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Customer customer satisfaction and the determinants of firm value: a case for JSE listed firms

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Customer Satisfaction and the Determinants of Firm Value

- A Case for JSE Listed Firms

A research report submitted by

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For the degree Master of Management in the field of Strategic Marketing

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PLAGARISM DECLARATION

This document is submitted in final fulfilment of the requirements for BUSA7044A (Research Theory and Design) for the degree of Master of Management (Strategic Marketing) at the University of Witwatersrand Business School. I declare that this research report is my own unaided work. It has not been submitted before for any degree or examination in any other University.



Busisiwe Nteyi CA (SA)

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ABSTRACT

This study examines the relationship of the South African Customer Satisfaction Index (SACSI) and the determinants of firm value for South African listed firms. The American Customer Satisfaction Index (ACSI) has been a subject for research for over two decades in the United States, yet the effect of the SACSI created from adopting the ACSI methodology has not been examined. The study is intended to contribute to marketing literature in South Africa by being the first to examine the SACSI. The study aims to establish if there are relationships between the SACSI and determinants of firm value presented by return on assets, future cash flow, financial leverage, and Tobin's Q. The study adopted a quantitative method using longitudinal data of Johannesburg Stock Exchange listed firms. The customer satisfaction index scores and financial and stock market data were collected for eight years from 2013 to 2020 and analysed using Stata, a statistical software package. The sample size consisted of 25 listed firms. The findings reveal that customer satisfaction has no effect on the determinants of firm value in the South African context. Implication and suggestions for future research are discussed.

Keywords:

South African Customer Satisfaction Index, customer satisfaction, JSE listed firms, firm value, Tobin's Q

1. INTRODUCTION

1.1. BACKGROUND

The paper examines a customer-based metric that measures cumulative customer satisfaction known as the customer satisfaction index and discusses the importance of the customer-based metric in measuring the intangible assets of the firm. The value of intangible assets has been debated for many years which has caused a divide between marketing and finance. The paper examines why intangible assets are still relevant and how customer satisfaction has developed to become an important metric that adds value for the firm. As such, the study seeks to establish the link between customer satisfaction and the determinants of firm value and adds to the growing literature on customer satisfaction. It is the first to use the South African Customer Satisfaction Index (SACSI) in the study of customer satisfaction for listed firms in the South African context.

1.2. Problem Definition

An extensive review of the literature indicates that a considerable number of theories have been developed to attempt to answer the key question in strategic marketing, the relationship between marketing efforts with profitability and firm performance in the share markets. Limited research has been performed to assess the link between marketing outcomes of customer loyalty and satisfaction to financial and firm performance. The South African market is highly regulated and is considered to have one of the most advanced sectors in Africa (Odhiambo, 2009), and it provides an opportunity to apply existing marketing theories to an emerging market context. In addition, no research using the SACSI has been published in any South African academic journal. The research problem is understanding the relevance of customer satisfaction as measured by the SACSI in South Africa and its impact on the determinants of firm value.

1.3. Justification of the Research Topic

There is an increasing need for marketing managers to develop a knowledge of marketing theories and models that solve marketing problems and deliver measurable value to the firm.

The need to put research efforts into the understanding of the link of marketing to finance was identified as a research priority for academic scholars of the Marketing Science Institute (MSI) for several years. The 2016 to 2018 MSI fourth research priority focuses on identifying original approaches and sources of data, integrating data analytic methods and approaches, revising some traditional indicators and metrics to enhance insights that will facilitate better managerial decision making (MSI, 2016). The 2018 to 2020 MSI research priorities ask for indicators and metrics that should be measured and used to guide marketing strategy and understand the customer (MSI, 2018). In the context of the long-term effects of the COVID-19 pandemic for marketing, 2020 to 2022 third research priority ask marketers and researchers to identify tools that enhance the customer experience and sustain profitable growth (MSI, 2020).

In response, there is growing research on customer satisfaction since the development of the national customer satisfaction index in Sweden which will be the focus of this study. The prevailing index, American Customer Satisfaction Index (ACSI), has been used in numerous marketing studies as a measure for customer satisfaction. There has been limited research in South Africa on the effect of customer satisfaction and no studies have used the SACSI as a measure of customer satisfaction or replicated some of the findings in the studies in the United States. The purpose of this paper, as per the MSI priorities, is to contribute to the marketing field by examining the influence of a customer satisfaction index as the marketing metric that measures the value that the firm derives from its customers.

1.4. Statement of Research Objectives

The objectives of the research are to:

1. To explore the formation and development of the customer satisfaction index to the implementation of the SACSI,
2. To replicate existing studies in the United States to determine how customer satisfaction influences firm value in South Africa,
3. To identify the relationship between marketing and finance by examining the determinants of firm value as measured by Return on Assets and Tobin's Q to customer satisfaction,
4. To examine whether free cash flow and firm financial leverage as additional financial measures of firm value are associated with customer satisfaction and,

5. To determine the relevance of customer satisfaction as a valuable marketing metric by identifying processes that support and limit the development of the role of customer satisfaction.

1.5. Contributions of research

The purpose of the study is to make a practical contribution by establishing the link between finance and marketing. There are three focus areas explored to determine the role that marketing plays in the South African context. First, the study demonstrates how a firm can use customer satisfaction as a marketing level to unlock future financial performance. Secondly, the study creates a better understanding of the interplay between finance and marketing literature to further enhance the long-term strategic discussion amongst key decision-makers of the firm as it relates to the field of marketing. Lastly, the study assists with providing evidence to support whether the allocation of resources to strategic marketing initiatives aligns with the firm's key objective of increasing firm value.

The study contributes to the development of the study of customer satisfaction as an important customer-based measure in South Africa and advance the relevance and importance of customer satisfaction as a performance-based metric. This matters in South Africa as there is currently limited attention and research given to the role that customer-based intangible assets such as customer relationships and customer loyalty contribute to the value of the firm. The enhanced understanding of customer satisfaction will also benefit the firm's external stakeholders of the firm such as shareholders, investors, and analysts.

1.6. Delimitations of the study

Customer satisfaction is a central concept to modern marketing research and practise has led to a proliferation of research in its key concepts and their interrelationships (Yi, 1990). This paper examines the consequences of customer satisfaction to the firm value of listed firms. Further studies should examine other consequences of customer satisfaction in the South African context to determine the relevancy in different markets, industries, firm types, products, and services. To my knowledge, there has been no research in South Africa that examines the national indicator of customer satisfaction by employing the SACSI. Although

this study provides a significant contribution to the study of customer satisfaction, the data used in this study is limited to listed firms and the availability of data on FactSet.

1.7. Chapter Outline

The purpose of this study is to provide an overview of the research in customer satisfaction and the development of this area in South Africa. The paper is structured in three areas: 1) the study conducts a literature review of definition, determinants, and consequences of customer satisfaction, 2) the study introduces the South Africa Customer Satisfaction Index (SACSI) as a valid and reliable measure of customer satisfaction for the study of the relationship of customer satisfaction and its consequences, and 3) reveal findings of the impact of customer satisfaction to the determinants of firm value. Implications and suggestions for future research are discussed.

2. OVERVIEW OF APPLICABLE LITERATURE

2.1. Introduction

The purpose of this section is to develop a conceptual and practical understanding of the link between finance and marketing in delivering superior firm value and to explore the role that marketing can play in the South African context. The literature review is divided into five sections that provide an overview of research in customer satisfaction to create a basis of understanding for the definition, measurement, determinants, and consequences of customer satisfaction. The first section outlines the marketing-based metrics for measuring firm performance. The second section outlines the theoretical background for customer satisfaction. The third section outlines the constructs and antecedents in the measurement of a customer satisfaction metric. The fourth section outlines the formation and development of the customer satisfaction index in the last two decades. The last section reviews research that reviews the consequence of customer satisfaction by identifying theorized relations of customer satisfaction and the determinants of firm value. The review of the literature is used to reveal the relevance and use of customer satisfaction as a measure for firm performance and firm value. The section will highlight the growing literature in customer satisfaction that has aimed in various ways to improve the understanding of the link between marketing and finance.

2.2. Marketing metrics for measuring firm performance

The main objective for the firm is the creation of firm (shareholder) value. The role of the management of a firm is to make decisions, set priorities and allocate resources to activities that increase firm value. The most significant impact that customer satisfaction research has made on the business world was to contribute research that revealed the relationship between customer satisfaction and firm financial performance. Various studies have demonstrated marketing's contribution to financial performance and provided evidence to support the accountability and alignment of the marketing department through the appropriate metrics to the finance department. Studies by O'sullivan and Abela (2007) and Verhoef and Leeflang (2009) provide empirical evidence that marketing performance has a significant and positive effect on business performance, profitability and share returns. Firms that maintain

relationships with current customers have greater profitability in the long term as it is more costly to attract and add new customers (Anderson & Sullivan, 1993).

Over the years, marketing-based metrics such as the customer lifetime value and customer satisfaction metrics assist in providing quantifiable performance metrics that measure the contribution of marketing efforts on customers in maximizing firm profits and ultimately firm value. Research by Gupta, Lehmann, and Stuart (2004) propose analysts use models that incorporate metrics that value customers and intangible assets in the determination of firm value. To achieve this, the key focus area for marketers is in identifying opportunities in building intangible assets not measured in the balance sheet that will contribute to firm value.

The fundamental premise for both customer satisfaction and customer equity lie in the ability to create and sustain long-term cash flows from current and future customers. Significant research in the United States on customer satisfaction has shown it is a predictor of future cash flow (Fornell, Morgeson III, & Hult, 2016) and an intangible marketing asset (Fornell, Mithas, Morgeson III, & Krishnan, 2006). The finding by Anderson, Fornell, and Lehmann (1994) that firms with high customer satisfaction achieve higher future economic returns is supported by Fornell (1992) study that indicates the benefits of high customer satisfaction firms include increased loyalty by customers, it lowers the costs of attracting new customers and increases the repurchase rate and retention of current customers. Other studies show that customer satisfaction influences customer retention which in turn drives market share (Rust & Zahorik, 1993); is related to word-of-mouth marketing (Anderson, 1998); reduces the variability of future cash flows (Gruca & Rego, 2005) and satisfied customers become loyal customers who increase profitability for the firm (Hallowell, 1996). These studies provide empirical evidence to support customer satisfaction as a driver for future cash flow and firm value.

2.3. BACKGROUND ON CUSTOMER SATISFACTION

The theoretical background of the study is informed by two frameworks in the study of customer satisfaction. Customer satisfaction can be explained in terms of two types distinct of evaluations: a short-term transactional metric and a long-term cumulative or overall metric. Relationships between both constructs of customer satisfaction, transaction-specific and cumulative, to its outcomes such as repurchase intentions and customer loyalty, have mostly been studied separately (Bodet, 2008) and the distinction between transaction-specific and

overall satisfaction has received limited empirical research in satisfaction and marketing services literature (Jones & Suh, 2000).

Oliver (1980) defines customer satisfaction as an additive combination on the expected level for a product or service performance and the resulting post-decision evaluation on whether the product meets, exceeds, or falls short of one's expectations. This type of evaluation of satisfaction is transaction-specific when it relates to a specific transaction or event. Common methods used for measuring transactional satisfaction are the Customer Satisfaction Score surveys (CSat), the SERVQUAL model and the Net Promoter Score (NPS). Johnson and Fornell (1991) define cumulative satisfaction as the grouping of satisfaction of different individuals and the computation of average satisfaction of a customer base.

Transaction-specific satisfaction may vary from experience to experience, whereas overall satisfaction is relatively stable over time (Veloutsou, Gilbert, Moutinho, & Goode, 2005). Overall satisfaction can also be viewed as a function of all previous transaction-specific satisfaction over time (Jones & Suh, 2000). Overall satisfaction results from an evaluative process of key variables that capture the reliable and valid components of the consumption experience (Yi, 1990). The evolution of customer relationship management has shifted the paradigm from short-term transactional marketing to long-term relationship marketing and customer development that leads to superior mutual value creation for the customers and the firm (Parvatiyar & Sheth, 2001). The study focuses on theories of cumulative satisfaction as a customer-based metric that estimates an overall firm-level customer satisfaction for firms in different industries and measures the overall evaluation of the consumption experience of goods and services. As cumulative satisfaction consists of several components, overall customer satisfaction becomes a complex construct to measure reliably. Johnson, Gustafsson, Andreassen, Lervik, and Cha (2001) noted that treating customer satisfaction as a cumulative construct resolve modelling issues for developing an index. Before gaining an understanding of the measures that capture the constructs of overall satisfaction, the study first analyses some of the theories that define the concept of customer satisfaction.

The overarching theoretical framework in the customer satisfaction model is the Theory of Rational Expectations which is an economic theory that states that outcomes depend partly on what people expect to happen (Sargent, n.d.). The use of rational expectations is a widely used concept in economics and plays a central role in the determination of the level of economic

activity to people's expectations about the future. Rational expectations can be used in a variety of situations, and it provides the conceptual principle of customer satisfaction. Johnson, Anderson, and Fornell (1995) view the rational expectation model to explain the stability of market behaviour rather than describe individual level expectations and explain why certain behaviour and decisions persist at the market level (market-level expectations). Customer satisfaction is positively affected by market expectations, and current market expectations are related to historical expectations and the market's experience with quality in the most recent period (Anderson et al., 1994). The rational expectations antecedent framework describes customer satisfaction as an outcome of a cognitive and rational evaluation process by customers with the rational approach having a stronger influence on decisions than the emotional aspect does (Susanti, Sumarwan, Simanjuntak, & Yusuf, 2020).

The dependent variable and consequence of the customer satisfaction model is to explain customer loyalty. This objective is supported by the exit-voice theory developed by Hirschman (1970) which states that loyalty is a function of the firm reacting to customers switching from competitor products (brand disloyalty) and permitting the voice of the customer (compliments or complaints) to ask and influence change within the firm. The customer reveals the failure of the firm to provide satisfaction via two feedback mechanisms, exit and voice (Johnson et al., 2001). As such, substantial focus in marketing research has been placed on the customer's reaction to satisfaction (i.e., loyalty, repeat purchase behaviour, positive word-of-mouth, firm profitability) and dissatisfaction (i.e., switching brands, stopping buying the products and negative word-of-mouth).

The additional overarching theoretical framework in the customer satisfaction model is the expectation disconfirmation theory (ECT) that explains that satisfaction is the function of expectation and expectancy disconfirmation, where satisfaction is a feeling that arises when a product's perceived performance meets, exceeds, or falls short of customer's expectation. The expectation construct is defined as anticipated performance and performance is used as a standard to measure disconfirmation (Churchill Jr & Surprenant, 1982). When expectations are positively confirmed, a product performs better than expected and expectations are negatively confirmed when a product performs poorly than expected. The early studies in the 1970s in customer satisfaction focused on the influence of disconfirmed expectation as a central measure of customer satisfaction. The disconfirmation construct is used to explain that satisfaction is

related to the size and direction of the disconfirmation experience and the disconfirmation is related to the customer's initial expectations of the product's performance. (Churchill Jr & Surprenant, 1982). It is the size of the disconfirmation experience that generates satisfaction and dissatisfaction. The customer satisfaction model in the early studies under ECT posited satisfaction as a linear combination of four constructs: expectations, performance, disconfirmation, and satisfaction. Within this model, these four determinants are additive and measured separately (Oliver, 1977).

A central concept also established in the earlier studies is the distinction between perceived performance and objective performance. Yi (1990) explains perceived product performance varies across customers depending on their expectations and objective product performance is the actual level of performance and is assumed to be constant across customers. Studies in the determinant of customer satisfaction focus on perceptions and determinants of customer satisfaction are on subjective disconfirmation which is the discrepancy between expectations and perceived performance (Yi, 1990).

2.3.1. Determinants in the measurement of customer satisfaction

Customer satisfaction is not directly observable, and more comprehensive models were needed to develop an understanding of the determinants (or antecedents) to measure cumulative customer satisfaction and integrate the interrelationships of expectations, disconfirmation, perceived performance, and satisfaction. In the 1990s, the measurement of the customer satisfaction model was developed to conceptualize the determinants of customer satisfaction into an index. The model theorised customer satisfaction as the product of the two antecedents being customer expectation and perceived product performance (Johnson & Fornell, 1991). The model for customer satisfaction was further developed into three antecedents which is customer expectations, perceived quality, and perceived value (Fornell, Johnson, Anderson, Cha, & Bryant, 1996).

The first determinant is customer expectation which is based on the market's past consumption experience and the prediction of the ability of the firm to deliver quality in the future (Fornell et al., 1996). Customer satisfaction is hypothesized as primarily a function of expectations and disconfirmation, with expectations used as a standard of comparison (Yi, 1990). Following on ECT framework on measuring satisfaction, the combined effect of expectation and the size of

the positive and negative disconfirmation are linked to perceived product performance (Oliver, 1977). Churchill Jr and Surprenant (1982) was the first to examine perceived performance by investigating the impact of the effect of disconfirmation as a determinant of satisfaction and stated that it is captured by expectation and perceived performance. Their research found that results differed between durable and non-durable goods, where the disconfirmation experience is found in non-durable goods and perceived performance is the main determinant of satisfaction in durable goods.

Customer expectations provide the benchmark for the measurement of satisfaction. Expectations (or some form of comparison standards) and the confirmation/disconfirmation paradigm have consistently been found to be the key variables affecting the evaluation of product performance (Yi, 1990). However, the measurement of satisfaction is not merely a result of comparing predictive expectations and firm's only responsibility is to increase expectations to influence satisfaction levels (Spreng & Mackoy, 1996). As a separate antecedent, customer expectation does not have a fundamental role or directly affects satisfaction, but rather through its interactions with other antecedents in the model to measure customer satisfaction. For example, prior research has found expectation to be positively associated with perceived quality and indirectly with perceived value (Fornell et al., 1996) (Johnson & Fornell, 1991).

The findings by Anderson and Sullivan (1993) research suggest that satisfaction is a function of perceived quality and disconfirmation, and not expectations as previously proposed in satisfaction literature. As demonstrated earlier, the satisfaction models based on the ECT framework does not consider quality as a construct for measuring satisfaction. However, the authors find that perceived quality has the greatest impact on customer satisfaction and repurchase intentions than customer expectations and disconfirmation. When quality is vague or difficult to determine, it is usually when the customer is unfamiliar with the product or the product is complex, then expectation becomes a key determinant in measuring satisfaction (Anderson & Sullivan, 1993).

The findings by Anderson and Sullivan (1993) contributed further to satisfaction research in the development of a model to quantify satisfaction and identified perceived quality as a determinant of satisfaction. When posited as a second construct in the measurement of cumulative satisfaction, perceived quality measures the market evaluation of the product

performance of the recent customer experience (Fornell et al., 1996). Anderson and Sullivan (1993) model divert from the expectancy-disconfirmation model by introducing an analytical framework that measures satisfaction as a function of perceived quality and disconfirmation. In this model, expectation is modelled through its effect on perceived quality, positive and negative disconfirmation. The outcome of the perceived quality-disconfirmation model finds negative disconfirmation has a greater impact on satisfaction than positive disconfirmation. It suggests that firms need to put the effort into managing customer complaints and take measures to improve product quality to control the impact of negative disconfirmation on satisfaction.

Theories of perceived quality were first examined in service management literature which aimed to advance research in the determinants of quality. Perceived service quality is the customer's perspective of what they perceive to be service quality against what they expected. In the service quality model developed by Parasuraman, Zeithaml, and Berry (1985) to define and measure quality, the authors posited service quality as a comparison between expected service (expectations of what the firm should provide) and perceived service (perception of performance). Oliver (1993) made the first attempt to integrate satisfaction to service quality by proposing a conceptual model that defines satisfaction as a function of the size and direction (disconfirmation) of predictive expectations and perceived quality and proposes a customer can be satisfied with a lower quality if performance is better than expectations. However, this proposal can leave firms confused on whether its objective to the customer is to manage their perceived performance of the firm or for the firm to deliver a higher level of perceived service quality.

Spreng and Mackoy (1996) empirical study further examined the key aspects of the relationship between perceived service quality and customer satisfaction and investigated whether perceived service quality is an antecedent to customer satisfaction or an outcome of customer satisfaction. The authors' results found that expectations have a positive effect on both satisfaction and perceived service quality through perceived performance. Simply put, it means if a firm lowers expectations, it might also lower perceptions and performance leading to lower levels of satisfaction. The findings of Spreng and Mackoy (1996) support the earlier finding by Cronin Jr and Taylor (1992) who suggest that service quality is an antecedent to customer satisfaction. Their findings support those hypothesized by Parasuraman et al. (1985) and Zeithaml (1988) that a higher level of service quality results in an increase in customer

satisfaction. This further support the proposal of including perceived quality as the second determinant of customer satisfaction. In later studies that build of efforts that examine the effects of perceived service quality on customer satisfaction, Tam (2004) explained that a transaction level, perceived transaction-specific quality will influence customer satisfaction and overall perception of firm's service quality is based on customer's cumulative transaction-specific satisfaction with the service over time.

The third determinant to measure cumulative customer satisfaction is perceived value. Value is viewed as another type of comparative postpurchase experience and it competes with other antecedents in the determination of satisfaction (Oliver, 1996). If value is a component of satisfaction, it is worth determining what distinguishes value from quality. In more simple terms, customers derive value from quality; it increases the consumption experience, which then makes quality a precursor to both value and satisfaction. As such, in satisfaction literature, references to value are in relation to quality. In determining satisfaction, you first derive quality as posited as the second antecedent and then derive value that is posited as the third antecedent in this section.

As the third determinant of overall satisfaction, the addition of the perceived value was to factor the effect of the price of goods on customer satisfaction and allow for the comparisons of low and high priced goods (Fornell et al., 1996). Hallowell (1996) defines value as a function of perceived quality and price, where differing levels of perceived value affects the level of satisfaction. Ravald and Grönroos (1996) suggest that perceived value can be improved by either delivering better quality service or reducing the customer-perceived costs. It is worth noting that although the price is a key measure of value, perceptions of value can also be derived from non-monetary costs such as benefits derived, time, physical and psychological efforts (Tam, 2004). The perceptions of value can be determined without the purchase of products and services, while customer satisfaction can only be determined when a consumption experience has occurred for the product or service (Sweeney & Soutar, 2001). The convergence in market research into the interrelationships of quality, value and satisfaction reveal that positive service quality perceptions lead to improved customer satisfaction and value perceptions, and that results in positive value directly influencing satisfaction (Cronin Jr, Brady, & Hult, 2000).

2.3.2. Formation of customer satisfaction index

The development of the customer satisfaction index provided a significant advancement in customer satisfaction research. An index allows for a common scale for the measurement and monitoring of customer satisfaction that aggregates customer satisfaction over time for products, firms and industries (Yi, 1990). The first customer satisfaction index model was established in Sweden in 1989 by Claes Fornell, who has become the world's leading expert and scholar in customer satisfaction. The Swedish Customer Satisfaction Barometer (SCSB) was the first national index of customer satisfaction and was developed through a survey of 100 leading Swedish firms in 30 industries. The Swedish customer satisfaction index described in the Fornell (1992) study served as a national economic indicator reflecting customer satisfaction across firms and industries over a long-term period.

The customer satisfaction index tracks and benchmarks the cumulative evaluation of customer satisfaction of firms and industries over time. A customer satisfaction index aims to become a national index that makes industries more competitive, promote market orientation and complements traditional economic performance indices. Current economic indices measure the quantity of output of a firm, industry, or economy through indices such as the gross domestic product, business confidence index or producer price index. The customer satisfaction index measures the quality of the consumption experience in the economy as reflected in the prepurchase experiences and post-purchase outcomes of the customer (Fornell, 1992) and has been shown to correlate with the gross domestic product (Aksoy, Cooil, Groening, Keiningham, & Yalçın, 2008). The intended users of the customer satisfaction index are various stakeholders of the firm including the customer, Chief Marketing Officer, the Chief Financial Officer, analysts, and shareholders.

The ground-breaking study by Fornell (1992) in developing the SCSB created a benchmark for further modifications and improvements to the national index models (Johnson et al., 2001). Germany's Deutsche Kunden barometer was introduced in 1992 by Meyer and Dornach (1997). The American Customer Satisfaction Index (ACSI) was created in 1994 by researchers from the University of Michigan Business School and the research is documented in the Fornell et al. (1996) study. The ACSI was the third index produced and the approach in developing the ACSI was to start with the methodology of the Swedish model and then increase the reliability and validity of the Swedish model. The ASCI surveyed more than 200 firms in over

40 industries that served as a representation of the United States economy (Fornell et al., 1996). The ACSI is supported by a uniform statistical methodology for calculating an index and remains the basis from which other countries create their national indices.

The ACSI benchmarks satisfaction by the firm, by brand, by industry and by sector. The American version of the model had a more extended sample of firms due to the scale of the American economy. The difference between the models was that the American model was based on three determinants in measuring customer satisfaction (customer expectation, perceived quality, and perceived value) and the Swedish model was based on two determinants (customer expectation and perceived value). The dependent variables for both models are customer loyalty and customer complaints, where increased satisfaction is increased customer loyalty and decreased customer complaints (Johnson et al., 2001). The original SCSB was later rectified to conform to the ACSI (Fornell et al., 1996).

There are key improvements in the American model from the original Swedish model for all three antecedents of customer satisfaction. First, the introduction of the perceived quality construct in the American model was in response to the difference between reliability (a feature of the Swedish model) and customization (a feature for the American model). The findings of Fornell et al. (1996) in developing the American model found that customization and reliability were two primary components of the perceived quality antecedent. The quality experience of a customer is defined as a function of customization and reliability, where customization is the ability for the firm's offerings to be modified to fit the customer requirements and reliability is the ability of the firm to deliver the requirements consistently and dependably (Johnson et al., 2001). The ACSI survey defines perceived quality as product quality and service quality and asks the customer to separately evaluate each component of the perceived quality antecedent for customization, reliability and overall quality (Johnson et al., 2001).

The second improvement of the American model is the measurement of perceived value to allow comparability between firms with high priced and low priced goods and services (Fornell et al., 1996). Fornell et al. (1996) found that value is more central to the customer's initial selection of the firm's offering and quality is more central to the consumption experience. The impact of price increases relative to quality (the ACSI predicts both increases in perceived value and perceived quality increases customer satisfaction) and quality is a component of value, the model also links quality to price (Johnson et al., 2001). The results of the American

model measures customer loyalty as the likelihood of repurchasing if the firm changed its price (price tolerance).

The third improvement of the American model is the measurement of customer expectations using three measures compared to a single measure used in the Swedish model (Fornell et al., 1996). The three measurements for customer expectations (the prepurchase stage) operationalized corresponding three measurements for the evaluation of perceived quality (the post-purchase stage) for experiences with quality, customization, and reliability. Overall, the findings by Fornell et al. (1996) in developing the American model provided the means for the firm to measure the long-term financial performance of its most valuable asset – its customers.

South Africa is one of four countries that has a created customer satisfaction index in partnership with the ACSI. The South African Customer Satisfaction Index (SACSI) was created in 2012 with the first satisfaction scores measured in 2013. The SACSI remains the only national cross-industry benchmark of customer satisfaction in South Africa. Currently, the SACSI measures over 118 brands across 14 industries and the customer satisfaction score is a comparable metric with other firms across the world (under licenced with the ACSI).

2.4. DETERMINANTS OF FIRM VALUE

Given that there are no current studies that link SACSI to accounting and financial metrics, this study begins by examining whether the SACSI is linked to the firm valuation inputs as measured by profitability, free cash flow and financial leverage.

2.4.1. Customer satisfaction and profitability

Return of asset (ROA) is widely accepted as the best financial ratio in finance literature that represent profitability (Jordan, Ross, & Westerfield, 2003). ROA is an accounting profitability ratio used to measure the firm's ability and efficiency to generate net income through utilizing its assets. Ordinary least squares (OLS) regression was used by Hallowell (1996) to examine the relationship between customer satisfaction and profitability by using Return of Assets (ROA) as a proxy for profitability. Anderson, Fornell, and Rust (1997) used the OLS approach

to test the profitability hypothesis with Return on Investment (ROI) as a profitability measure. There are various ways to determine the constituents of an investment for different firms as it can range from a specific investment to a specific asset or group of assets. Return on equity (ROE) measures the profitability for shareholders and estimates the firm's ability to turn shareholder's equity (contributions to the firm) into profit. Since the primary goal of listed firms is to create value for shareholders, Sun and Kim (2013) use ROE as the proxy for the measure of profitability. ROA is the preferred measure of profitability as it measures the efficiency of utilizing the entire asset base of a firm.

2.4.2. Customer satisfaction and future cash flows

Gruca and Rego (2005) study provide comprehensive research on how customer satisfaction contributes to the increases and stability of future cash flows. The authors posited that it is these two characteristics of cash flow with customer satisfaction that contribute to the increase in firm value. Their study builds on the foundational study by Anderson, Fornell, and Mazvancheryl (2004) on how future customer behaviour affects the level, timing and risk of future cash flows, and thus can be associated with firm value. There is growing strong empirical evidence that supports the link between customer satisfaction to future cash flow by demonstrating that high customer satisfaction leads to (1) high retained customers who buy more goods and services (level); (2) a more stable customer base that generates revenues at lower costs (risk); and (3) produces a relatively predictable source of future income (timing). Firms with high levels of future cash flows ensure payment of dividends and debt and are viewed as less risky to investors and lenders (Himme & Fischer, 2014). Free cash flow (refers to both current and future cash flow) is an accounting and finance measure of profitability that measures the amounts of cash the firm generates after deducting operating and capital costs. Analysts and CEOs have widely used free cash flow models in the valuation of a firm (Pinto, Robinson, & Stowe, 2019) as free cash flows provide an economically sound basis for valuations (Free cash flow valuations, n.d.).

2.4.3. Customer satisfaction and financial leverage

To add to the growing research studies contributing further evidence of interaction between customer satisfaction and variables of firm valuation, Himme and Fischer (2014) study

examined how the cost of capital (equity and debt of a firm are the two types of capital) is influenced by customer satisfaction ratings. The authors used the ACSI as an independent variable in a conceptual model that explains the effect of customer satisfaction on default risk (the risk that the firm is unable to meet its debt obligations) and systematic risk (share market risk). These two measures of risk are the components of the cost of capital. Cost of capital is a variable of firm valuation models as the free cash flow of a business is distributed to debtholders and shareholders. The cost of capital as a component of firm valuation models is measured by the weighted average cost of capital (WACC) ratio.

In the finance literature, the WACC is used as the discount rate in calculating the value of the firm and represents the combined rate for both types of capital (Definition of WACC, n.d.). The WACC is calculated by adding a weighted proportion of the interest rate of debt and interest rate for equity against total capital. Further findings by Himme and Fischer (2014) assessed how customer satisfaction, brand value and corporate reputation influenced the cost of capital and found that these three non-financial metrics contain information that significantly influences the reduction of cost of capital.

Malshe and Agarwal (2015) provide a further understanding of the relationship between the cost of capital and customer satisfaction, and the impact on firm value. The authors investigate the impact of the proportion of debt to equity referred to as financial leverage and how it affects marketing strategies and ultimately the firm value. South African firms are primarily funded by debt, with the latest research from Statistics South Africa showing that the cost of capital of the formal business sector is funded by 70% debt financing (Statistics South Africa, 2020). Highly leveraged firms have the obligation of using free cash flows generated to repay debt obligations and Malshe and Agarwal (2015) argue that these firms invest less on future marketing strategies (investments in advertising and firm innovations) and long-term growth opportunities to unlock future increased cash flow. Further to impacting future cash flow, financial leverage influences the cost of capital and the overall risk of the firm (increased use of debt is a higher risk to the firm). Rayan (2010) study on JSE listed firms found that increasing financial leverage was negatively correlated with firm value and Malshe and Agarwal (2015) found that firms that have high financial leverage negatively moderate the relationship between customer satisfaction and firm value.

2.4.4. Customer satisfaction and firm value

Many studies focus on the consequences of customer satisfaction and significant attention has been given to its relationship to firm financial performance and firm value. Earlier studies in satisfaction research focused on the measurements of determinants of satisfaction and later studies in customer satisfaction addressed the growing need to research the consequences of maximizing satisfaction for the firm. In the absence of providing empirical support to show the benefits of satisfying customers, customer satisfaction will not be considered as a valuable performance metric. The basis of this section follows research that reveals the link between customer satisfaction and firm value.

To develop an appreciation and relevance of customer satisfaction, Anderson et al. (2004) developed a theoretical framework with empirical support to show how customer satisfaction is associated with future cash flows and long-term financial performance. Customer satisfaction is an important determinant of post-purchase behaviour, which in turn is expected to affect the firm's future profitability (Tam, 2004). A critical part of the ACSI is its ability to predict future economic returns (Anderson & Fornell, 2000) and the basic principle is that satisfied customers can be economic assets to a firm that generate future profits to the firm (Jordan et al., 2003) and should be possible to use the ACSI to predict firm's financial results (Sun & Kim, 2013). The traditional accounting-based metrics which are historical measures based on past performance of the firm and alone are not a true reflection of business performance and firm value.

The need to add marketing metrics that provide an additional explanation on how to create value for the firm has created interest in customer satisfaction research. Firm value is measured by the expected future cash flows adjusted for the cost of capital (WACC rate). The future behaviour of a satisfied customer influences expected future cash flows as satisfied customers buy more of the firm's offering, buy additional products of the firm, have increased level of word of mouth, have higher price tolerance and increases the firm's bargaining power in the market (Anderson et al., 2004). Customer satisfaction is positively correlated to customer retention (Anderson & Sullivan, 1993) and customer retention leads to higher future revenue (Fornell, 1992). Gruca and Rego (2005) find that customer satisfaction creates firm value due to its ability to increase future cash flow and reduces its variability.

Several studies that theorize the link between customer satisfaction to financial performance and share market performance have demonstrated that firms with high customer satisfaction have superior economic returns as increases in customer satisfaction affects future cash flows which in turn affects long term financial performance (Anderson et al., 1994). This finding is supported by Fornell (1992) study that indicates the benefits of high customer satisfaction firms include increased loyalty of current customers, lowering of the cost of attracting new customers and increases in the repurchase rate of current customers. Using the ACSI as a measure of customer satisfaction over a four years, Anderson et al. (2004) found a positive and significant relationship between customer satisfaction and firm value, with the relationship varying significantly between firms and industries. Following this study, Fornell et al. (2006) supported the initial research that customer satisfaction is significantly related to firm value by examining how customer satisfaction affected share prices, a dependent variable of firm value, and share returns. Fornell et al. (2006) argue that since customer satisfaction as an intangible asset is not recognized in the financial statements, it is also not fully reflected in firm value. The research findings found that firms that have highly satisfied customers generated positive excess market returns which indicated that the ACSI provided additional evidence to the market that is not reflected in share prices or known by market participants (Fornell et al., 2006).

Jacobson and Mizik (2009) criticized the generalization about the findings of customer satisfaction in the study by Fornell et al. (2006) and other past research that indicate that the financial markets do not fully include the value of intangible and marketing assets (i.e. customer relationships, satisfaction and loyalty) in the share price. An empirical study by Jacobson and Mizik (2009) of the 100 ACSI measured firms over 10 years confirmed the findings by Fornell et al. (2006) that there is mispricing of customer satisfaction in the market, but their study found that excess returns were only driven by high satisfaction firms in two sectors - computer and internet sectors. The authors concluded that mispricing of the share returns may be influenced by the models and methods used in studies of customer satisfaction, and mispricing is influenced by the period, sectors and firms selected in the sample.

In response to the Jacobson and Mizik (2009) critique, Fornell, Mithas, and Morgeson III (2009) added new data and additional analysis on the results of the initial study by Fornell et al. (2006) to reveal that excess return still existed and the relationship between customer satisfaction and excess returns was statistically significant. This highlighted the need for

additional advanced research and methods to better understand the role of customer satisfaction as a measure of firm value. In response to the need for empirical evidence to understand if there is a firm value implication to customer satisfaction, Fornell et al. (2016) added to the growing empirical evidence linking customer satisfaction to share market outperformance and to further support the importance of customer satisfaction as a marketing intangible asset. The study of the ACSI and share returns over 15 years found share returns of customer satisfaction firms outperform the average market return. This study supports the conclusions in the initial research that information on marketing intangibles are not fully known by market participants (Fornell et al., 2016). These research findings suggest that firms put in place measures to increase overall customer satisfaction and increase the focus with shareholders, analysts, and management for customer satisfaction as a metric that contributes to firm value.

Despite the growing literature and the advanced understanding of customer satisfaction, Bharadwaj and Mitra (2016) examined why customer satisfaction remained ignored in the valuation models by investors despite the long existence of the ACSI. The authors found that marketing literature as it relates to intangible assets (customer retention, loyalty, and satisfaction) is not integrated into the existing firm valuation literature or under the attention of the accounting and investment industries. Aksoy et al. (2008) study also found resistance by the investment community to include customer satisfaction in valuation models for several reasons such as (1) customer attitudinal data did not provide many benefits, (2) investors do not value customer satisfaction data, (3) firm manage for the short term benefits such as affecting the share price versus long-term efforts that increase customer satisfaction and loyalty, and lastly (4) there remains scepticism for the importance and impact on firm valuation for non-financial measures.

2.5. Development of Hypothesis

The purpose of the study is to identify observable relationships between marketing and financial variables of firm value. The hypotheses are derived from the literature review as presented in chapter two. The study employs the principles used in finance and accounting practice to measure firm value to examine how one marketing metric, customer satisfaction, is linked to all variables of firm value. These variables are return on assets (ROA) which is the proxy for profitability. Tobin Q is used as a proxy for firm value. Additional firm valuation

variables used are free cash flow and financial leverage. The study evaluates the hypotheses for the interaction of customer satisfaction, the effects of these variables of firm value separately. The purpose of taking this approach is to create an understanding with accountants, analysts, and shareholders by using the methodology they would apply in their financial modelling to create: (1) an understanding of the true value of the firm, and (2) to demonstrate if there is efficacy of including customer satisfaction with financial measures in firm valuations (Aksoy et al., 2008). The theoretical framework that supports the hypotheses are (1) customers are the primary source of cash flow for the firm; (2) financial leverage affects customer satisfaction; and (3) customer satisfaction is associated with firm value. Table 1 summarizes key variables and literature support of the hypotheses for the variables of firm value.

2.5.1. Customer satisfaction and firm profitability

Hypothesis1(H_1): The null hypothesis states there is a positive relationship between customer satisfaction and firm profitability.

2.5.2. Customer satisfaction and future cash flow

Hypothesis1(H_2): The null hypothesis states there is a positive relationship between current cash flow, current earnings, customer satisfaction and future cash flow.

Gruca and Rego (2005) hypothesized future cash flow as a function of both current cash flows and current earnings as traditionally modelled in accounting literature. Customer satisfaction is expected to explain the variation in future cash flow and contribute to the growth in future cash flow.

2.5.3. Customer satisfaction and financial leverage

Hypothesis1(H_3): The main hypothesis states that there is a negative relationship between customer satisfaction and financial leverage. The link between financial leverage and advertising intensity is posited with H_3 as advertising intensities have a moderating effect on the negative relationship between financial leverage on customer satisfaction (Malshe & Agarwal, 2015). Higher financial leverage is expected to have a negative effect on advertising intensity (firms with high debt spend less on advertising initiatives), and this results in lower customer satisfaction. Therefore, the coefficient for advertising intensity is expected to be negative and significant (Malshe & Agarwal, 2015). The firm-specific control variables of H_3

that affect the firm's choice for its leverage and thus influences the leverage and customer satisfaction relationship are profit margin, firm size (as measured by total assets) and market-to-book ratio.

For this reasoning, the main and moderating hypothesis is stated as follows:

Main null hypothesis - H_3: There is a negative relationship between customer satisfaction and firm financial leverage.

Moderating hypothesis - $H_{3a:}$ The negative impact of high financial leverage on customer satisfaction is moderated by a firm's advertising expenditures.

2.5.4. Customer satisfaction and firm value

Hypothesis1(H_4): The main hypothesis states there is a positive relationship between customer satisfaction and firm value. The relationship between customer satisfaction and firm value is expected to vary based on both firm and industry factors, where when an industry concentration is low (more firms competing and weaker bargaining power), satisfied customers are more difficult to retain (Anderson et al., 2004). Therefore, the impact of customer satisfaction on firm value is reduced in industries with low concentrations. The theoretical framework developed by Anderson et al. (2004) added two firm-specific control variables as measured by advertising-to-sales ratio and market share for their influencing roles to the hypothesized relationship. Market share is associated with industry concentration levels as market share accounts for within-industry variation and industry concentration accounts for cross-industry variation. Advertising-to-sales ratio is included for its role in building customer satisfaction efforts.

Main null hypothesis – H_4: There is a positive relationship between customer satisfaction and firm value.

Moderating hypothesis – $H_{4a:}$ The positive impact of customer satisfaction on firm value is reduced when the industry concentration declines.

Table 1 Summary of Key Variables and Literature Support

Variables	Hypothesis	Definition	Data Source	Literature Support
Customer satisfaction		The overall consumption experience of customers surveyed in the SACSI	SACSI	
Profitability (ROA)	H1	The ratio of the firm's operating income to the net book value of total assets	FactSet	Hallowell (1996); Jacobson and Mizik (2009)
Free Cashflow	H2	The amount of cash generated through its operations after accounting for operating and capital expenditures	FactSet	Gruca and Rega (2005)
Financial Leverage	H3	The use of debt to finance rather than equity to fund the operations or purchase of capital assets	FactSet	Tuli and Bharadwaj (2009); Malshe and Agarwal (2015)
Firm value	H4	The most common kinds of firm value measures are return and risk. Return is the magnitude and speed of firm future cash flows and the risk refers to the vulnerability or volatility of cash flows	FactSet	Anderson, Fornell &Mazvancheryl (2004)

2.6. Conclusion of Literature Review

Through various studies that aim to close the gap between marketing and finance, the review of the literature reveals the various use of customer satisfaction as a marketing-based metric that can be linked to firm value. The study examines evidence to support if the same significant relationship between customer satisfaction and firm value exists in an emerging market context as the ACSI studies in the last two decades have revealed. The result of the research reveals whether customer satisfaction has a role in South Africa to determine if there is relevance in measuring the SACSI. In addition, the study establishes whether it is worth improving and striving for high customer satisfaction levels if competing firms with less satisfied customers can achieve the same result.

3. RESEARCH METHODOLOGY AND TECHNIQUES

3.1. Introduction

The purpose of the study is to investigate the relationship between customer satisfaction and the long-term firm value for leading Johannesburg Share Exchange (JSE) listed firms. The four hypotheses are tested by analysing the customer satisfaction scores as measured by the South African Customer Satisfaction Index (SACSI) over eight years (2013 to 2020). Following on prior studies on customer satisfaction produced in the United States in the last 20 years, the research methods employed in this study are outlined below. Research in the United States has

consistently used ACSI as a reliable measure of customer satisfaction. The SACSI uses the same methodology as the ACSI to measure the index and it makes it possible to replicate and perform similar research as the United States studies on customer satisfaction in South Africa.

The research on customer satisfaction in the last 20 years provides a foundational basis to approach research from an emerging market context. South Africa with one of the most advance financial sectors in Africa (International Monetary Fund, 2016) provides common and global comparable financial data for research. Studies on customer satisfaction have focused on linkages to various financial and non-financial metrics to seek to explain the relationship between marketing and finance, and understand the implication and its contribution to firm valuation literature (Bharadwaj & Mitra, 2016; Oliver, 1980). This study is the first to study the effect of SACSI on the financial inputs of firm value.

3.2. Research Approach

The research approach is a longitudinal research design as the study examines the effect of customer satisfaction on firm value over time. The study will obtain customer satisfaction scores for the same firms, measured at different time points, for the period of study. The research design is appropriate due to the nature of the research question. The study design will address the nature of the research question outlined in the hypotheses and determine whether the same relationships exist in South Africa as observed in customer satisfaction studies in the United States.

A marketing research firm performs an annual quantitative cross-sectional survey to obtain the data from customers to calculate an individual firm customer satisfaction score. The SACSI is the output of the survey of a large group of customers but does not follow the same group of customers over time. The customer satisfaction scores obtained measure the overall satisfaction of a firm in a year and the overall satisfaction of the same firm over time. As some customer satisfaction scores of the same firm were not available for the entire period, new customer satisfaction scores were introduced as new firms were included in the index and some firms will drop off. The presence of missing data adds complexity to the research design and the method used to address this problem is discussed below.

Using data obtained from an independent source is a disadvantage in the study as the customer satisfaction scores obtained are restricted to the firms that the marketing research firm decides to measure and potential insights of the effect of customer satisfaction may not be discovered if the SACSI population does not represent the diversity of firms listed on the JSE. However, having the SACSI allows for longitudinal studies in customer satisfaction to be cost-effective and less time-consuming as the data collection is performed by another party. Over time, the availability of long-term data will enable further studies and discoveries of relationships and observable trends of customer satisfaction in South Africa.

3.3. The Research Instruments

The study uses secondary data for the research instruments. The SACSI is measured using the same methodology as the ACSI. As shown in the theoretical background, the ACSI is the customer satisfaction measure that has been supported by decades of academic research. South Africa is one of four countries that developed its national customer satisfaction index in partnership with the ACSI. Consulta Research (Consulta), a market research firm, developed the customer satisfaction index for South Africa. Consulta was founded in 1998 by Professor Adré Schreuder who is the leading subject matter expert in customer experience management and measurement. The SACSI was created in 2012 and the first customer satisfaction scores were published in 2013 for six industries (banking, insurance, automobiles, personal technology, retail, and telecommunication) and covered 53 household consumer brands. By 2020, the SACSI has analysed 14 industries and has covered 118 brands across the South African economy. The data is categorized into four benchmarks: by industry, by sector, by the firm and by brand. For example, in the Accommodation and Food Services sector, there are two industries covered being the Fast Food and Full-Service Restaurants and 13 brands covered by the index.

The data for the SACSI is collected through telephone and online surveys from randomly selected customers who have recently consumed the surveyed firm's product or service. (Appendix 1 for example of an online survey). The survey closes once data from at least 2 000 customers is collected. In the 2019 cellular network survey, 2 500 customers were surveyed (SA Cellular Networks increasingly undifferentiated when it comes to customer satisfaction,

2020) and 12 500 customers for the 2020 banking index were surveyed (The Battle of the Banks in Customer Loyalty and Satisfaction Stakes Hits a High in Digital COVID Economy, 2021).

The respondents are asked questions on the measurement variables of the index, which are indicators of the customers' expectations, perceived quality, and perceived value. The survey responses are used to assess the respondent's evaluation of each construct of the SACSI model that was developed on the ACSI methodology. The ACSI methodology uses a multiple indicator approach to measure the customer satisfaction index as a latent variable, and each response variable has an estimated weight to construct the index value (Anderson et al., 2004; Luo, Homburg, & Wieseke, 2010). The outcome of the model is a national index, the SACSI, with scores that can range from 0 to 100. Consulta provided quarterly customer satisfaction data for this study for eight years covering the second quarter of 2013 to the fourth quarter of 2020.

Financial and share data are for listed firms on the JSE. The JSE, created in 1887, is the only stock exchange in South Africa and the largest in Africa (History &Company Overview, n.d.). The JSE uses the Industry Classification Benchmark (ICB) which is a global standard used by global stock exchanges to categorize firms by industry and sector. This categorization allows for easier comparisons between industries and sectors for firms in different global stock exchange markets. Currently, the JSE structure consists of 11 industries and 44 sectors (ICB Industry, n.d.). Financial and JSE share data was obtained from FactSet which is a leading global financial data and software system that provides real-time and historical financial and share data for firms, industries, and share market indices. The FactSet database contains daily share data for all listed firms on the JSE and it is one of the most comprehensive and accurate sources for data.

3.4. Data Sources and Collection

To test the hypotheses, quantitative secondary data collected for customer satisfaction and financial data is analysed in this section. The industry classification applied by the SACSI differs from that of the JSE ICB classification. A process was followed to align the SACSI and the FactSet datasets. First, the SACSI data were merged to the FactSet data quarter by quarter. The SACSI is measured and released quarterly. For the SACSI reported in each quarter, the FactSet data for the last day of the same quarter was used to merge to the customer satisfaction

data. The second step was to categorize the sectors reported by the SACSI into the ICB classification of the JSE. For example, the Accommodation and Food Services sector in the SACSI was allocated to the following ICB categories: the JSE sector is the Consumer Services sector, the JSE industry group is travel and leisure and the JSE subsector is Restaurants and Bars.

In the SACSI data obtained for the eight-year period, there were six industries and seven sectors covered. The seven sectors were accommodation and food services; finance and insurance; information; durable goods; government; retail trade; transportation and warehousing. The SACSI data received from Consulta for the period had 649 firm quarterly satisfaction scores. The government sector data was removed from the dataset as it does not relate to listed firms. The government sector data consisted of 32 observations. In addition, 129 firm observations were removed from the sample as it relates to firms that are privately owned such as the medical aid schemes (Bonitas, Bestmed and Medihelp) and finance and insurance firms (Auto and General, Hollard and SA Homeloans) who are not listed on the JSE. The data provided by Consulta also included observations from firms that are listed in other global stock exchanges. These firms such Nike, Facebook, Shell, and Apple covered a variety of sectors and consisted of 50 observations. Therefore, a total of 211 unusable observations of the final dataset related to firms that are not listed on the JSE were excluded from the sample.

From the 438 remaining usable observations, the SACSI data was merged with the ICB sector classifications. Due to the SACSI covering business to consumer firms, the data was segmented into four of the eleven industries of the ICB classifications. The largest groups in the dataset based on the ICB coding are the Financials (J30) sector with 11 firms followed by Consumer Staples (J45) with 7 firms. The industries with the smallest number of observations were Telecommunications (J15) and Consumer Discretionary (J40) with 3 firms each. Although the government sector (J65) is presented as an ICB grouping, as indicated above it is excluded as there are no government entities publicly traded on the JSE unlike in other global stock exchanges.

Consistent with the findings by Jacobson and Mizik (2009) and Luo et al. (2010) of the ACSI data in their studies, not all the firms in the SACSI dataset have observations. Some firms in Consumer Staples (J45) and Consumer Discretionary (J40) industries were included for the second quarters of 2013 to 2016 and then dropped. These firms included Woolworths and Mr

Price who are constituents of the JSE Top 40 index. This makes them one of the 40 largest listed firms by market capitalization in South Africa but were not included in the dataset for the full period of the study. In addition, the full dataset for the period of the study is unbalanced as it is focused on Financials (J30) sector firms who have SACSI scores for the full period of study and may lead to an inefficient statistical result as the missing data present a diverse universe of customer-orientated firms in the JSE.

A statistical approach for firms included in the dataset but where customer satisfaction was not measured for the full period of study was considered to reduce the bias of the missing data (dropouts) from the analysis of longitudinal data. There are three types of missing data: (1) missing completely at random (MCAR); (2) missing at random (MAR); and (3) missing not at random (MNAR) (Little and Rubin, 2002). The dropouts in the dataset are MCAR as there is no systematic relationship between the missing values of the firms and any other observed and missing values of other variables. MCAR relates firms to retail sector firms (J45) which did not have customer satisfaction data from 2017 to 2020. Listwise deletion is recommended for MCAR missing data which affects firms with missing customer satisfaction data. When this strategy is used, this will create an opportunity for the model to be more robust as including non-random observations with missing values can cause bias in the model output.

Multiple imputation is a statistical method for replacing missing data. The imputations were not used in the study as in instances where financial data was missing from FactSet, the missing values were obtained directly from the published financial statements of the firms on their websites. This was the case for financial data for ABSA, Nedbank and Old Mutual in 2020 and Mr Price in 2014 and 2015. Old Mutual, one of the oldest firms and brands in the country, has been measured by the SACSI since the inception of the index in 2013. The firm was listed on the JSE in 2018 and stock market data was not available from 2013 to 2017, however financial statement data was available on FactSet from 2018. There were five unusable observations (from 2013 to 2017) were removed from the sample.

For certain diversified firms, the SACSI is calculated at a division or brand level. For example, at ABSA, the SACSI data was available for all its six divisions being banking, credit cards, current accounts, savings, home, and personal loans for the period of study. For retailers such as Truworths and Spar Group, the SACSI data was available at the firm level. Ittner, Larcker, and Taylor (2009) examined how previous studies cleaned the ACSI data and found that these

studies did not deal with how they handled satisfaction scores at divisional or brand level and firms that have merged with other firms.

The study followed the same approach by Ittner et al. (2009) to clean the SACSI and to match the SACSI measured brand or division to a firm name and share code on the FactSet dataset. For diversified firms, the division-level or brand-level SACSI data was averaged across all brands or divisions to obtain the firm-level score. The firm-level score was matched to the parent firm data from FactSet. For single division-level SACSI data, the satisfaction score was matched to the parent firm. For the remaining dataset, the SACSI reports scores for both Momentum and Metropolitan (financial sector firms) for the full period of the study. These two firms merged in December 2010 into a listed firm Momentum Metropolitan Holdings Limited, but firms still operate independently as business units. To avoid double-counting by matching one listed entity share data to two individual firm satisfaction data, the satisfaction scores of both firms were merged and the average for the period of the study. This was the only instance in the dataset where two firms were merged into one firm during the period of study.

After deleting firms that had missing data (mostly occurred in 2018 to 2020) and merging division-level and brand-level SACSI data, there were 156 usable observations from 27 firms over an eight-year period. Table 2 summarizes the statistics of customer satisfaction over time before making any analysis of the structure of the data. For example, in 2015, there was a sample of 29 customer satisfaction scores wherein the minimum was 69.74 with the maximum of 83.80. The sample customer satisfaction mean score for 2015 was 76.68 and the standard deviation was 3.4. There was a positive skewness of 0.05 and the negative kurtosis of negative 0.55 indicates that the distribution in 2015 was flat and had lighter tails than the normal distribution.

Table 2 Descriptive Statistics for Customer Satisfaction

	N	Minimum	Maximum	Mean	Std Error	Std Deviation	Skewness	Kurtosis
2013	17	69.90	88.00	77.81	1.16	4.80	0.21	-0.29
2014	27	69.61	83.40	76.43	0.77	4.01	0.24	-1.11
2015	29	69.74	83.80	76.68	0.63	3.40	0.05	-0.55
2016	19	67.03	82.08	75.54	0.92	3.99	(3.41)	-0.26
2017	15	70.68	80.19	75.78	0.75	2.92	(0.26)	-1.03
2018	16	71.20	82.20	75.49	0.82	3.27	0.54	-0.79
2019	16	70.00	81.65	75.94	0.83	3.32	(0.04)	-0.44
2020	17	71.10	84.00	77.02	0.91	3.74	0.03	-1.02

4. DATA ANALYSIS TECHNIQUES

4.1. Introduction

This chapter outlines the methodology used to answer the research hypotheses stated in chapter two. Econometric research methods were utilised to research the relationship between customer satisfaction and financial variables of firm value. Financial econometric models are designed to analyse financial data for simulation, forecasting or decision-making objectives (Jajuga, 2004). In addition, the models employed in the study are developed from some underlying financial theory and the data analysis is performed using real quantitative data to verify the hypotheses (Jajuga, 2004).

To answer the research hypotheses, the analysis is designed to explain the mean, standard deviation, and correlation coefficients of the data set. As the models in this study analyse more than two variables over time and at the same time, the analysis of the data will also examine the correlation between two different variables. Diagnostics tests outlined below are performed to determine an appropriate model to analyse the data that will provide insightful results and meaningful recommendations to the hypotheses.

4.2. Applying Linear mixed effect modelling as a data analysis technique

Linear Mixed Effect Modelling (LMM) is used as a data analysis technique for the study and is suitable for longitudinal studies that have repeated measures. LMM propose a best fitting formula that observes the combination of the effects for each variable that best fits the observed data (Strik, 2011). LMM is also appropriate as it handles correlated longitudinal data with missing values. These characteristics of longitudinal data exist in the dataset as there are SACSI measured firms that do not have financial variables for the full period of study and these missing financial variables were not imputed for the study. As the study uses a longitudinal dataset for statistical analysis, LMM accommodates the characteristics of the dataset which has incomplete and unbalanced data, and correlations between and within variables.

The data requirements for a longitudinal study are substantial as the data collection process needs to be constant over time. To address this concern, panel data econometric techniques are used to identify empirical patterns of the marketing-finance interface. The independent variable

at each time point is the customer satisfaction score. The variables for each firm are earnings, free cash flow, return on assets, financial leverage, and Tobin's Q. The descriptive statistics are discussed in section 5.2.

4.3. Statistical Inferences on Fixed and Random Effects

LMM distinguishes and allows for both fixed and random effects to be analysed in the model. Fixed effects are described as the systematic mean patterns and random effects explain the correlated patterns between and within observations or both. Stated differently, the fixed effects are the mean responses that are assumed to be shared by all observations and random effects are subject-specific effects that are unique to a particular observation. Random effects are used to account for the variance-covariance of the dependent variable (y) after the fixed effects have been accounted for (Rosopa, 2014). Examples in the dataset of random effects are earnings, free cash flow, financial leverage, ROA, total assets, and Tobin's Q. The dependent variable in mixed model is modelled in the equation below:

$$y = \text{fixed effect} + \text{random effect} + \text{random error term.}$$

The interaction with random effects whether it is combined with a fixed effect, or another random effect will lead to a better LMM fitting model for the dataset. The interaction of both effects which facilitates making an LMM a flexible approach in statistical analysis for the study is summarised in Table 3.

Table 3 Data Analysis Techniques

	Types of data	Intercept	Slope	Type of regression
1	Cross-sectional	Fixed	Fixed	General linear regression
2	Longitudinal	Random	Fixed	Mixed effect regression
3	Longitudinal	Fixed	Random	Mixed effect regression
4	Longitudinal	Random	Random	Mixed effect regression

For statistical inferences on fixed effects, hypothesis tests and confidence intervals are computed using *F* statistic. If the ρ value of the F statistic is less than 0.05, then we reject the null hypothesis that the population coefficients for the fixed effects are zero (Rosopa, 2014). For statistical inferences on random effects, hypothesis tests and confidence intervals are computed using Wald (*Z)* statistic. If the ρ value of the F statistic is less than 0.05, then we

reject the null hypothesis that the population coefficients for the random effects are zero (Rosopa, 2014).

4.4. The Nature of Heteroskedasticity

Heteroskedasticity is tested on a general linear model to confirm if the assumptions of OLS are violated. Haan & Levin (1997) recommends a test statistic for using heteroskedasticity or a covariance matrix estimation procedure to allow the model to draw accurate inferences from estimated parameters. The White General Heteroskedasticity Test (White Test) is used to test the presence of heteroskedasticity in the dataset. Due to the nature of industries of the SACSI firms, some free cash flow and earnings data points have highly negative or significantly positive values. These data points present outliers in the dataset. Appendix 2 is the outcome of the test of heteroskedasticity which confirms the presence of heteroskedasticity and thus LMM will be a better fit for the dataset. The chi-square for the White Test is 88.832, the degree of freedom is 51 and a ρ value of 0.001. Therefore, the null hypothesis of homoskedasticity can be rejected for the alternative hypothesis.

The Breusch–Pagan (BP) test is an additional test for heteroskedasticity and the test on the dataset has a ρ value of 0.389. Refer to Appendix 2. The BP test relies on the normality assumption (Gujarati, 2003) that the null hypothesis assumes homoskedasticity. Since the ρ value for the BP test is greater than 0.05 (statistically insignificant), meaning that there is not enough evidence to reject the null hypothesis if the dataset was normally distributed. As the dataset is not normally distributed, the study cannot rely on the results of the BP test as the assumption of normality in a general linear model is violated. Therefore, the study will consider the results of the White Test showing that the dataset has heteroskedasticity.

4.5. Covariance Structure Analysis

There are two sources of variations in the longitudinal data: the relationships between the variables and relationships within the variables. For repeated-measures data, independence cannot be assumed for the observations whereas for linear models the data is presumed to be uncorrelated over time and the variance is constant. To analyse the repeated-measures data, a statistical analysis is performed to address the issue of covariation between measures. The LMM allows the integration of both relationships, within and between the variables, in a single

model. As an approach in statistical analysis, the LMM provides a powerful tool to measure the effect of customer satisfaction accurately over time as it allows the correlations patterns to be explicitly modelled with specific characteristics (Pusponegoro, Notodiputro, & Sartono, 2017).

Covariance structure analysis is a technique used on repeated measures to explain unobserved sources of variation and covariation in the observed measurements (Joreskog & Andersen, 1981). A covariance matrix is used to determine the patterns of autocorrelation for the residual components in the LMM to avoid making incorrect and inefficient inferences on the dataset. Choosing the correct variance-covariance structure is an important step in the data analysis to determine the degree of similarities among the repeated observations (Barnett & Koper, 2010). Of the most common variance-covariance structures, the unstructured (UN) and first-order autoregression (AR) covariance structures are selected for the study as the starting point in building an efficient LMM as it does not assume a pattern of the covariances.

For the UN structure, there are no constraints imposed on the values and each variance and covariance estimates unique correlation patterns between observations from the dataset and results in the best possible model fit (Sweet & Grace-Martin, 2010). The UN structure also does not require an assumption of the error terms. As an alternative measure to model the random effects of LMM, the AR structure allow simple and interpretable parameterization from a fewer number of estimated parameters (Wolfinger, 1996). The AR structure assumes all variances are constant over time and have a constant parameter. The UN and AR covariance analysis technique allow both fixed and random effects of the LMM model to be analysed. Each covariance matrix structure gives an estimation improvement accuracy for the model and tests power for detection treatment effects (Pusponegoro et al., 2017). . The covariance matrix is discussed in section 5.2.

4.6. Estimation using Restricted Maximum Likelihood

This section relates to deviance tests used to compare models (model-fitting is achieved by maximum likelihood). Analysis of variance (ANOVA) is a one-way analysis to test and compare if there are any statistically significant differences between three unrelated groups (Laerd, 2018). ANOVA as a statistical technique is not appropriate for the dataset as its assumptions for balanced data and data that have no missing values are violated. As the study

makes use of an LMM, repeated-measures ANOVA (RMANOVA) or multivariate ANOVA (MANOVA) was considered as an alternative statistical method for the longitudinal analysis. However, both RMANOVA and MANOVA does not accommodate unbalanced and missing data. A statistical method for mixed model analysis of variance that will be flexible to the nature of the dataset will accommodate a greater set of covariance correlation structures and unbalanced data.

The approach used to estimate and analyse variance components for mixed-effects models is Restricted Maximum Likelihood (REML) as it separates the estimates of the fixed and random effects (Raudenbush & Bryk, 2002). If the data was balanced, the estimates of ANOVA would be the same as REML. For statistical analysis, REML as a method is used to components of variance in unbalanced data by producing unbiased estimates of the variance-covariance parameters (Chakravarty, 2020). REML differs from Maximum Likelihood Estimation (MLE), as REML is used to account for the degrees of freedom lost in estimating fixed-effect parameters when estimating covariance components (Mattout & Phillips, 2007).

4.7. Tests for Statistical Significance

The customer satisfaction index as measured by the SACSI is the most reliable and prevailing measure of customer satisfaction for marketing studies. However, numerous observed and unobserved variables interact such as managerial expertise, firm efficiencies, regulatory environment, R&D efforts, market and industry trends and consumer tastes (Anderson et al., 2004) that can explain the relationship between customer satisfaction and shareholder value are not analysed in the study.

4.8. Statistical tool

As this study uses longitudinal (panel) financial data for firms, econometric techniques are used to determine the relationship between marketing and finance. Econometrics is a quantitative statistical tool used to evaluate existing marketing theories by converting real-world data into statistical analysis and to compare the findings against the existing theory or develop new theories. Panel data modelling techniques address the dependence of the data within the same sample and allow for firm-specific effects to be introduced into the model. There are three common panel data models used in econometric studies, (1) pooled ordinary least squares

(OLS); (2) one-way fixed effects and (3) one-way random effect. Pooled OLS is not suitable for this study as explained above as it assumes all the groups (firms) are homogenous. Fixed effects and random effects panel data models capture the significant variation that exists in the data. The Hausmann Specification Test (Hausmann test) is used within econometric panel data for testing between fixed and random effects within panel data models (Amini, Delgado, Henderson, & Parmeter, 2012) and used to determine whether fixed effects or random effects model is the suitable regression tool for the analysis. The data was analysed on Stata, which is the most suitable software package for an econometric study.

4.9. Hausmann Specification Test

The Hausman test was conducted to assess whether the fixed effects or the random effects model was an appropriate model to assess the relationships between customer satisfaction and firm value variables. The null hypothesis in the Hausmann Test is that the random effects model is the most appropriate model to analyse the relationship and the alternative hypothesis is the fixed effects model is most appropriate. The results are presented in Chapter 4.

5. RESEARCH FINDINGS AND ANALYSIS

5.1. Introduction

The chapter presents the key findings of each variable of firm value as stated in chapter two. The descriptive statistics and the covariance structure of the data set is discussed. The study establishes if customer satisfaction is linked to the profitability of the firm. The firm generates free cash flow from profits after taking into consideration its cost of capital. The remaining free cash flow at the firm's disposal is used to compute the value of the firm. The results of each financial variables are discussed separately below.

5.2. Review of Descriptive Statistics

Variable	Minimum	Maximum	Mean	Std Error	Std Deviation	Skewness	Kurtosis
Customer satisfaction	67,03	88,00	76,37	0,30	3,72	0,18	-0,39
Earnings (in R'm)	172	86 749	16 198	1 381	17 247	1,70	2,55
Free cash flow (in R'm)	(50 243)	56 483	9 084	1 312	16 383	0,40	0,19
Return on assets	0,57%	46,90%	11,16%	0,96%	12,03%	1,38	1,12
Financial leverage	0%	380,52%	39,47%	4,96%	61,92%	2,81	8,90
Tobin Q	0,05	8,43	1,18	0,12	1,50	2,39	6,54
Total assets (in R'm)	738	2 532 940	458 859	44 957	561 517	1,59	2,06
Market cap (in R'm)	2 018	323 761	107 651	7 842	97 948	1,28	0,94

Table 5.1: Descriptive statistics

The final sample consists of 156 observations across 5 industries covering both manufacturing and services firms for which all the relevant variables have no missing data. The summary of the descriptive statistics of the sample in Table 5.1 is without observing the categorical grouping: quarters, years, ICB industry and holding company and the share code. In doing so, the summary descriptive statistics for the sample ignores the effect of the repeated measures of the longitudinal dataset. In this initial review of the descriptive statistics, the interdependency of the variables in the dataset is ignored.

Table 5.1 summarizes the mean and standard deviation of customer satisfaction for the ungrouped longitudinal dataset. Overall, in the uncategorized dataset, the mean customer satisfaction score is 76.37 and the standard deviation is 3.72. There was positive skewness of 0.18 and a kurtosis of negative 0.39. The firms with customer satisfaction scores above the

mean of 76.37 indicate whether the firm has scored below and above par over the entire dataset during the period of study. The average ACSI since its inception in 1994 to 2021 was 74.5. The independent variables are earnings, free cash flow, return of assets, financial leverage, and Tobin's Q. The control variables are total assets and market capitalization as they are not the focal point of the study and are used as indicators of firm size.

The lowest earning was data point was R172 million (2014 earnings of the Spur Limited) and the maximum data point was R86,7 billion (2020 earnings for MTN Group). The market capitalisation of Spur Limited is the second lowest in the dataset and MTN Group is one of the largest market capitalized firms in the sample. Free cash flows (FCF) can be negative or positive with a few data points in the sample having negative FCF during the period of study. The lowest and maximum data points were observed from the financial sector with Nedbank earning the lowest negative FCF of R50,2 billion in 2019 and Standard Bank having the highest FCF of R56.5 billion in 2016. The data had a mean FCF of R9 billion with a standard deviation of R16,4 billion.

The five banks covered by the SACSI sample (ABSA, Capitec, First Rand, Nedbank, and Standard Bank) have a mean ROA of 3.09% with the lowest ROA data points observed with Old Mutual and Liberty Holdings in 2020. The mean average Return on Asset is 11.16% is driven by the Telecommunications and Consumer Staples sector firms who have a mean ROA of 25.24% and 21.52%, respectively. The mean financial leverage is 39% which is lower than the 70% national average as measured by Statistics South Africa. The lower mean financial leverage is attributed to firms in the sample who have no and low leverage. This is expected as retail firms who are included in the sample are mostly cash-driven and have no leverage (Pick n Pay, Mr Price, Famous Brands and Truworths) supporting the findings by Mukaddam and Sibindi (2020) study that found a negative relationship between debt and financial performance of South African retail firms. Tobin's Q of 1 indicates the firm is valued and the mean Tobin Q is 1.18 indicates that the firms in the dataset are slightly overvalued. The standard deviation is 1.5.

The descriptive statistics results of the uncategorized data cannot be relied upon for a study with longitudinal data. The characteristics of the data include repeated observations over time, using the same sample of SACSI measured firms and containing missing and unbalanced data. Ordinary Least Square (OLS) in general linear regression is not an appropriate method to

analyse longitudinal data as the OLS assumptions for homoscedasticity and lack of independence of the observations are violated by the dataset. Heteroscedasticity in statistical modelling relates to the error term that does not have a constant variance. OLS was used for the review of the descriptive statistics above as only fixed effects were used to model the dependent variable. Examples in the dataset are the fixed effects are industry, the quarters, the year and the JSE share code.

Variable	Customer Satisfaction	Market Cap	Earnings	FCF	ROA	Financial Leverage	Tobin Q	Total Assets
Customer Satisfaction	1							
Market Cap	*-0,11*	1						
Earnings	-.300**	.768**	1					
Future cash flow	*-0,12*	.566**	.496**	1				
Return on asset	*0,01*	*-0,02*	*0,07*	*-0,14*	1			
Financial Leverage	-.189*	*-0,01*	.274**	*-0,001*	-.263**	1		
Tobin Q	.209**	*-0,12*	-.185*	-.180*	.855**	-.309**	1	
Total Assets	-.206**	.490**	.467**	.535**	-.522**	.435**	-.469**	1

**Correlation is significant at the 0.01 level

*Correlation is significant at the 0.05 level

Table 5.2: Correlation matrix

The correlation matrix in Table 5.2 describes the relationship between the variables hypothesized in the study. The p-value and correlations for the uncategorized data allow for the interpretation of the relationship between the variables before the method for analysing the longitudinal data is developed below. The unmarked correlations (in *italics*) have p-values greater than both 0.01 and 0.05 significance levels. This indicates that they are statistically insignificant relationships between each other. For the customer satisfaction dependent variable, the following independent variables are statistically insignificant: market capitalisation (ρ of 0.11), free cash flow (ρ of 0.12) and return on assets (ρ of 0.01). As this is the inferential part of the sample, there is no strong evidence to reject the null hypothesis. The correlations with p-values lower than both 0.01 and 0.05 significance levels for customer satisfaction are the following: earnings (ρ of 0.3), financial leverage (ρ of 0.19) and Tobin's Q (ρ of 0.2). The relationship between customer satisfaction and the above three independent variables are statistically significant.

5.3. Results and Discussion

The section presents the key findings derived and is presented in accordance with the hypotheses framed in chapter two. The model formulations are outlined, followed by the presentation of the results from the quantitative analysis.

5.3.1. Results and discussion – Hypothesis 1

Hypothesis: Does Satisfaction have a positive effect on ROA?

Hypothesis 1 examines the hypothesized relationships between customer satisfaction and profitability (as measured by ROA) from Hallowell (1996) study. The study cannot replicate the statistical approach used by Hallowell (1996) who used OLS regression analysis on cross-sectional data as the dataset is longitudinal in form. The best approach to model the relationship between customer satisfaction and profitability (ROA) is using a simplified LMM due to the nature of the dataset. ROA is calculated by dividing the firm's earnings by total assets value. The data is obtained from FactSet. From Equation (1), the study modified and made customer satisfaction the dependent variable as the subject of the formula to reach the Model (1) equation.

$$(1)\ ROA_{(t+1)} = \alpha + \beta_1\ SatisfactionLevel_{i,t-1}$$

```
. hausman fixed random

                 ---- Coefficients ----
             |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
             |    fixed       random       Difference          S.E.
-------------+------------------------------------------------------------
    SAcsiSco |  .1971478     .1846063       .0125415       .0298177
------------------------------------------------------------------------------
                           b = consistent under Ho and Ha; obtained from xtreg
            B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

                  chi2(1) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =        0.18
                Prob>chi2 =      0.6740
```

Figure 5.3: Hausman test: Relationship between customer satisfaction and ROA

The results of the Hausman test indicate a ρ of 0.674. This implies that the null hypothesis for using the random effects model cannot be rejected. Therefore, a random effects model is used to model the relationship between customer satisfaction and ROA.

```
Random-effects GLS regression                   Number of obs     =       140
Group variable: Brand                           Number of groups  =        29

R-sq:                                           Obs per group:
     within  = 0.0160                                         min =         1
     between = 0.0017                                         avg =       4.8
     overall = 0.0017                                         max =         8

                                                Wald chi2(1)      =      1.64
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =    0.2008
```

ROA	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
SAcsiSco	.1846063	.1442968	1.28	0.201	-.0982103	.4674229
_cons	.3568609	11.41547	0.03	0.975	-22.01706	22.73078
sigma_u	13.256229					
sigma_e	3.3906246					
rho	.9385958	(fraction of variance due to u_i)				

Figure 5.4: Random effects model: Relationship between Customer Satisfaction and ROE

The Model 1 (Figure 5.4) reveal that customer satisfaction (β = 0.185, ρ = 0.201) has a positive but insignificant effect on ROA. The relationship was positive as the coefficients for customer satisfaction (β = 0.185) was greater than zero. The relationship is insignificant as the ρ-value was greater than 0.05. The results from Model (1) indicate that for every 1 unit increase in customer satisfaction, the ROA increases by 0.185 and this increase is due to a random chance as the ρ-value was greater than 0.05. The results of Model (1) showed that 93.9% of the variation in ROA was due to differences across firms in the sample rather than from customer satisfaction. The model fails to capture the relationship between customer satisfaction and ROA and the null hypothesis is rejected.

5.3.2. Results and discussion – Hypothesis 2

Hypothesis: Does customer satisfaction have a positive effect on future cash flow?

The study examines cash flows with the inclusion of the firm's current satisfaction level as an explanatory variable. As this study is the first attempt at examining the link of SACSI to cash flow, Equation (2) is not further extended to the empirical models developed by Gruca and Rego (2005) for the effect of the additional characteristics of the variability of future cash flow. Equation (2) models the future cash flow of the firm at time (t+1) as the function of current cash flows, current earning, and current level of satisfaction. However worth noting that firms do not apply a linear strategy on financial performance, and therefore future cash flows and future customer satisfaction can be impacted by several firm-level variables.

For simplicity, additional influences on the relationship between customer satisfaction and cash flow such as the impact of the differences in firms that produce goods or services (Anderson et al., 1997); and advertising investment (Luo & Homburg, 2007) are also not included in Equation (2). As cash flow is strongly correlated to the size of the firm (Gruca & Rego, 2005) and total assets determines the firm size (Rego, Billett, & Morgan, 2009), the firm's total assets are used to standardize the current cash flows and earnings data. The data for earnings, cash flow and total assets is obtained from FactSet. The equation is adopted from Gruca and Rego (2005) for Model (2):

$$\text{Cash flow}_{(t+1)} = f_2\,(\text{Cash flow}_{(t)};\ \text{Earnings}_{(t)};\ \text{Satisfaction}_{(t)})$$

$$(2)\quad \text{Cash flow}_{(t+1)ij} = \pi_{0ij} + \pi_{1ij} \times \text{Cash flow}_{(t)ij} + \pi_{2ij} \times \text{Earnings}_{(t)ij} + \pi_{3ij} \times \text{Satisfaction}_{(t)ij} + \varepsilon_{(t)ij}$$

The model for Equation (2) used π_{0ij}, π_{1ij}, π_{2ij} and π_{3ij} for firm i and industry j to model the range of firm-level strategic influences that impact the growth model that estimates future cash flow. However, in the model for Equation (2), these measures were not considered and accounted for to simplify the model formulation. The main reason for this approach was due to limited data available for the dataset to measure firm-level strategic influences which were market share, advertising, research and development, brands, and firm operating segments.

```
. hausman fixed random

                 ---- Coefficients ----
             |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
             |    fixed       random       Difference          S.E.
-------------+------------------------------------------------------------
      LnSACSI |  -2.737327    .3623252      -3.099652        1.354338
   LnEarnings |   .3398552    .9155953      -.5757401        .2565164
------------------------------------------------------------------------------
                b = consistent under Ho and Ha; obtained from xtreg
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

                  chi2(2) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =        8.31
                Prob>chi2 =      0.0157
```

Figure 5.5: Hausman test: Relationship between customer satisfaction and future cash flow

The results of the Hausman test indicate a ρ of 0.0157, which is less than 0.05 This implies that the null hypothesis for using the random effects model is rejected and the fixed effects model was most appropriate to use. Therefore, a fixed effects model is used to model the relationship between customer satisfaction and future cash flow and the results are shown below.

```
. xtreg LnFCF LnSACSI LnEarnings, fe

Fixed-effects (within) regression               Number of obs      =       123
Group variable: Firm                            Number of groups   =        29

R-sq:                                           Obs per group:
     within  = 0.0363                                         min =         1
     between = 0.6945                                         avg =       4.2
     overall = 0.5600                                         max =         8

                                                F(2,92)            =      1.73
corr(u_i, Xb)  = 0.6080                         Prob > F           =    0.1829

------------------------------------------------------------------------------
       LnFCF |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      LnSACSI |  -2.737327   2.359311    -1.16   0.249    -7.423122    1.948468
   LnEarnings |   .3398552   .2733944     1.24   0.217    -.2031297     .88284
        _cons |   17.41244   10.93175     1.59   0.115    -4.298951    39.12383
-------------+----------------------------------------------------------------
      sigma_u |  1.1753355
      sigma_e |  .65175139
          rho |  .76482037   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(28, 92) = 5.18                     Prob > F = 0.0000
```

Figure 5.6: Random effects model: Relationship between customer satisfaction and future cash flow

The Model (2) (Figure 5.6) reveal that customer satisfaction (β = -2.74, ρ = 0.249) has a negative but insignificant effect on future cash flow. The relationship is negative as the coefficient for customer satisfaction is (β = -2.74) was less than zero. The relationship is insignificant as the ρ-value was greater than 0.05. The results from Model (2) indicate that for

every 1 unit increase in customer satisfaction, the future cash flow decreases by 2.74 and this decrease is due to a random chance as the result is insignificant. The results of Model (2) showed that 76.5% of the variation in future cash flow was due to differences across firms in the sample rather than from customer satisfaction. Model (2) fails to capture the relationship between customer satisfaction and future cash flow and the null hypothesis is rejected.

Firm earnings ($\beta = 0.34$, $\rho = 0.217$) has a positive and insignificant effect on future cash flow. The relationship was positive because the coefficient for firm earnings ($\beta = 0.34$) was greater than zero and insignificant because the ρ-value is more than 0.05. This means for every unit increase in firm earnings, the future cash flow of the firm increases by 0.33 units.

5.3.3. Results and discussion – Hypothesis 3

Hypothesis: Does customer satisfaction have a negative effect on financial leverage?

This section of the study examines the relationship between customer satisfaction and the leverage of firms using the methodologies outlined below. To investigate the relationship between debt, customer satisfaction and firm value, Malshe and Agarwal (2015) used a sample of 171 firms over a 17-year period with customer satisfaction scores measured by the ACSI. An empirical model developed by Malshe and Agarwal (2015) examined the satisfaction and financial leverage link by using customer satisfaction, advertising and research and development (R&D) as dependent variables for the firm's decision about the capital structure of the firm.

Financial leverage is measured as the total short and long-term debt to the market capitalization (market capitalization is firm share price multiplied by the number of issued shares) of the firm. The market value of capitalization (also known as the market value of equity) is used rather than the book value of equity (the difference between the firm's assets and liabilities) as the market value reflects the investor's sentiment of the value of the firm. It is worth noting the difference between the market value of equity (referred to as equity value in finance literature) and firm value (referred to as enterprise value in finance literature) as both measures are used to value the firm. The market value of equity is the value of the firm's core operations that are available to its shareholders and firm value are calculated using free cash flow discounted by the WACC. The market value of equity is commonly used in the banking and insurance

industries (Equity value, n.d.) which is more useful for this study as the sample is mostly Financials (J30) sector firms.

Malshe and Agarwal (2015) model customer satisfaction as the principle dependent variable. Advertising and R&D intensities are measured as their expenditures divided by total sales. The control variables for their empirical model are obtained from a study by Frank and Goyal (2009) of the important factors that explain the financial leverage of listed firms. The three control factors added by Malshe and Agarwal (2015) for the leverage equation are factors that influence the firm's choice of capital structure. These include firm size which is measured by the natural logarithm of the total assets which is the proxy for firm size, profit margin is measured as the earnings divided by revenue, market-to-book asset ratio is measured as the market capitalisation divided by the book value of equity and the tangible collateralizable portion of the total assets is measured by the total value of property, plant, and equipment to total assets.

The study adopts Equation (3) from the empirical model developed by Malshe and Agarwal (2015) to examine the satisfaction and financial leverage link. In Model (3) customer satisfaction, advertising and R&D is used as dependent variables for the firm's decision about the capital structure of the firm. Data for financial leverage is obtained from FactSet.

$$(3)\ \text{Leverage}_{i,t} = Ø_0 + Ø\,\text{Customer Satisfaction}_{i,t-1} + \text{Advertising Intensity}_{i,t-1} + \text{R\&D Intensity}_{i,t-1} + \text{CTRL}_{i,t-1} + \varepsilon_{i,t}$$

In the model for Equation (3), the measure for R&D intensity was not considered and accounted for the model formulation. The main reason for this approach was due to limited data available for the dataset for the firms selected in the study. According to the IFRS, some activities are eligible to be classified as R&D expenditure. Unlike in other sectors such as the IT and pharmaceutical industries where it is easier to demonstrate R&D activity, industries selected in the study disclosed limited R&D activity over the period of study. R&D expenditure was disclosed only for MTN (from 2016 to 2020) and Sasol (from 2013 to 2015). The three control variables included by Malshe and Agarwal (2015) are the natural logarithm of total assets, profit margin and market to book ratio.

```
. hausman fixed random

                 ---- Coefficients ----
             |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
             |    fixed         random       Difference          S.E.
-------------+------------------------------------------------------------
  SAcsiScore |   .0241989      .008106       .0160929               .
ProfitMargin |  -.0653446     -.0218785      -.043466        .0101812
MarketToBo~o |  -.0106073     -.0091944      -.0014128       .000967
Lntotalass~s |    .509752      .1113158       .3984362       .1875508
Advertisin~s |  -.1130744     -.1057559      -.0073184               .
------------------------------------------------------------------------------
                           b = consistent under Ho and Ha; obtained from xtreg
            B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

                  chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =       33.28
                Prob>chi2 =      0.0000
                (V_b-V_B is not positive definite)
```

Figure 5.7: Hausman test: Relationship between customer satisfaction and financial leverage

The results of the Hausman test indicate a ρ-value of 0.000. This implies that the null hypothesis for using the random effects model was rejected and the fixed effects model is the most appropriate to model the relationship between customer satisfaction and financial leverage.

```
. xtreg LnFinancial_Leverage SAcsiScore ProfitMargin MarketToBookAssetRatio Lntotalassets Adve

Fixed-effects (within) regression               Number of obs      =       135
Group variable: Firm                            Number of groups   =        28

R-sq:                                           Obs per group:
     within  = 0.5551                                         min =         1
     between = 0.6661                                         avg =       4.8
     overall = 0.4469                                         max =         8

                                                F(5,102)           =     25.46
corr(u_i, Xb)  = -0.7514                        Prob > F           =    0.0000

------------------------------------------------------------------------------
LnFinancial_Leverage |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
---------------------+--------------------------------------------------------
          SAcsiScore |   .0241989   .0237259     1.02   0.310    -.0228613    .0712591
        ProfitMargin |  -.0653446   .0166554    -3.92   0.000    -.0983805   -.0323086
MarketToBookAssetRatio |  -.0106073   .0014523    -7.30   0.000    -.0134878   -.0077267
        Lntotalassets |    .509752   .2146702     2.37   0.019     .0839546    .9355494
AdvertisingIntensities |  -.1130744   .0674702    -1.68   0.097    -.2469012    .0207525
               _cons |  -2.839975   3.380511    -0.84   0.403    -9.545203    3.865252
---------------------+--------------------------------------------------------
             sigma_u |  1.8278377
             sigma_e |  .50729141
                 rho |  .92848232   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(27, 102) = 15.76                     Prob > F = 0.0000
```

Figure 5.8: Random effects model: Relationship between customer satisfaction and financial leverage

The Model (3) (Figure 5.8) reveals that customer satisfaction (β = 0.024, ρ = 0.310) has a positive but insignificant effect on financial leverage. The relationship is positive as the coefficient for customer satisfaction is (β = 0.024) was greater than zero. The relationship is insignificant as the ρ-value was greater than 0.05. The results from Model (3) indicate that for

every 1 unit increase in customer satisfaction, the financial leverage increases by 0.024 units and this increase are due to a random chance as the result is insignificant.

Advertising intensity (β = -0.113, ρ = 0.097) has a negative and insignificant effect on financial leverage. The relationship is negative as the coefficient for advertising intensity (β = -0.113) was less than zero while the insignificant as the ρ-value was greater than 0.05. This means the result has indicated that for every 1 unit increase in advertising intensity, financial leverage decreasing by 0.113 units is due to change as the result is insignificant.

Profit margin (β = -0.065, ρ = 0.0000) has a negative and significant effect on financial leverage. The relationship was negative as the coefficient for profit margin (β = -0.065) was less than zero and was significant as the ρ–value was less than 0.05. This means for every 1 unit increase in profit margin, the financial leverage of the firm decreased by 0.065 units.

Market-to-book ratio (β = -0.011, ρ = 0.0000) has a negative effect and significant effect on financial leverage. The relationship was negative because the coefficient for market-to-book ratio (β = -0.011) was less than zero and was significant as the ρ-value was less than 0.05. This means for every unit increase in profit margin, the financial leverage of the firm decreases by 0.011 units.

The total assets (β = 0.510, ρ = 0.0019) has a positive and significant effect on financial leverage. The relationship was positive because the coefficient for total assets (β = 0.510) was greater than zero and significant because the ρ-value was less than 0.05. This means for every unit increase in total assets, the financial leverage of the firm increases by 0.51 units.

The rho value indicates that 92.8% of the variation in financial leverage was due to differences within firms rather than from customer satisfaction, profit margin, market-to-book ratio, total assets, and advertising intensities. Model (3) fails to capture the relationship between customer satisfaction and financial leverage and the null hypothesis is rejected. The results in Figure 5.6 are further discussed in section 6.2.

5.3.4. Results and discussion – Hypothesis 4

Hypothesis: Does customer satisfaction have a positive effect on firm value?

This section of the study aims to complete the picture by testing the relationship between customer satisfaction and firm value. Other research approaches used in studies linking customer satisfaction to firm value included the four-factor model, event study, calendar time portfolio study and stock return response model (Srinivasan & Hanssens, 2009). Each method has its advantages and disadvantages. The more advanced test on customer satisfaction and firm value uses some form of calendar time portfolio study. This calendar time portfolio study research approach was first introduced by Fornell et al. (2006) who used two types of a calendar-time portfolio to determine whether firms with high customer satisfaction scores outperform the share market. This has become a popular approach for long term customer satisfaction studies and used in later studies by Fornell et al. (2016) and Sorescu and Sorescu (2016) to test the validity of the results of the original approach of the Fornell et al. (2006) study.

The calendar time portfolio method is used to assess firm-specific long-term abnormal share performance by constructing share portfolios using different trading rules. The general principle used in customer satisfaction studies is to create a portfolio to hold a long position (i.e., holding shares with the expectation that the share price will decrease in value) on shares that have high or increasing satisfaction and a short position (i.e., an expectation that the share price will fall) on shares with low or decreasing satisfaction. An alternative trading rule will be to hold equal amounts of shares in the long (top 50% of ACSI firms in the dataset) and short positions (bottom 50% of the firms). A market-neutral (zero-beta) portfolio is constructed to measure market volatility. The outcome of this approach measures the abnormal returns of all portfolios (long, short, and equal parts portfolio) to the market-neutral portfolio. However, this research approach is not adopted for this study due to the current size and nature of the sample of SACSI measured firms and the data being unbalanced and overweight on Financial (J30) sector firms.

The event study approach is used in numerous studies that analyse the impact of an event such as the effect of releasing of customer satisfaction scores on the firm value, the effect on the share markets or the reaction from investors (Anderson et al., 2004) (Fornell et al., 2006) (Luo

et al., 2010). As this study is not focussing on evaluating the effect of the announcement of the SACSI scores or whether this event provides unexpected information to the financial market, an event study approach is not used to evaluate the relationship of customer satisfaction to firm value.

The study adopts an approach outlined in Fornell et al. (2006) which is the relationship between customer satisfaction and the market value of equity. The basis of this approach is to determine whether the firm value reflects the current market expectations of the future cash flows of the firm (derived from both tangible identifiable assets and intangible unrecorded market assets) and reflecting the exposure to risk associated with the firm's risk with its sources of finance (firm risk) and with the market (market risk). Based on the above sections that link customer satisfaction to observable financial inputs of a firm's valuation and evidence reported in several studies, it is expected that customer satisfaction is significantly correlated to the market value of equity.

Equation (4) from Fornell et al. (2006) study tests the effect of customer satisfaction combined with the book value of the firm to estimate the market value of equity (firm value). Data for total assets and total liabilities are obtained from FactSet.

$$\text{(4) Ln Market Value of Equity} = \alpha + \beta_1 \ln \text{Book Value of Assets} + \beta_2 \ln \text{Book Value of Liabilities} + \beta_3 \ln \text{SACSI}$$

As an alternative measure for firm value and to enhance the validity of the above results, common proxies used to measure firm value are Tobin's Q, share prices and share market ratios (Gruca & Rego, 2005). This study has selected Tobin's Q, a widely used measure to determine the firm value (Q Ratio, n.d.), is calculated by the market value of the firm's assets (market value of equity and market value of liabilities) to the replacement cost of the assets (book value of the asset and market value of liabilities). Tobin's Q is estimated in Model (4) is from Chung and Pruitt (1996) study which used Tobin's Q as a proxy for the value of firms. The data required for the calculation is obtained from FactSet.

$$\text{Tobin's Q} = \text{Market capitalization} + \text{total debt} + \text{total value of preference shares)/Total assets}$$

Several other customer satisfaction studies have used Tobin's Q as a measure of firm value. Anderson et al. (2004) selected Tobin's Q in their study as it is forward-looking, comparable across firms, and is a risk-adjusted measure. Srinivasan and Hanssens (2009) used Tobin's Q as it approximates and compares the market value to replacement costs rather than accounting measured book values. Malshe and Agarwal (2015) study demonstrated that Tobin's Q has several advantages as a market performance measure over other share market ratios (examples, Price to Book ratio or Price to Earnings Ratio) as Tobin's Q captures both firm-specific internally generated intangible and tangible assets to compare to the market value of the firm.

The ideal Tobin's Q equals 1 which indicates that the firm is fairly valued. The firm is perceived to be creating firm value when the Tobin Q is greater than 1 and the gap above 1 indicates the degree of expected future abnormal returns that can be derived from the firm (Anderson et al., 2004). The basis of this approach is Tobin's Q utilizes the market value of equity which as demonstrated above considers the firm's expected future cash flows adjusted at expected market risk. Log-linear Equation () is adopted from Anderson et al. (2004) who developed an econometric model that measures Tobin's Q as a function of customer satisfaction:

$$(5)\ \text{Ln}\ q_{it} = \alpha + \beta_1\ \text{ln Satisfaction Level}_{it} + \beta_2\ \text{ln Advertising to Sales Ratio}_{it} + \beta_3\ \text{Market Share}_{it} + \beta_4\ \text{Industry Concentration}_{it} + \varepsilon_{it}$$

In Equation (5), customer satisfaction is the principal dependent variable. The control variables for the equation to account for firm-specific factors are Advertising to Sales and Market Share. To control industry-specific factors, Industry Concentration is included in the equation. Advertising to sales is measured as advertising expenditures divided by total sales. Total sales figures are used as a proxy for market share. Herfindahl–Hirschman Index (HHI) is a simple and widely accepted statistical measure for industry concentration is calculated for the firms in the sample by using the total sales for each firm as a proxy for market share (Department of Justice, 2018). The HHI is calculated as the sum of the squares of the market share of each firm in the sample. Data for the variables are obtained from FactSet.

```
. hausman fixed random

                 ---- Coefficients ----
                 (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
                 fixed        random         Difference          S.E.
-------------------------------------------------------------------------------
      LnSACSI    -.0744675     .0405964      -.1150639                .
LnAdvertis~o     -.0645303     -.046108      -.0184222                .
LnMarketSh~e     -.1054366    -.2863447       .1809081        .0682418
LnIndustry~n       .191275     .6483329      -.4570579        .1308989
-------------------------------------------------------------------------------
                b = consistent under Ho and Ha; obtained from xtreg
     B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

                  chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =       24.25
                Prob>chi2 =      0.0001
                (V_b-V_B is not positive definite)
```

Figure 5.9: Hausman test: Relationship between customer satisfaction and Tobin's Q

The results of the Hausman test indicate a ρ of 0.0001. This implies that the null hypothesis for using the random effects model cannot be rejected. Therefore, a random effects model is used to model the relationship between customer satisfaction and firm value.

```
. xtreg LnTobinQ LnSACSI LnAdvertisingToAssetRatio LnMarketShare LnIndustryConcentration, fe

Fixed-effects (within) regression               Number of obs      =       112
Group variable: Firm                            Number of groups   =        25

R-sq:                                           Obs per group:
     within  = 0.0227                                         min =         1
     between = 0.2297                                         avg =       4.5
     overall = 0.1947                                         max =         8

                                                F(4,83)            =      0.48
corr(u_i, Xb)  = 0.3987                         Prob > F           =    0.7483

------------------------------------------------------------------------------
    LnTobinQ |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      LnSACSI |  -.0744675    1.07161    -0.07   0.945    -2.205857    2.056922
LnAdvertisi~o |  -.0645303   .0555347    -1.16   0.249    -.1749864    .0459259
LnMarketShare |  -.1054366   .1561104    -0.68   0.501    -.4159338    .2050607
LnIndustryC~n |    .191275   .2763894     0.69   0.491    -.3584525    .7410024
        _cons |  -1.36278    4.793794    -0.28   0.777    -10.89744    8.171884
-------------+----------------------------------------------------------------
      sigma_u |  1.2616245
      sigma_e |  .28107307
          rho |  .95271315   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(24, 83) = 50.48                     Prob > F = 0.0000
```

Figure 5.10: Random effects model: Relationship between customer satisfaction and Tobin's Q

The Model (4) (Figure 5.10) reveal that Tobin's Q (β = -0.0745, ρ = 0.924) has a negative and insignificant relationship is customer satisfaction. The relationship is negative as the coefficient for customer satisfaction is (β = -0.0745) is less than zero and insignificant as the ρ-value was

greater than 0.05. The results from Model (4) indicate that for every 1 unit increase in customer satisfaction, Tobin's Q decreases by 0.0745 and this decrease is due to a random chance as the result is insignificant. The results of Model (4) showed that 95.3% of the variation in firm value was due to differences across firms in the sample rather than from customer satisfaction. Model (4) fails to capture the relationship between customer satisfaction and firm value and the null hypothesis is rejected.

Industry concentration ($\beta = 0.191$, p-value = 0.491) has a positive and insignificant effect on firm value. The relationship is positive because the coefficient for industry concentration ($\beta = 0.191$) was more than zero and is insignificant because the p-value is more than 0.05. This means that for every 1 unit increase in industry concentration, the firm value decreases by 0.191.

Advertising-to-asset ratio ($\beta = -0.065$, p-value = 0.249) has a negative and insignificant effect on firm value. The relationship is negative because the coefficient for the advertising-to-asset ratio ($\beta = -0.065$) is less than zero and was insignificant because the p-value is more than 0.05. This means that for every 1 unit increase in the advertising-to-asset ratio, the firm value decreases by 0.065 units.

Market share ($\beta = -0.105$, p-value = 0.501) has a negative and insignificant effect on firm value. The relationship is negative because the coefficient for market share ($\beta = -0.105$) was less than zero and is insignificant because the p-value is more than 0.05. This means that for every 1 unit increase in market share, the firm value decreases by 0.105 units.

Table 6

Summary of results for the impact of customer satisfaction on determinants of firm value

	Model 1 (Profitability)	Model 2 (Future cash flow)	Model 3 (Financial leverage)	Model 4 (Firm value)	p-value	Conclusion
Customer satisfaction x ROA	0,184				0,201	*Insignificant*
Customer satisfaction x FCF		-2,737			0,249	*Insignificant*
FCF x Current earnings		0,340			0,217	*Insignificant*
Customer satisfaction x Leverage			0,024		0,310	*Insignificant*
Profit Margin			-0,653		0,000*	*Significant*
Market-to-book ratio			0,011		0,000*	*Significant*
Firm size (total assets)			0,510		0,019	*Insignificant*
Advertising/Sales			-0,113		0,097	*Insignificant*
Customer satisfaction x Tobin's Q			0,074		0,945	*Insignificant*
Advertising/Asset			-0,065		0,249	*Insignificant*
Market share			-0,105		0,501	*Insignificant*
Industry Concentration			0,191		0,491	*Insignificant*
Constant	0,356	17,412	-2,840	-1,367		
R-sq	0,00	0,56	0,45	0,19		
Observations	140	123	135	112		

*p <0.05

6. SUMMARY OF MAIN FINDINGS

6.1. Introduction

In this chapter, the findings from the statistical analysis conducted in chapter five is discussed. The discussion is in the context of the study and in reference to the literature review presented in chapter two. The results are discussed as they relate to each research hypothesis.

6.2. Discussion of Main Findings

6.2.1. Summary of discussion - Hypothesis 1

Hypothesis: Does customer satisfaction have a positive effect on ROA?

The results presented in figure 5.4 supports the alternative hypothesis as customer satisfaction has a positive but insignificant effect on ROA. On a theoretical level, this does not support the assertion by Hallowell (1996) and Ittner et al. (2009) that customer satisfaction has a strong and positive relationship with profitability (as measured by ROA). This finding contradicts the notion affirmed in marketing literature which suggests that firms that focus on customer satisfaction maximize their profits. Despite the lack of statistical significance and the inconsistency of the findings, it may be worth exploring another research question which is does increasing customer satisfaction can account for increasing profitability and decreasing customer satisfaction is related to decreasing profitability. This may provide further conclusive evidence for this hypothesis. The current findings of the study suggest that customer satisfaction and profitability cannot be pursued at the same time.

As suggested by Anderson et al. (2004), customers and customer satisfaction will not be an important topic for management unless a body of research can demonstrate a direct relationship between customer satisfaction and accounting-based measures for financial performance. Despite the conflicting findings in South Africa, the correlation analysis in Table 5.2 supports the prior expectation that customer satisfaction was significantly and positively correlated to ROA (p-value of 0.01). The study cannot exclude the possibility of additional effects that can explain the association of customer satisfaction to profitability, and recommend researchers first conduct specification models to ensure that their statistical tests are appropriate. This important research question remains unanswered, and we need to understand the SACSI

inclusion effect better to confirm the adage that the customer is the most important asset for the firm.

6.2.2. Summary of discussion - Hypothesis 2

Hypothesis: Does customer satisfaction have a positive on future cash flow?

The results presented in figure 5.6 supports the alternative hypothesis: customer satisfaction does not have a positive effect on future cash flow. The results contradict the findings of Gruca and Rego (2005) who used complex model formulations (which include industry and firm-specific control variables) to analyse the relationship between customer satisfaction and cash flow growth. Their findings found a significant and positive relationship between customer satisfaction and future cash flow growth, and current earnings and current satisfaction jointly affect future cash flows. The effect of current earnings in the results indicates a positive but insignificant effect on future cash flows. The results indicate that the null hypothesis is rejected.

The results have serious implications for management decision making as it seems to suggest that firm's ability to grow cash flow is not influenced by higher levels of customer satisfaction. The results of Gruca and Rego (2005) study also indicate that a large proportion of the variance of the future cash flow is attributable to the industry in which the firm competes which suggest that management's ability to influence future cash flow is limited to the effects (if any) of customer satisfaction on industry variables. The findings also suggest the need (as discussed in section 7.4) to identify firm and industry covariates that are relevant for studies conducted in the South African context.

6.2.3. Summary of discussion - Hypothesis 3

Hypothesis: Does customer satisfaction have a negative effect on financial leverage?

The results presented in figure 5.8 supports the alternative hypothesis: customer satisfaction does not have a negative effect on financial leverage. The results do not support the findings by Malshe and Agarwal (2015) whose results revealed that financial leverage affected customer satisfaction, that the relationship was mediated by advertising intensities, and the results was statistically significant. The result of the study suggests that the management's decisions of the

financial leverage of the firm are not influenced by decisions on long term investments that build and improve customer satisfaction.

Consistent with the expectation that management's focus is to protect profit margin instead of customer satisfaction, the results of the study show that financial leverage has a negative and significant effect on profit margins. The result is consistent with Malshe and Agarwal (2015) who found that profit margin has a negative impact on financial leverage. The findings is supported by literature that states that firms use financial leverage to affect profitability, where firms with high leverage (their activities are financed through borrowings) are less profitable than firms that self-finance investment activities (Chen, Harford, & Kamara, 2019) (Eriotis, Frangouli, & Ventoura-Neokosmides, 2002).

The mediating effect of adverting intensity in the Malshe and Agarwal (2015) findings indicate that financial leverage had a significant negative impact on advertising investments. The results presented in figure 5.8 for the moderating role of advertising for South African firms support the notion of the negative relationship with financial leverage however, the impact was insignificant. Malshe and Agarwal (2015) did not observe a statistically significant impact of total assets (a proxy for firm size) and market-to-book ratio on financial leverage which contradicts the findings of this study. The control variables added to the financial leverage hypothesis suggest that both (a proxy for firm size) and market-to-book ratio have a significant positive and negative effect, respectively, on financial leverage. This finding suggests that larger firms attain a greater appetite for funding their operations through debt. However, this positive effect of firm size is more pronounced on financial services firms in the sample as banks are generally highly indebted compared to the smallest firms in the sample (clothing retail firms) who have no debt.

6.2.4. Summary of discussion - Hypothesis 4

Hypothesis: Does customer satisfaction have a positive effect on firm value?

The results presented in figure 5.10 supports the alternative hypothesis as customer satisfaction does not have a positive effect on firm value. As stipulated in the literature review, the results of this study contradict the findings by several studies such as Anderson et al. (2004) who found the relationship between customer satisfaction is positive and significant, customer satisfaction has a positive on Tobin's Q (O'Sullivan & McCallig, 2012).

The findings of the remaining variables are notably insignificant. The results presented in figure 5.10 for the moderating role of industry concentration find a weak positive association correlation between industry concentration and firm value. The results from Anderson et al. (2004) found the coefficient for industry concentration significant and positive, where increased (high) concentration levels allow firms to create firm value. However, in the South African context, the degree of concentration does not play a role in the hypothesized relationship due to the likely monopolistic nature as there are few firms listed in each ICB sector in the sample. As the concentration levels of the sample are already high, the interaction with firm value is expected to be positive. However, results indicate the impact of the association is small.

Furthermore, the findings indicate market share was negative and the advertising-to-sales ratio was positive, and both impacts were had an insignificant effect on the hypothesized relationship. These findings are consistent with the findings of Anderson et al. (2004) for both control variables, who found that market share does not provide additional value once the association of industry concentration to firm value is accounted for. In addition, the advertising-to-sales ratio does not play a role in impacting the customer satisfaction efforts of a firm. Anderson et al. (2004) noted that numerous studies used other additional control variables such as firm size, leverage, profitability, and market growth in the study of Tobin's Q which may provide firm-specific variables that are directly observable to explain differences within industries. The implication of the findings of the hypothesis given that it contradicts various prior studies of the ACSI association to firm value, this topic requires further investigation to provide management with the motivation and justification for considering customer satisfaction effects.

7. CONCLUSION AND RECOMMENDATIONS

7.1. Introduction

This section presents conclusions of the findings of the research conducted. The limitations in the research are discussed together with the priorities for future research.

7.2. Problem Definition and Answer

Despite empirical evidence in the past 20 years that examined the relationship between the customer satisfaction index and firm financial performance, the effect of customer satisfaction on the financial performance of South African firms has been relatively neglected. However, on this first attempt of studying the customer satisfaction index in South Africa, the results of the linear mixed models indicate that SACSI does not influence profitability (as measured by ROA), future cash flow, financial leverage, and firm value (as measured by Tobin's Q). The study does not find evidence that supports the belief that customer satisfaction has a relationship with the determinants of firm value as the effects of the association for listed firms in South Africa was statistically insignificant. The results of this study of the SACSI were not consistent with the prior studies using the ACSI. Based on the results, the study highlights further research is required to determine customer satisfaction is an important marketing metric and whether it has any effects on firm financial performance and firm value. The findings of this study do not provide empirical support to firm management, share analysts and shareholders to focus on marketing activities and strategies that increase customer satisfaction.

7.3. Limitations of the study

The challenge in future research in customer satisfaction is limited to the firms that are measured by the SACSI. There have been no significant developments to create additional frameworks backed by extensive research that measure customer satisfaction that is comparable across different markets and sectors like the ACSI. The sample size of this study is lower than the studies on customer satisfaction in the United States due to the differences in the market. The New York Stock Exchange is the largest stock exchange by market capitalization in the United States with over 2,800 listed firms (Statista, 2021) compared to 341 firms listed on the JSE in 2021 (Business Insider SA, 2020). Currently, the ACSI surveys over

300 firms in 43 industries (About ACSI, n.d.) compared to 27 listed firms used for the SACSI sample. As such, prior studies on customer satisfaction in the United States are more extensive and can have a lower period of study but with larger datasets. For example, the Anderson et al. (2004) study had 330 usable observations over a four year period and Sorescu and Sorescu (2016) study examined 296 publicly traded firms over 16 year period. Therefore, further studies on customer satisfaction in South Africa will be enhanced with larger sample sizes that consist of long periods and more South African publicly listed firms included in the surveys by Consulta.

The customer satisfaction index measured in South Africa is for large firms or brands that have high public interest from the insurance, banking, and telecommunications industries. These firms or brands service customers directly. There are no customer satisfaction scores for firms that operate solely in the business-to-business market, and whose operations contribute a significant portion of the total market capitalization of listed firms in the JSE. Further to the point above, due to the sheer scale of consumer brands in the United States, a significant portion of consumer goods firms are listed on their share exchanges and available for ACSI studies.

It may be interesting to investigate alternative measures on customer satisfaction such as the Ask Afrika Orange Index which measures service excellence and customer experience across 159 South African firms (Customer experience within the medical aid industry**,** 2021). Furthermore, alternative measures on customer satisfaction may support findings from studies by Malshe and Agarwal (2015), Anderson et al. (1997) that show the impact of customer satisfaction is more distinct in service than manufacturing firms. In addition, some studies exclude industries from their studies such as financials firms as they are subject to more intensive regulation than other listed firms (Malshe & Agarwal, 2015) and computer and internet sector firms which are subject to bubble period which can result in potential mispricing of customer satisfaction (Jacobson & Mizik, 2009).

Firms also approach Consulta directly for paid customer satisfaction research which is not publicly released. There is also no SACSI coverage for significant business-to-consumer oriented firms who are part of the Top 40 largest publicly listed firms. The most notable sectors excluded are healthcare (Netcare, Life and Mediclinic), retail (Woolworths, Foschini Group, Truworths), and travel and leisure (Sun International, City Lodge and Tsogo Sun). Due to these

exclusions, the SACSI does not fully represent a universe of publicly listed firms in South Africa.

The focus of the study was to investigate the association of customer satisfaction to financial metrics that can be obtained from a reliable database of firm data. There are numerous marketing studies on customer satisfaction that focus on various financial metrics such as advertising investment (McAlister, Srinivasan, & Kim, 2007) and R&D investment (Luo & Homburg, 2007). There is also extensive literature in non-financial metrics such as influence on employee satisfaction (Luo & Homburg, 2007) and analysts share recommendations (Luo et al., 2010) which are not addressed in this study but can be topics for future research in customer satisfaction.

The studies on financial market metrics in South Africa are limited to the data obtained from databases such as Iress, Bloomberg and FactSet. The financial and market databases are only accessible through a purchased data license. In addition, the JSE also provides historical market data for academic purposes on request. Studies in the United States obtained data from Standard & Poor's COMPUSTAT database, one of the world's leading financial databases that has the most comprehensive and disaggregated firm data on firms. COMPUSTAT is primarily focused on North American firms (Compustat Fundamental, n.d.). Additional financial data sources such as the Institutional Broker's Estimate System provide long-term historical reliable analyst market data (non-financial data metrics) on listed firms were not available for the study.

Lastly, the impact of customer satisfaction is not the same across different industries and territories. Customer satisfaction can have a positive and negative impact on customer loyalty as satisfied customers are likely to be loyal customers, but a firm having loyal customers does not necessarily indicate that the customers are satisfied (Fornell, 1992). Industries included in the dataset such as retail and banking sectors (with many firms competing in the sector) have low switching costs which make the industry sensitive to satisfaction. Other industries such as telecommunication and insurance operating in an industry that is dominated by a few competitors have customers that are locked in contract period which increases the barriers for switching.

7.4. Priorities for future research

Based on the findings, the results offer areas where the research can be improved to gain a better understanding of the theoretical implications of customer satisfaction in South Africa. First, future studies can examine various variables that may explain the effect of customer satisfaction using a broader range of marketing variables such as brand equity, customer loyalty, service quality that can affect marketing investments, strategy, and outcomes.

Second, some studies on customer satisfaction have used various firm- and industry-specific control variables including employee satisfaction, liquidity, capital intensity, market growth, research and development, sales growth, competition, profit margin CEO and institutional investor ownership to control the possible presence of fixed and random effects among the financial measures (Anderson et al., 2004) that may bias the results of the study. Future studies will need to identify appropriate control variables that will explain the variation between South African and the United States firms. In addition, to reduce the extensive effect required to identify the appropriate control variables for an entire SACSI measured firms, an approach similar to Sun and Kim (2013) who studied one sector (hospitality and tourism) of the ACSI measured firms can be undertaken as a simpler approach.

Third, to control further potential bias in the results, more sophisticated econometric modelling techniques for the analysis of longitudinal data is required. The studies in the United States employed a variety of research methods such as floodlight analysis and seemingly unrelated regression (SUR) estimation (Malshe & Agarwal, 2015), Hierarchical Linear Modelling (Gruca & Rego, 2005) and Hildreth–Lu procedure (Anderson et al., 2004) to provide efficient and reliable estimates for their research. Future researchers will need to first conduct rigorous statistical analyses to alleviate the possible heterogeneity issues and spurious correlations in errors in the longitudinal data to achieve strong statistical reliability and validity in the results (Sun & Kim, 2013).

Lastly, future studies should include more firms listed on the JSE and access a longer time series as more sectors are representative of the firms that comprise the economy of South Africa. Due to the current smaller size of the JSE sample, certain sectors cannot be excluded for this study. Malshe and Agarwal (2015) excluded financial firms in their study of financial leverage, however in this study these firms were included and made up a large proportion (44%)

of the sample. As more SACSI data becomes available, South Africa can look forward to more meaningful work on the effects of customer satisfaction.

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APPENDIX 1 - CONSULTA ONLINE SURVEY

How satisfied are you with your insurance provider - have your say!

Dear Valued Client

The SA-csi Team, together with your help, is on a mission to discover how satisfied customers are with their insurance provider. Please rate your satisfaction with your provider.

Share your opinion by clicking the link below:
Have your say now!

What is the SA-csi?

The South African Customer Satisfaction Index (SA-csi) is an independent national benchmark of customer satisfaction of the quality of products and services available to household consumers in South Africa. The SA-csi is the first independent comprehensive national customer satisfaction index with international comparability in South Africa.

What's up for grabs?

For your time and effort, we will randomly award 4 respondents with R2500 vouchers each for fully completing the questionnaire.

Kindly note:

Please take special note that this study is conducted for research purposes only.

To confirm the legitimacy of this research, please contact Consulta Project Executive, PJ Claasen, at pj.claasen@consulta.co.za.

This questionnaire will close as soon as we have enough responses, so get started ASAP!

Kind regards,
The SA-csi Team



Dear Ms Nteyi

PPS is continuously seeking ways of improving their service offering to you as a valued client and therefore Consulta was appointed by PPS to conduct an Insurance Brand Index Study.

The aim of this survey is to better understand your views, opinions and perceptions towards long-term insurance, short-term insurance and investment providers in South Africa.

It will take approximately 20 minutes to complete this questionnaire.

Have your say before the 30th of September 2021.

Up for grabs?
Stand a chance to be awarded a takealot.com voucher worth R1500. Award recipients will be randomly selected and notified by 30 December 2021.

Disclaimer and important information:

- Consulta is a corporate member of SAMRA. All information is treated as confidential and will not be applied for any other purpose other than research.
- No confidential or personally identifiable information will be shared with any third party.
- Please take special note that at no point during this activity will you be asked for any personal details (such as your ID number) or banking details (such as your pin or account number).
- If you ever receive a mail requesting such information, please report it to your bank immediately.

If you have any questions or concerns regarding the questionnaire, please contact us via e-mail: Sone Dos Santos at Consulta at sone[@]consulta.co.za.

Kind Regards,
The Consulta Team

Have a question?
I do not wish to receive any further communication regarding this project or from Consulta at all:
https://voice.consulta.co.za/Community/oh/2EA0F6797CEA8A3A08D98D669660271B75.
This specific email sent to you by Consulta (Pty) Ltd, Highgrove Park, Highveld Techno Park, Centurion, South Africa.
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CONSULTAPanel
your survey community

Are you currently in possession of any **insurance, investment or medical aid** products?

- Yes
- No

Next

CONSULTAPanel
your survey community

As a PPS member, we would like you to rate **PPS** from a **main provider** point of view. Please select "next" to continue with the survey.

- PPS

Next

CONSULTAPanel
your survey community

Please continue to rate each brand on the following attributes.

Please make use of a 0 - 10 scale, where:
0 = Do not agree at all
10 = Completely Agree
You may also choose any number in-between or select DK if you don't know.

	Do not agree at all										**Completely Agree**	
Is a provider that is easy to deal with (requires low levels of effort from its customers)	0	1	2	3	4	5	6	7	8	9	10	DK
PPS	○	○	○	○	○	○	○	○	○	○	○	○
Discovery	○	○	○	○	○	○	○	○	○	○	○	○

CONSULTAPanel
your survey community

Thank you for completing the Non-bank Financial services Brand evaluation survey.

To read more about Consulta and ConsultaPanel, please visit our websites.

Regards,

The Consulta team

APPENDIX 2 - HETEROSKEDASTICITY

White Test for Heteroskedasticity[a,b,c]

Chi-Square	df	Sig.
88.832	51	.001

a. Dependent variable: SAcsi Score

b. Tests the null hypothesis that the variance of the errors does not depend on the values of the independent variables.

c. Design: Intercept + Year + Quarter + ICBIndustry + HCO + Code + Earnings + FCF + ROA + FinancialLeverage + TobinQ + Year * Year + Year * Quarter + Year * ICBIndustry + Year * HCO + Year * Code + Year * Earnings + Year * FCF + Year * ROA + Year * FinancialLeverage + Year * TobinQ + Quarter * Quarter + Quarter * ICBIndustry + Quarter * HCO + Quarter * Code + Quarter * Earnings + Quarter * FCF + Quarter * ROA + Quarter * FinancialLeverage + Quarter * TobinQ + ICBIndustry * ICBIndustry + ICBIndustry * HCO + ICBIndustry * Code + ICBIndustry * Earnings + ICBIndustry * FCF + ICBIndustry * ROA + ICBIndustry * FinancialLeverage + ICBIndustry * TobinQ + HCO * HCO + HCO * Code + HCO * Earnings + HCO * FCF + HCO * ROA + HCO * FinancialLeverage + HCO * TobinQ + Code * Code + Code * Earnings + Code * FCF + Code * ROA + Code * FinancialLeverage + Code * TobinQ + Earnings * Earnings + Earnings * FCF + Earnings * ROA + Earnings * FinancialLeverage + Earnings * TobinQ + FCF * FCF + FCF * ROA + FCF * FinancialLeverage + FCF * TobinQ + ROA * ROA + ROA * FinancialLeverage + ROA * TobinQ + FinancialLeverage * FinancialLeverage + FinancialLeverage * TobinQ + TobinQ * TobinQ

Modified Breusch-Pagan Test for Heteroskedasticity[a,b,c]

Chi-Square	df	Sig.
.741	1	.389

a. Dependent variable: SAcsi Score

b. Tests the null hypothesis that the variance of the errors does not depend on the values of the independent variables.

c. Predicted values from design: Intercept + Year + Quarter + ICBIndustry + HCO + Code + Earnings + FCF + ROA + FinancialLeverage + TobinQ