guideline for retail banking on how to take product performance to the next level. The conclusion will summarise strategic focus areas and suggestions emanating from the result of the study.

CHAPTER 2

HOME LOAN PROFITABILITY

2.1 Introduction

A typical income statement of a home loan strategic business unit will reflect the following:

- Interest income – on advances to customers;
- interest expense – indirect interest cost, debenture interest, other, liquidity premium and MFTP (matched fund transfer pricing);
- net interest before impairments;
- total income – including non-interest income;
- total operating income – after impairments on advances have been deducted;
- operating expenditure – depreciation, marketing and advertising, operating lease rentals, professional fees, staff costs, other operating expenditures, net intra-group fees;
- profit before taxation – after indirect taxation; and
- headline earnings – after taxation.

To optimise the product profitability the various elements of the income statement need to be analysed. Analysis and conclusions should contribute towards cost savings or income maximisation. One needs to understand the product elements to ensure effective opportunity identification. The features and benefits of a product describe the product purpose. If deviation from the purpose surfaces the elements of the product should be reviewed to assess where deviations occur and how to implement corrective actions.

2.2 Defining a home loan

What is a home loan? It is an interest in a property created as a security for a loan or payment of a debt and terminated on payment of the loan or debt. A product that structures the loan needed to finance a residential property in an affordable way, secured by a mortgage bond registered over the property (Setswe, 2006: 4).

Banks are usual lenders who provide the money to house buyers. Interest is payable on loans calculated on the sum loaned plus any interest that has accrued in previous periods or compounding debt interest. The interest charged is known as the mortgage bond rate (MBR) or base home loan rate, minus concessions or plus penalties in basis point portions.

The variable interest rate home loan is the most common form of home loan. The interest rate moves in tandem with the prime overdraft lending rate. The customers also have an option of a fixed interest rate where the rate is fixed for a certain period of 12, 18 or 24 months. Net interest income is defined as the difference between its interest income (generated from earning assets) and its interest expense (paid on deposits and other borrowings). The return on interest income equals the growth in the value of the investment, normally measured as a percentage.

Banks offer flexible home loans to customers as a way of retaining the capital and earning further interest without losing the customer by early settlement. Banks are now competing more aggressively for new and existing business. Pricing becomes a prominent deciding factor for customers since it will be the biggest investment ever made by most individuals. With more real price competition, more South Africans start to switch home loans among institutions. Rising interest rates have increased newly-popular adjustable rate mortgages. Property values suffered declines from the demise of the housing bubble. This leaves homeowners unable to meet financial commitments and lenders without a

means to recoup losses (Subprime mortgage financial crisis, 2007. 01 September). This is some of the reasons why financial institutions resort to multiple product choices as part of the value proposition. It enables them to earn more dependable non-interest income.

The value proposition consists of products, options, value add products and distribution channels. The products can be divided into:

- The vanilla home loan – a product that structures the loan needed to finance a residential property in an affordable way, which always is secured by a mortgage bond registered over the property;
- tailor-made products like the first time home loan which provides additional finance to cover the transfer and registration cost for first time home buyers;
- private bank home loan – a loan where unique features are designed to suit the needs of affluent customers;
- My Home – a home loan with unique features for low-income earners;
- Gold Facility – a bundle of products that is designed to provide upper income earners with an electronic-enabled facility at bundled products; and
- special purpose loans like bridging finance – an unsecured loan pending on the receipt of funds from a property related transaction.

2.2.1 Options

The following options are available on a home loan to suit the needs of the customer:

- Interest rates (variable or fixed) – a mechanism for customers that can fix or vary repayments for a pre-determined period;
- flexi-reserve (advanced amount or capital) – a mechanism to access available funds in the home loan;

- further advances or re-advances – a mechanism to increase the home loan;
- MultiPlan (multiple accounts) – enabling the splitting of a home loan into multiple subsidiary accounts, providing a unique loan mechanism at any of the home loan interest rate options; and
- FastForward – enabling customers to accelerate home loan repayments.

2.2.2 Value-add products

Value-adds are additional product offerings that are available to customers as a method for the bank to up-sell or cross-sell non interest income products to customers. These include:

- HOC (homeowner's comprehensive insurance) – to cover the bank's and the customer's risk regarding maintenance of the property and insure against disasters that result in damage to the property;
- mortgage protection cover (life assurance) – life cover to manage the risks of death of the borrower;
- Bondsaver – broadens the home loan offering to cover short-term household cover that also assists in repaying the loan sooner;
- home loan rewards – an approach to retain and cross-sell to the customer; and
- Telkom Smart Moves – provides convenience when the customer obtains a Telkom landline installed as part of the home loan process.

The principles involved in qualifying a home loan customer for the loan amount requested are based on affordability. Previously a customer could spend a maximum percentage of between 30 percent and 40 percent on a home loan. With the introduction of the NCA (National Credit Act) the customer's affordability needs to be established by doing a proper income and expenditure statement on the customer and all participating residents. Interest is calculated on the daily outstanding balance and then capitalised/debited monthly on the instalment due

day. Instalments are payable into the loan account on the required instalment due day and monthly repayments are to be met in terms of the mortgage loan agreement. The due day will default to the first of the month unless another date is selected.

2.2.3 Pricing structure

Once the bond has been registered, there are other costs that can be debited to the home loan account. These are:

Initiation fee: This is a once-off fee charged by the bank for processing the application and setting up the home loan.

Valuation fee: This is a once-off fee charged for performing an assessment on the property.

Monthly service fee: A monthly service fee is payable to cover the running cost of a loan on the bank's electronic database.

Interest rates: The range of interest rate options enables the customer to make the best deal based on personal circumstances. There is a choice of variable and fixed interest rates. By selecting the variable rate option the interest rate will then vary with changes to the prime rate. The fixed interest rate option offers a fixed interest rate for a period between twelve months and ten years. This option helps a customer to repay a fixed amount per month for the period of the fixed rate, thus it helps with budget and cash-flow planning of the customer.

Early settlement interest: Any home loan that is closed where customers have failed to give the bank a 90-day prior notice of the intention of such closure, 90 days penalty interest will be levied to this account.

2.3 Defining optimisation

Optimisation is usually associated with performance improvement or maximising the result of a product or service. When something is optimised it results in either a cost saving, better efficiency or a profit increase. In the banking industry optimisation of processes, customer contact, sales, assets and liabilities is key to business success. The average cost to income is a measure of efficiency that expresses total operating costs incurred as a proportion of income.

Figures released by the banking supervision department show an increase in non-performing loans from 1.08% in December 2006 to 1.14% in April 2007. Banking registrar Errol Kruger says there are two components to a non performing loan ratio (Hazelhurst, 2007: 3). As long as the total book grows at a strong rate, the ratio tends to stay low. It seems as if the implementation of the National Credit Act on 1 June 2007 is causing a slower growth in lending due to sanctions on reckless lending and restrictions on the marketing of credit. Together with the increase in mortgage rates to 14%, it is likely that the incidence of bad debt will increase. Rising house prices have funded the consumer boom because households have used comparatively cheap mortgage finance to fund consumption. Absa property economist Jacques du Toit predicted that house prices will grow at between 13% and 14% this year (Hazelhurst, 2007: 3). The most recent figure is 15.5% year-on-year growth in May 2007. "This year the house price grew 14.5% month-on-month with the average house price increasing to R932 000." (Opperman, 2007: 3).

According to the business report of 27 June 2007, the value of non-performing mortgage loans rose sharply in the first four months of the year. This raises fears that the problem of increased non-performing loans will spread to those institutions that lend to subprime lenders. It includes those individuals and institutions who own mortgage backed loans that include subprime exposure.

Subprime lending is a general term that refers to the practice of making loans available to borrowers who do not qualify for market interest rates. This could be because of problems with credit history or the ability to prove that there is enough income to support the monthly payment on the loan (Subprime mortgage financial crisis, 2007: 2). There are fears that foreclosures will depress the housing market even more. The slowdown in sales due to the NCA, combined with the sharp rise in non-performing loans, threatens to create a situation in which problems in finance and the housing market feed each other and drag down both areas in a vicious cycle. Very few delinquent mortgages ever see foreclosure.

History shows that most of those whose payments are 30, 60 or even 90 days overdue will eventually pay up and never see foreclosure (Milton, 2007: 2). Housing is clearly the economy's weak spot and mortgage problems are clearly a financial threat. With interest rates rising, the intensity of the pressure on the housing market is likely to intensify.

2.4 Profitability

The financial industry will always attempt to evaluate the potential profitability of clients (Lingle, 1995: 13). It is, however, very difficult to evaluate the real profitability of a home loan due to variable and fixed cost components that might differ from time to time. With the implementation of the NCA a quote that discloses the cost of credit should be provided to the consumer. The pre-agreement provides the consumer with the opportunity to scrutinise and understand the terms and conditions of the agreement before entering into the agreement.

Another factor that affects profitability is that competition in the mortgage industry has increased tremendously over the last few years with more than 35 lenders in the market. More lenders compete in a market where competition is fierce and

especially banks have to fight to retain or increase market share in the home loan space.

In the Finance Week of 9 March 2001 it was mentioned that "banks spend too much on commissions" with reference to high commissions paid to mortgage originators to recruit clients. This apparently prevented banks from offering better home loan rates since the cost to income decreased due to higher variable cost. Banks use mortgage originators because they offer an additional marketing channel in a highly competitive home loan market. Most banks pay a double commission even where the estate agent has had little to do with obtaining a bond simply because the banks do not want to alienate the estate agents who remain an important source of potential customers.

However, with the introduction of the National Credit Act (NCA) it seems like banks have almost brought the approvals of new home loans to a stand still (Kloppers, 2007: 3). Gavin Opperman, managing executive of Absa Home Loans, said that the NCA rules dictate that customers have to declare all information pertaining to income and expenditure before a home loan can be approved. The customer also has a five day period in which to finally decide if credit should be taken up. It further influences the number of applications, as well as the processing thereof.

The annual report of the Home Loan Bank of Chicago said that "We anticipate significantly lower net income in 2007 compared to 2006 due to a continued reduction in net interest income" (Sloan, 2007: 4).

"As housing volume and lending volume fall off, you would expect that banks possibly take a greater risk to try to offset the earnings reduction that may come from that," Nancy Wentzler, chief economist at the office of the Controller of the Currency said (Hopkins, 2007: 5).

This led to banks entering the subprime lending space. Then the question can be asked if the cost-to-income ratios of South African banks are in line with the First World economy.

2.5 Operating cost factors

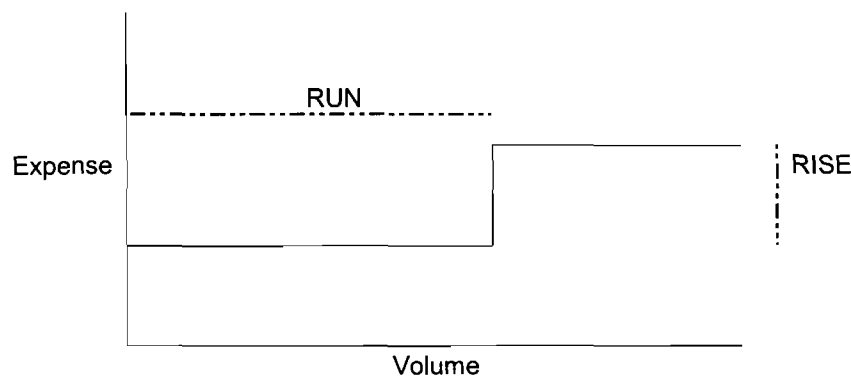
The classification of expenses as fixed, variable and semi-variable defines how an expense will behave over a relevant range of volume during a pre-defined period (usually one year) (Spaller, 2006: 45). If the concepts of relevant volume ranges and time are discarded, it can be argued that all expenses are semi-variable. In other words, at some volume level during some period all expenses will increase (or decrease) as volume increases (or decreases). According to Larochelle and Sansò (2000: 391) the product profitability depends mostly on the amount of money invested in the product, but also on the interest rate, the competition and market return. The investment amount varies with time as taste changes and when competition affects the client loyalty. The competition further expands on client potential, acquisition costs, product attrition, market penetration and market segmentation as elements that influence the marketing mix problem. These are all valid aspects that need to be explored further.

Contribution margin is sales revenue less variable costs. It is the amount available to pay for fixed costs and provide any profit after variable costs have been paid (Waters, 2008). Financial institutions are increasingly utilising contribution margin as a means of not only measuring profitability performance, but also as a tool to assist in making daily pricing decisions. When used as a measurement of profitability reporting, contribution margin more clearly shows how behaviour cost impacts on profitability. Many of the functions an operational manager performs depend on a firm understanding of cost. In taking a contribution margin approach when reporting profitability, focuses the user directly on fixed and variable cost behaviour. When utilising contribution margin to facilitate pricing decisions, a user can pinpoint the exact price point that must

be achieved to cover variable costs; therefore, contributing toward covering fixed costs and ultimately creating profits.

It may be argued that all expenses are semi-variable. This means that at some volume level during some period all expenses will increase (or decrease) as volume increases (or decreases). The incorporation of volume ranges and time requires a “run/rise” analysis when defining whether an expense is fixed, variable or semi-variable. This type of analysis defines the “run” as the relevant range of volume over which the associated expense will remain stable. The “rise” is the magnitude of the increase (or decrease) the expense will experience once the relevant range of volume is surpassed. The figure below illustrates “run” and “rise”.

Figure 2.1 “Run” and “rise”



Source; Spaller, 2006: 46

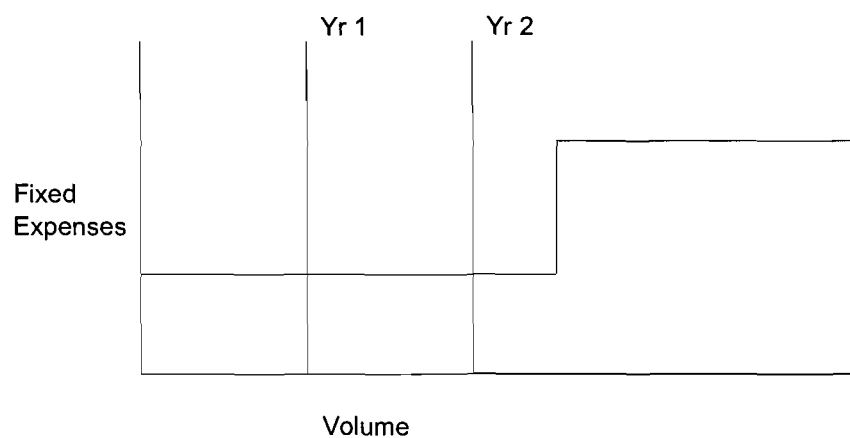
Fixed expenses remain stable over the largest relevant volume range, which means that it takes a significant volume increase or decrease before these expenses are impacted. This yields the longest run and highest rise on the run/rise step curve.

While fixed expenses stay the same as volume is increased within the relevant volume tolerance range, fixed unit costs actually go down within the same

tolerance range. The opposite is true when volume decreases within the relevant volume tolerance range defined for the fixed classification.

To illustrate, let's say an expense stays flat at R30 933 per home loan per year during year 1 and 2. Volume, on the other hand, increases from 10 home loan applications to 20 home loan applications. The resulting per item unit costs will drop from R3 093.30 or $(R30\ 933/10)$ to R1 546.65 or $(R30\ 933/20)$ since the fixed expense is assigned to a larger number of loan applications. Some examples of fixed expenses or resources include Credit Risk Economic Capital (CREC) cost, occupancy, computer equipment or central processing units (CPU's) in IT. Operations management is usually also considered a fixed production cost.

Figure 2.2 Volume/ fixed cost relationship



Source; Spaller, 2006: 46

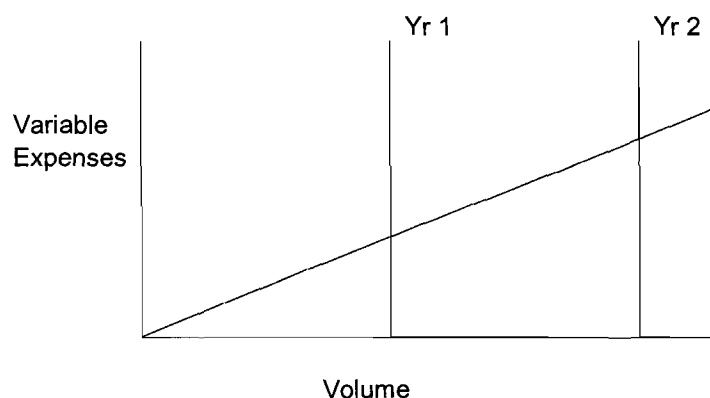
Table 2.1 Fixed costs include:

Table Name	Description / Comments / Calculations
Producer Price Index (Cumulative)	Details the cumulative forecast producer price index for years 1-5
Opening costs (Year 1)	- Opening costs consist of - process unit costs; - business development costs; - business services costs; and - pre-registration unit costs. - This table details these costs calculated as the total cost divided by the volume of applications, segmented by channel. - The 'All' segment is calculated by weighting the total cost per channel to the weight of each channel in the sub-population.
Account servicing costs (Year 1 - 5)	- Account servicing costs include: - Credit H/O and infrastructure; - credit monitoring; - credit collections; - legal recoveries; - self-service channel; - forensics and special investigations; - physical channels; - personal bank sales – enquiries; - contact centre inbound; - REAM; - group payment systems; - group administration costs; and - group support costs. - These are calculated by dividing the total cost by the volume of the total mortgage portfolio.
Closing costs	- Includes: - group administration; and - off balance sheet recoveries: Group administration. - These are calculated by dividing the total cost by the volume of accounts closed (pa).
Fixed costs (selected sub-portfolio)	- The total fixed costs are for year 1-5 by risk. - The calculation is the sum of the account opening costs, servicing costs and closing costs. - The producer price index is applied to these costs to reflect future inflation. - For year 2 - 5 the cumulative probability of the loan being open at the end of the previous year is applied. - Fixed cost can be included or excluded in the Report 1 spreadsheet. If they are excluded their fixed costs are set to zero.

Source; Venter, 2006: 27

Variable expenses vary in direct relation to each unit of volume. Expenses move directly with volume increases (or decreases) in a linear fashion and therefore have no volume tolerance ranges. The linear nature yields a line to define the relationship between expenses and volume rather than a run/rise step curve. When expressed as a unit cost, the variable cost component remains constant, regardless of the relevant volume. Examples include postage, communication cost, courier costs etc.

Figure 2.3 Variable expense/ volume relationships



Source; Spaller, 2006: 47

Table 2.2 Variable costs include:

Table Name	Description / Comments / Calculations
Credit H/O and infrastructure, Credit monitoring, Credit collections, Legal recoveries, Self-service channel, Forensics and special investigations, Physical channels, Retail bank – enquiries, Contact centre inbound, REAM, Group payment systems, Group administration costs, Group support costs	Apply the probability of the account being open from year 1 - 5 to the cost shown in the table above, by risk

Off balance sheet recoveries: Group admin	• Apply the probability that the account will close in year 1 - 5 to the cost shown in the table above, by risk
Originators commission (a)	• It details the commission payable to originators as percentage of loan amount by channel. • For the internal channel, the commission percentage is set to zero. • The commission for 'other' originators is the average commission payable to those originators where the applicable rates have been available. • The commission for 'agents' is the average commission payable to estate agents, lead generators and developers where the applicable rates have been available. • The commission for the 'All' segment is the average of all channels weighted by volume.
Originators commission (b)	• Applies the selected commission to the open balance to calculate the commission payable, by risk • Includes a facility to spread the commission over year 1 - 5 using, as example, the Effective Interest Rate Method
Variable costs	• These detail the total variable costs per loan for year 1 - 5, by risk. • The calculations are the sum of the account opening costs (year 1 only), account servicing costs, closing costs and originators commission.

Source; Venter, 2006: 24

2.6 Description of opening costs

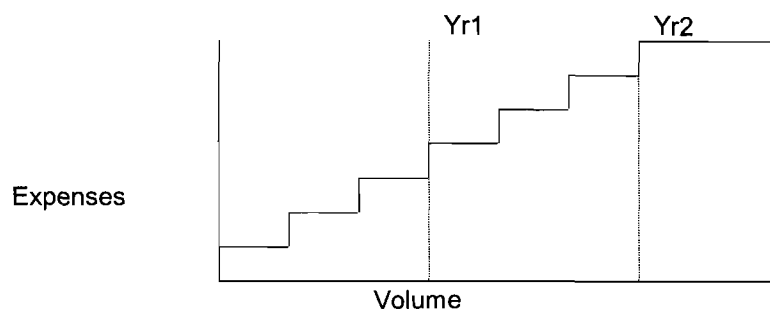
The following aspects are components of the opening costs of a home loan account. The costs are described as:

- *Processing unit:* This includes all processing related costs incurred from the processing unit, through the allocations desk, the quality and preparation officers, the scoring clerk, valuation clerk and final grants clerk.
- *Business development costs:* These include all sales-related costs within regional structures and head office functions. This also includes all sales activities of Absa Home Loans (AHL) sales consultants and channel relationship managers.

- *Business services*: This function provides logistical support to regional head offices. Examples include office moves, financial control, account payments, and budget and infrastructure management.
- *Pre-registration unit*: This unit follows up all final grants processed by the processing unit by placing a welcoming call to customers. The terms of business are confirmed with the customer and attorneys are instructed that a bond has been registered. Duties include the monitoring of bond registrations.

Semi-variable expenses fit into a relevant volume tolerance range between the fixed classification and the variable classification. This yields a shorter “run” and “rise” on the run/rise step curve than fixed expenses, but more than the linear nature of variable expenses. While these expenses do not vary with volume increases or decreases directly, they do change on a smaller scale and within a smaller defined relevant volume tolerance range than fixed expenses. Good examples of semi-variable expenses are salaries and benefits for personnel.

Figure 2.4 Volume/ expenses relationship



Source; Spaller, 2006: 47

Contribution margin - This term assumes only variable and fixed cost classifications and defines what remains from total sales revenues after deducting variable costs. The remainder can be used to contribute toward covering fixed expenses and profits for the period. The semi-variable component is a key to business analyses, such as staffing models and capacity planning.

However, for ongoing profitability measurement in a monthly production environment, the semi-variable component can be associated with the variable and fixed components to simplify analysis, including the contribution margin calculation. Typically, the semi-variable component can be split 60% fixed and 40% variable unless a detailed analysis determines an alternate split (Spaller, 2006: 48). With the contribution margin calculation it is important to understand that revenue is not always required to cover the fixed cost component.

Many banks today use a full absorption approach when evaluating product profitability. As a result, all costs directly associated with producing a product (variable, semi-variable and fixed), as well as any transferred costs from other areas (like finance, administration or sales) and an allocated portion of bank overhead not directly related to the cost of providing the service (like audit, tax, board of directors) are included.

When utilising a full absorption approach all incurred costs including direct, support and overhead costs are divided among bank units. Banks define units of cost differently, usually depending on the complexity and size of the institution. For example, banks can allocate costs to line of business segments, divisions, departments, products, customers and accounts. The goal is to allocate costs at the approximate level of resource consumption.

The full absorption methodology is based on the idea that any unit's use of a bank's resource bears with it an opportunity cost to the institution, because it precludes the use of those same resources to support other bank business units. Consequently, if a unit's profitability cannot be demonstrated on a fully absorbed cost basis, the resources should be redeployed to other profitable units.

The biggest problem with this approach is that costs are included that are typically out of the product manager's control. Thus, if costs are allocated on a fully absorbed basis, operating inefficiencies or unused capacity in other departments may be included in a product's cost allocation.

Some managers argue that fully absorbed costs adversely affect the presentation of product profitability and may cause products to be eliminated when, in fact, they produce a profit contribution to the bank. The contribution margin approach will be a solution to this problem when measuring and reporting product profitability. This approach is becoming more widely used as an internal planning and decision-making tool, an emphasis on costs by behaviour facilitates cost-volume-profit analysis.

Unlike the full absorption approach, the contribution margin approach does not require that all expenses be allocated to the reporting units of an institution. The contribution margin approach focuses on marginal revenue and marginal costs. It allows undistributed expenses to remain at different levels of reporting. Advantages of this approach include:

- Activity/ cost drivers are the primary base of cost. By focusing on activity or cost drivers, the credibility and accuracy of cost allocations are greatly enhanced. The cost X volume distribution technique supports an usage driven charge to product revenues.
- Product managers are held accountable for expense control. Expenses are included in reporting only at the level it becomes controllable.
- The resulting management information is viewed as better for product management and marginal pricing decisions as only those costs directly related to the product, which is used in the analysis (Spaller, R. 2006: 50).

The contribution margin approach can also be used when a bank is attempting to build business for new products or when the institution has available unused capacity. By covering direct production costs, some marginal contribution to profit is made.

If we assume that overhead will be incurred regardless of whether another unit is produced, then it is better to have some marginal revenue contribution toward

overhead than to have none at all. Table 1 shows three different levels of product profitability reporting.

Table 2.3 Levels of product profitability reporting

Product Contribution Margin	Product Profitability	Economic Profit
= Revenues-Variable costs = Contribution margin	= Revenues-Variable costs = Contribution margin – Other direct costs (semi-variable and fixed) – Support costs (usually fixed) – Overhead (fixed) = Product profitability	= {Net interest income + other income} – {Provisions + Variable costs + Fixed costs + Tax + CREC (Credit Risk Economic Capital) costs} = NOPAT – Capital charge

Source: Own

2.7 Using contribution margin for making pricing decisions

Competitive considerations are critical in bank pricing strategies, particularly within Treasury Services. In practice, bank prices are based as much on competitor pricing as on the bank's own costs. Pricing tends to be one of the more sensitive and difficult problems facing bankers. Most bankers agree pricing should cover costs. Pricing is also primarily market-driven.

How can these opposing positions be reconciled? Using contribution margin when making pricing decisions can help balance these two positions and ultimately help an institution to maximise profitability. By utilising contribution margin, an institution can focus on utilising available unused operational capacity. By filling available unused capacity, an institution can reap the benefits of operating as efficiently as possible and maximising economies of scale.

By increasing volumes, fixed unit costs across the board are lowered. Not only does this benefit products whose resource pools can be traced directly to the

product, but products that utilise shared resource pools benefit as well. Having fixed, variable and semi-variable cost information available to help make pricing decisions, empowers the sales force to be as competitive as possible when bidding on new business. This gives the institution a distinct competitive advantage.

When using contribution margin for reporting purposes or for making pricing decisions, it is important to be aware of potential caveats. Bankers should ask the question, “What true additional costs are associated with new volume?” for each potential new deal. To determine profit contribution, the product’s position on the stepped cost function should be evaluated carefully.

Eventually, the marginal cost of the new volume will be quite costly, such as adding second tier checking to ensure adherence to compliance and Sarbanes-Oxley (SOX) requirements. The Sarbanes-Oxley Act of 2002 (Pub. L. No. 107-204, 116 Stat. 745), also known as the Public Company Accounting Reform and Investor Protection Act of 2002 and commonly called SOX or Sarbox.

The aim of the Act is to:

- Improve quality and transparency in financial reporting, and independent audits and accounting services for public companies to create a Public Company Accounting Oversight Board;
- enhance the standard setting process for accounting practices;
- strengthen the independence of firms that audit public companies;
- increase corporate responsibility and the usefulness of corporate financial disclosure;
- protect the objectivity and independence of securities analysts; and
- improve securities and exchange commission resources and oversight, and for other purposes (<http://www.sarbanes-oxley.com/section.php>).

As such, using contribution margin should not necessarily be a *carte blanche* nod to price every large deal at the margin. Doing so could potentially leave

significant revenues on the table and would be a foolhardy strategy. It also does not mean that by increasing the volume of smaller deals, more value will be created. However, a more thoughtful approach using contribution margin on selected products for selected targeted customers can provide additional profits for a financial institution, utilise available unused capacity and give an institution a competitive advantage.

2.8 Profitability model

According to the profitability analyst of Absa Bank (Nel, 2007: 1) the following aspects influence home loan profitability:

- The higher the volumes, the more profitable the home loan;
- loan sizes - the cost component as a percentage of the loan amount;
- interest rate concessions that impact on interest margin and interest income;
- loan to value (LTV) – risk and asset value. The higher the loan value, the higher the risk and expected losses in bad debt. Higher capital amounts borrowed to customers increase the unexpected losses;
- life expectancy of a loan – the shorter the term of the loan on the books of the lender, the less profitable it becomes due to break-even that might not have been reached yet;
- probability of default – economic conditions influence this probability by amongst others higher interest rates, increased taxes and fuel prices, as well as other economic variables;
- house price index (HPI) – appreciation or depreciation of house prices in the market place;
- channel mix – percentage distribution of mortgage originators, branches, estate agents, developers, call centres and electronic channels, and express agents as suppliers of mortgage business. This is very important since the cost allocation to these resources differs dramatically;

- recovery rates – realising the asset as a percentage of outstanding credit and the collection period or time to re-sale;
- expected losses through write-offs;
- capital allocation in terms of property only;
- non-interest income;
- charge for economic capital, the capital banks set aside as a buffer against potential losses inherent in any business activity – mortgage lending. Banks' focus on economic capital is part of an industry-wide movement to measure risks, to optimise performance measurement, to base strategic decisions on accurate information, and thus to strengthen an institution's long-term profitability and competitiveness. Costing structure depends on conversion ratio. The conversion ratio is the number of successful mortgage applications divided by the total number of bond applications received; and
- soft issues like turnaround time, service levels and image risk.

According to a European Benchmark Review, “the five pillars of excellence in retail banking” research shows that most European, Middle East and African (EMEA) banks favour strategies for revenue growth over those of cost reduction to improve profits.

The most important initiatives for growth involve cross-selling to existing clients and acquiring new customers whilst improving cost-to-income ratios and managing costs through efficiency plays. The retail banking assessment model incorporates themes such as strategy, business intelligence and control, multi-channel customer management, people and organisation, information technology and application systems. Broad-based business transformation is necessary to implement customer driven strategies. This includes increased focus on business intelligence, greater efforts to speed up response times, realignment in people skills and improved IT systems. The ultimate aim of customer management is to create an effective buying environment. If different channels are not integrated,

customer management lacks consistent information required to be optimally efficient (Machold, 2006: 10).

2.8.1 Mortgage value model

The bank's primary objective is the maximisation of expected profits¹ under the constraints of liquidity, soundness, standing and lawfulness. To this end the implementation and use of an integrated system of risk-return management focused on adding and creating shareholder value is essential.

Consequently a process of integrated risk and return management has the following objectives:

- Management of a portfolio from an overall integrated view;
- optimisation of risk/ reward relations of the bank portfolio;
- identification of risk/ reward efficient portfolio strategies;
- setting of risk/ reward efficient management targets;
- implementation in ongoing business;
- consistent and efficient risk/ reward management of business lines; and
- accurate determination of value versus loan amount and pricing in accordance.

The purpose of the home loans value model is to provide home loan business units with a tool to attain some of the most important objectives previously listed. This model projects the economic value² of new retail mortgage business and enables the business to make strategic and tactical decisions based on future profitability.

The model will allow home loans to:

- Drive the value from new business lending by understanding expected economic profit returns at a strategic cohort level, for example with

¹ Measured in terms of return on equity or risk adjusted performance.

² Where value is defined in terms of the trade-off between risk and reward

specific customer types, products, distribution channels, loan-to-value (LTV) buckets and regional segments;

- design new or adjust existing product propositions to enhance profitability and support business growth;
- design lending strategies by assessing future value by risk level, e.g. using scorecard accept/ decline cut-offs to mitigate loss making segments of new business;
- price for risk therefore becomes market competitive whilst ensuring the business is value adding; and
- provide a platform that will enable controlled challenge to seek new business opportunities to increase sales.

2.8.1.1 Methodology

The model estimates a series of cash flows over the first five years of a singular mortgage that shows the flow of net income against the flow of capital required to support the transaction. The model incorporates historic data, current information on the home loan portfolio and future forecasts to estimate the economic value of a mortgage.

- Historic: Default and prepayment, expected balances
- Current: Fixed and variable costs, loan sizes, property values, tax rates, economic capital
- Future: House price index, prime rate forecasts, producer price index

These elements are combined to produce a forecast of future profitability – economic profit. Accounting profit measures suggest that Earning Before Interest Tax Depreciation and Amortisation (EBITDA), Earnings Before Interest and Tax (EBIT), net income or Earnings Per Share (EPS) determine whether a manager is successfully creating value or destroying it.

However, these yardsticks are incomplete measures of performance that ignore capital and they fail to recognise the expected return that is demanded by shareholders from investment made in the business. As a result, these measures are ill-equipped to handle the many business decisions that are muddled by trade-offs between profit margin and capital use (<http://www.idgcapitalgroup.com>).

Accounting profit and profit margin measures often drive over-investment and vertical integration because it overlooks capital and its cost. When capital costs are not considered, managers are often drawn to higher margin businesses that seem attractive on the surface, but in reality destroy value because the increased margins are saddled by very low capital turnover.

The solution to this problem is a concept that dates as far back as 1896 and is supported by a number of distinguished economists. In essence, a company creates value by generating a return on investment that exceeds the cost of capital. Broadly defined, the cost of capital is the weighted average cost of borrowing money from debt holders and the expected return required by shareholders.

This concept is a fundamental truism of finance and business. The only debate regarding this concept is what it is called and how it is applied. Economic profit (EP), residual income, economic value added and any other value-added measure (EVA, SVA, CVA, etc.) all refer to the same thing, differing only depending which consultant to whom you are talking. The underlying concept is the same. Briefly stated, economic profit is the calculation of a company's net operating profit after taxes (NOPAT), minus a capital charge for the investment or capital employed in the business.

A positive EP indicates that book value is increasing which over time will yield a positive shareholder value. A negative EP, however, indicates that the capital of the organisation is being eroded; that is, operations are not profitable enough to

support the cost of capital or the organisation has too much capital for its operations. This information is vital for any for-profit organisation.

EP can become even more powerful in conjunction with Activity-based Costing (ABC) as it ensures much better attention direction in cost management than any other cost management method. Activity-based costing is a costing technique that is designed to reflect the demands that products, customers and other cost objects make on overhead resources more accurately (Garrison, Noreen, Brewer. 2006: 322). However, ABC stops at operating costs and ignores the cost and effective utilisation of capital. Therefore, the combination of the two gives organisations significantly more insight into costs, the formation of costs and profitability.

This information is crucial for:

- Strategic decisions;
- product and process design;
- product mix decisions;
- investment decisions; and
- pricing.

The Home Loans Value Model predicts the average present value discounted future economic profit of a singular mortgage for the first five years of its lifecycle.

Five years is deemed to be a suitable outcome period as:

- Strategic decisions are generally made based on value generated in the first five years; and
- data constraints mean that a lower level of accuracy would be achieved beyond five years.

The components of economic profit are:

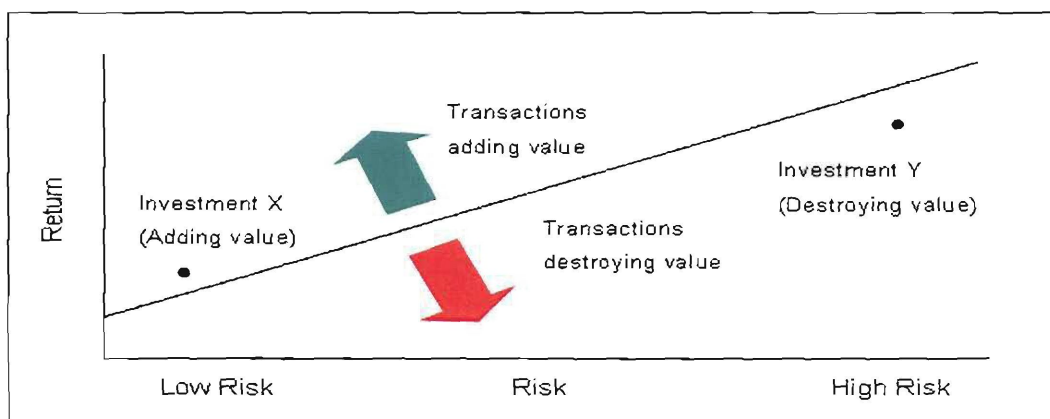
- Net interest income;
- other income;
- provisions;

- variable costs;
- fixed costs;
- tax; and
- credit risk economic capital costs (CREC).

By combining these components, the model user is able to measure a specific transaction in terms of its value-creating or value-destroying capability.

To enhance the ability to make strategic and tactical decisions for specific sub-populations of the portfolio, the model has been split into six strategic segments.

Figure 2.5 Measuring economic profit (loss)



Source; Venter, 2006: 7

The risk/return trade-off function is based on the standard economic concepts of utility theory and indifference curves. The steeper the slope of the investor's indifference curve, the more risk averse the investor will be. Investment X will create more value to the customer since the risk is lower and the return is higher. This investment requires a higher expected rate of return as compensation for any given amount of risk. This investor is more risk averse than the investor of investment Y. Investment Y will be destroying value since the risk is too high without receiving the necessary return that will create value (Brigham & Ehrhardt, 2005: 180).

Table 2.4 Model segments

REGION	CHANNEL	CUSTOMER	PRODUCT	LTV
Cape	Internal	Middle market	Variable standard	(0-70]
Central	PA Betterbond	First time	Variable building	(70-85]
Eastern Cape	Bondchoice	Housing scheme	Fixed standard	(85-100]
Gauteng	Loanlink	My Home	Fixed building	(100+
KZN	MSA			
Northern	Other originators			
	Agents & developers			

Source; Venter, 2006: 7

The model segments the customer into the different segments of region, channel, customer type, product and loan-to-value and thereby allocating certain risk weightings to the home loan applicant. The sixth strategic segment consists of 10 risk grades as measured by the bank's mortgage application scorecards. Thus, the future economic value of new business can be measured by any combination of these cohorts. Application scores produced by these cards are grouped in 10 risk grades, aligned to reflect similar levels of risk. The risk weightings are then used as input to determine the overall risk that the customer poses to the bank. According to this risk grade the pricing of the customer is determined, as well as the decision if the bank is willing to finance this customer.

The different regions have certain risk scores according to many factors like the level of impairments, product exposure, demographics and many more. The channel is also risk graded since mortgage origination is priced differently at the different suppliers due to different commission structures applicable to the various MO's. Customer, loan type and loan-to-value are all allocated risk weightings according to the risk associated with the different cohorts.

2.8.2 The current group economic capital methodology

The base level economical capital (EC) methodology is based on a single economic factor model in which borrower default is driven by two components -

factors specific to that borrower (for example, life stage shift) and the systematic influence of the overall economy on the retail sector.

One advantage of this framework is that it is possible to represent the loss distribution by a straightforward formula, which can be entered into a spreadsheet. Further details of the single factor model (often known as the *Vasicek model*) and formula are available in a Moody's KMV technical document at "The Loan Loss Distribution", available from Barclays Group Risk (http://www.moodyskmv.com/newsevents/mc/mc122002_risk.html).

A key factor in the single economic factor model is the R-square. The coefficient of determination reflects the proportion of variability in a data set that is accounted for by a statistical model. R-square is a statistic that will give some information about the goodness of fit of a model. R-square can be interpreted as the degree of correlation between the type of borrowing/ customer and the economic environment. In other words, the relative influence of economic factors like interest rate increases/ decreases is compared to individual factors like disposable income or age when determining the customer's likelihood to default. A caution that applies to p is that while correlations may provide valuable clues regarding causal relationship among variables, a high correlation between two variables does not represent adequate evidence that changing one variable has resulted, or may result, from changes of other variables. (Venter, 2006: 9)

The model has been implemented within the Barclays Group EC team's credit risk (CREC) model, which is used by the businesses to complete quarterly EC submissions. The EC calculation in the value model is based on the current group economic capital methodology, taking into account segment probabilities of default and severities for each year of the loan. The next model is based on risk weightings that are allocated to the different segments.

2.8.3 Risk weights model

Value drivers are calculated 'per loan' and the majority are split by risk level (score). Risk weights reflect the most recent volume risk score distribution of new business. These are used to calculate the value drivers at an aggregate risk level. The model segments the customer into the different segments of region, channel, customer type, product and loan-to-value and thereby allocating certain risk weightings to the home loan applicant.

2.8.3.1. Channel, customer, product and LTV weights

A number of parameters are set at channel, customer, product and/or LTV level. These weights reflect the most recent volume and value by channel, customer, product and LTV distributions of new business. These are used to calculate parameters at an aggregate channel, customer, product and LTV level. The probability of a cross-sale is defined as the probability that the bank will reap the benefit (in the form of an estimate of economic profit) of other products sold to mortgage customers during years 1 - 5 of the original mortgage.

This probability of a cross-sale is based on an analysis of historic data where a customer mortgage account has been identified as the 'first' account opened. Once the most valuable accounts and customers are determined, the best thing to do is to retain them by offering additional services to cement their relationship (Coffey and Palm, 2006: 3). The analysis also includes the net effect of customer activity for a specific product, for example, not only accounts opened, but also accounts closed.

An alternative definition entails that the sequence of customer activity does not play a role. This considers the probability of a mortgage customer having other products in the portfolio, irrespective of which product has been opened first. In this case the mortgage product might very well be a cross-sale from another product SBU. This definition should be applied when evaluating the overall

profitability of existing business, whereas the previous definition should be used when considering new mortgage business. (Coffey and Palm, 2006: 4).

The income derived from products that are cross-sold from the first product that the customer has with the bank should be significant. Preliminary findings indicate low or even negative probabilities (due to account closures) of cross-sales when using the alternative definition. This means that mortgage related cross-selling would not significantly contribute to the profitability of a customer.

2.9 Conclusion

Defining the home loan product and exploring the different products, options, value-adds and business channels available in the value proposition, are setting the scene to establish which different aspects influence home loan profitability. Optimising profitability of a home loan through pricing by means of interest rates, non-interest income and other value-added products that are cross-sold, becomes obvious when the detail components of a home loan are investigated.

Minimising cost factors and maximising income factors through an effective operation are key to the profitability of the product. The use of economic profit as a measure of profitability in conjunction with ABC costing is powerful as an indicator of value creation. Many factors are included in the profitability models to ensure that profits are optimised and by exploring these factors, it leads to opportunities to further enhance income and curb expenses.

Chapter 3 will look at the gathering, processing and interpretation of the information that is drawn from the data warehouse.

CHAPTER 3

GATHERING, PROCESSING AND INTERPRETATION OF INFORMATION

3.1 Introduction

In order to do a comparison of profitability between the different geographical areas the decision was taken to use nine branches in and around Gauteng, South Africa, for analysis. These branches were selected due to the size of mortgage book, demographic differences, geographical differences, social differences, age of mortgage book, house price range differences and other related data availability.

The variance of variables in the home loan book will be compared to establish trends in different geographical locations that could be used for increased profitability. Due to the Information Security Policy applicable to financial institutions some information might not be disclosed. Therefore the specific branches used in the sample analysis will be referred to as branches A to I in alphabetical order. The demographical information used was sourced from the total population resident in a geographical area, supplied by the Absa information management helpdesk. Detailed data on the demographic split on home loans of Absa is not available. Therefore, the assumption is made that the banks' home loan demographic detail is representative of the demographics of that area. The possible correlation between bond size, income bracket, demographics and profitability will be investigated to establish positive or negative correlations.

3.2 Research methodology

From a preliminary investigation it appears that the following items play a role in the profitability of a home loan account:

- Age of loans in the geographical area where the property is situated (established neighbourhood or growing area);
- age of the population resident in a specific geographical area;

- other demographical components like sex and income levels of the home loan owners;
- race group distribution;
- composition of income and expenses relevant to economic profit in relation to one another; and
- channel usage to obtain finance.

The data collected was for the year 2006 for the nine specific branches mentioned. An interview with the Manager: Product and Pricing of home loans was also conducted to obtain more insight into the profitability model (Nel, T. 2007. April). The data supplied was extensive and needed to be restated for statistical purposes. Various versions of data were used to collate summary sheets for statistical analysis purpose. The dependable variables used for analysis are average economic profit per account and ROA per account. No regression analysis or statistical extractions could be done. Therefore, descriptive statistical observations together with graphs were used for analysis.

3.3 Comparisons

Various comparisons will be made to see if the theoretical assumptions correlate with the statistical results. The different independent variables are expected to have an influence on home loan profitability and if closer attention can be paid to each of these aspects, the profitability of home loans in the financial industry will be optimised. The independent variables are categorised into demographical, operational, financial and channel distribution variables.

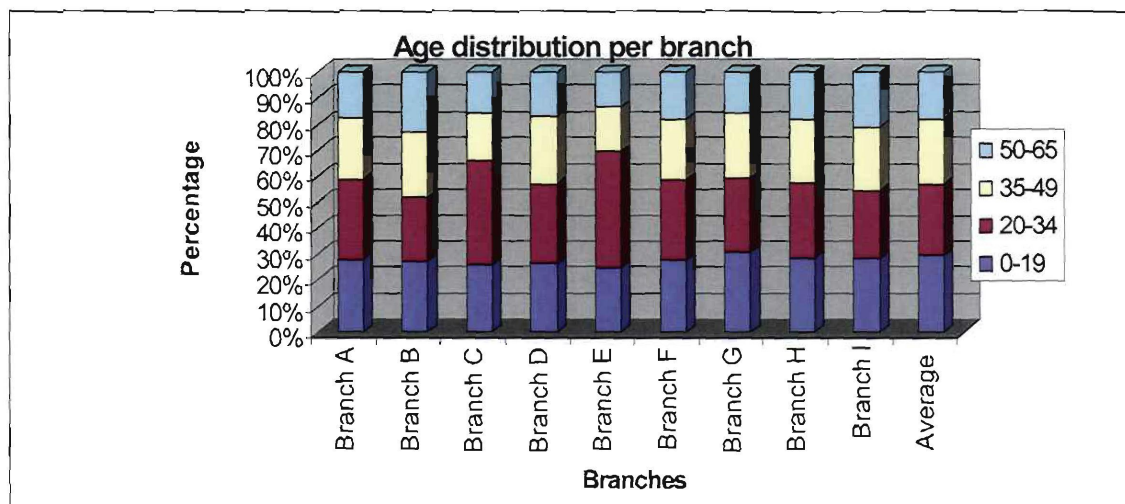
3.3.1 Demographical variables

The total population per branch is necessary to establish market share of the branch in the geographical area, measured against the total population in that area. The age distribution will give an indication of the age group per branch that is most profitable. The age distribution per geographical area will enable the

marketing efforts of the financial institution to be directed at the most profitable and dominant market per area. It is also indicative of the value proposition offering that should have more focus in that geographical area.

The economic profit (EP) per branch in relation to total population is expected to have a positive correlation. If there is a high population density in a geographical area, it is expected to have higher volume of home loans at the branch responsible for that area. Due to the higher volumes economies of scale should reduce the operating cost per account and thus increase profits.

Figure 3.1 Age distribution per branch



Source: Own

Branch E is situated in a densely populated area with many flats and the highest population of all the branches measured. The number of people in the age group 20 – 34 is 41% of the total population in that area. The age distribution is important since it is an indicator of the repayment period applicable to most loans. The longer the repayment period, the more interest income can be derived from that loan. It can, however, not be evaluated in isolation. There is supposed to be a direct correlation between age distribution and profitability per branch. This will be discussed in chapter 4.

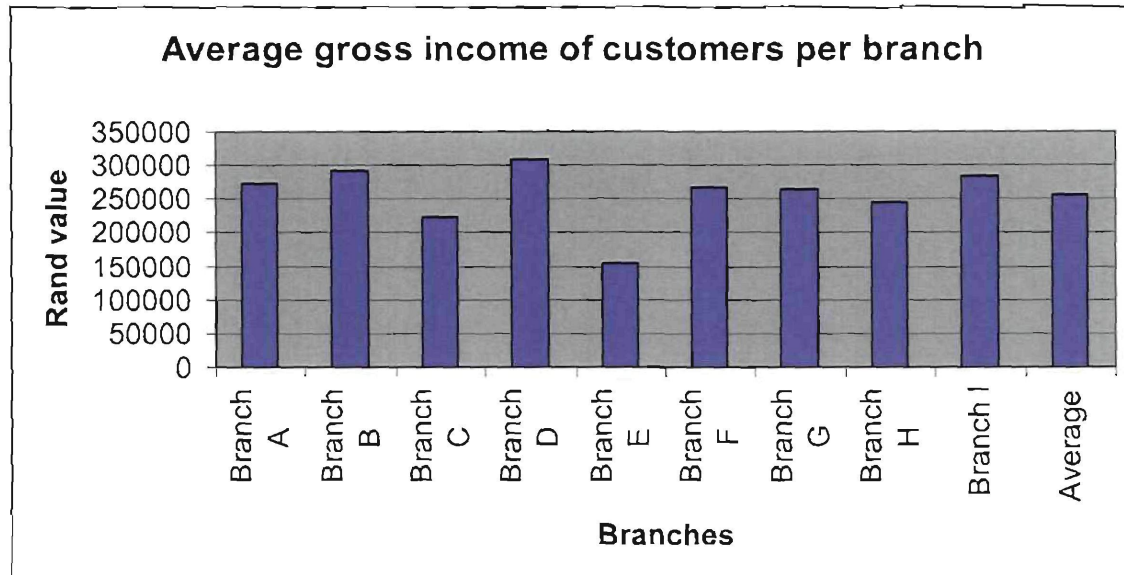
Branch C has 37% of a population between the ages of 20-34. However, a very big university is situated in that area that might distort the data.

Further demographical analysis indicates that the race and gender analyses are not statistically significant enough to draw any meaningful conclusion from the results. The race groups that reside in the geographical areas of the different branches are mostly white people and therefore the race analysis is not usable for statistical analysis. The race analysis, if significant, can also enable profitability analysis per race group. The gender analysis does not add any value since the male/female split is 0.97:1. The average gross income per area measured against ROA or economic profit indicates which income group is most profitable.

From the theory discussed, the expectation is that the branches where the biggest percentage of customers in the population have a home loan with a specific financial institution, the more profitable the average home loan will be for that bank. Thus the higher the market share, the higher the profitability. Furthermore, the customer base with the highest gross income should also be more profitable due to financial education, better repayment ability, more responsible account holders and bigger loan sizes of these customers.

The following chart indicates the average gross income per branch. The information that is available on the bank's information database depends on the frequency customers update personal information about gross income and other demographics. The age of information influences the following results since the gross income distribution will be outdated and did not keep track with inflation or customer progress through salary adjustments. The influence of the age of information is unknown. According to the data analysis in appendix 6, only one branch has more than R300 000 gross income per household. Branch A, B, I, E, F and G have more than R250 000 gross income per household. The correlation between gross income and EP will be investigated and explained in chapter 4.

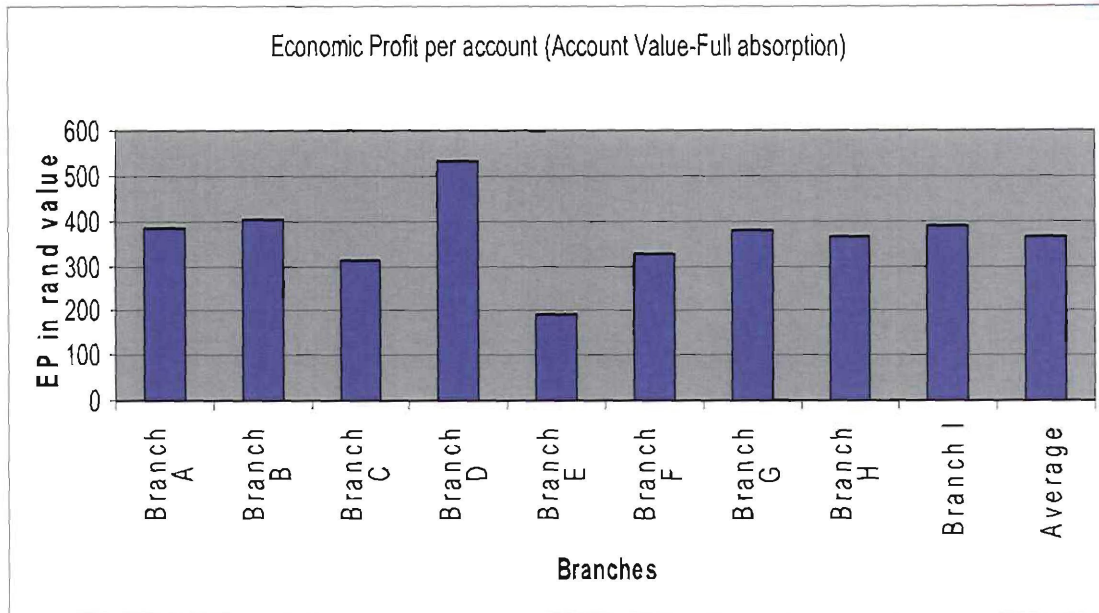
Figure 3.2 Average gross income per branch



Source: Own

The average gross income per branch is an indicator of affordability per branch area. Branch D is situated in a very wealthy, upcoming area with understandably the highest gross income. Branch B and I are also situated in affluent areas with an above average gross income per household. It is expected that a direct correlation should exist between average gross income and profitability since impairments should be lower in higher income areas, and more interest income can be derived from higher loan sizes. The result will be discussed in chapter 4.

Figure 3.3 Economic profit per account



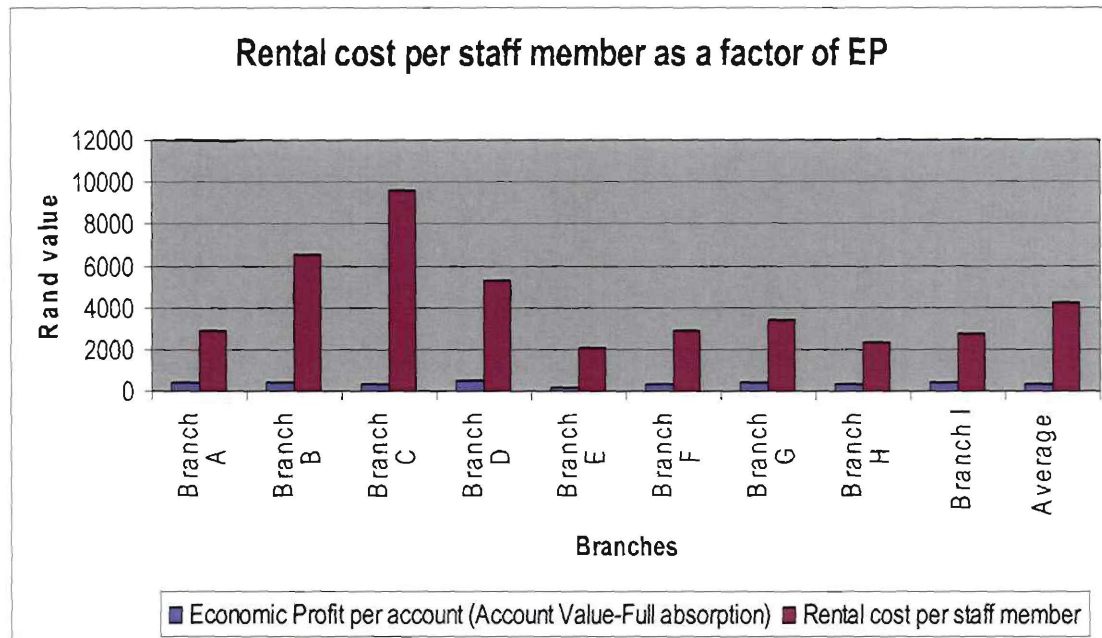
Source: Own

The economic profit (EP) per account is the highest in branch D with branch B, I, and A following closely. It was expected that EP would have had a direct correlation with the average gross income per household since the trend is exactly the same as the gross income per household trend. Typically branch E has the lowest EP since it is in the lowest gross income area with probably the biggest impairments of all branches.

3.3.2 Operational variables

By analysing the cost components like staff numbers per site, branch size in square meters and rent paid, a trend can be established regarding the preference of profitable customer choice of infrastructure for doing business and the bank's expenses to enable delivery of these financial solutions can be established.

Figure 3.4 Rental cost per staff member as a factor of EP

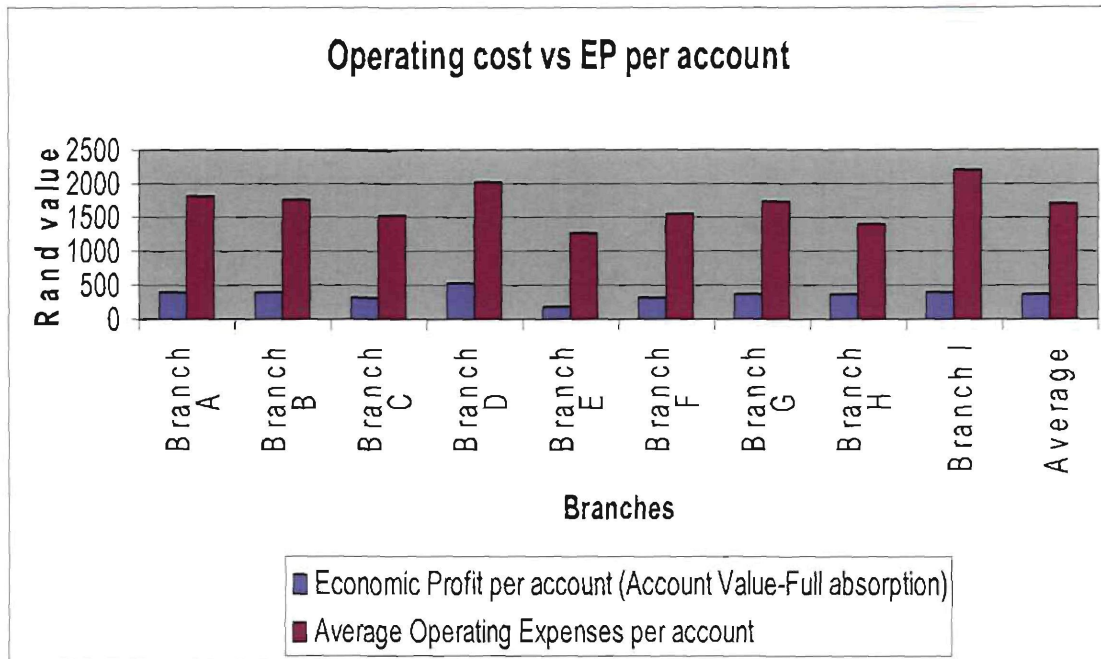


Source: Own

Branch C has a cost of R9 571 per staff member in rent payable, which is very high if an average of R4 200 for the nine branches is taken into account. Branch C, B, and D are all branches in affluent retail centres. The cost per staff member also indicates the level of efficient use of rental space that should impact the profitability of that branch since the operational cost per staff member also increases.

Branch C can make use of a smaller physical branch infrastructure to deliver the products and services needed for that environment at a lower rental price since excess capacity in the branch is not used productively to optimise profitability. Large unoccupied areas exist in the branch at a high rental cost. This will have a positive effect on the home loan profitability of that branch if transfer pricing is adjusted accordingly. It is expected that, where the operational cost is the highest, the average home loan will be less profitable if the *ceteris paribus* principle is applied.

Figure 3.5 Operating cost vs EP per account



Source: Own

The figure indicates that Branch I has the highest operational cost per account with Branch D second highest. In terms of EP per account Branch D is the most profitable with Branch I third most profitable. The average operating expenses per account has a 75% correlation with the EP per account. See attachment 1 for further details in this regard.

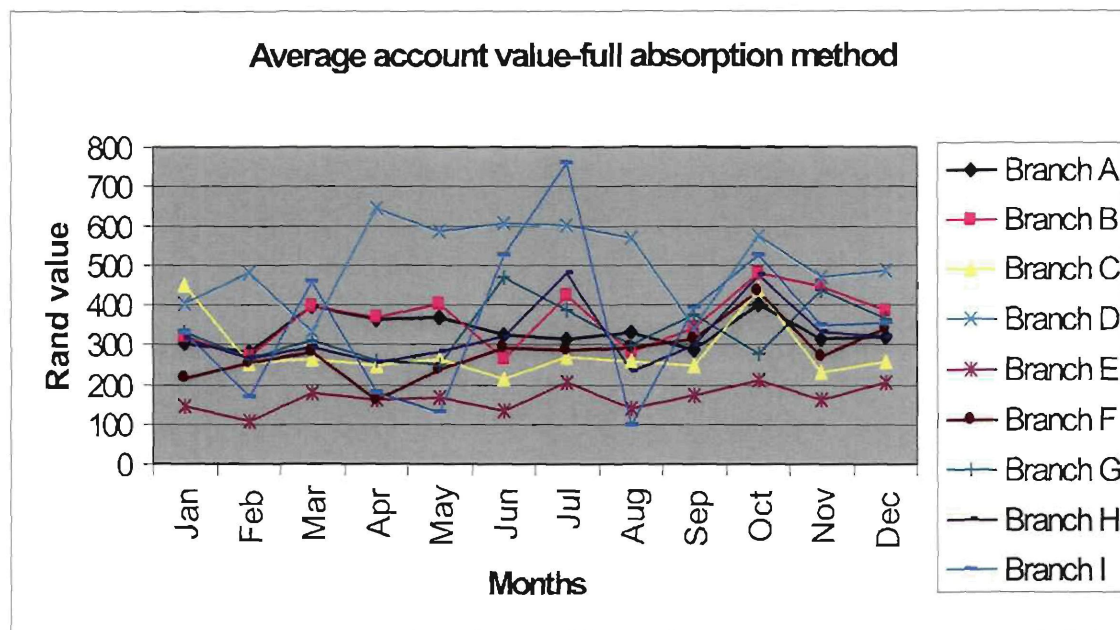
This means that management should strive to minimise the operating cost at the branches in order to maximise EP per account. Management should strive to bring the cost of operations down to the EP level by increasing value ad products and strive to reduce cost in order to improve home loan profitability.

3.3.3 Financial variables

This is the essence of this study since the current profitability analysis will enable certain derivations that can be used to increase profitability. It is expected that

the more loans a financial institution have, the more profitable it should be due to various cost benefits and economies of scale factors. Numbers need to increase consistently to optimise profitability and reduce the operating expenses per account. The average home loan balance per branch, average valuation amount, operating income, operating expenditure, net interest received, net interest margin and non-interest income per branch per account will be analysed to establish which set of demographics, operations, channels, numbers and balances gives the best value to the financial institution.

Figure 3.6 Average account value – full absorption method



Source: Own

The average account value – full absorption cost method indicates a generally high value to Branch F. This branch is situated in an established middle-to-higher income area where conservative customers accept the rates offered by the bank the first time. Most accounts at this branch are older than the normal seven year break-even age and thus highly profitable. The account value of Branch I in

August 2006 dipped to a low of R94 due to a bigger provision for bad debt that was created in that month.

The values per branch are influenced by certain unique factors applicable to the area where the branch is located. Branch E generally has low value per account since its loan amounts are smaller and impairments are generally higher in this area. An upward trend is visible in the average account value of Branch E, which indicates either a better lending practices area or a decline in impairments.

The loan to value (LTV) principle should indicate that the lower the LTV, the more profitable the loans are due to fewer expected credit impairments with these loans and an age correlation on profitability. The lower LTV will be indicative of the stage where break-even will be reached or positive value will be extracted from the loan. Branch E has the lowest LTV at 39%. The number of flats bought by investors to rent out are quite high and the bank decided that stricter lending principles should apply to this area where mass urbanisation of foreigners is taking place. A positive correlation exists between LTV and profitability of the branches, except with Branch E where the correlation is lower than the rest of the branches.

The following table indicates the percentage loan to value per mortgage per branch.

Table 3.1 Percentage LTV per branch

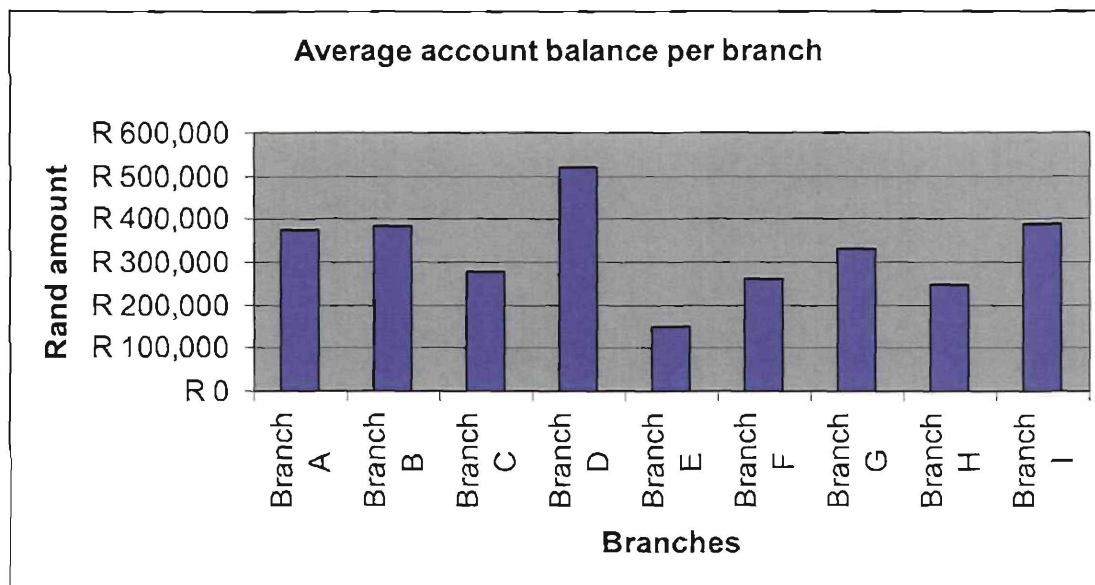
Loan to value of current mortgage book per branch	
Branch	Percentage LTV of current book
Branch G	52%
Branch E	39%
Branch A	58%
Branch D	58%
Branch F	46%
Branch C	50%
Branch H	47%
Branch B	57%
Branch I	52%
Average	52%

Source: Own

The average number of customers per branch for the period January 2006 to December 2006 is depicted in the following graph. According to the data analysis, Branch I had the best growth of 25.35% in home loan numbers for the period. It is surprising since this area is a well-established residential area in a medium to very wealthy area. This could be due to older houses being bought at a good price and revamped by the new owner to suit his needs, as well as the fact that very expensive estates are being built in this area. Branch A and F have the most customers of all branches. (Appendix 2)

The following figure depicts the average account balance per branch. Significant growth of more than 20% was achieved in Branch G, I and C during the period under review. High growth in balances is directly correlated (0.95) to the EP per branch. Branch G is situated in a high-growth area and has a younger population of middle class customers. It was rather surprising to see Branch I and C with 34.6% and 21.4% growth respectively since they are situated in established middle to very affluent class areas. Branch A and B also had significant balance growth of more than 16.2% and 8.7% respectively.

Figure 3.7 Average account balance per branch

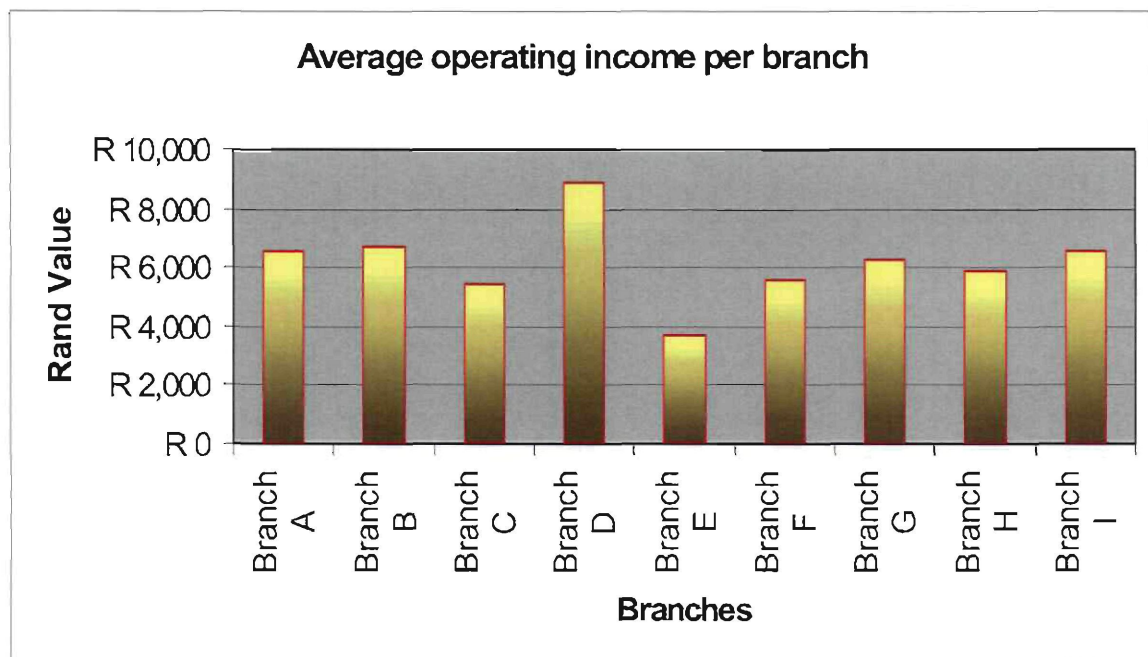


Source: Own

It is expected that a strong correlation should exist between operating income, operating expenses and account value (full absorption method). A strong correlation (between 0.9 and 1.0) is expected due to the direct impact the items have on profitability. Branch A, B and C have the most total operating income due to the highest account balances. However, if one looks at the average operating income per branch, it shows a different picture. Branch D is accumulating the most average operating income per account, namely R8 879

per year, and Branch E the lowest at R3 706 per account. Expenses are not deducted from income yet.

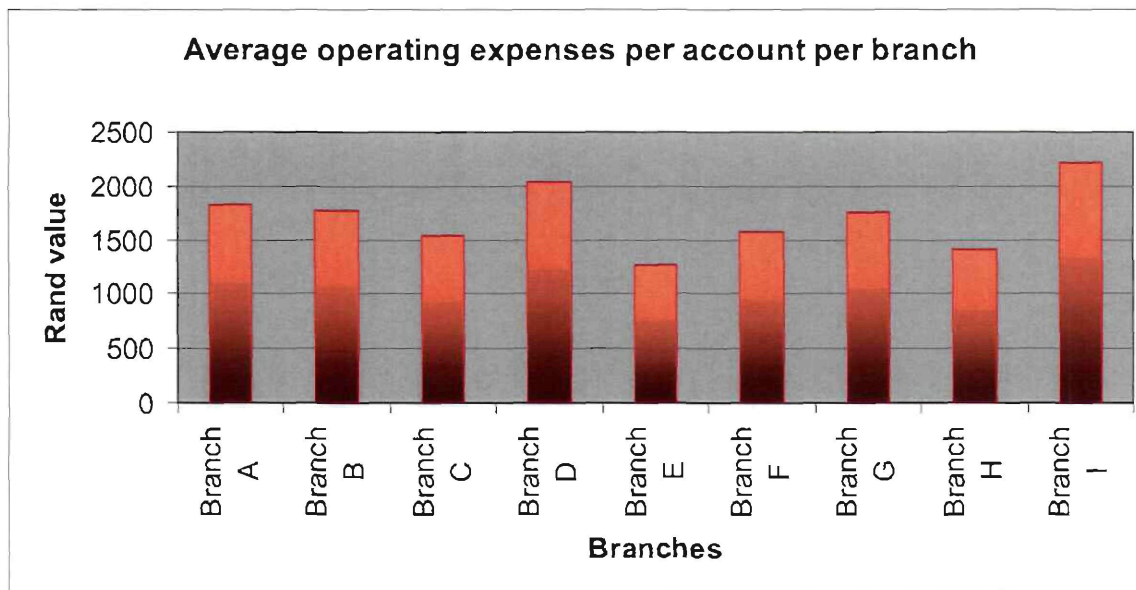
Figure 3.8 Average operating income per account per branch



Source: Own

The expenses per branch include the following total transaction cost: Opening cost, closing cost, maintenance, system transaction cost, teller transaction cost and Absa ATM cost. Additional costs added to transaction cost are cash handling fee and treasury administration fee. These expenses are the lowest at Branch E and the highest at Branch I with an average of R1 709 for all branches.

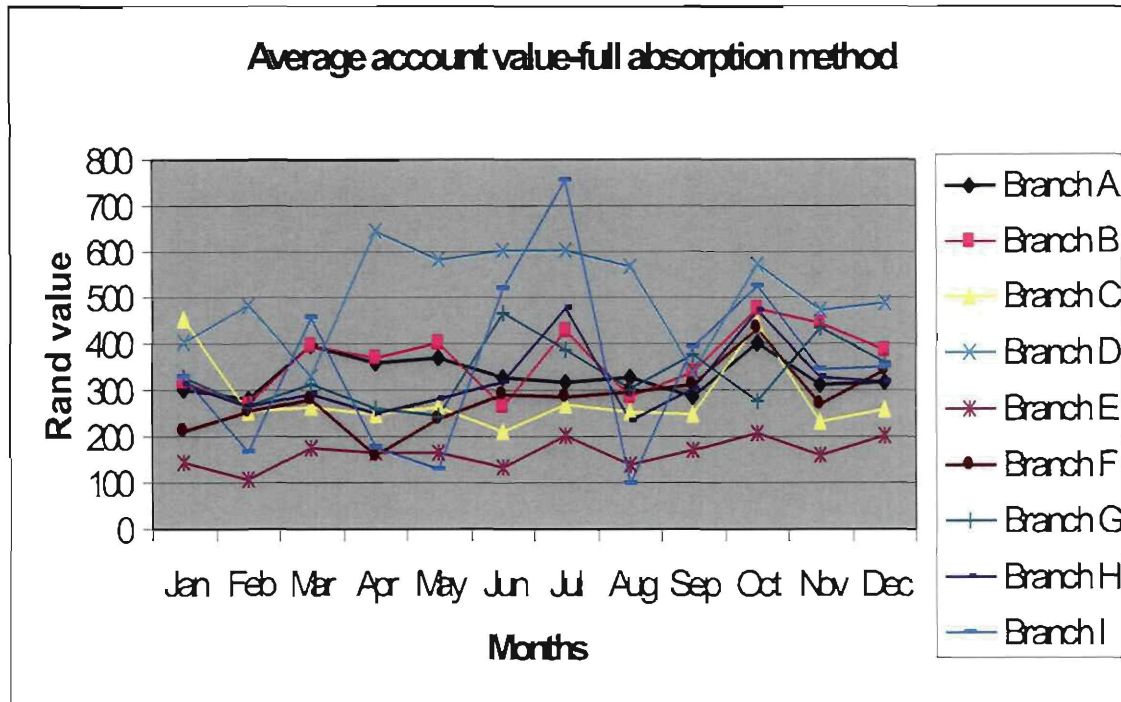
Figure 3.9 Average operating expenses per account per branch



Source: Own

Total overhead cost is deducted from total account value before account value full absorption is determined. The branch with the highest operating income, operating expenses and account value (Branch A) does not have the highest operating income, operating expenses and EP per account. In fact, Branch D with EP per account of R533, is at the top with Branch B with R403 second most EP per account. This is mainly due to non-interest income per account that is much more at Branch D (R533 per account) than in the other branches. The big deviation of Branch I in July is due to bad debt recovery that came through. The bad debt recovery of June was rectified in August for Branch I. The small up and down curves are a result of the number of days per month of measure.

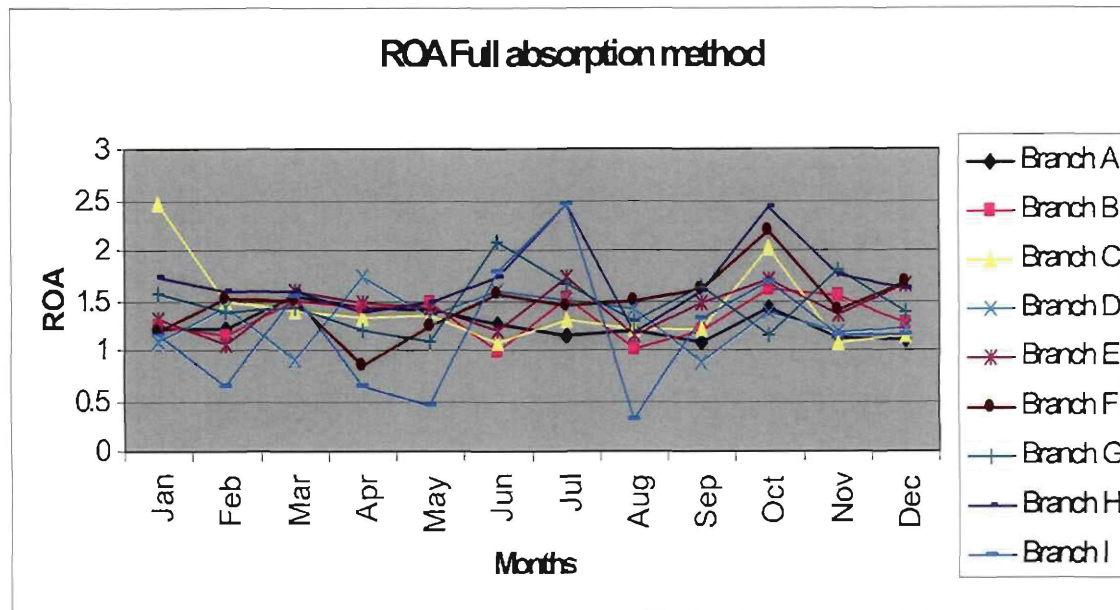
Figure 3.10 Average account value – full absorption method



Source: Own

Return on assets (ROA) is the highest at branch H (1.70), where most business is done through the physical branch channel. Credit impairments was a bigger factor at branch I and therefore the low ROA during February, April, May and August 2006 are due to provisions for bad debt raised during these four months. Branch I came out with the lowest ROA at 1.18. ROA is also a component of Du Pont's chart on ROE. This approach to evaluate performance lists the various expense items, sum it and subtract it from sales to obtain the company's net income. When we divide the net income by sales we get to the profit margin. The profit margin times the total asset turnover is called the Du Pont equation and it gives the return on assets or ROA (Brigham, E.F. & Ehrhardt, M.C: 2005. p 460). The average ROA of the nine branches was 1.30, which is very low and can be improved if the individual expense items are examined to identify and then correct problems.

Figure 3.11 ROA per branch – full absorption method

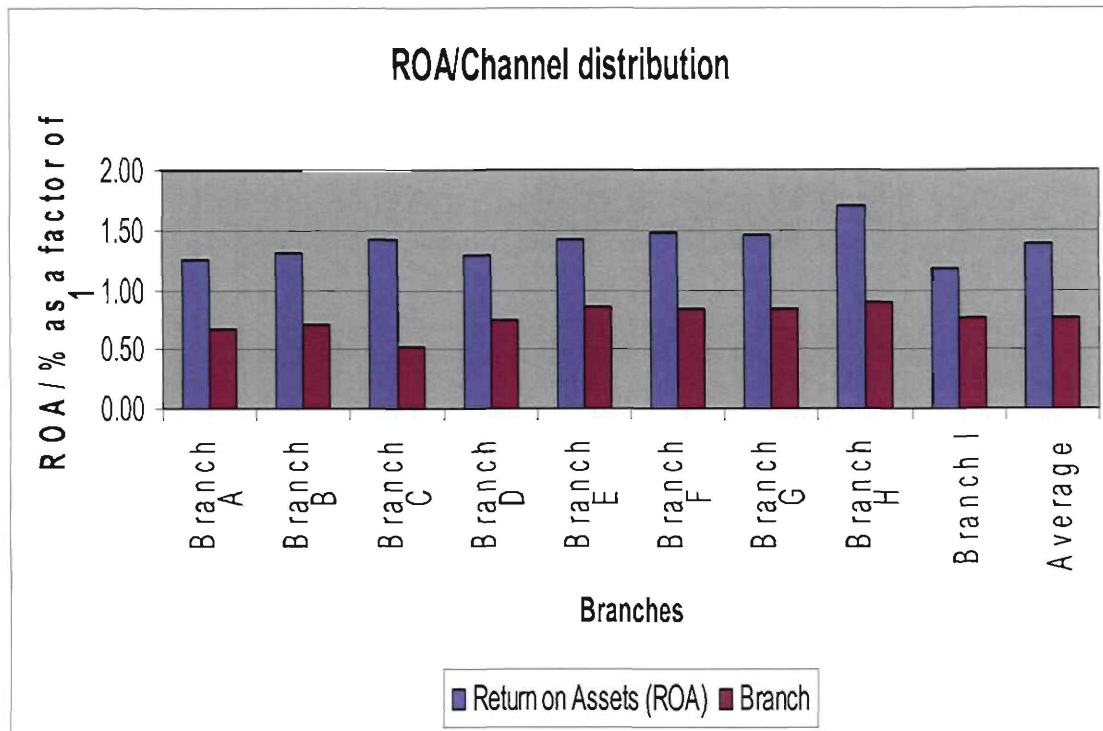


Source: own

3.3.4. Channel of business generation

In the introduction to the dissertation the different sources of business were discussed. The cost components allocated to business generated by mortgage originators and estate agents are high and should impact the profitability of home loans generated through these channels. The correlation between percentage business generated through the different channels and the profitability per account will be studied to derive strategies that will enable more effective channel usage.

Figure 3.12 ROA as a factor of business generated through the branches



Source: Own

A positive correlation exists between ROA and the branch channel as source of business generation, although the correlation is not very strong (0.47).

CHAPTER 4

CONCLUSION AND RECOMMENDATIONS

4.1 Introduction

The analysis consists of correlations and comparisons that are used to answer the research questions. Graphs and tables are used to make statistical observations about the numeric data analysis. Other recommendations are based on opinions and innovative ideas on optimising profitability in the home loan industry.

4.2 Strategic proposals and recommendations

One of the ways to optimise home loan profitability is to have special sales drives that have the objective of increasing the home loan book and increase market share. When the demographics and market analysis are taken into consideration the content mentioned in chapter 3 becomes very important in the sense that the percentage influence of the factors on total profitability per loan, varies substantially. In assessing the performance of the home loan product in the different markets, three perspectives was used namely from a client profitability -, client needs – and a client behaviour perspective. From a client profitability perspective the performance drivers and indicators were the customer profitability (CP) per product, CP per client portfolio and segment business unit profitability. Associated with client needs the drivers identified was knowledge about the customer and the market , effective segmentation and market potential in terms of market penetration, cross-selling and customer aspirations. Some of the performance drivers associated with client behaviour include customer satisfaction, channel utilisation (destination), and accounts maintained, opened and closed.

4.2.1 Demographic variables

The economic profit (EP) per branch in relation to total population has a negative correlation of -0.64%. It means that higher volume loans at lower value do not equal increased economic profit. This result was not expected and can be justified on the principle that where the total population is higher, more flats and lower value loans are taken that are not as profitable as new development home loans at a much higher price. It was also found that no direct correlation exists between race group per population and the EP per home loan account. This is mainly due to the evolving black middle market that resides in D, C and E (entry-level banking).

4.2.2 Operational variables

Branch C, B, and D are located in affluent retail centres which indicate that customers want to be serviced at places which are convenient for them and in an environment that has a good look and feel, and addresses their social needs. With reference to Graph 4 and 5 it seems like Branch C with the highest cost per staff member is less profitable at R312.86 than the EP average of R364.57. However, Branch D is most profitable per loan with an EP of R532.60, but also has the third highest rent per staff member at R5 304. It is thus inconclusive to say that the higher the rental cost per staff member, the less profitable the average loan for that branch (*ceteris paribus*) is.

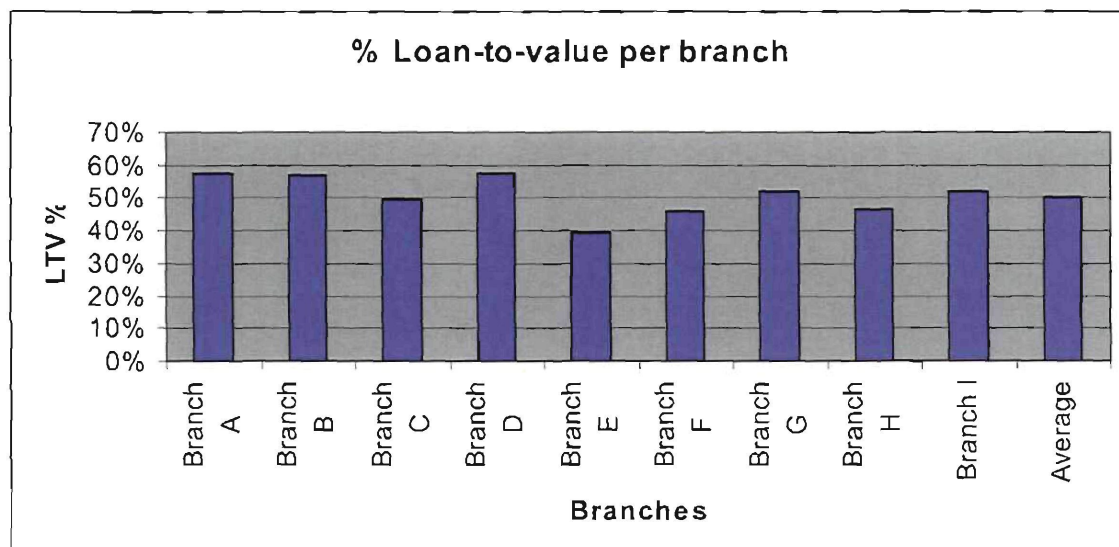
It is also inconclusive to say that the branch with the highest operating expense is less profitable since Branch I had the highest operating expenses and was third most profitable on EP. Branch I has the lowest ROA of all branches. The mix of non-interest income and average interest income per branch should thus influence EP and ROA more than expected. Virtually no correlation (-0.03) exist between the m² per staff member and the EP per staff member (*ceteris paribus*). The size of a branch cannot be looked at in isolation to establish customer

preference in this regard. All other aesthetic aspects need to be considered as well.

4.2.3 Financial variables

The age of the home loan book and the geographical location of the customer are displayed to a great extent in the above graph. The branches with the lowest LTV percentage are typically the older and established areas. The higher LTV areas are the areas where a lot of residential development takes place. It is interesting to see that the average home loan balance is only 50.4% of the total valuation amounts on the current mortgage book of the sample branches. Both Branch A and D are at 58% loan-to-value and Branch E is very low at 39% loan-to-value. The bank's risk is thus well-covered and opportunities for up-selling more loans exist in the branches.

Figure 4.1 Average loan-to-value percentage per branch

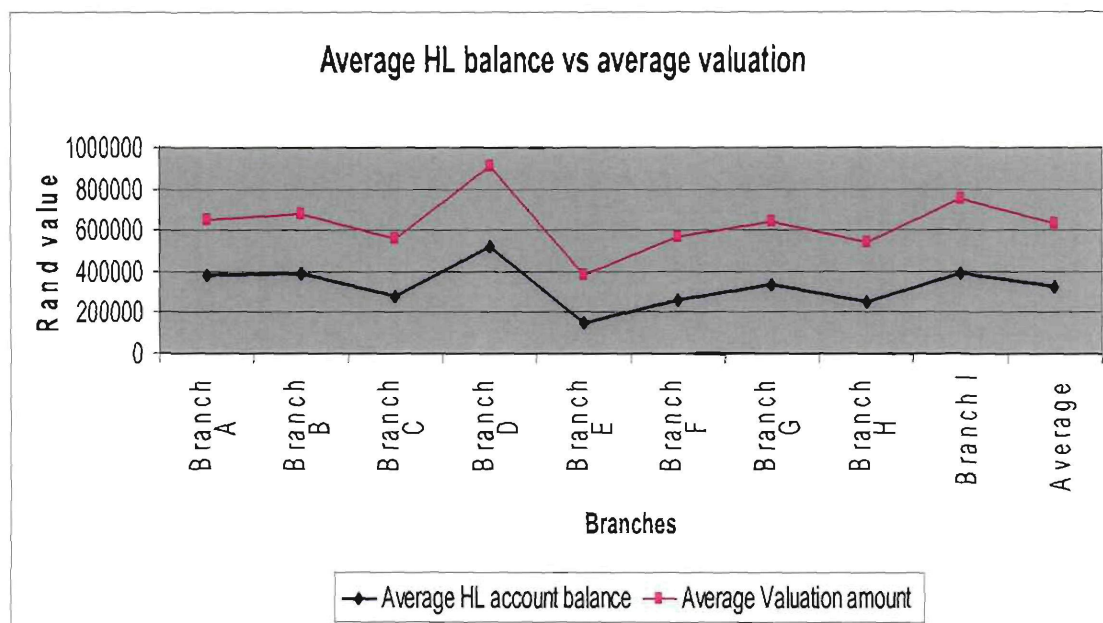


Source: Own

A direct correlation (0.008) does not exist between the number of home loan customers and the profitability of that branch. This is not expected to be the case due to economies of scale that should benefit the high volume branches. It is

also attributable to the view that the centralised home loan units apply the same pricing principles to all loans, irrespective of volumes, demographics and other reasons.

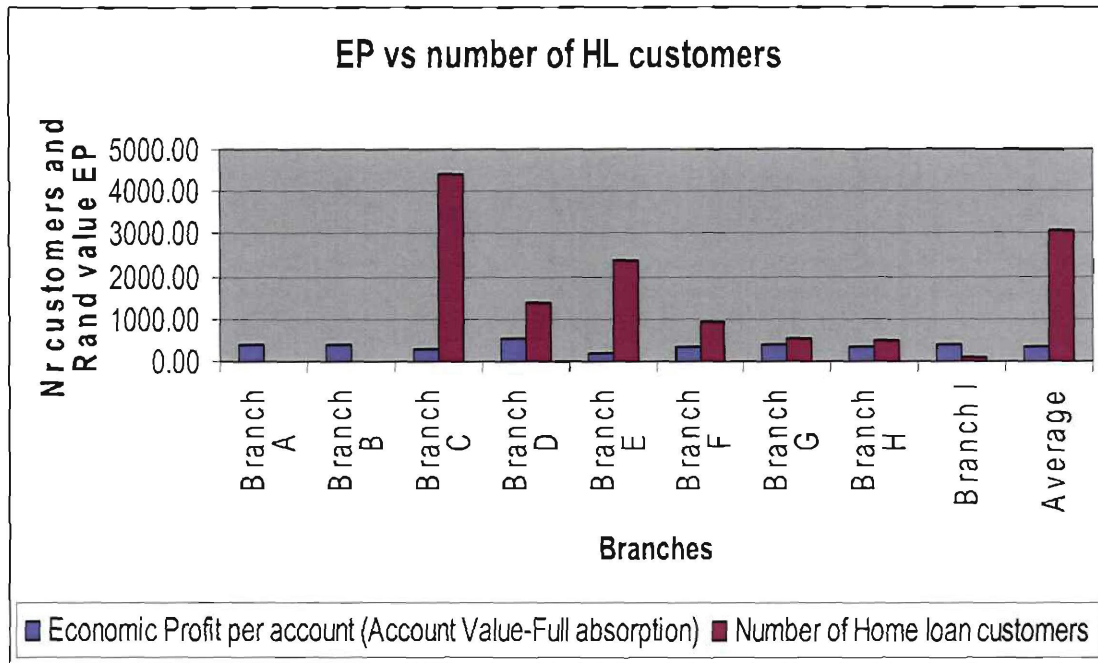
Figure 4.2 Average home loan balance in relation to average valuation per branch



Source: Own

Due to the size of the scale used in the following figure the number of home loans in branch A (11 568) and branch B (6 029) were left out in order to see a more meaningful correlation between EP and number of home loan customers. No direct correlation (0.008) exists between the number of home loan customers and the profitability of that branch. This is not expected to be the case due to economies of scale that should benefit the high volume branches. It is also attributable to the view that the centralised home loan units apply the same pricing principles to all loans, irrespective of volumes, demographics and other variables.

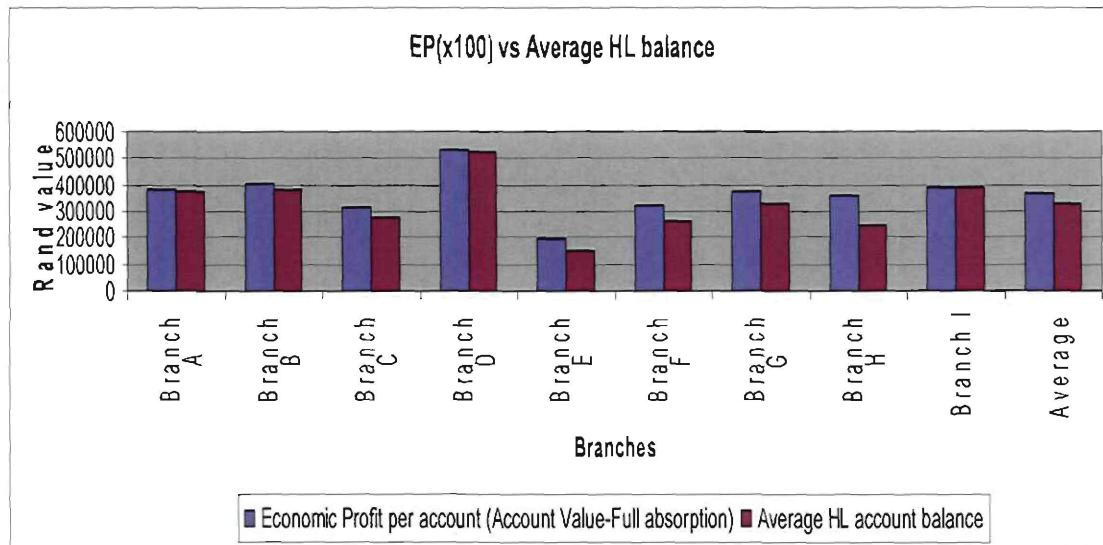
Figure 4.3 EP vs number of home loan customers



Source: Own

A meaningful correlation (0.95) exists between the average balance on a home loan account and the EP per branch. For this exercise the EP is multiplied by a thousand to come to a meaningful conclusion on the following graph. This means that EP is 1/000th of the balance. The strongest correlation is with Branch I which has only 81 home loan accounts domiciled at the branch.

Figure 4.4 EP vs home loan balance per branch



Source: Own

To have a better understanding of the detail applicable to the graph, the following data source table gives more information needed to explain the graph detail.

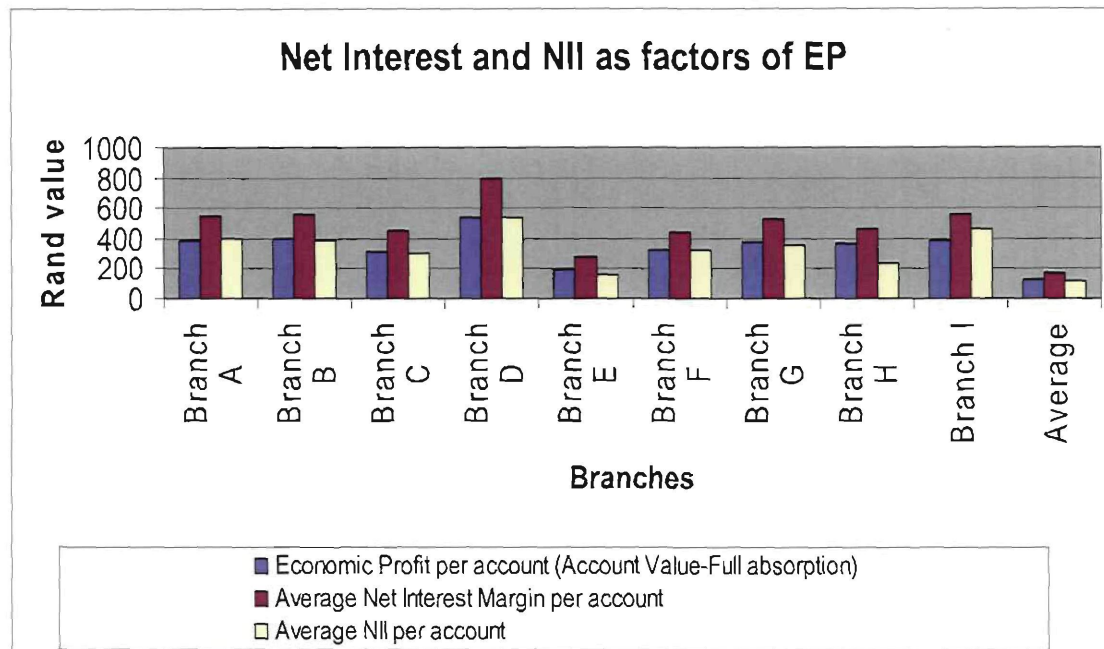
The following table illustrate the most important financial variables per branch. The average EP per account results in R365 with branch D being the most profitable on R532.60 per account. Branch D is also the highest earner with regards to average operating income-, net interest received- and total non-interest income per account. The effect of net interest received and non interest income received can be observed in the table below. Due to higher impairments at branch I, the EP is lower than that of branch B although branch I has a higher average net interest received (R2 921) than that of branch B (R2 787). By analysing the financial variables one can look into the specific detail that leads to the EP per branch. For example branch D has a relatively young home loan book that earns much more interest in the first seven years of the loan than older branches where the bulk of repayments consist of a smaller portion interest and bigger portion capital redemption.

Table 4.1 Financial variables

Branch	Economic Profit per Account (Account value - Full absorption)	Average Operating Income per Account	Average Net Interest Received per Account	Average Net Interest Margin per Account	Total NII per Account
Branch A	383.69	6537	2782	544	401
Branch B	402.64	6703	2787	554	391
Branch C	312.86	5419	2045	449	304
Branch D	532.60	8879	3910	796	533
Branch E	193.37	3706	1169	284	163
Branch F	324.52	5537	1974	441	319
Branch G	378.52	6256	2357	522	352
Branch H	362.97	5886	1939	462	235
Branch I	389.94	6533	2921	561	464
Average	364.57	6162	2432	513	351

EP has a correlation of 0.98 with net interest margin per account and a correlation of 0.88 with total non-interest income. This means that the factor of impairments is not as big as expected in the sample of nine branches used since impairments have been subtracted in the calculation of EP.

Figure 4.5 NI and NII as factors of EP



Source: Own

4.2.4 Channel of business generation

The high commission structure that exists for mortgage originators and estate agents should increase operational costs and decrease average account value. If financial institutions can do more business through their branch structure it will be able to cut on origination cost and increases ROI per account. The latest surge in interest rate increases has put the mortgage originator and agent business under pressure. The low returns will lead many firms to exit the industry through merger, sale or failure. Well-capitalised firms have employed the technological lessons to achieve dramatic reductions in direct costs of servicing, and the chase for economies of scale was on in-servicing. More detail can be obtained from: (<http://www.allbusiness.com/personal-finance/real-estate-mortgage-loans/681356-1.html>).

Table 4.2 Channel source of business per branch

Branch	Branch	Mortgage Originator	Estate Agents (Assume 10% of Agent Codes)	Other (Call Centre, Internet etc)
Branch A	67.31%	28.52%	3.27%	0.90%
Branch B	70.79%	25.39%	2.92%	0.90%
Branch C	52.45%	41.90%	4.75%	0.90%
Branch D	75.67%	21.04%	2.44%	0.90%
Branch E	85.85%	11.85%	1.40%	0.90%
Branch F	83.75%	13.72%	1.63%	0.90%
Branch G	84.88%	12.72%	1.50%	0.90%
Branch H	90.19%	7.93%	0.98%	0.90%
Branch I	76.34%	20.40%	2.36%	0.90%
Average	76.36%	20.39%	2.36%	0.90%

Due to the inclusion of the total home loan book of each branch in the channel analysis it is not a representative picture of new business generated. Some of the branches generated 100% business from customers before the introduction of commission to estate agents and bond originators.

The high percentage of business generated through mortgage originators at Branch C, A and B is an indication that customers at affluent branches prefer to work through bond originators. Ease of getting finance approved and time saved

by getting someone to apply for finance on behalf of the customer are factors that speak to customer's needs. A negative correlation of -0.15 exists between branch channel home loans and EP. It means that applications generated through the branch network are not necessarily more profitable than business generated through estate agents, bond originators or other channels like internet or call centres. This is contrary to the expectation that home loans generated through branches will be more profitable. However, value in this regard appears when ROA is taken as the ultimate financial determining factor where a positive correlation of 0.47 exists. The use of an external sales force like express home loan agents working for the financial institution will further enhance profitability of home loans for the bank. The cost is more directly manageable and the margin of error in calculating transfer pricing minimised.

A negative correlation between ROA and EP of -0.34 exists. This is due to additional risk and overhead costs incurred by home loans SBU per branch that vary from branch to branch.

4.3 Conclusion

At Absa Bank various profitability models are used to ensure that different market segments are still profitable to the bank. It supports the study results that one profitability model cannot be employed for the diverse home loan market in South Africa. With the latest increase in interest rates on 11 October 2007 and 7 November 2007 there will be more pressure on the disposable income of home loan owners. Impairments are expected to rise significantly and yet the value of property will still rise above the inflation rate if consumer confidence remains high. The business generated through the different channels should be optimised by doing a demographical and geographical analysis per branch/ area measured against the economic value achieved per loan.

Management of operational cost through a detailed cost analysis and thorough understanding of cost factors enable leadership to keep the cost to a minimum

whilst expanding business opportunities to capitalise on a growing home loan market. Net interest income is still the biggest contributor to home loan profitability and action should not only be to increase non-interest income, but also to regain better net interest margins in a very competitive market.

The negative correlation of the sample used between ROA and economic profit draws our attention to the fact that impairments and additional overhead cost can never be neglected and should be managed more diligently to ensure an acceptable ROA. The demographic composition of the home loan book determines the customer profile that should be used to determine localised marketing campaigns. The average value per loan in the high average personal income branches are better than in other branches, even though the interest rates are normally lower for most customers in this market.

The first mortgage originator arose during 1999 and up to 70% of new loan advances business is channelled through this channel presently. Optimising profitability will require the capability to match the customer segment optimally with channel and set targets according to natural market share. To be a leader in mortgage lending, alternative strategies to build a customer base and advances book at a lower cost of acquisition need to be found. Customer retention, service excellence, market share leverage, low operational cost and innovative marketing strategies will ensure sustainable and profitable growth in mortgage lending. A regionalised approach to forecast sales targets and improved profitability should be followed by the bank to ensure that we achieve our targets per region and maximise profitability.

4.4 Recommendation

In order to increase home loan profitability the bank needs to provide a direct channel with similar or better value propositions than the MO's. Bank-salaried agents who work on 25% basic salary and 75% commission and who are trained in products, sales and technology could be used for this purpose. Management information is then available to these agents in terms of the geographical area for

which they are responsible, and analysed as above, to assist in marketing and sales efforts. A value proposition to support increased non-interest income can be developed. An annual home loan review by the Express Agent can be added with the aim of:

- visitation programme at customer premises at convenient time for customer;
- review general condition of asset financed by the bank (risk assessment);
- review life cover, short-term insurance, HOC, funeral plan and other financial needs per checklist;
- value of property estimate supported by national database of property valuations;
- creation of a relationship model in the home loan space of banking; and
- to supply advice regarding further property investments, further bonds and various other non-interest income offerings.

The creation of a relationship model is necessary to ensure that the average life time of a home loan increase to at least eight years in order to achieve better profits. The new business mix of mortgage originators, branch sales specialists, customer retention unit and home loan express agents should be driven on their unique features and benefits to the company to enable profitable home loans for the bank. An increased focus on the core middle market and affluent customers is necessary, whilst the normal responsibility towards government and our mass markets is maintained.

Specialist knowledge is important in home loans and an academy should be formed where staff can be trained to serve as a back-up for staff turnover in these specialist positions. A lower base commission should be introduced to branch staff for each home loan they successfully acquire for the bank in order to increase home loan awareness and to serve as an incentive to sell home loans through this cheaper channel of an existing branch footprint.

4.5 Recommendation for further study

Further studies in this regard can be conducted on provincial or national scale to obtain a better representation of the total home loan population in a province and/ or a more representative set of data for 20 or more branches. Expanding the customer information database to include factors like age of entity, race of owners, gender, personal income and channel usage will enhance analytical capabilities of the bank to ensure a competitive advantage.

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Appendix 1	Economic Profit (Account value-Full absorption)	Economic Profit per account (Account Value-Full absorption)	Return on Assets (ROA)	Total Population	Number of households	Number of Home loan customers	% HL of total number of households	Average gross income	0-19	20-34	35-49	50-65	White	Black	Coulered	Asian	Male	Female	Number of staff	Size m²	Rent	Average HL account balance	Average Valuation amount	Average Operating Income per account	Average Operating Expenses per account	Average Net Interest Received per account	Average Net Margin per account	Total NII per account	Average Value Full absorption	Branch	Mortgage Originator	Estate Agents (Assume 10% of Agent codes)¹
Economic Profit (Account value-Full absorption)	1.00																															
Economic Profit per account (Account Value-Full absorption)	0.14	1.00																														
Return on Assets (ROA)	-0.40	-0.34	1.00																													
Total Population	0.11	-0.64	-0.21	1.00																												
Number of households	0.09	-0.62	-0.21	0.98	1.00																											
Number of Home loan customers	0.99	0.01	-0.37	0.22	0.19	1.00																										
% HL of total number of households	0.96	0.12	-0.34	-0.02	-0.07	0.95	1.00																									
Average gross income	0.21	0.91	-0.40	-0.69	-0.66	0.07	0.18	1.00																								
0-19	0.16	-0.61	-0.28	0.98	0.96	0.25	0.02	-0.62	1.00																							
20-34	0.00	-0.72	-0.04	0.95	0.92	0.12	-0.07	-0.83	0.90	1.00																						
35-49	0.28	-0.28	-0.52	0.86	0.83	0.33	0.09	-0.25	0.90	0.67	1.00																					
50-65	0.31	-0.31	-0.46	0.79	0.83	0.36	0.10	-0.22	0.82	0.58	0.93	1.00																				
White	0.44	-0.35	-0.52	0.71	0.70	0.48	0.27	-0.16	0.79	0.49	0.90	0.92	1.00																			
Black	-0.13	-0.63	0.04	0.89	0.87	-0.02	-0.20	-0.82	0.81	0.97	0.57	0.47	0.31	1.00																		
Coulered	-0.15	-0.75	0.16	0.86	0.84	-0.02	-0.19	-0.92	0.77	0.96	0.49	0.42	0.27	0.98	1.00																	
Asian	-0.23	-0.48	0.57	0.43	0.41	-0.15	-0.24	-0.73	0.39	0.60	0.08	-0.05	-0.16	0.68	0.71	1.00																
Male	0.09	-0.65	-0.19	1.00	0.97	0.20	-0.03	-0.72	0.98	0.96	0.84	0.76	0.68	0.91	0.88	0.46	1.00															
Female	0.15	-0.62	-0.25	1.00	0.99	0.25	0.00	-0.65	0.99	0.93	0.88	0.83	0.76	0.85	0.82	0.39	0.99	1.00														
Number of staff	0.95	0.15	-0.44	0.20	0.14	0.93	0.88	0.24	0.26	0.05	0.46	0.43	0.57	-0.11	-0.14	-0.25	0.18	0.23	1.00													
Size m²	0.72	0.18	-0.34	0.43	0.41	0.72	0.56	0.15	0.43	0.28	0.62	0.59	0.56	0.21	0.11	-0.03	0.40	0.46	0.81	1.00												
Rent	0.68	0.24	-0.34	0.31	0.36	0.66	0.46	0.28	0.36	0.10	0.58	0.66	0.60	0.03	-0.06	-0.11	0.27	0.37	0.74	0.90	1.00											
Average HL account balance	0.26	0.95	-0.61	-0.43	-0.42	0.15	0.22	0.88	-0.39	-0.56	-0.03	-0.09	-0.10	-0.51	-0.65	-0.55	-0.45	-0.41	0.29	0.30	0.36	1.00										
Average Valuation amount	0.11	0.95	-0.57	-0.48	-0.46	-0.01	0.08	0.88	-0.45	-0.59	-0.11	-0.16	-0.19	-0.52	-0.66	-0.56	-0.50	-0.46	0.13	0.17	0.23	0.99	1.00									
Average Operating Income per account	0.16	1.00	-0.40	-0.58	-0.57	0.04	0.14	0.90	-0.56	-0.66	-0.22	-0.27	-0.31	-0.57	-0.70	-0.48	-0.59	-0.57	0.19	0.23	0.27	0.97	0.97	1.00								
Average Operating Expenses per account	0.11	0.76	-0.77	-0.40	-0.37	0.01	0.10	0.79	-0.32	-0.54	-0.02	-0.05	-0.01	-0.52	-0.64	-0.69	-0.42	-0.36	0.10	-0.01	0.11	0.87	0.89	0.77	1.00							
Average Net Interest Received per account	0.24	0.95	-0.60	-0.46	-0.44	0.12	0.21	0.88	-0.42	-0.57	-0.07	-0.12	-0.15	-0.51	-0.65	-0.56	-0.47	-0.43	0.26	0.28	0.32	1.00	0.99	0.97	0.87	1.00						
Average Net Interest Margin per account	0.14	0.98	-0.45	-0.52	-0.51	0.02	0.12	0.87	-0.50	-0.60	-0.17	-0.24	-0.28	-0.51	-0.65	-0.46	-0.53	-0.51	0.17	0.23	0.26	0.98	0.98	1.00	0.80	0.98	1.00					
Total NII per account	0.21	0.89	-0.70	-0.42	-0.40	0.10	0.18	0.88	-0.37	-0.55	-0.02	-0.07	-0.04	-0.52	-0.67	-0.66	-0.44	-0.39	0.23	0.21	0.27	0.97	0.98	0.91	0.94	0.97	0.93	1.00				
Average Value Full absorption	0.14	1.00	-0.34	-0.64	-0.62	0.01	0.12	0.91	-0.61	-0.72	-0.28	-0.31	-0.35	-0.63	-0.74	-0.48	-0.65	-0.62	0.15	0.18	0.24	0.95	0.95	1.00	0.76	0.95	0.98	0.89	1.00			
Branch	-0.56	-0.13	0.47	-0.34	-0.43	-0.58	-0.42	-0.13	-0.35	-0.23	-0.40	-0.48	-0.41	-0.19	-0.10	0.05	-0.29	-0.39	-0.45	-0.64	-0.73	-0.30	-0.23	-0.17	-0.23	-0.27	-0.20	-0.31	-0.13	1.00		
Mortgage Originator	0.56	0.13	-0.47	0.34	0.43	0.58	0.42	0.13	0.35	0.23	0.40	0.47	0.41	0.19	0.10	-0.05	0.29	0.39	0.45	0.64	0.73	0.30	0.23	0.17	0.23	0.27	0.20	0.31	0.13	-1.00	1.00	
Estate Agents (Assume 10% of Agent codes)	0.56	0.13	-0.47	0.33	0.43	0.58	0.42	0.14	0.34	0.23	0.40	0.47	0.41	0.19	0.09	-0.05	0.29	0.38	0.45	0.64	0.73	0.30	0.23	0.17	0.23	0.27	0.20	0.32	0.13	-1.00	1.00	1.00

Appendix 2

Customer numbers

	Branch A	Branch B	Branch C	Branch D	Branch E	Branch F	Branch G	Branch H	Branch I
Jan	11493	5968	4426	1350	2427	955	512	527	71
Feb	11514	5989	4415	1354	2427	955	514	521	73
Mar	11540	6015	4408	1373	2413	945	527	521	73
Apr	11527	6014	4400	1373	2397	936	531	516	75
May	11571	6021	4407	1382	2394	941	538	512	78
Jun	11649	6058	4430	1383	2388	943	536	515	80
Jul	11639	6044	4418	1376	2357	939	541	511	82
Aug	11653	6065	4421	1380	2337	935	544	507	86
Sep	11582	6043	4418	1376	2312	929	546	507	87
Oct	11558	6029	4387	1363	2289	929	546	505	87
Nov	11554	6052	4389	1371	2270	930	547	501	88
Dec	11535	6054	4391	1356	2254	929	546	499	89
Total Gain/Loss(-)	42	86	-35	6	-173	-26	34	-28	18
Average number of customers for the year	11568	6029	4409	1370	2355	939	536	512	81
	42	86	-35	6	-173	-26	34	-28	18
%growth in numbers	0.37%	1.44%	-0.79%	0.44%	-7.13%	-2.72%	6.64%	-5.31%	25.35%

Total account balance

	Branch A	Branch B	Branch C	Branch D	Branch E	Branch F	Branch G	Branch H	Branch I
Jan	R 3,730,671,291	R 1,954,867,288	R 1,007,941,415	R 639,010,791	R 324,692,446	R 222,684,851	R 137,269,174	R 120,318,591	R 25,651,615
Feb	R 3,808,773,755	R 1,988,921,694	R 1,022,129,159	R 637,978,504	R 330,631,355	R 227,468,797	R 140,575,429	R 119,395,192	R 26,599,035
Mar	R 3,883,170,405	R 2,014,244,990	R 1,042,846,002	R 656,598,342	R 330,954,389	R 227,789,109	R 147,651,948	R 121,109,396	R 27,047,969
Apr	R 3,935,021,254	R 2,056,914,674	R 1,057,043,362	R 669,547,138	R 333,251,118	R 229,918,176	R 153,065,330	R 121,936,609	R 26,970,775
May	R 4,014,688,257	R 2,075,866,377	R 1,094,062,879	R 677,591,640	R 335,647,133	R 230,835,118	R 157,928,669	R 122,793,939	R 28,844,555
Jun	R 4,082,216,873	R 2,122,566,540	R 1,126,188,553	R 685,853,329	R 334,070,346	R 231,961,168	R 157,646,869	R 123,458,149	R 29,947,171
Jul	R 4,141,175,293	R 2,144,733,385	R 1,129,160,002	R 693,130,312	R 333,967,031	R 234,155,379	R 160,030,924	R 124,416,459	R 31,611,551
Aug	R 4,178,094,769	R 2,208,479,464	R 1,153,737,392	R 699,196,915	R 343,500,511	R 233,775,555	R 162,218,186	R 123,232,341	R 33,420,485
Sep	R 4,210,233,325	R 2,238,526,744	R 1,176,499,484	R 706,050,340	R 340,792,220	R 232,463,710	R 164,541,736	R 124,339,955	R 33,340,926
Oct	R 4,269,772,431	R 2,252,766,802	R 1,190,766,451	R 706,177,879	R 342,563,738	R 233,758,334	R 166,939,723	R 122,082,049	R 33,474,952
Nov	R 4,305,045,215	R 2,297,487,837	R 1,210,606,831	R 714,359,705	R 340,192,298	R 237,101,622	R 176,543,053	R 121,275,640	R 32,700,126
Dec	R 4,333,844,391	R 2,328,663,602	R 1,223,967,390	R 707,396,880	R 338,083,270	R 242,075,484	R 179,762,480	R 123,787,350	R 34,513,757
Change	R 603,173,100	R 373,796,314	R 216,025,975	R 68,386,089	R 13,390,824	R 19,390,633	R 42,493,306	R 3,468,759	R 8,862,142
Average Balance	R 4,074,392,272	R 2,140,336,616	R 1,119,579,077	R 682,740,981	R 335,695,488	R 231,998,942	R 158,681,127	R 122,345,473	R 30,343,576
	Branch A	Branch B	Branch C	Branch D	Branch E	Branch F	Branch G	Branch H	Branch I
Average balance per acc- Dec 06	R 375,713	R 384,649	R 278,745	R 521,679	R 149,993	R 260,576	R 329,235	R 248,071	R 387,795
% growth	16.17%	19.12%	21.43%	10.70%	4.12%	8.71%	30.96%	2.88%	34.55%

Total Operating Income

	Branch A	Branch B	Branch C	Branch D	Branch E	Branch F	Branch G	Branch H	Branch I
Jan	R 5,867,629	R 2,936,594	R 2,715,352	R 802,628	R 660,276	R 397,144	R 264,271	R 253,464	R 43,624
Feb	R 5,481,584	R 2,732,689	R 1,795,534	R 930,163	R 591,978	R 403,278	R 232,753	R 207,911	R 28,492
Mar	R 7,059,866	R 3,536,936	R 1,905,166	R 813,880	R 745,271	R 418,789	R 295,119	R 242,446	R 44,356
Apr	R 6,493,697	R 3,380,098	R 1,804,355	R 1,191,126	R 687,484	R 289,972	R 246,941	R 204,206	R 30,116
May	R 6,784,672	R 3,596,375	R 1,902,672	R 1,043,639	R 710,304	R 393,952	R 246,186	R 221,147	R 30,411
Jun	R 6,413,143	R 2,805,885	R 1,736,484	R 1,146,504	R 633,320	R 438,240	R 343,835	R 256,906	R 59,766
Jul	R 6,178,945	R 3,781,481	R 1,924,263	R 1,136,535	R 778,557	R 436,115	R 318,782	R 325,678	R 81,476
Aug	R 6,350,512	R 2,987,527	R 1,896,290	R 1,133,487	R 659,231	R 429,975	R 268,201	R 185,685	R 39,749
Sep	R 5,642,533	R 3,196,570	R 1,784,671	R 766,609	R 684,076	R 440,290	R 299,849	R 234,569	R 50,667
Oct	R 7,117,212	R 4,059,589	R 2,703,999	R 1,064,421	R 781,946	R 568,494	R 249,711	R 322,831	R 65,614
Nov	R 6,038,318	R 4,000,049	R 1,752,967	R 970,077	R 666,842	R 422,691	R 350,049	R 241,376	R 53,194
Dec	R 5,980,243	R 3,568,707	R 1,873,916	R 1,040,231	R 754,593	R 504,829	R 299,890	R 241,130	R 54,010
Total 2006	R 75,408,354	R 40,582,500	R 23,795,669	R 12,039,300	R 8,353,878	R 5,143,769	R 3,415,587	R 2,937,349	R 581,475
	Branch A	Branch B	Branch C	Branch D	Branch E	Branch F	Branch G	Branch H	Branch I
Average Operating Income per account	R 6,537	R 6,703	R 5,419	R 8,879	R 3,706	R 5,537	R 6,256	R 5,886	R 6,533

Appendix 3

Operating Expenses

	Branch A	Branch B	Branch C	Branch D	Branch E	Branch F	Branch G	Branch H	Branch I
Jan	1743393	763848	502832	190381	240158	153353	70175	63727	17272
Feb	1623964	860467	518855	204169	264806	116352	72830	48986	14015
Mar	1724653	851531	565860	295664	239581	108158	106285	66530	7539
Apr	1634992	868887	548919	216898	223768	106105	85593	52820	14278
May	1789371	867426	558666	247124	244637	127627	90691	55754	18045
Jun	1926627	963857	632501	229930	245049	117384	63064	69137	14767
Jul	1842813	896389	561957	228053	223636	124565	80917	55406	15253
Aug	1840143	1006236	595206	269829	266141	111103	80826	48594	29038
Sep	1693832	858442	528301	238243	216342	105773	67741	61487	12763
Oct	1729555	845114	553866	205156	228872	113124	75589	58296	15865
Nov	1764021	973387	574360	225417	229571	126931	82542	54180	19339
Dec	1665457	923781	568835	181988	222153	137425	76266	60632	19363
TOTAL 2006	20978821	10679365	6710158	2761482	2844714	1447900	952519	695549	197537
Average Operating Expenses	1748235	889947	559180	230124	237060	120658	79377	57962	16461
Average Operating Expenses per account	1819	1764	1528	2036	1262	1559	1745	1394	2220

Account Value Full Absorption

	Branch A	Branch B	Branch C	Branch D	Branch E	Branch F	Branch G	Branch H	Branch I
Jan	4025676	2108188	2171144	576667	416413	240288	191824	188723	26075
Feb	3762718	1804371	1234554	690420	323668	283470	157586	157924	14205
Mar	5240021	2619491	1291886	482355	502175	307310	185914	174928	36548
Apr	4763471	2446639	1211451	938522	460259	180570	157836	150405	15571
May	4898126	2663192	1297890	760835	461210	262558	152782	164426	11587
Jun	4385026	1778175	1057322	881092	384901	317143	278009	186304	44653
Jul	4235423	2823842	1319896	873296	551638	308297	235553	289331	65880
Aug	4415067	1917215	1256114	828426	389309	315743	185092	136161	10373
Sep	3850515	2274733	1212916	493189	463734	331578	171869	172158	37567
Oct	5289133	3153499	2106164	824460	549533	452449	263617	263617	48903
Nov	4176100	2963449	1132528	681007	433913	292947	265355	186286	32420
Dec	4219084	2579094	1261331	724081	528712	363745	221480	179081	34069
Change	193408	470906	-909813	147414	112299	123457	29656	-9642	7994
Average Value Full Absorption	4438446.667	2427657.333	1379433	729629.1667	455455.4167	304674.8333	202761.75	185778.6667	31487.58333
Average Value Full Absorption per account	383.89	402.64	312.86	532.60	193.37	324.52	378.52	362.97	389.94

Average account value full absorption

	Branch A	Branch B	Branch C	Branch D	Branch E	Branch F	Branch G	Branch H	Branch I
Jan	302	317	452	400	141	213	328	312	327
Feb	280	268	251	477	104	254	265	261	163
Mar	396	395	265	328	176	280	309	292	454
Apr	359	367	247	643	161	157	258	250	176
May	368	401	265	579	162	237	244	279	126
Jun	326	261	212	601	131	291	464	318	518
Jul	315	424	268	599	201	283	386	474	755
Aug	328	282	255	565	137	293	298	230	94
Sep	286	338	247	337	169	311	373	298	388
Oct	400	475	440	568	207	431	274	469	523
Nov	312	444	230	466	160	271	433	328	344
Dec	316	384	258	482	202	342	360	317	349
Average account value full absorption per 12m	332.33	363.00	282.50	503.75	162.58	280.25	332.67	319.00	351.42

Appendix 4

ROA Full absorption

	Branch A	Branch B	Branch C	Branch D	Branch E	Branch F	Branch G	Branch H	Branch I
Jan	1.22	1.22	1.23	2.47	1.07	1.3	1.19	1.56	1.73
Feb	1.22	1.13	1.49	1.41	1.05	1.52	1.37	1.57	1.15
Mar	1.54	1.48	1.4	0.88	1.58	1.48	1.41	1.58	0.62
Apr	1.41	1.41	1.32	1.72	1.47	0.84	1.19	1.38	1.53
May	1.39	1.47	1.34	1.33	1.42	1.23	1.07	1.46	0.63
Jun	1.25	0.98	1.08	1.57	1.18	1.56	2.06	1.73	0.44
Jul	1.15	1.51	1.3	1.5	1.73	1.45	1.66	2.45	1.76
Aug	1.19	0.99	1.22	1.4	1.15	1.48	1.27	1.17	2.45
Sep	1.06	1.19	1.2	0.85	1.46	1.61	1.62	1.57	0.31
Oct	1.41	1.6	2.02	1.37	1.7	2.18	1.13	2.41	1.3
Nov	1.12	1.54	1.08	1.17	1.35	1.4	1.79	1.74	1.14
Dec	1.09	1.26	1.15	1.21	1.65	1.68	1.38	1.61	1.13
Average	1.25	1.32	1.42	1.29	1.42	1.46	1.7	1.7	1.18

	Branch A	Branch B	Branch C	Branch D	Branch E	Branch F	Branch G	Branch H	Branch I
Jan	27921677	14577119	8423727	4805291	2537145	1650996	1045993	928280	186722
Feb	25879384	13376184	7039157	4357004	2328987	1549076	958383	840840	178165
Mar	29222861	15070267	7947803	4900915	2591511	1729724	1116095	935325	200151
Apr	28662479	14788630	7689342	4820350	2516150	1697693	1127081	909498	194029
May	30022318	15486848	8229959	5052421	2644331	1757485	1179187	944458	206081
Jun	30697124	15806352	8473058	5112460	2628950	1758376	1210649	943010	221340
Jul	32809201	16882275	9081265	5400051	2770570	1869099	1282284	1046731	241485
Aug	34521973	17893402	9532078	5703247	2916676	1979511	1340930	1049862	262385
Sep	34081622	19334872	10880352	6028842	3054246	2104915	1486451	1085817	285261
Oct	36497719	19356626	10227016	5943844	2998844	2017203	1471965	1054035	268835
Nov	39325295	21072231	11165278	6387207	3181118	2215717	1633720	1138276	283427
Dec	11403618	6495112	1581916	564721	587727	209996	116037	235886	302759
Average	32180797.08	16803563.92	9014705	5356118.583	2752753.25	1853091.167	1262390.917	992599.25	116037
Total interest received for 12 months	0.789830804	0.785089775	0.81	0.784502283	0.820014969	0.798749835	0.795552025	0.811308526	0.777385841
Interest received as % of average loan amount	2782	2787	2045	3910	1169	1974	2357	1939	2921
Net Interest received per account									

	Branch A	Branch B	Branch C	Branch D	Branch E	Branch F	Branch G	Branch H	Branch I
Jan	6507640462	3525024495	2117943901	1119368334	860574022	488394816	315411007	255040911	47589840
Feb	6682806304	3578731494	2130485508	1153575334	882092749	490813817	320648007	254103910	48099840
Mar	6678512182	3593008940	2189560691	1135874298	875919631	498132817	304961007	255004311	47313840
Apr	6768405185	3664333833	2221962457	1155647299	860771626	4952310815	306952006	254877311	50003840
May	6983354160	3733849964	2243934562	1166116398	892039120	505233813	312222006	255995311	5118840
Jun	7813093360	4249108666	2517702922	1277810218	923680320	531228807	335612006	277945311	66223840
Jul	7910389147	4293682169	2544671224	1288941423	931960421	534778807	343246007	277509310	65943841
Aug	8080500422	4417114950	2661806897	1313524424	949879409	538587508	351476007	280228310	69328841
Sep	8090612506	4439364265	2674465898	1319817422	946883006	545132508	362685007	289507312	69953841
Oct	8185812858	4452427594	2708085700	1309779922	955208939	554432508	369300008	292933810	68028841
Nov	8310739257	4503725279	2782521385	1332956669	95087582	587819507	375904008	290495811	69526751
Dec	8338960746	4526679153	2795543573	1324599811	956991576	566406005	379694008	292420810	70663750
Average for 12 months	7529235549	4081420900	2465723727	1241500954	901074033.4	527772644	339859257	273005202.3	60366325.42
Average valuation amount per account	650872	676927	559227	906370	382554	562158	634460	533387	747571

Appendix 5

Net Interest Margin

	Branch A	Branch B	Branch C	Branch D	Branch E	Branch F	Branch G	Branch H	Branch I
Jan	6338113	3303019	2631478	1154544	689856	412898	261751	244846	41924
Feb	5512584	2837804	1617421	969442	605100	363355	227743	213016	38032
Mar	6263988	3189837	1851999	1121775	676879	412055	266767	233148	43057
Apr	6055461	3106480	1683390	1061694	651283	392470	275125	226390	41256
May	6213321	3262786	1855972	1053614	699039	417524	274929	234094	42180
Jun	6013762	3008916	1796134	1046141	637538	391274	274946	218878	42848
Jul	6426411	3375880	1933879	1102483	679874	418435	282653	279687	46358
Aug	6345776	3394837	1899817	1103337	682168	429778	287684	237221	47627
Sep	6447299	3500226	1918216	1192140	684565	402035	289128	240815	50170
Oct	6664632	3675506	2615849	1118880	693654	496583	303533	241701	51588
Nov	6552182	3643940	1887635	1067206	670866	402545	300523	228094	49346
Dec	6662988	3751728	2062919	1098873	650864	424074	312685	236659	49609
Average for 12 months	6291376	3337580	1979559	1090844	668474	413836	279789	236212	45333
Average per account	544	554	449	796	284	441	522	462	561

Total NII

	Branch A	Branch B	Branch C	Branch D	Branch E	Branch F	Branch G	Branch H	Branch I
Jan	357509	131495	102188	67612	25630	38505	17168	11855	1700
Feb	341273	183744	100152	46944	30577	18895	13886	7740	3505
Mar	419812	190989	113741	79691	28155	20730	20066	15590	1250
Apr	312211	190014	105289	74676	26760	18140	13500	7800	2220
May	410121	181584	99761	83533	31990	25975	17168	11901	6899
Jun	487653	216278	133421	69312	32980	21585	9255	14110	4030
Jul	464020	196437	120283	60070	37650	28835	17400	5935	3185
Aug	412876	275546	147257	73085	53737	22402	14500	3745	5080
Sep	345912	192215	91095	58067	25440	23800	9050	13500	540
Oct	343028	184936	112745	25618	43455	23095	17015	13527	1025
Nov	424011	233853	115473	64791	24598	27447	26116	6948	3848
Dec	317736	181038	99526	26607	23607	30253	13442	7499	4401
Total	4636162	2358129	1340931	730006	384579	299662	188566	120150	37483
Average per account	401	391	304	533	163	319	352	235	464

Appendix 6

Dependable variables		Demographical Information										Branch detail				Financial data					Channel usage (%)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
		Economic Profit per account (Value-Full absorption)		Return on Assets (ROA)		Total Population		Number of Households		Number of Home loan customers		Average gross Income		Age strubition		Race		Sex		Number of staff		Size m²		Rent		Average HL account balance		Average Operating Income per account		Average Operating Expenses per account		Average Net Interest Received per account		Average Net Margin per per account		Total Nil																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Branch												0-19		20-34		35-49		50-55		White		Black		Coloured		Asian		Male		Female		R																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			

Branch detail			Financial data										Channel usage (%)				
Branch	Number of staff	Size m²	Rent	R	Average H/L account balance		Average Operating Income per account	Average Operating Expenses per account	Average Net Interest Received per account	Average Net Interest Margin per account	Total Nil per account	Branch	Mortgage Agent (Internet etc)	Estate Agents (Assume 10% of Agent codes)			
					Average H/L account balance	Average Valuation amount											
Branch A	89	2147	260311		375713	650872	6537	1819	2782	544	401		67.31%	28.52%	3.27%	0.90%	
Branch B	72	2531	471433		384649	678927	6703	1764	2787	554	391		70.79%	25.39%	2.92%	0.90%	
Branch C	34	2035	325440		278745	559227	5419	1528	2045	449	304		52.45%	41.90%	4.75%	0.90%	
Branch D	38	2000	201553		521629	906370	8879	2039	3910	766	533		75.67%	21.04%	2.44%	0.90%	
Branch E	34	1456	71259		146993	382554	3706	1262	1169	284	163		85.85%	11.85%	1.40%	0.90%	
Branch F	31	1308	88808		280576	562158	5537	1559	1974	441	319		83.75%	13.72%	1.63%	0.90%	
Branch G	29	935	99086		329235	634460	6256	1745	2357	522	352		84.88%	12.72%	1.50%	0.90%	
Branch H	13	640	30080		248071	533387	5886	1384	1939	462	235		90.19%	7.93%	0.98%	0.90%	
Branch I	14	483	38545		387795	747571	6533	2220	2921	561	464		76.34%	20.40%	2.36%	0.90%	
Average	39	1504	176279		328287	628170	6182	1703	2432	513	351		76.36%	20.38%	2.36%	0.90%	