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The effect of post-purchase dissonance on customer equity for the car industry of South Africa

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The effect of post-purchase dissonance on customer equity for the car industry of South Africa



A research report submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Management in the field of Strategic Marketing
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ABSTRACT

Customer lifetime value (CLV) is important for all businesses. Increased customer lifetime value means increased profit, so it is in a company's interest to increase customer lifetime value as much as possible through any appropriate methods. The relationship between post-purchase dissonance and customer lifetime value has not been explored in the studied literature but it has been found that, when dissonance is cause by a consumer's experience of a product not living up to their expectations, loyalty decreases. This led the researcher to hypothesise a correlation between dissonance and customer lifetime value, which this study aimed to investigate. The research was conducted in the South African car industry and aimed to add the existing knowledge and, practically, to inform businesses whether taking action to decrease dissonance would have a significant positive effect on customer lifetime value, thereby better informing marketing strategies and budgets to have the most beneficial outcome. Using the data set of 116 respondents from around South Africa from a variety of age groups, the data collected was analysed to assess the potential relationships.

I, Kirsten O’Brien, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Management in Strategic Marketing at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other University.

Kirsten O’Brien

Signature…….

Signed at……. on the……day of……20……..

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CHAPTER 1: OVERVIEW OF THE STUDY

1.1. Introduction

Businesses are ever striving to improve profitability and shareholder value and improve methods of maximizing the effect of a company's marketing resources is of interest to all businesses. The customers of companies that sell high value items, especially those which cannot be returned and purchases into which significant time and effort has been invested, are likely to experience fairly substantial levels of dissonance (Sweeney *et al*., 2000). The car market in South Africa is a prime example of such an industry. The effect of this expected high level of dissonance on the bottom line is not yet fully understood and, after review of the existing literature, it was suspected that dissonance and customer lifetime value would have a causal relationship. This study's aim was to identify if spending a company's marketing budget on reducing customers' post-purchase frequency would be beneficial because of its possible correlation with customer lifetime value.

1.2. Context of study

1.2.1. South African car industry

The context of this study is the South African motor car industry. It was selected because the motor vehicle industry's customers were expected to experience relatively high levels of dissonance. This is because, in order for dissonance to occur, the purchase must be important enough for the consumer to have invested significant resources into the decision, such as time, money, or psychological costs; the consumer must be free to choose whichever product he/she wishes to purchase; and, once the decision is made, the consumer must not be able to change his/her mind and return the product for a different product (Sweeney *et al*., 2000). These three factors apply to the purchase of cars, which made it an appropriate choice of industry.

With the Rand in turmoil with the possibility of a downgrade by the rating agencies, political instability, limited electricity availability, recent droughts that reduced the farming output by 30%, decline in mining and manufacturing, unemployment up 27%, and business confidence is at its lowest in 6 years, the

motor industry has been one of the most harshly affected (Industrial Development Corporation, 2016). Additionally, car manufacturers are affected by potential political instability encouraging manufacturers to relocate their manufacturing plants to other markets, which is a costly process, and strike action in recent years has threatened profitability (England, 2013). The economic and political climate makes maintaining healthy profits more difficult so a better understanding of how companies can increase the intangible asset that is customer equity would be valuable in adjusting marketing efforts in order to enhance the financial position of the company.

1.3. Problem statement

1.3.1. Main problem

The main problem was to examine the relationship between an individual's experience of dissonance and his/her customer lifetime value and, therefore, the Customer Equity of the company, which is "the asset value of customers" (Kumar & George, 2007, p. 157). The aim of the study is to establish whether there is a causal relationship between high levels of dissonance in an individual and lower customer lifetime value.

1.3.1.1. Sub-problems

a) Sub-problem 1 is to examine the relationship between the emotional component of dissonance and an individual's customer lifetime value.

b) Sub-problem 2 is to examine the relationship between the cognitive component of dissonance and an individual's customer lifetime value.

1.3.2. Hypotheses

1.3.2.1. Null hypothesis 1:H_0: There is no relationship between high levels of dissonance and customer lifetime value.

1.3.2.2. Alternate hypothesis 1:H_1: High levels of dissonance are related to relatively low customer lifetime value in comparison to that of customers not experiencing dissonance.

Null hypothesis 1.1: H_0: There is no relationship between high levels of the emotional component of dissonance and customer lifetime value.

Alternate hypothesis 1.1: H_1: High levels of the emotional component of dissonance are related to relatively low customer lifetime value in comparison to that of customers not experiencing dissonance.

Null hypothesis 1.2:H_0: There is no relationship between high levels of the cognitive component of dissonance and customer lifetime value.

Alternate Hypothesis 1.2:H_1: High levels of the cognitive component of dissonance are related to relatively low customer lifetime value in comparison to that of customers not experiencing dissonance.

1.4. Purpose of study

The purpose of this study is to examine the effect that post-purchase cognitive dissonance has on customer equity in the context of the car industry of South Africa. Individuals who recently (within the last 1 to 24 months) purchased a vehicle were asked to complete a questionnaire to test their level of dissonance using Sweeney, Hausknecht & Soutar's (2000) twenty-two item scale and to provide information necessary to calulate customer lifetime value using Kumar and George's disaggregate method (2004), substituting with proxy variables.

1.5. Research objectives

It was intended for this study to address the theoretical and empirical objectives outlined below. A review of literature achieved the theoretical objectives and data collection, analysis, and interpretation addressed the empirical objectives.

1.5.1. Theoretical objectives

a. To review literature on customer lifetime value and the factors that affect customer lifetime value.

b. To review literature on dissonance, including its antecedents and effects on consumer behaviour.

1.5.2. Empirical objectives

a. To investigate whether there is a significant negative relationship between post-purchase dissonance and customer lifetime value.

b. To investigate whether there is a significant negative relationship between post-purchase cognitive dissonance and customer lifetime value.

c. To investigate whether there is a significant negative relationship between post-purchase emotional dissonance and customer lifetime value.

d. To investigate whether there is a relationship between high income-to-purchase price ratio on the level of dissonance experienced.

e. To investigate whether there is a significant variation in levels of dissonance when looking at demographic factors such as age groups, gender, and level of education.

1.6. Research questions

The following research questions are answered by the study:

a) To what extent does total post-purchase dissonance affect customer lifetime value.
b) To what extent does post-purchase cognitive dissonance affect customer lifetime value.
c) To what extent does post-purchase emotional dissonance affect customer lifetime value.
d) To what extent is the income-to-purchase price ratio related to post-purchase dissonance.
e) To what extent do demographic factors affect dissonance?

1.7. Significance of study

Theoretically, there is a gap in the literature regarding whether there is a relationship between dissonance and customer lifetime value, so this study aimed to contribute to the existing body of knowledge and attempt to provide new knowledge to narrow this gap.

In practice, the lack of evidence regarding the effect of dissonance on customer lifetime value means that the full extent of the damage of high levels of dissonance may not be fully understood. While the relationship between dissonance on satisfaction has been found to be negative (Sweeney, Soutar, and Johnson, 1996), the existing knowledge did not include information on its effect on customer lifetime value. A significant relationship between dissonance and customer lifetime value

would further highlight the importance and value to a firm of reducing customer dissonance and may therefore have marketing strategy implications for companies. Additionally, if it is found that one component of dissonance, either emotional or cognitive, has more impact on customer lifetime value than the other, this would help companies to direct resources and marketing budget to reducing this component of dissonance in order to improve customer lifetime value.

1.8. Delimitation of the study

The study will not specifically identify the reasons behind each individual's dissonance. This means that the proportion of dissonance caused by factors that car manufacturers can influence (such as customer service, post-purchases service and vehicle reliability) in comparison to those it cannot control (for example, a customer purchasing a 4X4 specifically for its off-road capabilities and then not being able to use it for off-road travel due to lifestyle factors), will not be measured.

1.9. Definition of terms

1.9.1. Post-purchase dissonance: buyer's remorse

Dissonance has been defined as a psychologically uncomfortable state that motivates an individual to attempt to reduce the dissonance (Festinger, 1958). Post-purchase dissonance is brought about when a review of a purchase yields information that is contrary to the opinion held by the consumer, which causes a psychological conflict (George & Yaoyuneyong, 2010). Dissonance can also be seen to be caused by expectations of undesirable results stemming from a purchase (Cooper and Fazio, 1984) that may lead to regret and remorse (Oliver, 1997).

1.9.2. Customer lifetime value

Customer lifetime value (CLV) is the value of an individual customer to a company over their expected time as the company's customer and it takes into account the value of purchases, expected number of purchases over the entire lifetime as a customer, and the unit marketing costs to serve that individual customer (Kumar & George, 2007, p. 157).

1.9.3. Customer equity:

Customer equity (CE) is “the asset value of customers” (Kumar & George, 2007, p. 157) and is the cumulative value of the customer lifetime value of current and potential customers. Because customer equity is an intangible asset that contributes to the profitability of the company, it is important that it is quantified and carefully managed (Kumar & George, 2007).

1.11. The flow of the study

The process followed when the study was conducted is presented below. Table 1 graphically depicts the chapters covered in the current study.

Table 1: Flow of the study

Chapter	Topic
Chapter 1	Introduction
Chapter 2	Literature review
Chapter 3	Research methodology
Chapter 4	Data analysis and results presentation
Chapter 5	Discussion of results
Chapter 6	Conclusion and recommendation

1.12. Summary of Chapter 1

Chapter 1 provides a summary of the study, outlines its objectives and presents the research purpose and questions. The scope of the study is also discussed and a flow diagram for the research outlines the framework of the study. The next chapter explores the existing body of knowledge and investigates the literature on which the research is grounded.

1.13. Synopsis of the study

Table 2 below provides the outline of the current study.

Table 2: Framework of the study

Chapter	Overview
Chapter 1: Introduction	Outline of the objectives, purpose, questions and scope of the research.
Chapter 2: Literature Review	Exploration of existing literature on customer lifetime value, factors that affect customer lifetime value, dissonance and consumer behaviour. The research variables are also discussed.
Chapter 3: Research Methodology	Explores details of the methodology, including the theoretical principles, the research framework, paradigm and design, limitations, validity, and reliability.
Chapter 4: Research Analysis and Results Presentation	Outlines the types of data analysis used and details the use of descriptive and inferential analysis.
Chapter 5: Discussion of Results	Discussion of results and interpretation of their meaning and assessing the presence or lack of support of the hypothesis.
Chapter 6: Conclusions and Recommendations	Discussion of the conclusions and inferences from them, as well as recommendations for businesses and academia.

2. LITERATURE REVIEW

2.1. Introduction

In this chapter, the existing literature surrounding customer lifetime value, factors that affect customer lifetime value, and post-purchase dissonance are explored. This chapter also discusses the research variables for the study, which are post-purchase cognitive dissonance, post-purchase emotional dissonance, total post-purchase dissonance, and each proxy variable that will be used to calculate customer lifetime value.

2.2. Theoretical Framework

2.2.1. Post-Purchase Dissonance: Buyer's Remorse

Post-purchase dissonance is comprises both cognitive dissonance and emotional dissonance and, in this study, both emotional and cognitive dissonance will be investigated and measured (Sweeney *et al.,* 2000). Emotional dissonance is the psychological discomfort experienced by an individual after the purchase (Soutar and Sweeney, 2003) while the cognitive component comes from the wisdom of the individual post-purchase that allows them to realise that they did not make the optimal choice (Oliver, 1997).

Even though dissonance is a psychological theory, it has been shown to have implications in marketing, such as negatively affecting customer satisfaction (Sweeney, Soutar, and Johnson, 1996), repurchase intention, word-of-mouth (Mao & Oppewal, 2010), and customer loyalty (Tse & Wilton, 1988).

While there is one other scale for measuring dissonance, developed by Montgomery and Barnes (1986), the construct and scale created by Sweeney, *et al.* (2000) was used in this study, as it has been shown to be reliable and valid.

Sweeney *et al*.'s (2000) twenty-two item scale includes three dissonance dimensions, namely emotional dissonance, wisdom of purchase and concern over deal. Wisdom of purchase and concern over deal are the components that make up of cognitive dissonance.

2.2.2. Customer lifetime value

Customer lifetime value is the value of an individual customer to a company over their expected time as the company's customer (Kumar & George, 2007, p. 157).

Customer lifetime value is very important to a firm as an intangible asset that has a direct effect on profitability, therefore the firm will attempt to decrease factors that reduce customer lifetime value and to encourage factors that increase customer lifetime value. There is not enough existing evidence of whether customer lifetime value and post-purchase dissonance are related but, due to dissonance's negative effect on customer satisfaction (Mao & Oppewal, 2010; Sweeney, Soutar, and Johnson, 1996) and loyalty (Tse & Wilton, 1988), it was expected that dissonance would have a negative effect on customer lifetime value too. It was also of interest to investigate the effect of each component of dissonance, namely emotional dissonance and cognitive dissonance, on customer lifetime value to see if one has more impact on customer lifetime value than the other.

2.2.3. Customer equity

Customer equity (CE) is "the asset value of customers" (Kumar & George, 2007, p. 157) and is the cumulative value of the customer lifetime value of current and potential customers. Because customer equity is an intangible asset that contributes to the profitability of the company, it is important that it is quantified and carefully managed (Kumar & George, 2007).

Customer lifetime value is calculated by assessing the value the customer is likely to bring to the company over the period of the relationship with the company. It considers both the resources spent on retaining customers and the income that a customer brings to the company and discounts these amounts to the present value (Kumar & George, 2007).

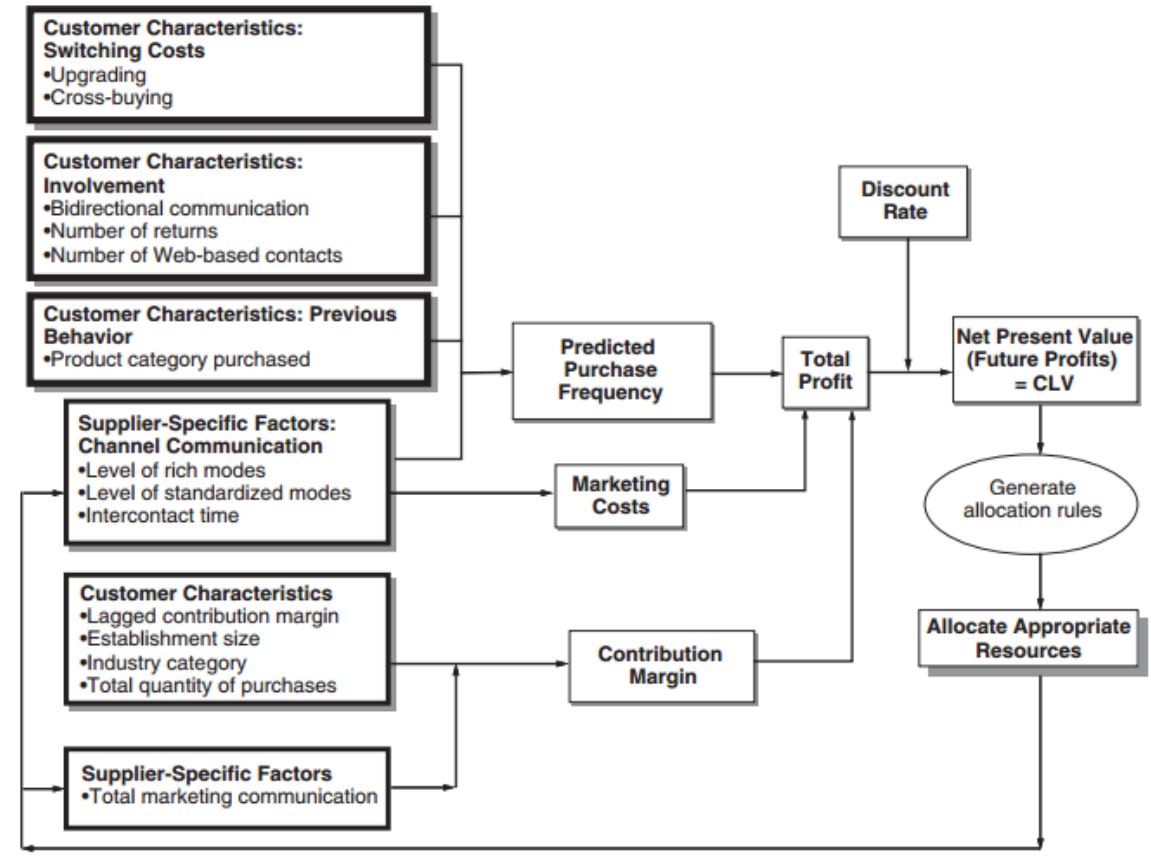
There are two approaches for measuring CE, namely aggregate-level and disaggregate-level. The aggregate-level approach analyses the average value

of 1 customer, allowing for informed decisions regarding resource allocation, and acquisition and retention expenditure. The disaggregate-level approach analyses individual customer's value to the company, instead of using an average, which allows the company to segment customers more accurately according to their characteristics, such as purchase preferences and their relative value to the company. This allows for better understanding of, and responsiveness to, customer needs and greater ability to allocate resources appropriately to retain the most valuable customers (Kumar & George, 2007). For this study, the disaggregate-level approach was used in order for the effect of an individual's post-purchase dissonance on that individual's customer lifetime value to be studied.

There are a number of methods for calculating customer equity using the aggregate-level approach, including the approaches created by Berger and Nasr (1998), Gupta and Lehmann (2003), and Rust, Zeithaml and Lemon (2000), which analyse average customer lifetime value at firm level, and Blattberg, Getz and Thomas (2001) which examines customer lifetime value of particular segments. Kumar and George's disaggregate method (2004) was the most appropriate for this study as it allowed for customer lifetime value to be calculated at individual level. This entails calculating the sum of cumulated cash flows for an individual customer, discounted to the present using the weighted average cost of capital (WACC). It relies on a customer's previous frequency of purchase to estimate future purchases, known as the "always-a-share" approach (Kumar & George, 2007).

Because of the lack of financial data relating to each respondent provided by the manufacturer, proxy variables will be used in order to calculate customer lifetime value by using data collected in the questionnaire.
Figure 1 shows the factors that contribute to customer lifetime value. Similar to Kumar & George's (2007) formula, the contribution margin and purchase frequency, less unit marketing costs and discount are seen to represent present value (Venkatesan & Kumar, 2004). This was useful to identify proxy variables for purchase frequency and unit marketing costs.

Figure 1: A conceptual framework for measuring and using clv



(Venkatesan & Kumar, 2004)

In this study, predicted purchase frequency (as a proxy variable for the customer lifetime value calculation) was determined by looking at previous purchase frequency, as reported by respondents. This is referred to as the lagged contribution margin, which is the use of previous purchasing behaviour to predict future purchases. It is expected that high frequency of previous purchases is related to high frequency of future purchases (Niraj, Gupta & Narasimhan, 2001). Respondents' estimation of whether their purchase frequency was likely to increase or decrease in future was also taken into account.

Figure 1 also explains how marketing costs were determined in this study: "rich" channel communication, meaning face-to-face contact with customers, is much more expensive for the company in comparison to standardised communication (for example direct mail or telephone conversations) or web-

based communication, which is the cheapest (Venkatesan & Kumar, 2004,109). This is because high levels of communication require more time on the part of sales or marketing staff, which is expensive for the company. This was taken into account when calculating the unit marketing costs of the particular customer.

2.3. Customer equity and customer lifetime value

Customer lifetime value is the value the customer is likely to bring to the company over the period of their relationship with the company. It considers both the resources spent on serving and retaining customers and the income that a customer brings to the company, all discounted to the present value (Kumar & George, 2007). The cumulative value of all a company's customers' customer lifetime value is equal to customer equity of the company.

There are two approaches for measuring customer equity, namely aggregate-level and disaggregate-level. As shown below in Kumar and George's Figure 2 below (2007), there are a number of methods for calculating customer using the aggregate-level approach, including the approaches created by Berger and Nasr (1998), Gupta and Lehmann (2003), and Rust, Zeithaml and Lemon (2000), which analyse average customer lifetime value at firm level, and Blattberg, Getz and Thomas (2001), which examines customer lifetime value of particular segments.

Kumar and George's disaggregate method (2004) will be used in this study to analyse customer lifetime value at individual level, which entails calculating the sum of cumulated cash flows for an individual customer, discounted to the present using the weighted average cost of capital (WACC). It relies on a customer's previous frequency of purchase to estimate future purchases, known as the "always-a-share" approach (Kumar & George, 2007). For this study, the disaggregate-level approach was used in order for the effect of an individual's post-purchase dissonance on his/her customer lifetime value to be studied.

Figure 2: Measuring customer equity

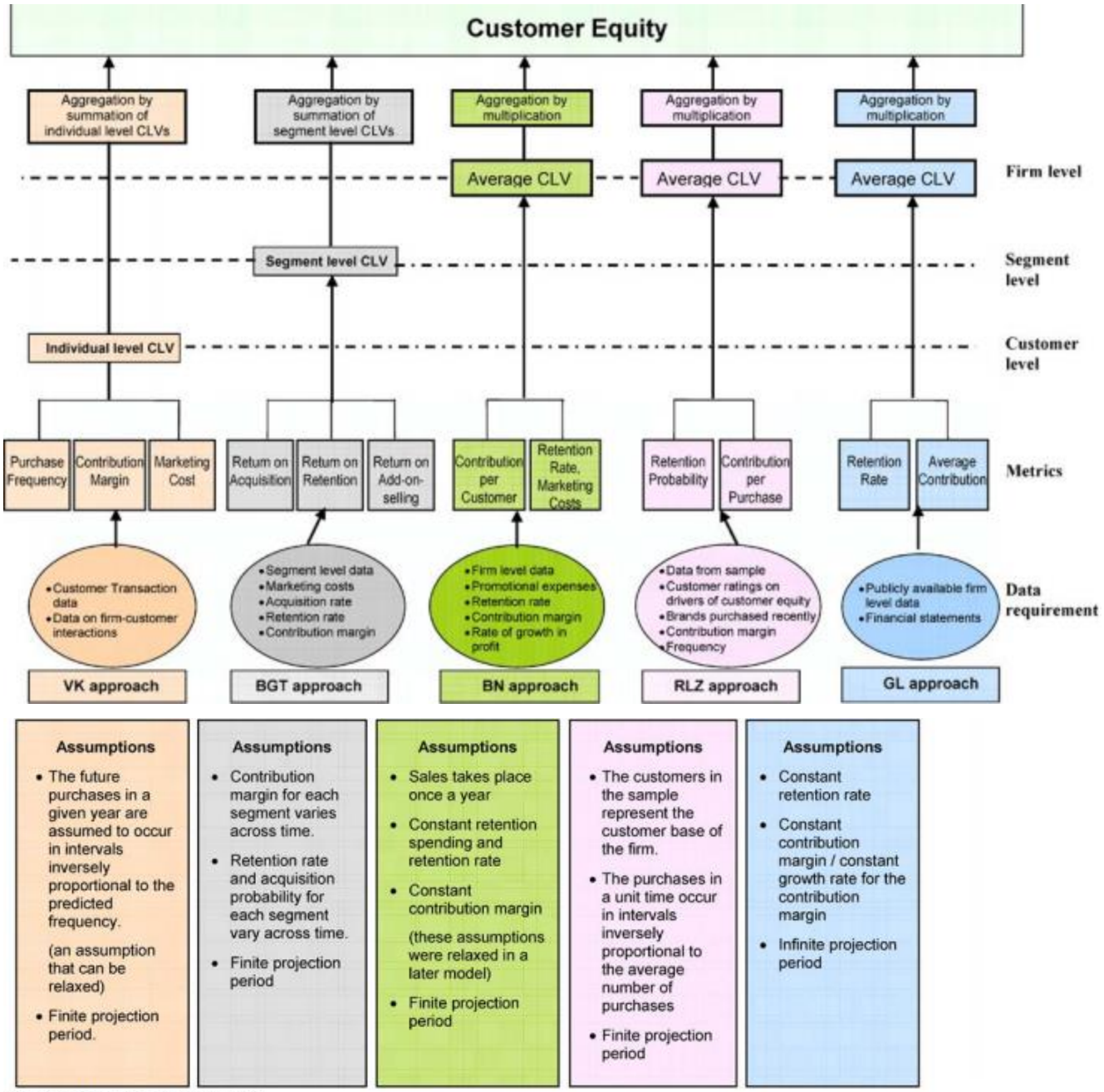


Figure 1 Measuring customer equity.

(Kumar & George, 2007, p. 159)

2.4. Segmentation of customers and the Pareto Principle

As discussed above, Kumar and George's disaggregate method for calculating customer lifetime value (2007) allows for an individual customer's value to be calculated, which allows marketers the opportunity to better allocate marketing efforts to retain the most profitable customers. The Pareto Principle states that, for most businesses, 20% of customers account for 80% of revenue. In other words, a small

portion of a company's customers are so profitable that they are more valuable to the company than all the other customers combined (Sanders, 1987).

This highlights the importance of retaining these customers, and the ability to segment customers based on their profitability, which Kumar and George's disaggregate method allows (Kumar & George, 2007), enables marketers to ensure that the most profitable clients are given the best possible customer experience, that they are satisfied and that they will be loyal to the company. This could be achieved, for example, through allocating more resources to serving them, giving more customised service to these individuals and offering incentives to them (Weinstein, 2002). If the Pareto Principle holds true for a particular company, theoretically 80% of the marketing budget should be spent on the most profitable 20% of clients, who are referred to as the 'vital few'. The other less profitable clients, the "trivial many" should be retained where possible (Craft & Leake, 2002).

In the context of the car industry, this segmentation in order to priorities the most profitable segments, is possible due to the fact that customers are generally known to the company. Unlike a fast moving consumer goods company, a car company has contact details, meaning they can be targeted with messages and special offers that would be too expensive to the company to offer to the entire customer base. Employees may also have detailed knowledge of customers' likes and dislikes, personalities and what incentive or benefit might make them most loyal (Weinstein, 2002). For example, some might enjoy special rates, others might want the option to buy a vehicle before it is available to most consumers, some will desire advice and personal contact with the sales person.

2.5. Consumer behaviour

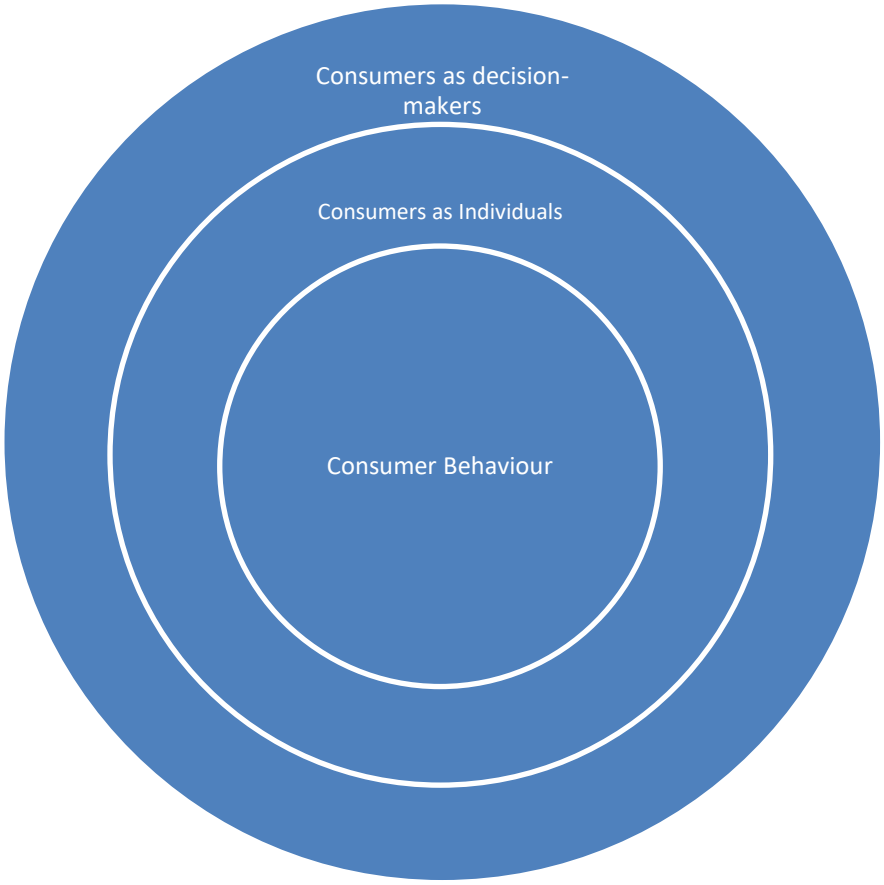
Consumer behaviour is the study of the processes involved when individuals, or groups of people, choose, use, evaluate and dispose of products or services (Solomon, Russell-Bennett & Previte, 2012).

Firms exist to satisfy consumers' needs, because doing so is profitable, so understanding these needs is vital in order to achieve marketing success.

Understanding of consumer behaviour helps companies to predict consumers' response to an factor (Solomon *et al*,. 2012), for example, in the context of this study, should the hypotheses be supported, a new programme aimed to reduce a customer's post-purchase dissonance by offering support and providing content that affirms their purchase decision may result in an increase in customer lifetime value.

Figure 3 shows that consumer decision making is influenced by the individual characteristic of the consumer, such as their perceptions, attitudes, learning and memory, motivation, values, involvement and their self-perception (Solomon *et al*., 2012).

Figure 3: Levels of consumer decision-making



Adapted from (Solomon *et al*. (2012)

For post-purchase dissonance, the most important of the individual characteristic of consumers is involvement, which is an individual's assessment of the relevance of the object based on their intrinsic needs, values and interests (Zaichkowsky, 1985). The

importance of the level of involvement to dissonance is because a high level of involvement in the purchase process is generally reserved for important decisions and, in order for dissonance to be experienced by the consumer, the decision has to be seen as important to the consumer (Sweeney *et al*., 2000). The factors that influence the level of involvement are shown in table 3.

Table 3: Antecedents of purchase involvement

Personal factors	Object or stimulus factors	Situational factors
Needs: safe mobility and/or status symbol	Differentiation of alternatives: a wide array of product options requires more involvement in evaluating and selecting the best option.	Purchase use: If a vehicle is bought to be used for an important race, the consumer will be more involved in the decision.
Importance: determined by the potential negative effects of making a bad decision	Source and content of Communication: information that is communicated to customers and how it is communicated influences the level of involvement.	Occasion: products bought for special occasions often result in more consumer involvement, for example a vehicle being purchased as an anniversary gift.
Interest: individuals are often more involved in purchases that interest them for example a car enthusiast would be more involved in a car purchase decision than the average consumer.		

Adapted from Solomon *et al.* (2013)

With regard to the factors that influence the consumer as the decision-maker, it is important to assess the way in which people evaluate their purchase, because this evaluation leads to potential feelings of post-purchase dissonance (Holloway, 1967). The process through which individuals make purchase decisions is also important because the more impulsive the decision, the less likely the chosen product will

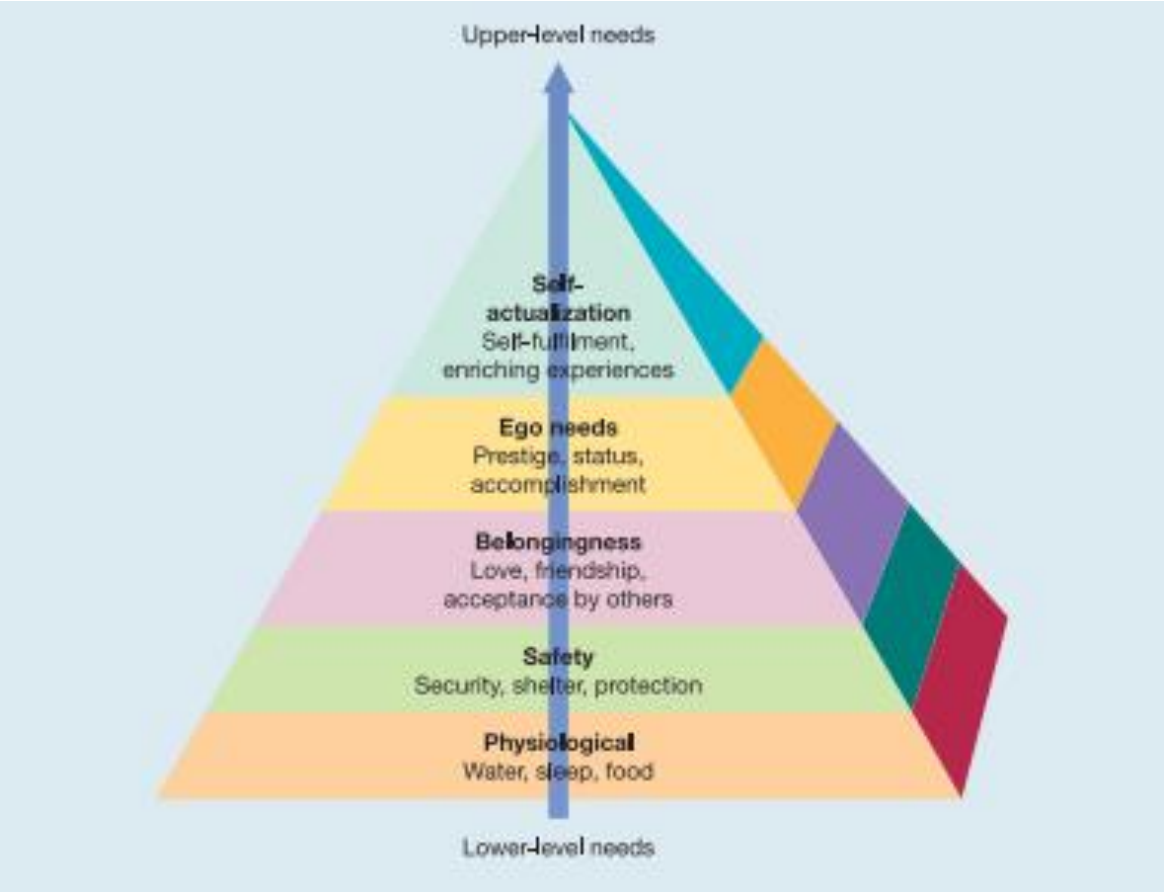
adequately satisfy the needs of the customer, although this can work in the opposite way, because purchase decisions that require lots of deliberation are generally more important to the consumer so the effect is more severe should the purchase not be satisfactory, meaning that post-purchase dissonance would be higher (Reed, 2013). The influence of the group to which the consumer belongs can be seen to have an effect on dissonance because, if there is group opinion that supports and reaffirms the purchase decision, dissonance is likely to be reduced. This support for the purchase decision could also come from opinion leaders, similarly reducing dissonance in consumers (Solomon *et al*., 2012).

The motivation for the purchase may also affect post-purchase dissonance. Expectancy theory suggests that consumer behaviour is a response to expectations of desirable outcomes caused by the purchase (Solomon *et al*., 2012)., for example in the case of a motor vehicle purchase, consumers make a purchase decision based on the expectation that the purchase will have the positive outcomes of easy and safe mobility. Specific products are chosen based on the consumer perception that the product's attributes, in comparison to other available products in the price range that the consumer can afford, will cause more positive consequences for the individual (Solomon *et al*., 2012). For example, one vehicle may be chosen over other similar products because of its perceived better performance in terms of speed, safety features, technological features (such as the ability to self-park), performance in terms of off-road capability, or the attractiveness of its appearance.

In terms of Maslow's hierarchy of needs, shown below in Figure 4, the purchase of a car fulfils the individual's need for safety, as it allows an individual to have mobility without the need to use public transport, which in South Africa is associated with higher risks of travel, due to bad driving and the higher risk of death, than when using one's own mode of transport (Oxford, 2013). 50% of South African youth regard the use of public transport to be "not very safe" or "not at all safe" in terms of the risk of attacks or accidents, and this risk would be reduced for individuals deciding to use self-transport instead (News 24, 2013). The purchase of a vehicle can also help to satisfy the ego needs of consumers who see having a car, or a particular type of car, as a status symbol because its high purchase price indicates affluence. This conspicuous consumption of luxury items is a way of signalling one's wealth, or perceived wealth,

to others and may even have an effect on the way we view ourselves (Sundie, Kenrick, Griskevicius, Tybur, Vohs & Beal, 2011).

Figure 4: Levels of need in Maslow's Hierarchy



(Solomon *et al*., 2012, p. 99)

Post-purchase dissonance may be decreased by a consumer behaviour in which individuals pay attention to adverts and other information that supports their purchase, and the viewpoint that led to the purchase decision and ignores information that goes against it, which is called selective exposure (Solomon *et al*., 2012).

In terms of the consumer as the decision-maker, consumer behaviour is affected by an individual's decision-making process, the way they shop, buy, evaluate and dispose of the product, and by group influence and opinion leadership (Solomon *et al*., 2012).

With regard to the consumer's decision-making process, the decision-making perspective may have an impact on post-purchase dissonance in consumers. For big

purchases, consumers make decisions based on rational thought (rational perspective) or based on the totality of the situation and purchase decisions cannot be explained entirely by rational thought (experiential perspective) (Solomon *et al*., 2012). Purchase decisions made using rational consideration of one's needs, and which product would best satisfy those needs, may result in less dissonance. This is because the purchase would be more likely to meet the individual's needs, in comparison to a purchase was made using the experiential perspective, meaning the reason for the purchase was not entirely logical (Solomon et al., 2012).

Another process that is of interest is the evaluation of the product after use and the extent of the customer's satisfaction. This is particularly important when studying dissonance because post-purchase dissonance originates when the evaluation of the purchase yields results that are not congruent with the customer's expectations or original opinion, which causes psychological conflict (George & Yaoyuneyong, 2010).

Reference groups and opinion leaders are also relevant to the discussion about post-purchase dissonance. The opinions of a consumer's reference group or from an admired and trusted opinion leader that reinforce the logic behind purchase decision may make dissonance less likely, whereas if these opinions go against the logic behind the purchase decision, dissonance may be more likely (Solomon *et al*., 2012).

2.6. Post-purchase dissonance

Post-purchase dissonance is a psychologically uncomfortable state (Festinger, 1958), which is caused by an incongruence between the expectation of a purchase and a customer's review of the purchase post-consumption (George & Yaoyuneyong, 2010). Consumers compare post-purchase perceived actual performance to expected performance. If the expected performance outweighs the actual performance, a negative disconfirmation is caused. If the actual performance outweighs the expected performance, a positive disconfirmation is caused. Positive disconfirmation or confirmation result in satisfaction while negative disconfirmation results in dissatisfaction (Woodruff, Cadotte & Jenkins, 1983). This incongruence between what was expected and outcome (disconfirmation) results in post-purchase dissonance, which the consumer then tries to alleviate by adjusting the product performance

cognition so that it aligns with the pre-experience expectation. In other words, a person may begin to feel more positively towards the purchase in order to make the gap between what was expected and the outcome smaller in order to reduce their dissonance. The extent of this is dependent on the psychological costs associated in comparison to the importance of the purchase (Festinger, 1957; Holloway, 1967). This process of reducing dissonance may include seeking new information that affirms their purchase decision, avoiding any information that is contrary to their original feelings about the product before purchase and even asking for a refund or exchange, which, in the case of a car, is very unlikely, unless there is something wrong with the car (Lamb, Hair & McDaniel, 2008)

Consumers learn from their previous purchases and, when they cause high levels of cognitive dissonance, the consumer is likely to alter their behaviour in order to avoid the negative experience of post-purchase dissonance in future. This means that the experience of post-purchase dissonance negatively affects customer loyalty and repeat purchase (Tse & Wilton, 1988; Cohen & Goldberg, 1970). This means that the expected customer lifetime of those who experience high levels of post-purchase dissonance would likely be shorter than those who don't experience it, which means fewer expected purchases and decreasing customer lifetime value to the company.

Post-purchase dissonance has also been found to have an effect on word of mouth, meaning that individuals experiencing high dissonance are more likely to speak negatively to others about the purchase in an order to process their feelings of dissonance (Lamb, Hair & McDaniel, 2008). This means that the effects of dissonance may go beyond the customer lifetime value and affect the current and potential customer lifetime value of other customers and target customers.

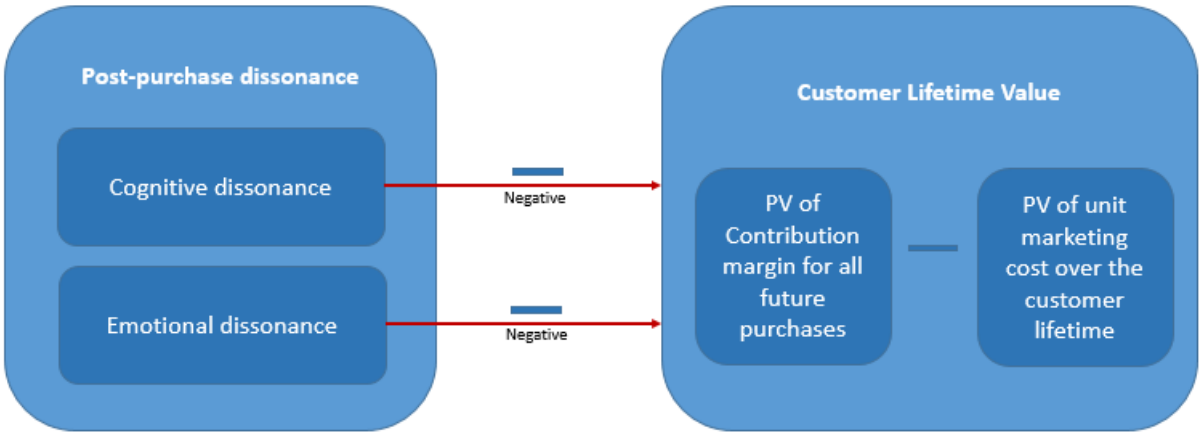
2.7. Discussion of variables

The variables of interest in this study are post-purchase dissonance, including its emotional and cognitive components, and customer lifetime value.

2.8. The conceptual model

In order to assess the possible relationships between variables, a conceptual model is needed. Figure 5 shows the expected relationship between variables, which will be tested in this study. It is expected that both cognitive and emotional dissonance, and therefore total dissonance, will have a negative effect on customer lifetime value.

Figure 5: The conceptual model of the study



2.9. Conclusion of literature review

The literature review highlights the importance of understanding consumer behaviour as a method for improving the post-purchase and consumption stages for consumers. Specifically, the negative effect of post-purchase dissonance on an individual's psychological well-being is harmful to their feelings towards the company, and this negative experience can reduce loyalty.

The literature review provides evidence that encouraged the researcher to believe that there would likely be a correlation between post-purchase dissonance and customer lifetime value in the car industry in South Africa.

2.10. Summary of Chapter 2

Chapter 2 presents the theoretical framework of the study, including the theory of post-purchase dissonance, customer lifetime value and customer equity. The variables are discussed and the conceptual model is presented.

CHAPTER 3: RESEARCH METHODOLOGY

3.1. Introduction

Chapter 3 details the methodology that is used in this research report to answer the research questions. A research methodology combines theoretical principles with a framework that guides how the research is done in a specific paradigm and provides a translation of the paradigm into more easily understood research language (Sarantakos, 1998). Within this chapter, the research paradigm, design, process, limitations, validity and reliability are discussed.

3.2. Research paradigm

A research paradigm is “a set of beliefs, values and techniques” shared by an academic community (Sarantakos, 1998) that guides how knowledge is studied and interpreted. It details the purpose, motivation and expected outcomes for the research (Bogdan & Biklen, 1998) and, according to Cohen & Manion (1994, p.38), all research designs should start with the delimitation of the research paradigm in order to define the philosophical intent and motivation for the study.

There are four types of research paradigms, namely positivist/postpositivist, interpretivist/constructivist, transformative and pragmatic. Positivism can be seen as the “scientific method” of research because of its focus on finding correlations and causal relationships between dependent and independent variables using experimental methods (Creswell, 2003, p.7). As shown in Table 4 below, positivism is most commonly associated with quantitative research methods.

Positivism can also be applied to the social sciences because of the belief that causal explanations of social phenomena can be found (Mertens, 2005, p.8). Instead of scientific experiments, data is collected by observing or measuring an experience “in order to predict and control forces that surround us” (O’Leary, 2004, p.5).

An interpretivist paradigm approaches research with the intention of gaining an understanding of human experience (Cohen & Manion, 1994, p. 36) and participants’ views are commonly used as the perspective of the situation being studied (Mackenzie

& Knipe, 2006). Because the interpretivist paradigm considers reality to be socially constructed
(Prasad, 2005), emphasis is placed on interpretation and observation in order to understanding the social world (Snape & Spencer, 2003). As shown in Table 4 below, the research method is mostly qualitative.

The transformative paradigm developed out of a feeling that the existing paradigms were not representative of the majority of the world population but rather, for the most part, had been developed by white men by studying white men (Mertens, 2005, p.17). A mixed methods approach serves the Transformative paradigm best, to allow for more complete worldview and consideration of many viewpoints (Mackenzie & Knipe, 2006).

The pragmatic paradigm places the research problem at the centre and can be seen to be the most flexible paradigm, not restricted by the positivist expectation that a single scientific could gain insight into all spheres of social inquiry (Mertens, 2005, p.26). Research and data collection methods are chosen based on their likelihood of providing the right insights, with no approach seen as being intrinsically right or wrong to the paradigm (Mackenzie & Knipe, 2006).

Table 4: Paradigms, methods and tools

Paradigm	Primary research methods	Data Collection Method
Positivist/ Postpositivist	Quantitative	Experiments, tests, scales
Interpretivist/ Constructivist	Qualitative	Interviews, observations, reviews of existing documents, analysis of visual data
Transformative	Mixed methods	A number of methods that avoid discrimination
Pragmatic	Varies according to the specific research purpose	Those of either/both of positivist and interpretivist methods

(Mackenzie & Knipe, 2006)

The positivist paradigm is the most appropriate for this study. This is due to the intention to identify relationships between variables, possibly causal ones, which requires statistical analysis and a quantitative approach. The nature of customer lifetime value as a financial concept means that the data created would be quantitative. Although dissonance is a social phenomenon, it is possible to measure it using Sweeny *et al*.'s (2000) scale, using a Likert scale, which, in the right context, produces data that can be analysed statistically (Allen & Seaman, 2007).

3.3. Research strategy

Research strategy is the general orientation to the conduct of social research (Bryman, 2015) and it describes how we gain knowledge from the world (Hennink, Hutter & Bailey, 2010). There are three research strategies, namely qualitative, quantitative, and mixed methods (Bryman, 2015).

Quantitative research is the attempt to objectively measure a phenomenon without the researcher influencing the data collection (Hennink *et al*., 2010). Due to its focus on objective measurement, quantitative research methods in social science has been criticised for its inability to understand the respondent's point of view (Lincoln & Guba, 1985); however, it provides the benefit of being able to, in the right circumstances, generalise the results to the broader population being studied (Hennink *et al*., 2010).

Qualitative research is an approach in which people's experiences are thoroughly examined using methods that collect content-rich data, such as focus groups, in-depth interviews and biographies. In this way, an understanding of the situation from the participant's perspective can be gained (Hennink *et al*., 2010). Qualitative research is interpretive, meaning that a researcher must study individuals in the context of their lives in order to understand the meaning people place on things with consideration of their cultural, social, economic and physical background (Denzin and Lincoln, 2008).

The mixed methods approach combines quantitative and qualitative research in one study (Creswell & Clark, 2007). While this approach has the benefit of "the best of both worlds", as it theoretically allows for both understanding of the human experience and objective measurement (Bryman, 2015) and comparison of variables and results in the

most accurate depiction of the phenomenon being studied (Tashakkori & Teddlie, 2003), some argue that mixed methods is flawed because qualitative and quantitative research stem from separate paradigms and carry different epistemological commitments (Bryman, 2015).

3.3.1. Data collection methods

A data collection method is a technique employed to collect empirical research data (Tashakkori & Teddlie, 2003). There are 6 methods of data collection: questionnaires, interviews, focus groups, tests, observation, case studies, and grounded theory.

Questionnaires are data collection instruments that the respondent fills in to record his or her data. Questionnaires contain a series of questions, which can include open-ended questions, which encourage collection of more in-depth data about the topic to allow for qualitative analysis, or closed-ended questions to provide standardised answers that can be more easily analysed quantitatively, or a combination of both (Tashakkori & Teddlie, 2003). Questionnaires can be used effectively in both quantitative and qualitative research.

Interviews involve an interviewer asking a series of questions of the respondent. Interviews have the benefit of giving the interviewer the ability to ask for clarification on ambiguous responses and probe for more information. However guarding against interviewer bias, which distorts the results, is important and interviewing is generally a time consuming method of data collection (Tashakkori & Teddlie, 2003). Interviews can be used effectively in both quantitative and qualitative research.

Focus groups involve small groups of people, from the population being studied, who discuss specific topics, guided by the researcher, in order to obtain in-depth information about how people feel or think about a topic and to gain an understanding of how individuals react to one another (Tashakkori & Teddlie, 2003). Focus groups are most effective for qualitative research.

Tests attempt to find causal links between variables by placing respondents in constructed situations that allow for the variables to be more easily studied. The effect of an intervention can be measured by comparing changes in the experimental group by comparing to a control group. It is not appropriate to use tests in some social science research as putting participants through unfortunate situations, such as retrenchment would not be ethical and would be harmful to participants (Saunders, Lewis & Thornhill, 2000).

A case study method involves an empirical study of a relevant phenomenon within its real life context using multiple sources of evidence (Robson, 2002:178) and is most appropriate if a rich understanding of the context of the research is sought (Morris and Wood 1991).

Data collection through observation is the methodical recording of events, behaviours and objects of significance in a social setting, which are studied through watching, listening, touching, smelling and/or tasting in order to gather information. It is commonly used in qualitative anthropological studies and in other social science disciplines (Kawulich, 2005).

3.3.2. Research strategy for the current study

For this study, a quantitative approach is the most appropriate in order to allow for statistical and financial analysis and because of the research's grounding in the positivist paradigm. The research method that was used was a questionnaire. The research would have benefitted from the use of financial customer data from the vehicle manufacturers but unfortunately, due to legal limitations because of Act 4 of 2013: Protection of Personal Information Act (South Africa, 2013), this was not possible.

3.3.3. Justification for using a quantitative method

Quantitative research is rooted in the belief that phenomena can be reduced to empirical indicators which represent the truth and the goal is to measure and analyse causal links between variables (Denzin and Lincoln, 1994). Qualitative

research allows for complex problems to be reduced to a number of variables in order to allow for hypothesis testing (Saunders, Lewis & Thornhill, 2000, p.113). The purpose of the research was to identify whether there was a link between customer lifetime value and post-purchase dissonance, in order to either prove or disprove the hypotheses, which is why quantitative research was carried out.

Additionally, the positivist paradigm of the study makes a quantitative approach appropriate. The ideal outcome of the research would be generalisabilty of results, meaning that the findings could inform decision-making about post-purchase dissonance and customer lifetime value in businesses around South Africa, or even the world, although the lack of a suitable sample framework meant the findings are less generalisable. This desire to extrapolate the findings to the population as a whole makes quantitative research more appropriate here, because of the ability to ensure an acceptable level of validity and reliability through statistical methods.

3.4. Research design

There are 5 broad research designs, including longitudinal, cross-sectional, case study, comparative, and experimental (Bryman, 2012; Owens, 2002).

Cross-sectional design provides a snapshot of the phenomenon under study at one point of time (Saunders *et al*., 2000), and the sample is selected to represent the population as a whole (Owens, 2002).

Longitudinal design allows change in a phenomenon over time to be examined by collecting data at two different points in time (Saunders *et al*., 2000). A cohort longitudinal study collects data using probability samples of the same population but the samples are often different for each collection of data, whereas a panel longitudinal study collects data at various points from the same sample of respondents (Owens, 2002).

A cross-sectional approach was used in this study to measure customer lifetime value and post-purchase dissonance of the population using a sample. This is appropriate because Kumar & George's (2007) formula for calculating customer lifetime value estimates the total value of a customer over their lifetime as a customer, using their financial data, and dissonance could be tested using Sweeney *et al*.,'s (2002) 22 point scale, so both could be measured at one point in time in order for any relationships between them to be examined.

A longitudinal design would have allowed for analysis of the effect of post-purchase dissonance on customer lifetime value over time to be studied, meaning that the effect on subsequent purchases from dissonance associated with the individual's recent vehicle purchase could be determined. However, the time constraints made it impossible to use this method, as the average respondent buys a car only every 4.55 years, so the time between measurements would have to be at least that length of time, which is longer than the time allowed for the study. The lack of probability sampling frame would have necessitated panel design, because, in cohort design, the samples selected may not be accurately representative of the population so comparing them to each other would be flawed (Saunders *et al*., 2000). Asking the same sample to complete the questionnaire twice in the panel design may also have distorted respondents' answers.

3.4.1. Data collection instrument

Questionnaires are one of the data collection methods appropriate for conducting qualitative research, specifically if questions are closed-ended as this allows for creation of data that can be analysed with statistical methods (Sale, Lohfeld & Brazil, 2002). This was the case for the majority of questions in this study. The use of a questionnaire for data collection is further justified in this study by to the need to measure attitudes, the need for a relatively quick turnaround due to the time frame of the study, the need to allow people from all over South Africa to participate, the need for perceived anonymity, due to the necessity to discuss personal financial information and information regarding an individual's feelings, all of which are possible using questionnaires (Tashakkori & Teddlie, 2003).

3.4.2. Target population

The target population is the group of people that the research aims to study and from which the sample is drawn using a method that allows the sample to represent the target population (Bryman, 2012). In this study, the population of interest were all South Africans who recently purchased new, used or demo model motor vehicles made by any manufacturer, specifically in the 1 to 24 months preceding the data collection.

3.4.3. Sampling

A sample is a selection of individuals from the target population who are carefully chosen in order to maximize the similarity of their characteristics to the characteristics of the population, thus minimizing sampling error. This maximises generalisability of results to the target population (Miller & Salkind, 2002).

There are two main categories of sampling techniques: probability sampling and nonprobability sampling (Saunders *et al*., 2000).
Probability sampling ensures that each individual in the population has a known and equal chance of being sampled. This requires a sample framework that includes each member of the population from which individuals can be selected by randomised methods (Miller & Salkind, 2002; Lohr, 2009). The lack of this framework in this study means that nonprobability sampling was necessary.

Nonprobability sampling is when the probability of each individual in the population being selected for the sample is unknown and unequal (Saunders *et al*., 2000). Nonprobability sampling is used when a sample framework for the entire population is not available, making probability sampling impossible. Instead a sample is selected of individuals that are likely to be typical of the population and that sample represents the population as a whole (Miller & Salkind, 2002). It is not possible to measure or control sampling error and bias in nonprobability sampling, so it produces less-generalisable results and does not allow for statistical inferences to be made (Miller & Salkind, 2002) but is useful when there is no available sampling frame. The results from

nonprobability sampling can still be of value and can still answer the research questions (Saunders *et al*., 2000).

Table 5: Types of probability and nonprobability sampling methods

	Sampling Method	**Description**
Probability Sampling	Simple Random Sampling	Each population member is assigned a unique number and numbers are selected for the sample at random (Miller & Salkind, 2002).
	Systematic Sampling	Select a random starting point and choose the nth individual to be included in the sample. “n” is determined by the size of the population divided by the desired size of the sample (Miller & Salkind, 2002).
	Multistage random sampling	Perform sampling in stages, each of which with probability methods (Miller & Salkind, 2002).
	Stratified sampling	Select samples, using probability techniques, from each subset of the population to ensure each is represented in proportion to its size (Miller & Salkind, 2002).
	Cluster Sampling	The population is divided into clusters and random probability samples are taken of each to ensure each cluster is represented in proportion to its size (Miller & Salkind, 2002).
Nonprobability sampling	Convenience sampling	Individuals are sampled based on their easy accessibility by the researcher (Davies & Hughes, 2014).
	Quota Sampling	Individuals are chosen at random from each subset of the population in order to make sure each is represented (Davies & Hughes, 2014).
	Purposive Sampling	The researcher chooses people who are believed to be representative of the population to be included in the sample (Davies & Hughes, 2014).

The number of sample units required for a study is dependent on the specific study at hand, and the type of research being conducted. In a student setting, the minimum sample size is sometimes seen as being 60 to 120 sample units (Davies & Hughes, 2014), but for this study, a wider sample would have been ideal because of the quantitative nature of the study. The sample size in qualitative studies should be large enough to allow for there to be sufficient power in statistical analysis (Miller & Salkind, 2002).

3.4.4. Sampling Method for Current Study

Probability sampling would have been ideal to allow for better generalisabilty of the results to the population as a whole (Miller & Salkind, 2002). Because of the lack of availability of a sampling frame, probability sampling was not possible in this study, so a nonprobability sampling technique, convenience sampling, was used.

Convenience sampling allowed the researcher to sample as many respondents as possible within the limited timeframe of the study, ensuring they were part of the population by using the screening questions to determine a) if the individual has bought a car in the last 1 to 24 months and b) if they live in South Africa. People who answered no to either of the screening questions were not included in the sample.

3.5. Data analysis and interpretation

3.5.1. Data cleansing and processing

Data cleansing is the process of detecting and removing errors or inconsistencies from the data in order to improve the quality of the data (Rahm & Do, 2000).

Because of the relatively small sample size, the researcher was able to remove incomplete responses and identify errors manually. For example, individuals who reported buying a new car 2 months previously in question 32 of the questionnaire in the appendices, but gave “1996” as the year the car was manufactured in question 33, there is clearly inconsistency. In these cases, the answers to other questions were considered to identify any factors that offer

more insight into the discrepancy. For instance, following on the above example, the purchase price and model of the car were considered as an indication of whether the car was likely new or used.

Data was also cleansed by the researcher formatting the responses; for example, for the purchase price in question 34, one respondent wrote “R200k” instead of “R200 000”.

Data was coded in a format that allowed for analysis in SAS 9.4 and a key was produced for each question as a reference for what the coding represented. The responses for question 31, pertaining to the model and manufacturer of the vehicle, were varied since it had an open-ended format. The researcher assigned a number to each vehicle manufacturer and inserted the corresponding number for the particular vehicle information. For example, if only the model was given, such as “M5” or “3-series BM” it was changed to the code for the manufacturer, in this case “6” to represent “BMW”.

It was also considered if the individual’s income made it likely that they would purchase a car for the purchase price, as some respondents’ purchases were extremely high in comparison to their income. This can be explained in part by their parents or other family or friend buying the vehicle for them, or by individuals who rely on debt to fund their lifestyle. These individuals’ responses were therefore not removed from the data.

Incomplete responses were eliminated if there was any missing data for questions 1 to 44, which took the number of respondents from 169 to 116. Questions 45, 46, 47 and 48 in the questionnaire were not used in analysis because they were irrelevant so responses with answers missing for these questions were not eliminated.

Finally, the researcher ensured that the type of data produced for each question was accurate in order for analysis to take place, which is an important step before commencing analysis (Saunders, Lewis & Thornhill, 2000).

3.5.2. Solving for customer lifetime value

Kumar & George's (2007) disaggregate method necessitated the researcher solving the equation in order to calculate customer lifetime value. This was performed using Microsoft Excel 2013 to apply the formula to the data, while using assumptions to determine how to substitute in proxy variables.

The first step of this calculation was to divide the calculation into two parts, the first of which was the left-hand side of the formula, which calculated the present value of the profit per customer for the company over the customer lifetime. The second part was the right-hand side of the calculation, through which the present value of the unit marketing costs to the company for that customer over the customer lifetime was calculated (Kumar & George, 2007, p. 161).

A sensitivity analysis was also conducted in Excel for each proxy variable in order to test the effects of the proxy variable and decide whether the assumptions behind it were sound and if it should be included. This was performed by assessing the change in total customer lifetime value when they were applied.

The inclusion of proxy variables meant that some outliers were created and they were distorting the results. It was decided not to adjust these respondents with the proxy variable that caused the problem.

3.5.2. Solving for post-purchase dissonance

Emotion, cognitive and total dissonance were calculated for each respondent using Microsoft Excel 2013. Emotional dissonance was calculated for each respondent by finding the average of their responses to questions 1 to 14, which correspond to emotional dissonance. This average was the individual's score for emotional dissonance.

Similarly, the average of the responses to questions 15 to 21 produced the individual's cognitive dissonance score and the average of questions 1 to 21 produced the individual's total dissonance score.

The average of all respondent's scores for emotional, cognitive and total dissonance indicated the normal level of dissonance for the sample.

3.5.3. Correlation

SAS 9.4 was used in the analysis of the data to test for correlation between customer lifetime value and the three types of dissonance. Correlation was tested and presented in a Pearson Correlation Coefficient table to show the existence and strength of relationships between the variables in question.

3.5.5. Validity

Validity refers to the extent that the observations and findings of a study are close and accurate representations of the phenomenon being studied (Davies & Hughes, 2014). It determines if the study accurately measures what it was intended to measure (Golafshani, 2003). In quantitative research, validity is related to the design and construction of the research tool (Davies & Hughes, 2014) and a test of validity is if the result is replicable (Golafshani, 2003). If results are affected only by manipulation of the independent variable, and results are a generalisable to the population as a whole, the study is said to be truly valid (Onwuegbuzie, 2000).

The twenty-two point scale to measure dissonance was developed by Sweeney et al. (2000) in order to provide an instrument for measuring dissonance with better validity than previous scales, such as Montgomery and Barnes' (1993), which included factors not linked to dissonance in the scale (Sweeney et al., 2002). It has since been used successfully in many other studies, across a variety of industries and countries, (Soutar & Sweeney, 2003; Gino, 2008; George & Yaoyuneyong, 2010; Soutar & Sweeney, 2003; Mao, Oppewal & Walker, 2006; Graff, Sophonthummapharn & Parida, 2012).

Similarly, Kumar and George's (2004) disaggregate approach for calculating customer lifetime value has been used in numerous studies since its creation and has been found to be valid (Gupta & Zeithaml, 2006; Villanueva, Yoo & Hanssens, 2008; Kumar, Ramani & Bohling, 2004); however, the use of proxy

variables means that the validity and reliability may have been compromised in this study.

3.5.5.1. External validity

According to Tongco (2007), external validity relies on a representative sample, selected through probability sampling, so the fact that probability sampling was not used in this study means the results are not statistically representative of the population as a whole. However, in terms of applying the findings to businesses in the motor industry, the results may be useful.

3.5.5.2. Internal validity

In development of Sweeney *et al*.'s (2002) twenty-two item scale for measuring dissonance, a number of measures were taken to improve internal validity. The scale items were developed through exploratory research, which made use of four focus groups, and the items this developed were assessed by 12 consumer behaviour experts. Factor analysis was used to refine these items and coefficient beta was used to clarify the existence of groups into which these items fall. Scale content was examined by graphing items to the total scale correlations, which was repeated for each factor, and eliminating any items that caused a severe drop in the Y-axis of the graph (Sweeney *et al*., 2002). Discriminant validity was investigated by assessing correlation between variables and items were removed if they showed lower correlation than other items in each dimension or overlapped dimensions (Sweeney *et al*., 2002).

The study aimed to establish predictive validity in terms of determining whether the measure of post-purchase dissonance could predict customer lifetime value (Bergkvist & Rossiter, 2007); however, the use of proxy variables hampered this.

3.5.6. Reliability

Reliability can be defined as the degree to which results are consistent over time and how accurate they are as a representation of the entire population.

Similarly to validity, reliability indicates the extent to which a study can be reproduced under a similar methodology (Joppe, 2000: p. 1).
There are three types of reliability in qualitative research. The first is the degree to which a measurement, when repeated, gives the same outcome (scale reliability), the second is the stability of the measurement over time and the third is the similarity of measurements within a similar period of (Joppe, 2000: p. 41 -42).

Sweeney *et al*.'s (2000) scale for measuring dissonance showed good scale reliability, with a coefficient alpha of 0.83, when applied to the electricity retail sector (O'Neill & Palmer, 2004). The fact that alternate-form reliability is used in Sweeney *et al*.'s (2000) scale, meaning that similar questions, worded differently, are used to measure each attribute, means that reliability is improved.

3.5.7. Sampling frame

A sampling frame is a list from which the sample is drawn (Bryman, 2012). An ideal sample framework would have included all customers who bought a car from particular car dealerships within the preceding 1 to 24 months as this was the original target population. Due to the lack of cooperation from car manufacturers/dealerships, because of Act 4 of 2013: Protection of Personal Information Act (South Africa, 2013), this was not possible in this study, so the population of the study became all South Africans who had purchased a car in the preceding 1 to 24 months before the study. There was no available sample frame for this because of the vast size of the population. This meant probability sampling could not be used and convenience probability sampling was selected instead, which did not necessitate a sampling frame.

3.5.8. Sampling size

The target sample size was 150 respondents. 169 responses were collected; however 53 of them were unusable due to being incomplete so the final sample size was 116 respondents.

3.5.9. Description of the respondents

The sample was comprised of almost equal numbers of male and female respondents, and with regard to age, respondents belonged to a variety of age groups, but there were far more respondents under 30 years of age than in the other age groups. The largest proportion of respondents were married and almost as many were single, with divorced and widowed respondents being in the minority. There is a very high level of education among respondents with 72% having completed an undergraduate degree or higher. The income brackets of respondents were varied but 52% earned over R400 000 per year and the best represented single income bracket was the highest, with 19% of respondents reporting annual earnings of over R1 million. The most common occupation for respondents was non-managerial employment (30%), followed by managerial employment (22%), and then directorship of a company (16%). All respondents lived in South Africa and had bought a motor vehicle in the 1 to 24 months preceding the study.

3.6. Data collection

The data collection method that was seen as best fitting the research objectives was a questionnaire. Using this method allowed for a combination of open-ended and closed-ended questions (Tashakkori & Teddlie, 2003). Open-ended questions were used when there were too many possible answers to use a multiple choice structure - such as the respondent's job title and vehicle make and model - while closed-ended questions created standardised answers that could be easily statistically analysed, such as the questions relating to income, age and post-purchase dissonance.

The modes of survey administration are personal, telephone, web and a combination of methods. Web administration of the survey was employed in this study and the benefits were the speed and low cost of data collection, ability to collect data from respondents all over South Africa, time for the respondent to complete the questionnaire and ability to do so when it suited them, no interviewer bias, no need to capture data because its inception in electronic format and high perceived anonymity, which was important due to the need to ask questions relating to income and personal feelings, meaning answers are likely to be more honest than if respondents were

answering questions in a public setting (Owens, 2002). It was also appropriate because most questions were short and closed-ended, which makes web-based questionnaires easier. The downsides of using a web-based questionnaire include the inability to explain the questions to confused respondents and the fact that, because more young people generally use the internet, there are likely to be more younger respondents than older ones (Owens, 2002).

3.7. Ethical considerations

The process of studying social sciences often necessitates contact and interaction with individuals and this means that there are potential ethical concerns for the research. The potential benefit of the research in terms of understanding needs to be weighed against the potential harmful effects of the research before proceeding. For this reason, ethics should be considered in every stage, from the initial design onwards (Webster, Lewis & Brown, 2013).

There are five principles that protect the ethical fibre of a study:

a) research should not be overly demanding on participants;
b) participation should be on the basis of informed consent;
c) participation should be voluntary and individuals should not be coerced or pressured into participating;
d) any adverse effects should be investigated and participants should be informed of the potential harm; and
e) Confidentiality and anonymity must be ensured (Bryman, 2012).

This study took the following action to ensure potential harm to respondents was mitigated:

a) The web questionnaire was fairly short and participants could stop at any point if they did not want to finish the questionnaire, without any pressure of being in the presence of an interviewer.
b) The questionnaire was undertaken by respondents on a purely voluntary basis with no compensation or reward.
c) All respondents knew they were taking part in the study, knew the purpose of the study, and were happy for their information to be collected and analysed.

d) Confidentiality and anonymity were of utmost importance due to the sensitive nature of some of the data. The respondents' names were not collected and each respondent's data was assigned a random respondent identifier code that had no link to their identity.

3.8. Limitations of the study

Because of the limited timeframe of the study and due to the nature of the course for which this study was completed, the potential sample size was limited to the number of sample units who could be reached within the data collection timeframe. This limited sample size makes some qualitative analysis methods less accurate.

The fact that nonprobability sampling was used, due to the lack of access to an appropriate sampling frame, means that findings cannot be generalised to the population as a whole.

The use of convenience sampling meant that there are likely more respondents from Gauteng in the sample. Because social media and other networking tools were used to gain respondents, the location of the researcher's friends and acquaintances likely influenced the geographic dispersion of the respondents due to fact that the researcher lived in Johannesburg at the time of the data collection.

Due to Act No. 4 of 2013: Protection of Personal Information Act (South Africa, 2013), vehicle companies were not permitted legally to share their customer's financial data with the researcher or allow for the questionnaire to be emailed to them, even if all communication had been made by the manufacturer, all data was anonymous and the researcher were to have signed a non-disclosure agreement. This meant that proxy variables had to be used to calculate customer lifetime value by substituting them into the equation. While this gave a good understanding of an individual's customer lifetime value, the results were presumably less accurate than they would have been should the financial data have been available.

3.9. Summary of Chapter 3

In Chapter 3, the research paradigm and design are discussed, as well as the demographic profile of the target sample. The research instrument and data analysis are also discussed and the ethical conduct and limitations of the study are considered.

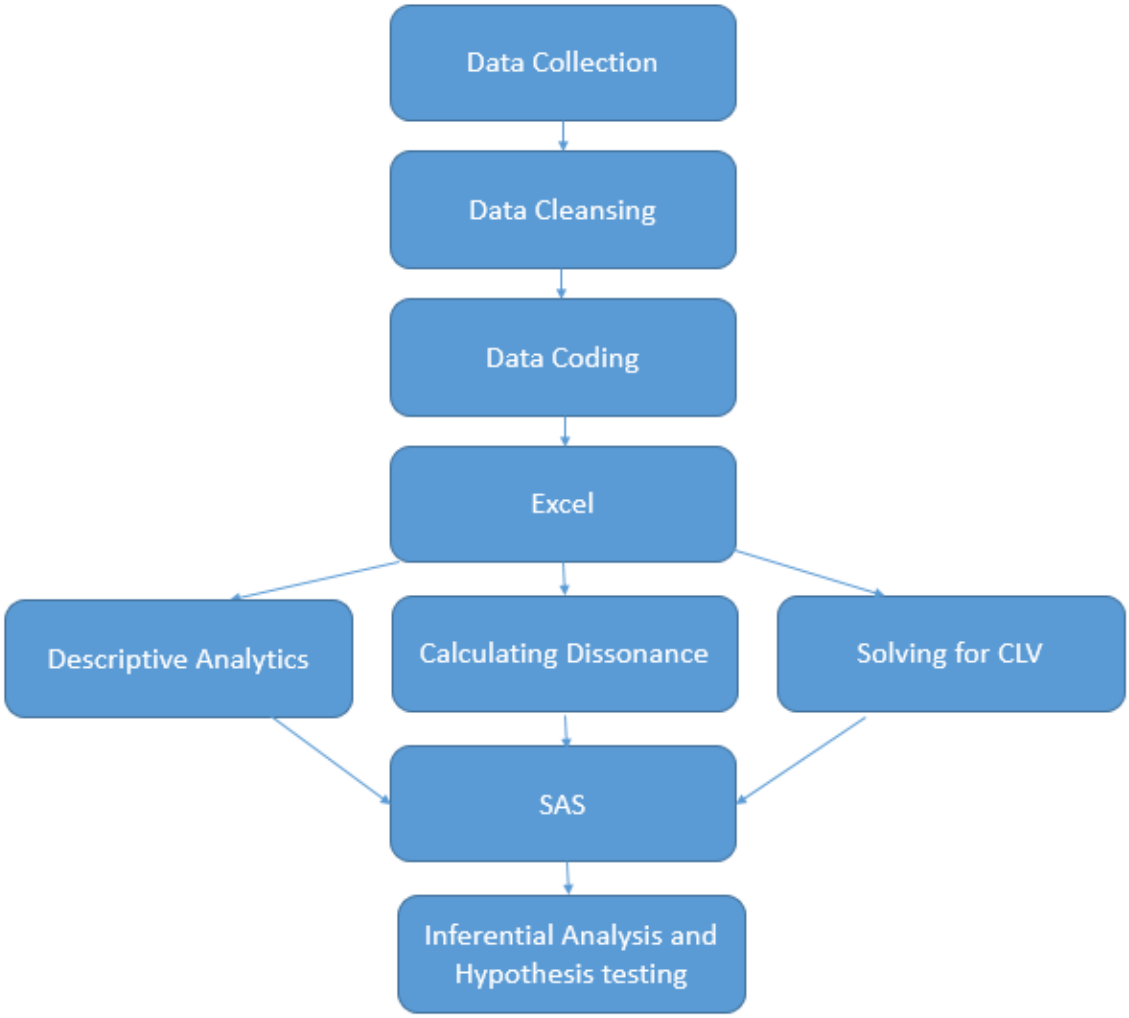
CHAPTER 4: DATA ANALYSIS AND RESULTS PRESENTATION

4.1. Introduction

Quantitative data analysis is the process of taking raw data and organising is, using graphs and statistical methods, in order to provide useful information about the sample, identify any relationships between variables and answer the research questions (Saunders, Lewis & Thornhill, 2000). The purpose of this chapter is to present and explain the results of this empirical study.

First, descriptive analysis is used to present the features of the data and the sample using numerical indices and graphs (Fraenkel, Wallen & Hyun, 1993). Inferential analysis is then used to investigate the research questions and prove or disprove hypotheses (Trochim & Donnelly, 2001). Figure 6 below gives an overview of the data analysis process followed in this study.

Figure 6: Overview of the data analysis process



4.2. Descriptive statistics

Descriptive statistics is the tools at the disposal of the researcher that allow for the characteristics of the sample units, in this case individual respondents. This includes indices, graphs and tables (Fraenkel, Wallen & Hyun, 1993).

Respondents all lived in South Africa and had purchased a motor vehicle in the 1 to 24 months preceding the study. Table 6 below gives an overview of the descriptive statistics relevant to this study.

Table 6: Descriptive statistics

Gender	Frequency	Percentage
Male	59	49.12%
Female	57	51.08%
Total	**116**	

Age	Frequency	Percentage
Under 30	57	49%
31-40	20	17%
41-50	4	3%
51-60	25	22%
61-70	8	7%
71 and older	2	2%
Total	**116**	

Marital Status	Frequency	Percentage
Married	58	50%
Single	50	43%
Divorced	7	6%
Widowed	1	1%
Total	**116**	

Level of Education	Frequency	Percentage
Less than Grade 12	5	4%
Grade 12	9	8%
Diploma	18	16%
Undergraduate degree	29	25%
Postgraduate degree	55	47%
Total	**116**	

Income	Frequency	Percentage
Less than R100 000	12	10%
R100 001 - R200 000	15	13%
R200 001 - R300 001	13	11%
R300 001 - R400 000	15	13%
R400 001 - R500 000	8	7%
R500 001 - R600 000	10	9%
R600 001 - R700 000	4	3%
R700 001 - R800 000	6	5%
R800 001 - R900 000	6	5%
R900 001 - R1000 000	5	4%
Above R1000 000	22	19%
Total	**116**	

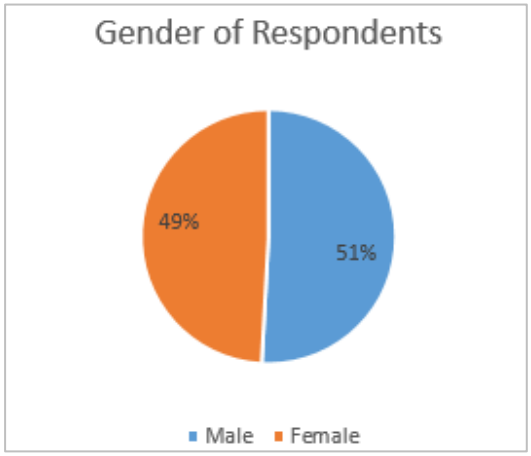
Job Tilte	Frequency	Percentage
Non-managerial employee	35	22556%
Manager	25	16111%
Student	5	3222%
Unemployed/ Housewife	4	2578%
Professional	12	7733%
Self employed	9	5800%
Retired	8	5156%
Director	18	11600%
Total	**116**	

4.2.1. Demographics

4.2.1.1. Gender

There were almost equal numbers of male and female respondents who made up 50.08% and 49.12% respectively as shown in figure 7.

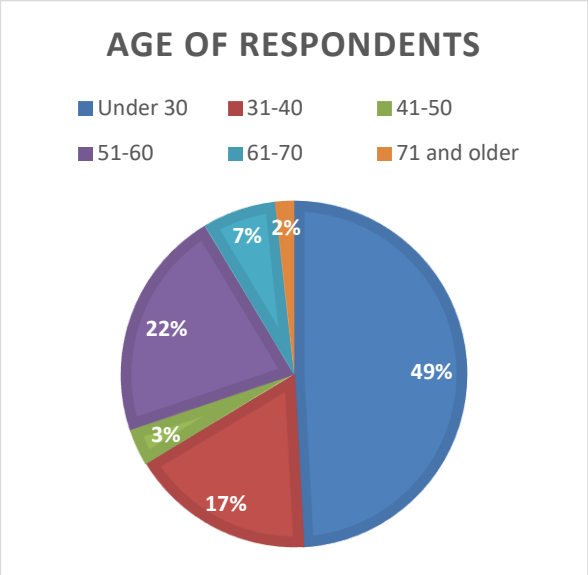
Figure 7: Gender of respondents



4.2.1.2. Age

In terms of age groups, figure 8 below shows that the largest proportion (49%) of respondents were under 30 years of age. Strangely there were low numbers of people aged 41 to 50 years.

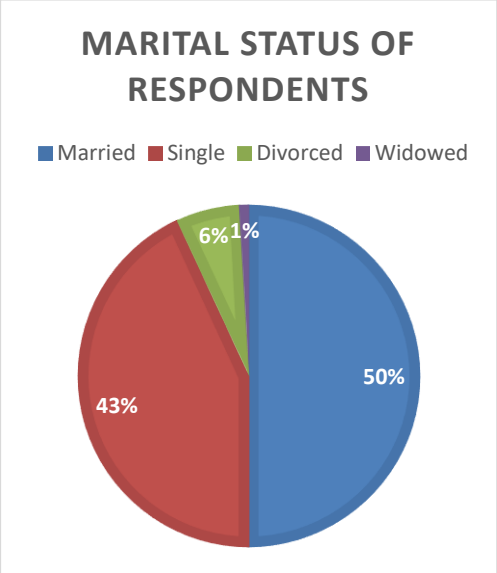
Figure 8: Age of respondents



4.2.1.3. Marital status

As shown in Figure 9, 50% of the respondents were married, 43% were single, 6% were divorced and 1% were widowed.

Figure 9: Marital status of respondents

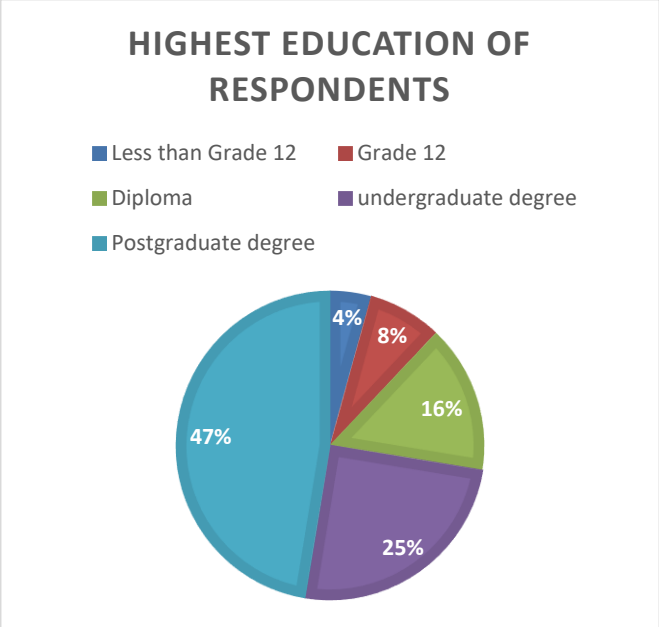


4.2.1.4. Level of education

As shown in Figure 10 below, 47% of respondents held postgraduate degrees, 25% held undergraduate degrees, 16% had completed a

diploma, 8% had finished grade 12, and 4% had not completed grade 12.

Figure 10: Highest education of respondents



4.2.1.5. Occupation

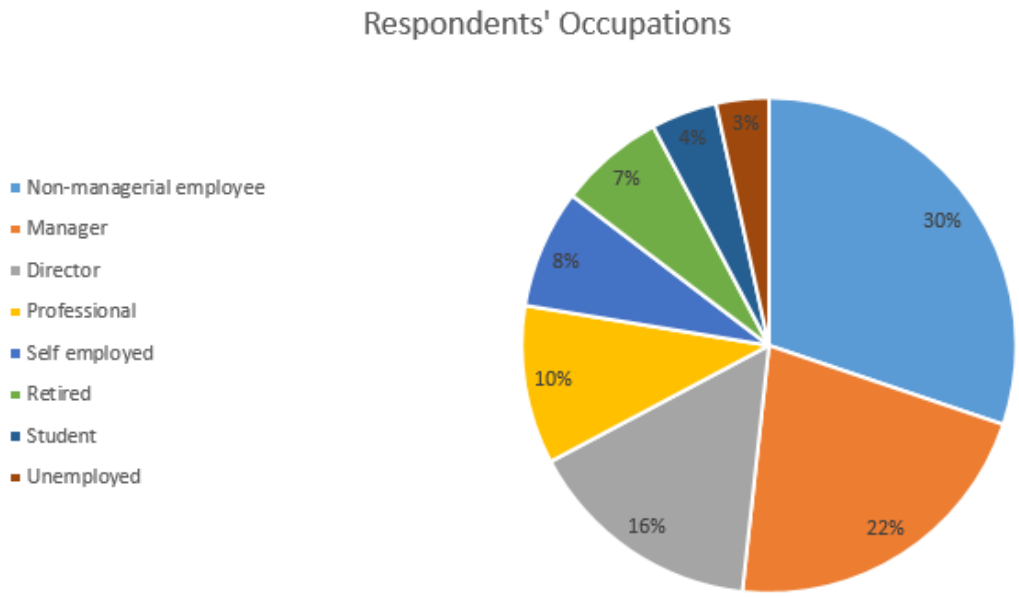
Respondents reported occupations were categorised into 6 groups:

a) Non-managerial employees: individuals employed by a company in a position without managerial responsibility.
b) Managers: Individuals employed in managerial roles.
c) Directors: Individuals who hold directorship roles.
d) Students: Full-time students.
e) Unemployed or housewife/househusband: individuals who don't have jobs, either because they're seeking jobs or because they choose to stay at home as housewives/househusbands.
f) Professionals: Individuals with professional qualifications, for example advocates, medical doctors, physiotherapists and engineers.
g) Self-employed: Individuals who run their own business.
h) Retired: Individuals who have retired.

As shown in Figure 11, the largest segment of the sample hold non-managerial employment, followed by managerial roles, and then

directorship. Very few students or unemployed people were in the sample.

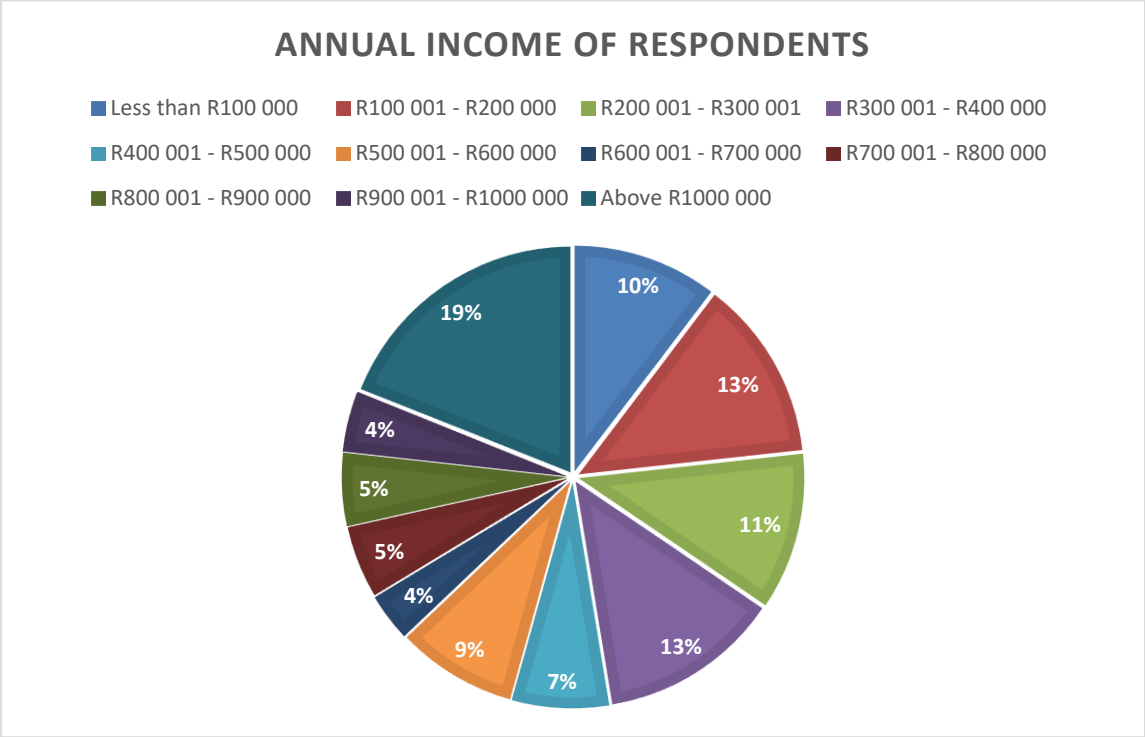
Figure 11: Respondents' occupations



4.2.1.6. Income level

The annual income of respondents is shown in Figure 12. The average annual income of the population was R550 000, although the largest cohort within the sample in terms of income bracket, making up 19% of respondents, earned more than R1 million per year.

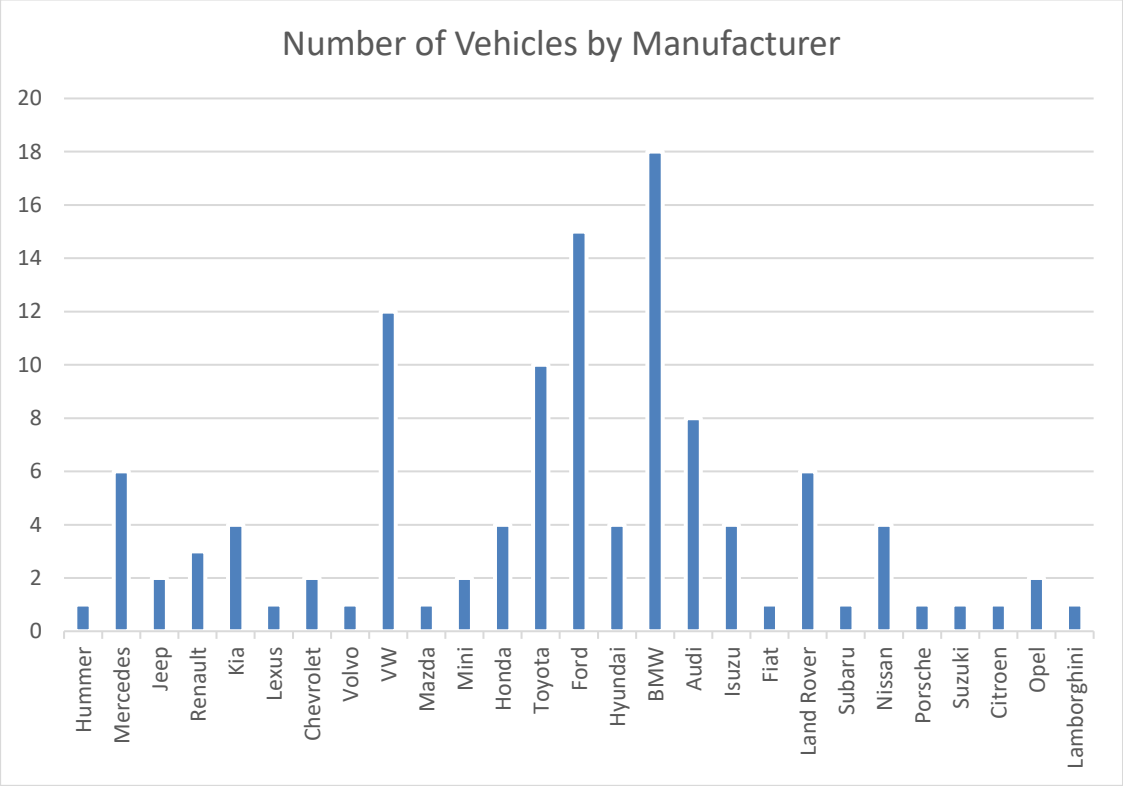
Figure 12: The annual income of respondents



4.2.1.7. Vehicle manufacturer of vehicle purchased

There were a broad range of manufacturers from which cars were purchased, as shown in Figure 13 below. The most well represented manufacturers were BMW, Ford, and Volkswagen.

Figure 13: Number of vehicles per manufacturer bought by respondents



4.2.2. Customer lifetime value and segments

In order to assess whether the Pareto principle, which is the theory that 20% of customers often represent 80% of profits, applied to this study, the customer lifetime value of the 23 most valuable respondents (20% of 116) were added together. Their combined customer lifetime value was R2 276 181, which is 43.19% of the total CLV of the study. This does not align with the Pareto principle but an explanation could be that customers that make large and frequent purchases often seem to demand the most contact with employees, which is costly to the company.

4.3. Reliability measurements

In order to ensure the integrity of the study, a Cronbach's coefficient alpha was performed to test for reliability.

4.3.1. Cronbach's coefficient alpha

Cronbach's coefficient alpha gives a measure of reliability from 0 to 1, where 1 is complete internal reliability and 0 represents a complete lack of internal reliability (Bryman, 2012).

Nunnally & Bernstein (1994) consider a Cronbach's coefficient alpha score to be sufficiently reliable when it is over 0.7, while Bryman (2012) recommends a study being considered to have good internal validity only if the Cronbach's coefficient alpha score is over 0.8.

Cronbach's coefficient alpha was performed on the data from this study and the internal consistency of both the emotional and cognitive constructs that make up dissonance were high. The standardised Cronbach's alpha statistic was 0.982587 for emotional dissonance, as shown in Table 7.

Table 7: The Cronbach's coefficient alpha of emotional dissonance

Cronbach Coefficient Alpha	
Variables	**Alpha**
Raw	0.979849
Standardized	0.982587

As shown in Table 8, all of the variables that make up emotional dissonance also have an alpha of over 0.7, and most are over 0.8.

Table 8: Cronbach's coefficient alpha with deleted variables for emotional dissonance

Cronbach Coefficient Alpha with Deleted Variable				
	Raw Variables		Standardized Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
Q1	0.892862	0.978047	0.890782	0.981220
Q2	0.714120	0.981035	0.715507	0.983684
Q3	0.844316	0.978962	0.843533	0.981890
Q4	0.760129	0.980666	0.760586	0.983056
Q5	0.944834	0.977499	0.946824	0.980419
Q6	0.940739	0.977777	0.942529	0.980480
Q7	0.800646	0.979530	0.799139	0.982516
Q8	0.923281	0.977582	0.921584	0.980780
Q9	0.908401	0.977789	0.906841	0.980991
Q10	0.930559	0.977434	0.930532	0.980652
Q11	0.885048	0.978136	0.890566	0.981223
Q12	0.880684	0.978295	0.884790	0.981305
Q13	0.894961	0.978632	0.900428	0.981082
Q14	0.874311	0.978467	0.880137	0.981371
Emotional_Dissonance	1.000000	0.976749	0.999659	0.979657

For cognitive dissonance the standardised Cronbach's alpha statistic was 0.9262, displayed in Table 9 below.

Table 9: The Cronbach's coefficient alpha of cognitive dissonance

Cronbach Coefficient Alpha	
Variables	Alpha
Raw	0.921536
Standardized	0.926295

Table 10 shows that the two of the variables that form cognitive dissonance (question 15 and question 21) have an alpha score of less than 0.7, which means that reliability was slightly lower for this construct.

Table 10: Cronbach's coefficient alpha with deleted variables for cognitive dissonance

Cronbach Coefficient Alpha with Deleted Variable				
	Raw Variables		Standardized Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
Q15	0.637015	0.919845	0.630656	0.925598
Q16	0.715358	0.913073	0.706263	0.919884
Q17	0.707601	0.914424	0.702161	0.920197
Q18	0.822421	0.904034	0.812234	0.911659
Q19	0.708612	0.913573	0.726448	0.918337
Q20	0.721909	0.912738	0.737257	0.917504
Q21	0.675616	0.916284	0.696141	0.920656
Cognitive_Dissonance	0.990258	0.895838	0.989512	0.897325

4.5. Analysis of customer lifetime value in Excel

Kumar & George's (2007) formula to calculate disaggregate customer lifetime value (Figure 14) requires each customer's information for each of the formula's variables to be entered, and then the researcher must solve the equation in order to find the total present value of the customer to the company over the customer lifetime.

In order to apply this formula to all the respondents at once, this process was performed in Microsoft Excel.

Figure 14: Kumar & George's (2007) formula to calculate disaggregate CLV

$$CLV_i = \sum_{y=1}^{T_i} \frac{CM_{i,y}}{(1+r)^{y/\text{frequency}_i}} - \sum_{l=1}^{n} \frac{\sum_m c_{i,m,l} \times x_{i,m,l}}{(1+r)^{l-1}} \quad (9)$$

where,

CLV_i	lifetime value of customer *i*,
$CM_{i,y}$	predicted contribution margin from customer *i* in purchase occasion *y*,
r	discount rate,
$c_{i,m,l}$	unit marketing cost for customer *i* in channel *m* in year *l*,
$x_{i,m,l}$	number of contacts to customer *i* in channel *m* in year *l*,
frequency_i	predicted purchase frequency for customer *i*,
n	number of years to forecast, and
T_i	predicted number of purchases made by customer *i* until the end of the planning period.

(Kumar & George, 2007, p. 161)

4.5.1. Proxy variables

Because financial data from the vehicle manufacturers was not available, due to Act No. 4 of 2013: Protection of Personal Information Act (South Africa, 2013), some of the formula's variables had to be substituted with proxy variables that were collected in the questionnaire.

4.5.1.1. Customer contribution margin

A combination of purchase price and average industry profit margin, which was 2.89% according to Statistics South Africa (2012), was used to calculate the predicted contribution margin of customer "*i*" for purchase occasion "*y*" ("CM*iy*" in the below formula).

4.5.1.2. Discount rate

An interest rate of 5.4%, which represents the average money market interest rate in South Africa across the big four banks (Absa, 2016; Nedbank, 2017; FNB, 2016; Standard Bank, 2014), was used as "*r*" in the formula, which is the applicable discount rate. The revenue (left hand

side of equation) and costs (right hand side of equation) from all expected purchases for an individual in their customer lifetime were discounted to present values using the discount rate *"r"* to find the customer lifetime value at present value.

4.5.1.3. Purchase frequency

The purchase frequency was determined by using respondents' previous purchase frequency (based on their answer in question 39). This is appropriate because of the lagged contribution margin, which indicates that previous purchasing behaviour can be used to predict future purchases. High frequency purchases in the past mean that frequent purchases in the future are likely (Niraj, Gupta & Narasimhan, 2001).

4.5.1.4. Number of years to be forecast

Average life expectancy in South Africa, which is 61 years (Lehohla, 2014), less the respondents' age was used to find "*n"*, the number of years to be forecast.

4.5.1.5. Expected number of purchases in customer lifetime

"Ti", which is the expected number of purchases by the individual during the expected customer lifetime, was determined by taking the number of years to be forecast, "*n"*, and dividing it by the expected purchase frequency.

4.5.1.6. Unit marketing costs

In order to find the unit marketing costs, the average cost of a minute of a salesperson's time was calculated by dividing the average salary of R84,882 (PayScale, 2017) by the number of minutes worked per year, assuming 20 days leave and 12 public holidays per year and that 8 hours of work were done each day. This meant that the cost per minute is 78c.

The average time per interaction between customer and salesperson, and the cost thereof, were estimated per type of transaction as shown in Table 11.

Table 11: Number of minutes and cost to the company of each type of interaction

Type of interaction	Time spent with client	Cost per interaction
Face-to-face	20 minutes	R15.51
Telephone	5 minutes	R3.88
Direct Mail	4 minutes	R3.10
Web-based	2 minutes	R1.55

"Xi,m,l", which is the number of contacts to the customer in channel "*m"* in year "*l"*, was determined using the responses to question 44 using Table 12**Table 12: Number of interactions per year based on reported frequency**

Frequency	Times per year
Daily	365
Weekly	52
Monthly	12
Bi-Annually	2
Annually	1
Never	0

4.5.2. Sensitivity analyses

There were three proxy variables that could be modified using other variables for which there is data from the questionnaire, which are:

a) Adjusting previous purchase frequency with the respondents' expected change in frequency, as reported by them.
b) Adjusting the expected customer lifetime value based on their propensity to switch.

c) Adjusting life expectancy based on income.

A sensitivity analysis was also conducted in Excel for each proxy variable, in order to test the effects of the proxy variable and decide whether the assumptions behind it were sound and if it should be included. This was performed by assessing the change in total customer lifetime value when they were applied.

4.5.2.1. Adjusting purchase frequency with expected change

In order to gain a more all-encompassing representation of the respondents' likely future purchase frequency, the researcher needed to consider the implications of adjusting the historic purchase frequency based on the respondent's self-reported expected change in purchase frequency, from the answers to question 40. The proposed adjustment followed the scale shown in Table 13.

Table 13: The scale of adjustment to previous purchase frequency using predicted change in purchase frequency

Predicted change in Frequency	Change implemented
Increase steeply	+75%
Increase slightly	+25%
Stay the same	0%
Decrease slightly	-25%
Decrease steeply	-75%

A sensitivity analysis was conducted to assess the effect of this adjustment, and the net effect was an increase of average customer lifetime value from R61 009 to R90 773, an increase of 49%. As shown in Table 14.

Table 14: Changes in customer lifetime value when purchase frequency was adjusted with predicted change

	Average CLV	Total CLV
Average CLV (original)	R 61 009	R 6 527 926
Average CLV with changes to purchasing frequency	R 90 773	R 9 712 713

This is not congruent with the responses to question 41 as, because there were more people who predicted their purchase frequency would decrease than those who predicted an increase, the overall effect of the adjustment was expected to be a decrease in customer lifetime value. This is shown in Figure 15.

Figure 15: Respondents' answers to question 41

This discrepancy was due to the fact that there were 10 outliers who were distorting the results because their purchase frequency was becoming unrealistically frequent (more frequent than once per year) when adjusted as above. To bring the outliers within normal range, the outliers' purchase frequency was not adjusted with their expected increase in frequency from question 41.

Even so, the average customer lifetime value increased slightly from R61 009 to R63 442. Some respondents indicated that their purchase frequency would increase but the effect of this did not result in the purchase frequency becoming more frequent than once per year, so the adjustment to their frequency remained. For individuals with high customer lifetime value because of high purchase price and/or low marketing costs, this impact meant they became even more valuable to the company and caused the increase in customer lifetime value when the adjustment was made.

4.5.2.2. Adjusting the expected customer lifetime value based on their propensity to switch

The customer lifetime (the number of years an individual will likely be a customer) was calculated by finding the difference between age and life expectancy. However, this does not take into consideration the effect of switching manufacturer and is only accurate if it is assumed that customers will stay loyal to the same manufacturer the rest of their lives. Question 42 provides information regarding the respondents' loyalty to the manufacturer and gave an indication of their propensity to switch. It was suspected that adjusting the customer lifetime based on this data would give a more realistic result.

In order to adjust for the impact of propensity to switch on customer lifetime, the respondents' answers to question 42 were used to adjust *n*, using the following scale in Table 15.

Table 15: Percentage change adjustment based on propensity to switch

Response	Likelihood of staying a customer (midpoint)	Likelihood of staying a customer (upper limit)	Likelihood of staying a customer (lower limit)
Extremely likely	91%	100%	83%
Very likely	75%	83%	66.4%
Quite likely	58%	66.4%	49.8%
Quite unlikely	42%	49.8%	33.3%
Very unlikely	25%	33.3%	16.6%
Extremely unlikely	8.3%	16.6%	0%

If the midpoint of the intervals is used, it assumes that customers who said they were extremely likely to purchase a car from the same manufacturer would remain loyal for 91% of their purchases throughout the rest of their lives and someone who reported they were extremely unlikely to purchase a car from the same manufacturer would remain loyal for 8.3% of the future purchases in their lifetime.

The scale was determined by taking 100%, divided by the number of possible responses to the question 6. In order to test for sensitivity, the effect of adjusting customer lifetime with the midpoint, upper and lower limits of each interval for propensity to switch was calculated.

The net effect of this adjustment is a change in average customer lifetime value from R61 009 to R47 474, when using the midpoint, to R52 558 when using the upper limits, and R41 998 when using the lower limits.

Table 16: The effect on clv of adjusting with propensity to switch

	Average CLV	Total CLV
Average CLV (original)	R 61 009	R 6 527 926
Average CLV with changes to propensity to switch (midpoint)	R 47 474	R 5 079 754
Upper limit of percentage bracket	R 52 558	R 5 623 748
Lower limit of percentage bracket	R 41 998	R 4 535 760

This sensitivity analysis shows that the effect on customer lifetime value when adjusting with the upper limit in comparison to the lower limit was very small, with customer lifetime value of only 11.5% less when using the midpoint in comparison to the lower limit and 9.7% higher than when using the upper limit in comparison to the midpoint. Therefore, it was decided to use the midpoint to adjust customer lifetime for propensity to switch.

4.5.3.2. Adjusting life expectancy based on income

Because higher income generally correlates to higher life expectancy, due to factors such as access to better health care, better nutrition and safe housing (Kawachi & Kennedy, 1997), the option to adjust a respondent's life expectancy based on their income per year was considered. A sensitivity analysis was performed and the effect of a change in the life expectancy from 61 to 65 and 70 respectively was recorded in Table 17.

Table 17: Customer lifetime value adjusted for life expectancy

Life Expectancy	Average CLV
61 years (original)	R 61 009
70 years	R 80 711
65 years	R 70 227

It was decided, due to the large effect of the adjustments on average customer lifetime value, not to adjust life expectancy based on income. This decision was supported by the fact that the purchase of vehicles generally slows in later life due to health-related issues and concern and anxiety about decreased driving ability (Lambert-Pandraud, Laurent & Lapersonne, 2005).

4.5.3. Solving for customer lifetime value

In order to find customer lifetime value, the above proxy variables, with any adjustments made, were substituted into Kumar and George's (2007) formula for calculating disaggregate customer lifetime value.

In order to solve it more easily, the formula was broken into two parts, the first of which determines the present value of the profit per customer for the company over the customer lifetime (Kumar & George, 2007, p. 161).

"CMiy" is the predicted contribution margin from customer *"i"* in purchase occasion "y". This was calculated by taking the purchase price of the vehicle and multiplying this with the average contribution margin in the car industry of South Africa, which is 2.89% (Statistics South Africa, 2012).

In order to calculate "*Ti"*, which is the number of expected purchases made by the customer during the customer lifetime, the difference between life expectancy and the current age of the respondent was calculated and then multiplied by the propensity to switch in order to determine the expected number of years in the expected customer lifetime, which is "*n"*. This customer lifetime (in years) was then divided by the expected purchase frequency (historic purchase frequency, adjusted for predicted change in future purchase frequency), which is "*frequencyi"* in the formula, to get to total expected purchases from the customer in future, which is "*Ti".* It was assumed that the purchase price remained the same for all future purchases and the contribution margin for each purchase was discounted back to present value using discount rate "*r"*.

The second part of the calculation determines the present value of the unit marketing costs to the company for that customer over the customer lifetime (Kumar & George, 2007, p. 161).

"Ciml" was calculated by multiplying the number of minutes per interaction, which was determined by the type of communication favoured by the customer, and the cost per minute to the company for the employee's time. This was then multiplied with "Ximl", which is the number of contact sessions between the customer and employee per year. This gives the total marketing costs per customer per year. It is assumed that this marketing cost stays the same for all the years in the customer lifetime and the cost of each year is discounted to present value using discount rate r.

The second part of the formula (present value of unit marketing costs over the customer lifetime) is subtracted from the first part of the formula (present value of profit per customer over customer lifetime) to give total customer lifetime value for the company for that particular customer.

4.6. Analysis of post-purchase dissonance in excel

Cognitive dissonance was calculated by finding the average scores of the data created by questions 15 to 22, emotional dissonance was calculated by finding the average scores of data created by questions 1 to 14. This gave a score for cognitive and emotional dissonance for each respondent, which was averaged to get the scores for the sample as a whole. Total dissonance is the average of cognitive and emotional dissonance. The results from this analysis can be seen in Table 18.

Table 18: Average total dissonance, emotional dissonance, and cognitive dissonance

Total Dissonance	Emotional Dissonance	Cognitive Dissonance
1.65625601	1.338875205	2.309190964

4.7. Hypothesis testing results

In order to prove or disprove the hypotheses, any possible relationships between post-purchase dissonance and customer lifetime value needed to be investigated. The data from the analysis of dissonance and the analysis of customer lifetime value, along with customer information such as income, purchase price, and the ratio of income to purchase price (income divided by purchase price), was imported to SAS, after another check that the coding was compatible with the program.

A correlation process was run in SAS 9.4 in order to produce a Pearson correlation coefficients table, shown in Table 19.

Table 19: The Pearson correlation coefficients for CLV, dissonance, income and purchase price

Pearson Correlation Coefficients
Prob > |r| under H0: Rho=0
Number of Observations

	income	Purchase_Price	Ratio_PP_to_Income	CLV	Total_Dissonance	Emotional_Dissonance	Cognitive_Dissonance
income	1.00000 116	0.45954 <.0001 116	-0.37174 <.0001 116	0.20289 0.0361 107	-0.04663 0.6192 116	-0.02686 0.7747 116	-0.05871 0.5313 116
Purchase_Price	0.45954 <.0001 116	1.00000 116	0.21112 0.0229 116	0.42290 <.0001 107	-0.08517 0.3633 116	-0.12609 0.1774 116	-0.01322 0.8880 116
Ratio_PP_to_Income	-0.37174 <.0001 116	0.21112 0.0229 116	1.00000 116	0.10019 0.3045 107	-0.09948 0.2880 116	-0.10209 0.2755 116	-0.07513 0.4228 116
CLV	0.20289 0.0361 107	0.42290 <.0001 107	0.10019 0.3045 107	1.00000 107	-0.16978 0.0804 107	-0.14385 0.1394 107	-0.16225 0.0950 107
Total_Dissonance	-0.04663 0.6192 116	-0.08517 0.3633 116	-0.09948 0.2880 116	-0.16978 0.0804 107	1.00000 116	0.91588 <.0001 116	0.85492 <.0001 116
Emotional_Dissonance	-0.02686 0.7747 116	-0.12609 0.1774 116	-0.10209 0.2755 116	-0.14385 0.1394 107	0.91588 <.0001 116	1.00000 116	0.58238 <.0001 116
Cognitive_Dissonance	-0.05871 0.5313 116	-0.01322 0.8880 116	-0.07513 0.4228 116	-0.16225 0.0950 107	0.85492 <.0001 116	0.58238 <.0001 116	1.00000 116

As shown in Table 19, the relationship between dissonance and customer lifetime value is a weak, negative correlation of -0.16978, meaning that respondents who have higher dissonance are likely to have slightly lower customer lifetime value than those with low dissonance. The correlation between dissonance and customer lifetime value means that hypothesis 1 is supported, although with a very weak relationship.

Table 19 also shows that the cognitive component of dissonance has a slightly stronger correlation with customer lifetime value, of -0.16225, than emotional dissonance's correlation with customer lifetime value, which was a correlation of 0.14385. Both are weak negative relationships; however, they support hypotheses 1.1 and 1.2.

As shown in Table 20, dissonance levels in this study were normal in comparison with other studies that used Sweeney *et al*.'s (2000) scale, with an average of 1.3388 out of 7 for emotional dissonance compared to an average from the other studies of 1.205, and average cognitive dissonance of 2.30919 out of 7 in comparison to an average of 2.205 in the other studies (George & Yaoyuneyong, 2010; Soutar & Sweeney, 2003; 2006; Graff, Sophonthummapharn & Parida, 2012).

Table 20: Dissonance in other studies using Sweeney *et al*.'s scale

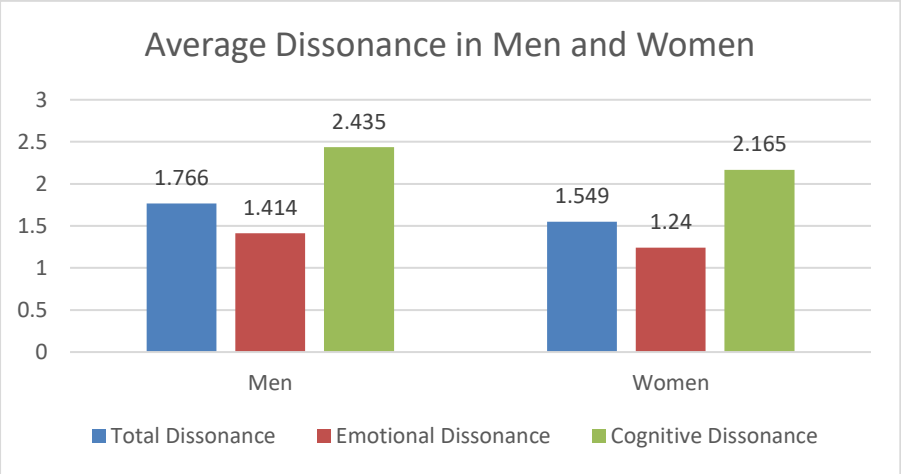
Study	Item of purchase	Emotional dissonance	Cognitive dissonance
George & Yaoyuneyong, 2010	CDs	N/A	2.5
Soutar & Sweeney, 2003	Car stereos and furniture	1.34	1.995
Graff, Sophonthummapharn & Parida, 2012	Cell phones	1.27	2.12
Average		1.305	2.205
Current study	Cars	1.338875	2.30919

It was expected a high ratio of income to the vehicle purchase price would correlate with decreased dissonance. This is because, in order to experience dissonance, a purchase must be of significant monetary value for the buyer (Sweeney *et al*., 2000), so it was expected, that someone who is spending a larger proportion of their income on the purchase would have more dissonance because the purchase would be more important to them. This relationship was weaker than expected with a correlation of -0.099 for total dissonance, -0.103 for emotional dissonance and -0.072 for cognitive

dissonance. An explanation for this may be that some of the respondents were given loans by family members to buy the cars, meaning that repayments were more affordable on a relatively low income.

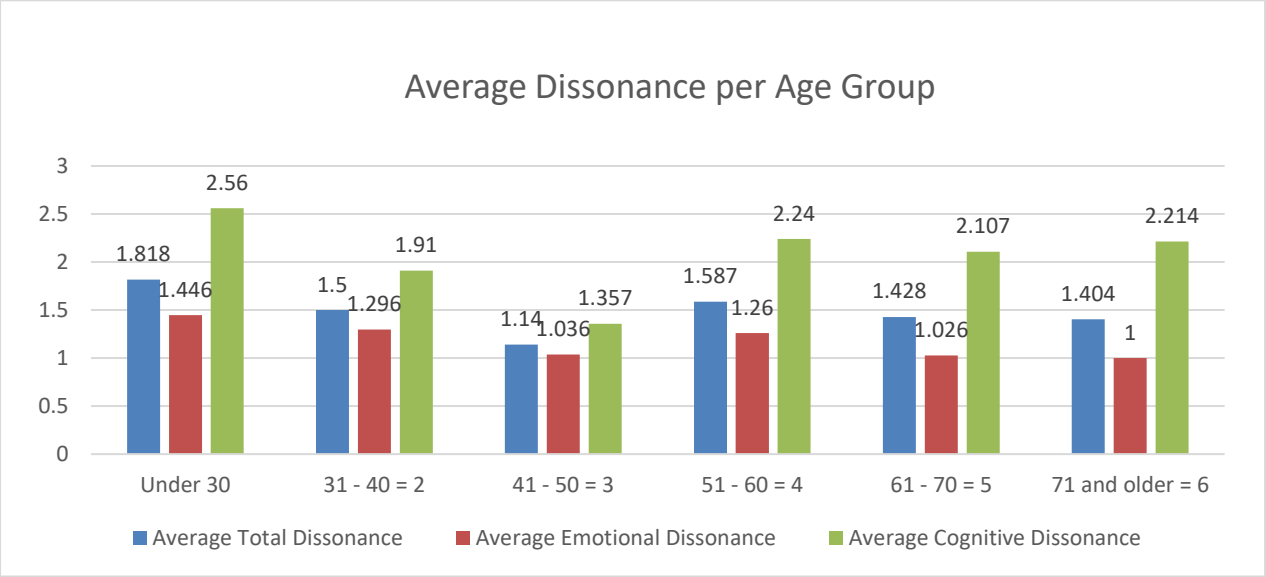
Men had slightly higher dissonance than women, with the average being 14% higher, as displayed in Figure 16.

Figure 16: Average dissonance in men and women



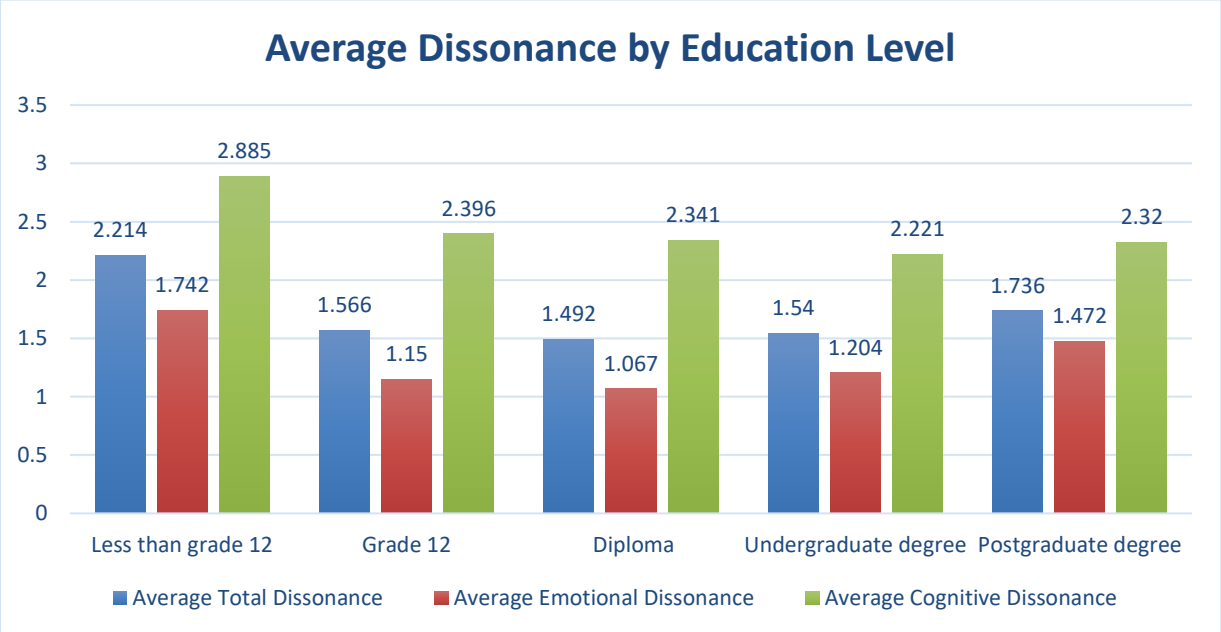
Based on past research, it was expected that older respondents would experience less dissonance than younger respondents (Lambert-Pandraud, Laurent & Lapersonne, 2005) so it wasn't unexpected that the age group with the highest level of dissonance, at 10% above the average, were aged under 30 years, as shown in Figure 17 below. However, the age group 41-50 years had the lowest dissonance; 45% lower than the average and lower than the more senior respondents.

Figure 17: Average dissonance per age group



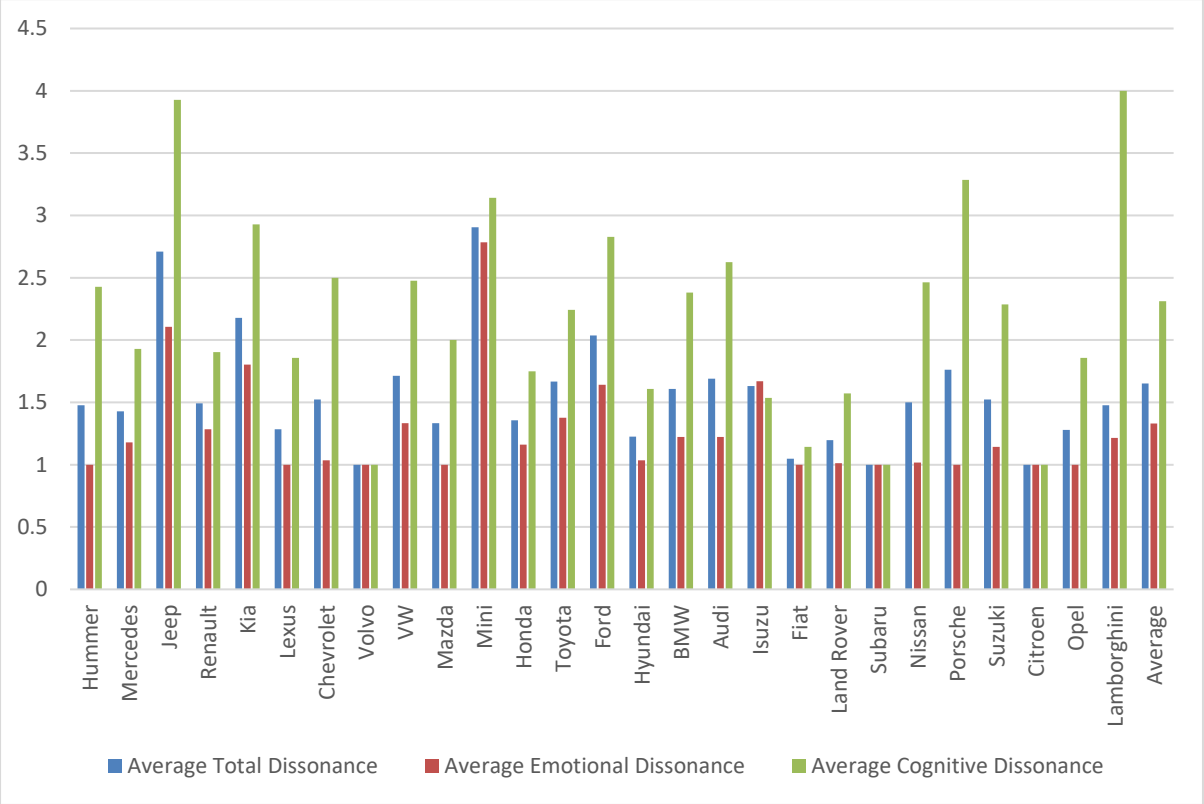
As displayed in Figure 18, in general, dissonance reduced with increased education, which could possibly be explained by more educated respondents making better purchase decisions; however, following this logic, it is unexpected that dissonance would be higher in those holding postgraduate degrees than in those who hold undergraduate degrees.

Figure 18: Average dissonance by level of education



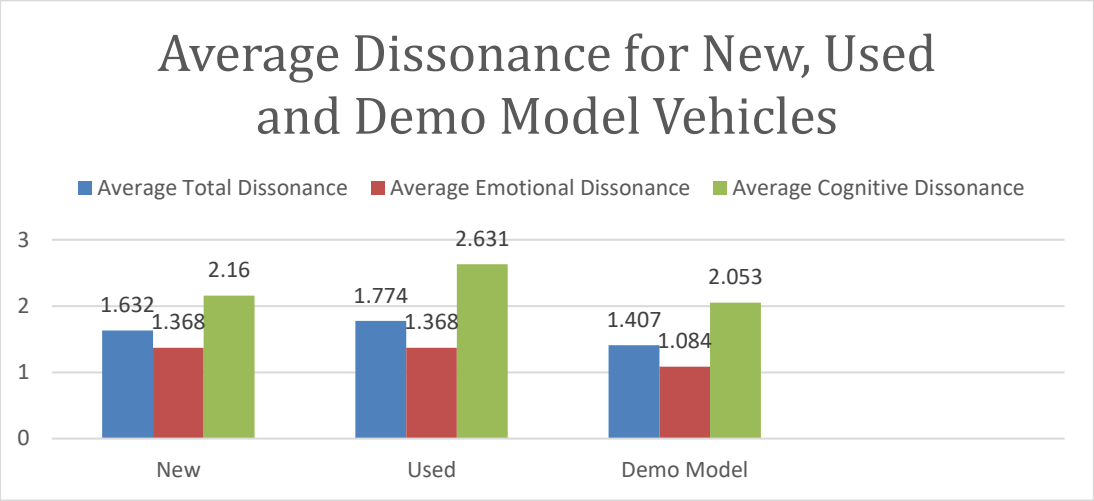
Because of the small sample and the fact that some manufacturers are only represented by 1 respondent, it is not possible to accurately assess dissonance by vehicle manufacturer (Figure 19 below).

Figure 19: Average dissonance per vehicle manufacturer



It is, however, interesting to examine the average data for new, used and demo model vehicles in Figure 20. Dissonance for respondents who bought used vehicles had 7% higher than average dissonance, perhaps because of the lack of recourse in the case of something going wrong in comparison to a vehicle bought from a dealer, either new or a demo model. Individuals who bought a demo model experienced significantly lower dissonance - 17% less than the average - and this may be because there is less concern that the individual overpaid for their vehicle when purchasing a demo model because they are generally seen to represent good value for buyers in comparison to new cars (Reed, 2013). With demo models, the individual also has the peace of mind of knowing they bought directly through the manufacturer.

Figure 20: Average dissonance for new, used and demo model vehicles



4.8. Summary of Chapter 4

Chapter 4 details the statistical analysis of the data, which was gathered using a web-based questionnaire. Descriptive statistics are presented and discussed. Microsoft Excel and SAS 9.4 were used to perform the analysis and the correlation between factors was analysed to give meaning to the data and find relationships.

CHAPTER 5: DISCUSSION OF RESULTS

5.1. Introduction

In Chapter 5, the results presented in the preceding chapter are discussed and meaning is assigned to them in accordance with the objectives of the study. First the respondents' profiles are touched on and then the results in terms of hypothesis support, or lack thereof, will be discussed.

5.2. Respondents' profiles

It is important to assess the profiles of the respondents in order to assess their likely similarity to the population as a whole.

5.2.1. Demographic profiles

5.2.1.1. Gender

There were almost equal numbers of male and female respondents (50.86% and 49.14% respectively). This is very close to representative of the population as a whole, both for South Africa and presumably for the population of this study, with 48.2% of the population being male and 51.7% of the population female (Statistics South Africa, 2011).

5.2.1.2. Age

Table 21 shows that the distribution of the age of the sample units is fairly similar to that of the population, with the exceptions being fewer 41 – 50 year olds, more 51 – 60 year olds, and fewer people under 30 years old. This disparity can be explained by the fact that probability sampling was not used so the sample can't be expected to be highly generalisable to the population as a whole.

Table 21: Frequency of South Africans and sample by age group

Age	South Africa	Sample
0 - 30	59.00%	49%
31-40	14.48%	17%
41-50	10.76%	3%
51-60	7.76%	22%
61-70	4.53%	7%
70 and older	3.48%	2%

5.2.1.3. Marital status

With regard to the marital status of the sample, the number of married, single, divorced, and widowed respondents were similar to what might be expected from the population as a whole, with the highest proportions married and single, and small proportions divorced or widowed.

5.2.1.4. Highest level of education

72% of respondents reported having completed undergraduate or postgraduate degrees, which is a very high level of education in comparison to the population of South Africa as a whole, considering only 1.2 million people reported having an undergraduate degree in 2016 (Statistics South Africa, 2016), which is 2.28% of the total population of 54.96 million South Africans, as estimated in mid-2015 (Lehohla, 2016). However, this is more in line with the expected demographics of the target population: since the research sought to study individuals who have recently purchased motor vehicles, which is an expense the majority of South Africans could not afford and education generally leads to higher income (Bloom & Canning, 2000), it is understandable that the target population would be more educated than the average South African.

5.2.1.5. Occupation

The largest segment of the sample hold non-managerial employment, followed by managerial roles and then directorship. The high proportion of individuals in managerial and directorship positions, and very few students or unemployed people, is congruent with the above discussion in 5.2.1.4, regarding the necessary disposable income in order to be considered part of the target

population, due to the high cost of purchasing a vehicle, and he relative increase in salary for those in managerial or directorship positions. Given the high unemployment rate of 26.5% in South Africa (Statistics South Africa, 2016), this is not representative of the population of South Africa but is representative of the population of the study.

5.2.1.6. Income level

A high average income from the sample population was expected, following on from the discussion above, regarding the necessary disposable income to purchase a car in order to fall within the target population. The average annual income of the population was R550 000, although the largest cohort within the sample in terms of income bracket, making up 19% of respondents, earned more than R1 million per year. This is well above the average of the population, who earned on average R138 168 per household in 2015 (Statistics South Africa, 2011).

5.3. Hypothesis discussion

5.3.1. Hypothesis 1

The study proposed that there is a negative relationship between post-purchase dissonance and customer lifetime value. Analysis of the data supports this, but the correlation is a weak one of -0.16978.

5.3.1.1. Hypothesis 1.1

The study proposed that there is a negative relationship between the emotional component of post-purchase dissonance and customer lifetime value. Analysis of the data supports this, but the correlation is a weak one of -0.14385.

5.3.1.2. Hypothesis 1.2

The study proposed that there is a negative relationship between the cognitive component of post-purchase dissonance and customer lifetime value. Analysis of the data supports this, but the correlation is a weak one of -0.16225.

5.4. Summary of Chapter 5

In Chapter 5, the results are presented, the demographic profiles of respondents are examined, and each hypothesis is discussed. All of the hypotheses are supported and proven correct, but with weak correlations. Overall, based on the results of this study, it can be concluded that high levels of dissonance are related to low customer lifetime value, although it cannot be said if this is relationship is causal in nature.

CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS

6.1. Introduction

This study aimed to answer the research questions of whether there is a correlation between dissonance and customer lifetime value. Chapter 6 presents conclusions and makes inferences from the study. First a synopsis of the findings is presented, giving an overview of the results. Next the potential implications to academia and businesses are explored, followed by the recommendations, the limitations and, finally, suggestions for future research.

6.2. Synopsis of the findings

This study aimed to investigate the correlation between post-purchase dissonance and customer lifetime value. From evaluation of the three hypotheses that were put forward, the research outcomes have validated that there is a relationship, albeit a weak one, between post-purchase dissonance and customer lifetime value. The individual coefficients of H1, H1.1 and H1.2 were -0.16978, -0.14385 and -0.16225 respectively, as shown in Table 22.

Table 22: Synopsis of the findings

Proposed relationship	Hypothesis	Correlation	Supported/Rejected
Total Dissonance → CLV	H1	-0.16978	Supported with a weak correlation
Emotional Dissonance → CLV	H1.1	-0.143885	Supported with a weak correlation
Cognitive Dissonance → CLV	H1.2	-0.16225	Supported with a weak correlation

This shows that all three hypotheses were supported, because post-purchase dissonance, and its two components, emotional and cognitive dissonance, were found to have negative correlations with customer lifetime value, meaning that high post-purchase dissonance is linked to low customer lifetime value.

6.3. Implications of the study

This study has some implications for academia and businesses.

6.3.1. Implications for car manufacturers

As discussed in the literature review, customer equity is an important intangible asset for all companies, made up of the customer lifetime value of all the company's clients. The findings of this study show that there is a link between post-purchase dissonance and customer lifetime value. Although it is not clear whether or not this relationship is a causal one, the results are still an indication that action to decrease a company's customers' dissonance may have a positive effect on customer equity.

Cognitive post-purchase dissonance had a slightly stronger negative relationship with customer lifetime value than emotional post-purchase dissonance did, meaning that efforts to reduce cognitive dissonance in customers may have more of a significant effect on customer lifetime value than a change in emotional dissonance.

6.3.2. Implications for businesses in general

The findings could be useful for companies outside of the car industry if the products they sell are likely to evoke dissonance in customers, specifically for high priced items that generally required a high level of decision-making involvement and that could not be returned once they were bought (Sweeney *et al*., 2000). These companies may find that implementing efforts to decrease customer dissonance may cause an increase in customer lifetime value.

6.3.3. Academic implications

Because of the small sample and lack of probability sampling methods, the findings of this study are likely of very little value to academia due to their lack of statistical integrity. However, the literature review identified a gap in the knowledge and closing this gap with future research would provide useful in

insight from a marketing academia point of view and from the perspective of companies who would like to improve their customer lifetime value.

6.4. Recommendations

Since increasing customer lifetime value is so valuable for a business and there is a correlation between dissonance customer lifetime value, action should be taken to reduce dissonance.

6.4.1. Strategy to reduce dissonance

Because cognitive dissonance had a slightly stronger correlation with customer lifetime value than emotional dissonance did, and cognitive dissonance was also far higher than emotional dissonance overall, with a score of 2.309 in comparison to 1.3388 for emotional dissonance, companies should consider taking measures to reduce dissonance as a whole, and cognitive dissonance specifically. This may improve customer equity over all.

Examples of marketing strategies to reduce cognitive dissonance may include strategic communication with customers after their purchase, which can reinforce the purchase decision and reduce feelings of dissonance (Solomon *et al*., 2013). This could be in the form a note left in the car when it is collected, congratulating the customer on an excellent choice of car, direct communication between employees and the customer to show support and offer practical advice on how to get the most out of the vehicle, advertising by the company that promotes the product benefits, and endorsement by respected opinion leaders or admired celebrities to reinforce that the product is a socially desirable one (Lamb, Hair & McDaniel, 2008).

6.4.2. Allocation of resources

Resources should be allocated to the marketing strategy to reduce post-purchase dissonance in order for these strategies to be implemented effectively. This includes all necessary resources such as money, skills, and more possibly more after-sales support employees.

6.5. Conclusions

The hypotheses were all supported, suggesting that there is a weak relationship between total dissonance, cognitive dissonance, and emotional dissonance, and customer lifetime value.

Although the relationships is weak, and it is not clear if the relationships are causal, it is another indicator, apart from satisfaction (Sweeney, Soutar, and Johnson, 1996) and other factors that have previously been found to be negatively affected by dissonance, that it is important from a marketing point of view for companies to implement strategies to reduce their customers' dissonance.

The fact that individuals who purchased used cars experience significantly higher dissonance indicates that it is important for used car sellers to reduce uncertainty, perhaps by informing buyers of the history of the car in a transparent manner and offering some form of after-sales assistance. To build a brand that customers can trust is also important in order to reduce concern, and therefore dissonance.

6.6. Limitations

Because of the limited scope of this study, the effect of possible mediating variables was not focused upon. For example, factors such as whether the company keeps the lines of communication open and asks customers for their post-purchase feedback, the response of the company in an attempt to recover when complaints are made, and whether the company offers post-sales support, for example, training customers who have purchased off-road vehicles how to best navigate off-road routes. These factors may help to decrease customers' feelings of dissonance.

Lack of access to the customer's financial data in this study meant that proxy variables had to be substituted into the customer lifetime value calculation, resulting in an unknown level of accuracy.

Another limitation was the small sample, which limited the statistical power of analysis.

6.7. Suggestions for further research

It would be very interesting for the research to be repeated using probability sampling, a larger sample and with access to customers' financial data in order to more accurately calculate customer lifetime value using Kumar and George's disaggregate method (2004), and access to the respondents' physical addresses, email addresses, or telephone numbers in order for them to complete a survey based on their feelings of dissonance. Alternatively, they could be contacted directly by the car company in order to protect their anonymity and comply with Act No. 4 of 2013: Protection of Personal Information Act (South Africa, 2013).

This remedial action would provide more statistical power of analysis and more statistically sound results that could be more easily generalised to the population as a whole and may mean that a stronger relationship between customer lifetime value and dissonance will be identified.

Future research could consider mediating factors on dissonance, and if action taken by manufacturers to improve the customer's perception of the purchase, as mentioned under the limitations section, has any impact on reducing dissonances effect on customer lifetime value.

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Appendices

Appendix A: Covering Letter

The University of Witwatersrand
Graduate School of Business Administration
Date: March 2016

Dear Sir/Madam

RE: COMPLETION OF QUESTIONNAIRE

I am a post graduate student at the University of Witwatersrand currently reading for the programme of Master of Management in Strategic Marketing.

As part of the requirements of the degree, I must complete a research study. I have chosen to investigate the effect of customers' feelings of post-purchase dissonance on their customer lifetime value for companies in the car industry. The title is "**The effect of post-purchase dissonance on customer equity for the car industry of South Africa".**

If you live in **South Africa** and have **bought a new, used or demo model car in the last 1 to 24 months**, it would be greatly appreciated if you would complete the attached questionnaire which will require your response on the following subjects:

- Your feelings about your recent purchase of a vehicle
- Questions regarding your relationship with the car company
- Questions about your purchase frequency
- Demographic questions, for example your age, income and marital status

Your identity will remain strictly anonymous and your answers will be kept in utmost confidence.

Kind regards,

_____ _____

Kirsten O'Brien
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Neale Penman
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Appendix B: Questionnaire

Screening questions:

a) Have you purchased a new, used or demo model motor vehicle in the last 1 to 24 months?

   Yes □ No □

b) Do you live in South Africa?

   Yes □ No □

Cognitive Dissonance: Please rate the following statements by circling your selection in terms of how true they are with regard to the recent purchase of your vehicle, where: 1 = Strongly Disagree 2= Disagree 3= Somewhat Disagree 4= Neutral 5= Somewhat Agree 6= Agree 7= Strongly Agree

After I bought the product:	Strongly Disagree			Neutral			Strongly Agree
1. I was in despair	1	2	3	4	5	6	7
2. I resented it	1	2	3	4	5	6	7
3. I felt disappointed with myself	1	2	3	4	5	6	7
4. I felt scared	1	2	3	4	5	6	7
5. I felt hollow	1	2	3	4	5	6	7
6. I felt angry	1	2	3	4	5	6	7
7. I felt uneasy	1	2	3	4	5	6	7
8. I felt I'd let myself down	1	2	3	4	5	6	7
9. I felt annoyed	1	2	3	4	5	6	7
10. I felt frustrated	1	2	3	4	5	6	7
11. I was in pain	1	2	3	4	5	6	7
12. I felt depressed	1	2	3	4	5	6	7
13. I felt furious with myself	1	2	3	4	5	6	7
14. I was in agony	1	2	3	4	5	6	7
I wonder:	Strongly Disagree			Neutral			Strongly Agree
15. If I need this product	1	2	3	4	5	6	7
16. Whether I should have bought anything at all	1	2	3	4	5	6	7
17. If I made the right choice	1	2	3	4	5	6	7
18. If I have done the right thing buying this product	1	2	3	4	5	6	7
After I bought this product I wondered:	Strongly Disagree			Neutral			Strongly Agree
19. If I'd been fooled	1	2	3	4	5	6	7
20. If I had been deceived/fooled	1	2	3	4	5	6	7
21. Whether there was something wrong with the deal I got	1	2	3	4	5	6	7

(Adapted from Sweeney *et al.,* 2000).

Demographic Questions: Please provide the following information

22. What is your full name?

    _____
    __

23. What is your age group? (Please tick) Under 30 | 31 – 40 | 41 – 50 | 51-60 | 61 – 70 | 71 and older

24. What is your gender? (please tick)

25. Female ☐ Male ☐

26. What is your relationship status? (please tick)

    Single | Married | Divorced | Widowed

27. How many children do you have? _____

28. How old are/is your child(ren)?

    _____

29. What is your job title?

    _____

30. What is your highest level of education? (please tick)

    Below Grade 12 | Matric | Undergraduate Degree | Post-Graduate Degree

31. Total Income per year (from all sources) (please tick)

    Less that R100 000 | R100 001 – R200 000 | R200 001 – R400 000 | R400 001 – R600 000 | R600 001 – R800 000 | R800 001 – R1 Million | More than R1 million

Customer Lifetime Value questions:

32. What is the model and manufacturer of the car you recently purchased?

    _____

33. Which month and year did you purchase the vehicle?

    _____

34. In what year was the vehicle manufactured?

    _____

35. Total purchase price of the vehicle

    R_____

36. Condition of the vehicle at the time of the purchase

New | Demo Model | Second hand

37. Into which category does your recently purchased vehicle fall?

Hatch-back | Sedan | SUV/4x4

Sports car/super car

38. How many vehicles have you bought in your life for you to drive personally?

_____

39. Which categories do your previous vehicles fall? :

Hatch-back | Sedan

SUV/4x4 | Sports car/super car

40. How often have you purchased a new vehicle in the past, on average?)

Every year | Every 2nd year | Every 3rd year | Every 4th year

Every 5th year | Less frequently than every 5th year

41. Do you think the frequency of your car purchases in future is likely to:

Increase slightly | Increase steeply | Remain the same

Decrease slightly | Decrease steeply (please tick)

42. How many vehicles made by the current manufacturer have you bought previously? _____

43. How likely are you to purchase a car in future from the same manufacturer as your current vehicle? (please tick) Extremely Likely | Very likely

Quite likely | Quite unlikely

Very unlikely | Extremely unlikely

44. Your communication with the manufacturer is generally: (please tick)

Face-to-face | Direct mail | Telephone | Web-based

45. How frequent is your communication with the manufacturer, on average?

Daily | Weekly | Monthly | Bi-annually | Annually

Never

How often to you initiate the communication with the supplier, as a percentage of total communication with the supplier? 0 – 25% | 25 – 50%

50 – 75% | 75 – 100%

47. Do you get any relationship benefits from the supplier, because you are seen as a premium client? No | Yes
48. Have you ever requested to return a vehicle to the supplier? No | Yes
49. What was the outcome of the request to return the vehicle?

_____