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Perceptions of service quality, customer satisfaction and customer loyalty in mobile telephony in South Africa

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Perceptions of service quality, customer satisfaction and customer loyalty in mobile telephony in South Africa

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A research report submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Business Administration

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ABSTRACT

The South African mobile telephony sector is reaching saturation and churn rates are extremely high. The market is becoming more competitive with the advent of fixed mobile convergence, disruptive technologies and deregulation of the sector. Faced with all these challenges operators need to identify ways to keep customers loyal while ensuring that subscribers continue to increase their spending.

The purpose of this paper is to investigate the crucial factors that lead to customer loyalty in the South African mobile telephony sector, namely service quality and customer satisfaction. Furthermore the antecedents, mediating and consequent relationships of customer loyalty, service quality and customer satisfaction was also examined.

Data was obtained from 168 mobile phone users from the three MNO's (mobile network operators) using a survey compiled from existing literature. The survey was confined to the Gauteng province. The data was analysed using structural equation modelling in order to test the relationships between the constructs.

The findings support the proposed hypotheses and are consistent with other literary studies. Pricing, value added services and customer support services are the most significant service quality dimensions influencing customer satisfaction. Customer satisfaction has a direct positive impact on customer loyalty. Customer satisfaction was found to be the mediator between service quality and customer loyalty.

DECLARATION

I, Theesen Munsamy, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Theesen Munsamy

Signed at …….Midrand…….

On the ……23…… day of ……March…... 2011

DEDICATION

This research is dedicated to my wife and daughter,

Charlene and Sahuri Munsamy.

ACKNOWLEDGEMENTS

My gratitude goes out to the following people, without their assistance this research would not have been possible:

My wife, Charlene: for encouraging me to pursue my studies and supporting me with strength, love and encouragement throughout this journey. You were my pillar of strength.

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CHAPTER 1: INTRODUCTION

1.1 Purpose of the study

"Companies increasingly look to quality, satisfaction and loyalty as keys to achieving market leadership. Understanding these intrinsically linked key factors and how they contribute to a company's overall equity is fundamental to success." (Nielsen 2000).

The purpose of this research is to determine the impact of service quality on customer loyalty in mobile telephony in South Africa. The report will aim to establish if there is a relationship between service quality, customer satisfaction and customer loyalty.

1.2 Context of the study

South Africa has a population of 48 million and has the largest economy in the African continent with a Gross Domestic Product (GDP) of R285 billion (International 2009). South Africa adopts a fiscally conservative economic policy with a focus on controlling inflation and maintaining a budget surplus. Telecommunications is one of the fastest growing sectors in the economy and accounts for approximately 10% of the GDP. Like many other African countries mobile telephony in South Africa is dominant over fixed telephony(BMI 2010).

The South African mobile market consists of three operators, namely Vodacom, Cell C and MTN. At the time of conclusion of this research, Telkom was in the finalisation stages of launching its own mobile network. Therefore a detail on its market share is unknown at this stage. The current market share of the three operators is Vodacom 54.5%, MTN 31.7% and Cell C 13.8% (Vodacom 2009). The mobile customer base is estimated to be 51.7 million translating into a mobile penetration of over 100% which indicates that market saturation has been reached for voice services (International 2009). The mobile data market however is relatively new and represents an opportunity for mobile operators.

All three operators have reported shrinking subscriber bases which are attributed to the Regulation of Interception of Communications and Provision of Communication-Related Information Act (RICA) which was implemented in August 2009 (MTN 2009). The act requires verification of personal details of subscribers before they can have access to mobile services.

Vodacom and MTN have reported declining average revenue per user (ARPU) levels for both pre-paid and post-paid in 2009 and they have attributed it to weaker economic conditions and penetration into lower market segments. The communications regulatory body ICASA has regulated interconnect fees and reduced the interconnect fees from March 2010 and have mandated the operators to further reduce the tariffs over the next year to be in line with their international peers. This regulation is expected to further reduce ARPU levels.

With technology convergence mobile operators can also expect new competition and their market share to drop. Services such as Facebook, Twitter and VOIP are likely to 'cannibalise' revenue streams generated from traditional voice and SMS.

Faced with increased competition, regulation and dwindling ARPU, operators need to identify ways to prevent subscriber churn while ensuring that they continue to increase their spending. The study will aim to identify if subscribers will remain loyal to an operator and increase spending if service quality expectations are met.

1.3 Problem statement

1.3.1 *Main problem*

The study aims to analyse the relationship between service quality, customer satisfaction and customer loyalty in mobile telephony in South Africa.

1.3.2 *Sub-problems*

The first sub-problem is to analyse the relationship between service quality and

customer loyalty.

The second sub-problem is to analyse the relationship between customer satisfaction and customer loyalty.

The third sub-problem is to analyse the relationship between service quality and customer satisfaction.

1.4 Significance of the study

The mobile telephony market is faced with very current challenges and the study fills the gap in that there is currently very limited research on the existing problems faced in the mobile telephony sector in South Africa. The South African mobile market is dominated by pre-paid subscribers who make up the bulk of the subscriber base. Vodacom has a total subscriber base of 28 million, of which 23 million are pre-paid subscribers. Pre-paid subscribers are more susceptible to churn than contract subscribers (Vodacom 2009).

McCarthy (2009) describes churn as a loss in customer value as a result of customers switching mobile operators or dropping services. It is further stated that churn is most evident in saturated markets where mobile penetration is approaching or exceeding 100%. Vodacom has indicated that 34.9% of its subscriber base churned in 2008 (Vodacom 2009). This large percentage of churn has a significant impact on revenue and understanding factors influencing churn can contribute and increase a company's equity. Churn and customer loyalty are intrinsically linked and reducing churn means increasing customer loyalty. There are numerous factors that could possibly influence customer loyalty; this research will focus on service quality and customer satisfaction.

A similar study conducted in the Greek mobile telephony market found that there was a relationship between service quality and customer loyalty (Blery, Batistatos, Papastratou, Perifanos, Remoundaki and Retsina 2008). In the Greek study repurchase intention was used to measure customer loyalty and there were positive relationships between service quality and purchase intention or customer loyalty. They also found that service quality was a key decision

making criterion for service customers and it was thus beneficial for operators to give it attention.

Certain aspects of the Greek market study will be replicated and used in the current South African context. The Greek study was conducted when the market there had reached saturation, South Africa is also currently experiencing market saturation and an adapted version of the research instrument will be used and results compared.

The study will provide guidance to mobile operators who want to reduce subscriber churn and get subscribers to spend more on mobile telephony. The specific areas in the mobile operator where this research could be used are in customer relationship management (CRM), marketing and engineering. In CRM the research could be used to understand what is important to customers and manage or exceed their expectations. In marketing, products and services should be launched with features and quality in mind. Engineering departments can use the research to implement systems that conform to the service quality expectations of the customers e.g. availability, minimum and maximum thresholds.

The study could provide guidance to governmental institutions such as the Department of Communication and ICASA who are the custodians of telecommunication services in the country. The information could be used for policy formulation and policy assessment to manage service quality in the industry.

Lastly the study will academically contribute to the service industry literature and specifically to the mobile industry.

1.5 Definition of terms

- Mobile telephony allows for telephony services to move around locations instead of being confined to a single location. It is made possible with the utilisation of cellular technology.
- Average Revenue Per User (ARPU) is the measurement used by mobile operators to determine how much revenue is being spent by individual users on average over a period of time.
- Churn as defined by (Mcarthy 2009) is the loss in customer value as a result of customers switching mobile operators or dropping services.

1.6 List of abbreviations and acronyms

VAS	Value added services
SMS	Short message service
WAP	Wireless application protocol
IVR	Interactive voice response
USSD	Unstructured supplementary service data
MNO	Mobile network operator
ARPU	Average revenue per users

1.7 Assumptions

- The total number of respondents will be sufficient to gain adequate data.
- Information will be conveyed truthfully and honestly by respondents. False or biased data will provide inaccurate results.
- Respondents will be randomly selected from all three operators.
- The respondent sample will be confined to the Gauteng geographical area.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This section reviewed the theoretical literature currently available on the key themes of this study. The first key theme was service quality and included possible models that could be used to measure service quality. The second key theme was customer satisfaction and lastly customer loyalty was reviewed. The relationship between the three constructs was also analysed. This section concludes with a summary of the key learning's based on the literature available.

2.2 Theoretical Background

Studies have shown that it is more economical and profitable to retain customers than to acquire new customers (Lee-Kelley, Gilbert and Mannicom 2003). Reinartz and Kumar (2002) found that the best customers are the loyal ones; they cost less to serve and usually pay more than other customers. They also act as word of mouth marketers. Lastly they state that winning loyalty will result in the profits flowing.

In mobile telephony in South Africa Vodacom have indicated that they experienced a 34.9% churn of its 28 million subscriber base in 2009 (Vodacom 2009). This equates to 9.7 million subscribers moving or purchasing rival competitor products or services. This highlights the critical importance of customer loyalty and the impact it can have on equity of an organisation. While numerous studies have been conducted on the relationship between service quality and customer loyalty in other countries and other market sectors (Taylor and Baker 1994; Ojo 2010; Santouridis and Trivellas 2010), there is very limited literature on the subject in the South African context and especially the mobile telecommunications sector. The mobile telecommunication sector in South Africa is unique in that South Africa is a developing country yet it is one of the leaders in mobile telecommunication and pioneers in the pre-paid market. The

research will aim to fill gaps in the current literature available and contribute to a framework that will integrate the concepts of customer loyalty, customer satisfaction and service quality.

2.3 Service Quality

Service quality has been widely studied and various definitions of the term have been presented.

Elliot (1994) defines service quality as a global judgement relating to superiority of a service. The Japanese production philosophy implies *'zero defects'* in the firm's offerings. Parasuraman, Berry and Zeithaml (1988) states that service quality "is the consumers' judgement about the overall excellence or superiority of a service". Parasuraman, Zeithaml and Berry (1985) state that service quality is the difference between expectations of what consumers want and perceptions of what they get and have identified three underlying themes of service quality:

- Service quality is difficult for the consumer to evaluate.
- Service quality perceptions are a result of consumer expectations and actual service performance. Boulding, Kalra, Staelin and Zeithaml (1993) are in agreement with this statement and further add that consumer expectations can change when they receive information through word of mouth, company communication and contact with the firm or competitors service delivery system.
- The process of service delivery can influence evaluations of service quality.

Quality in both the goods and services sector has become a strategic tool to improve operational efficiency and business performance (Jain and Gupta 2004). Ojo (2010) states that service quality is critical in order to stay competitive and in order to sustain good relationships with customers. Aydin and Ozer (2005) identified two underlying processes that explain the contribution of service quality to profitability. The first is that service quality is a

means of differentiation which leads to competitive advantage and ultimately market share. The second is that service quality leads to repeat purchases, positive word of mouth and customers becoming less price sensitive.

There is a distinct difference between defining and measuring quality in the goods and services sectors. Parasuraman et al. (1985) state that services are intangible, heterogeneous and inseparable whereas products have tangible characteristics. Jain and Gupta (2004) are in agreement and state that service quality as a result of its characteristics of being intangible, heterogeneous and inseparable and are not easily identifiable and measurable. Parasuraman, Zeithaml and Berry (1988) concur with the above and propose that consumer's perceptions of quality be used to assess the quality of a firm's service.

Parasuraman et al. (1985) identified 10 dimensions used by consumers as criteria in evaluating service quality. These dimensions will assist in choosing a tool to measure customer's perceptions of service quality.

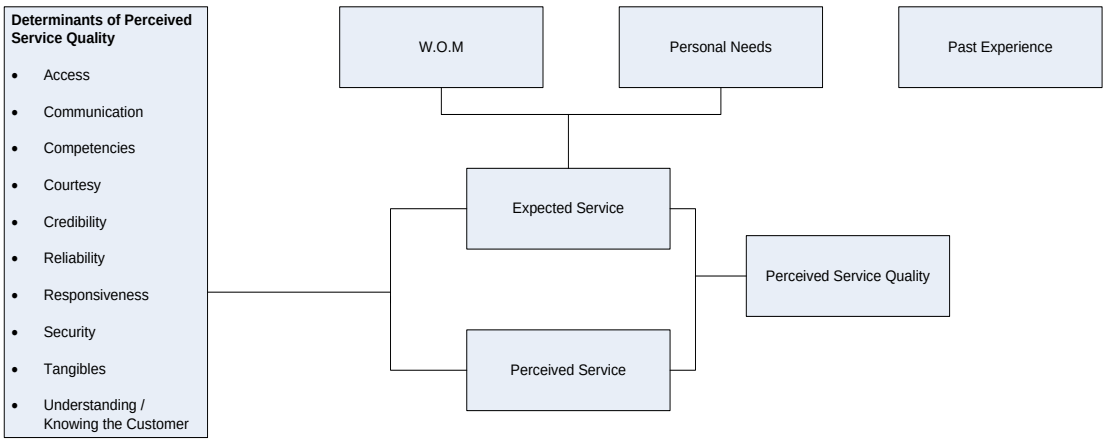


Figure 1: Determinants of perceived service quality (Parasuraman et al. 1985)

2.3.1 Measuring Service Quality

Santouridis and Trivellas (2010) state that there are several measuring instruments that can be used to measure service quality. There is however no consensus on how to measure service quality (Aydin and Ozer 2005). The most widely used and cited instrument for measuring consumer perceptions of service quality is the SERVQUAL instrument developed by (Parasuraman et al. 1985). In a study of service quality in a cellular telecommunications company conducted in South Africa, Van der Wal, Pampallis and Bond (2002) established that the SERVQUAL instrument was reliable and accurate in measuring service quality.

SERVQUAL is a concise multiple item scale that has good reliability and validity that businesses could use to understand consumer expectations and perceptions and ultimately improve service (Parasuraman et al. 1988). The authors go on to recommend that the model be used periodically in conjunction with other service quality measurements such as employee surveys.

SERVQUAL consists of five dimensions (tangibles, reliability, responsiveness, assurance and empathy) and measures customer expectations and perceptions (Blery, Batistatos, Papastratou, Perifanos, Remoundaki and Retsina 2008). Van der Wal et al (2002) describe the five dimensions as follows:

(1) *Tangibles* – refers to companies' physical facilities, equipment, decor and communication material.
(2) *Reliability* – refers to the service and how it is delivered (accuracy and dependability).
(3) Responsiveness – speed, agility and willingness to help customers.
(4) *Assurance* – ability of company to inspire trust and confidence in the customer.
(5) *Empathy* – ability to provide caring and personalised attention to its customers.

SERVQUAL is a quantitative model that is used to gauge perceptions and consists of a 22 item scale. The 10 dimensions, tangibles, reliability,

responsiveness, communication, credibility, security, competence, courtesy, understanding customer and access were used as a basis to define the SERVQUAL scale (Parasuraman et al. 1988).

As with all measuring instruments they have their strengths and weaknesses. SERVQUAL involves the calculation of the difference between perception and expectations of the five dimensions highlighted above (Brown et al. 1993). They further state that it is difficult to conceptualise service as a difference between scores and proposes the SERVPERF instrument which only measures performance. Elliot (1994) however argues that SERVQUAL can identify areas of deficiency as a result of the difference between scores and the tool needs to fit the purpose e.g. SERVPERF is superior in measuring variance in overall measure of perceived quality and SERVQUAL is superior in measuring service quality deficiencies and shortfalls. The other critical point established is that the different tools produce different information for different audiences. SERVQUAL has been cited by numerous researchers as having been outperformed on a number of psychometric and statistical considerations by other tools due to the approach of using the difference between score, resulting in issues of reliability, validity and variance (Babakus and Boller 1992; Brown et al. 1993; Cronin and Taylor 1994; Brady, Cronin and Brand 2002). Parasuraman et al. (1988) have noted the concern raised above and stated that there is no conclusive evidence to validate the psychometric problems and propose further research on direct psychometric measures pertaining to SERVQUAL.

The SERVQUAL instrument was designed with the intention of being generic and applicable to all service industries. This however has been criticised by numerous studies as industries have specific factors that need consideration (Asubonteng, McCleary and Swan 1996; Myerscough 2002).

There have been numerous debates on the number of dimensions that are optimal in the measurement of service quality but no consensus has been reached as some researchers believe that five dimensions are not enough while some believe that five is too much (Babakus and Boller 1992; Asubonteng et al. 1996; Buttle 1996; Martine and Martinez 2010).

While the weaknesses might seem to outweigh the strengths of the SERVQUAL instrument it must be noted that it is the most widely used tool and hence draws a lot of attention from academics. It is however a simple tool that can be used practically. The five dimensions on which it is based on can be related to easily and hence its popularity. Asubonteng et al. (1996) state that the instrument works with either qualitative or quantitative input and provides a clear result, they go on to state that while the instrument may have flaws, managers will chose a tool that they are comfortable working with.

A measurement model proposed by (Lee, Lee and Feick 2001; Aydin and Ozer 2005) targeting specifically the mobile telephony sector whereby service quality is measured using a one-dimensional measure of perceived service quality relating to the base services of mobile telephony instead of the 22-item SERVQUAL or SERVPERF instrument is used for this research. The base services identified in the South African market were billing systems, network quality, pricing, value added services, device quality and customer support services.

Pricing is a critical strategic tool that can be used to combat competitive forces and undeserved markets; it is however governed by market structure and the objectives of the MNO (Anonymous 2009). Prepaid subscribers in South Africa are extremely price sensitive and prone to high churn rates. Since mobile penetration is over 100% in South Africa it implies that subscribers have more than one network SIM card. Subscribers look for the best deals irrespective of the network to meet their communication needs. It is essential that MNO's take this into their pricing considerations. Brydon, Heath and Zadvorny (2006) identified the following factors that need to be taken into account when MNO's make pricing decisions:

- Subscriber requirements.
- Limitations of the MNO – capacity, cost, performance and resources.
- Competitive landscape – what services and pricing are the other operators offering.
- Services – uniqueness and exclusivity of services.

Improving customer support services and specifically customer care has been identified by (Hatton 2009) in increasing customer satisfaction, thereby increasing loyalty and reducing churn. They further state that improving customer care can reduce the direct costs of retention by 30-40% in comparison to price discounting alone. Puschel (2010) identified customer care as an integral component of service quality which influences customer satisfaction. Customer care is considered critical as it involves all interactions between the MNO and the customer and it is when customers test their relationship with the MNO.

Network quality according to Puschel (2010) is the customer's perception of the operator's network quality, capacity and coverage for all services provided. (Nkopodi 2010) identified the following criteria to measure quality of service during the 2010 Soccer World Cup:

- Completed calls – These are calls that were successfully set-up and received by the called party including the release of failed calls.
- Call set-up rate – These are the percentage of calls that are successfully set-up to a valid number, properly dialled and where the called party's busy tone, ringing tone or answer signal is recognised at the network termination point of the calling user.
- Call drop rate – A percentage of calls that are unintentionally disconnected in the middle of the conversation without the user's intervention.
- Call success rate – Refers to the percentage of calls that are successfully set-up and terminated as a percentage of the total call attempts.
- Call block rate – These are calls that are unsuccessful because of a lack of resources for the connection due to congestion.
- Speech quality – refers to the clarity of conversational speech without noise or echo interference.
- Call set-up time – Is the time from which a send button is processed or when the address information required for setting up a call is received by the network to when the called party's busy tone or ringing tone is

received by the calling party.

Value added services as defined by Pandey (2010) are all mobile services except voice services. Examples of value added services include SMS, WAP, MMS, IVR and location based services. With voice revenues reaching saturation, adoption of a VAS strategy is critical for MNO's who want to increase revenue and ARPU of its subscribers. Vodacom (2009) in their annual financial report stated that their two largest VAS income generators were mobile data and mobile messaging which contributed 8.6% (R4.5 billion) and 6.2% (R3.2 billion) respectively. While there was an increase of 1% in voice revenue from 2009/2010, mobile data grew 31% and mobile messaging 6%. This clearly indicates that VAS is a critical revenue stream for MNO's.

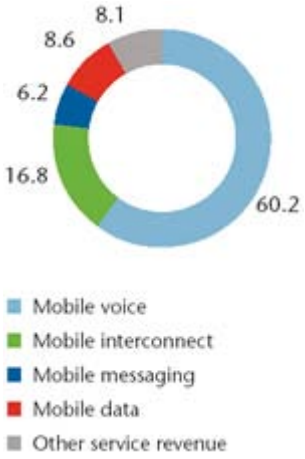


Figure 2: Revenue analysis Vodacom (Vodacom 2009)

From a subscriber perspective for many subscribers a mobile phone is the only means of communication and entertainment specifically for subscribers from the rural areas (Pandey 2010). So even though they are low ARPU subscribers they will utilise services that will bring them entertainment. Some of the VAS services that would be of interest to low ARPU rural users are mobile banking, music and radio.

High ARPU users also want services that will add value and make their lives easier, for example Facebook, Twitter, Mxit and location based services. These subscribers are also not price sensitive and will be willing to pay a premium for

some of these services.

Device quality is seen as a market driver for VAS services (Morrish 2010). With the advent of smart phones with more functionality, processing power and the evolution of hardware and software, the uptake of the services will increase exponentially. The Apple iPhone is a typical example of device quality that subscribers are looking for. There are thousands of applications and services available for these handsets that subscribers are willing to pay for.

2.4 Loyalty

2.4.1 Churn

In mobile telecommunications managing churn and ensuring customer loyalty is a strategic objective. Service providers have found that it is more economical to retain customers and growing their life time value than acquiring new customers (Mcarthy 2009). Customer life time value (CLV) refers to the amount of profit that a firm can expect to make from a customer in the future (Malthouse and Mulhern 2007). Portela and Menezes (2009) in their study of the Portuguese telecommunications market found that high levels of competition and low switching costs have resulted in a change in customer switching behaviour resulting in high churn rates. The authors go on to define churn as the customer's decision to terminate the relationship with a provider. McCarthy (2009) has identified two possible reasons for churn:

- **Marketing Pull** – the customer wants a better deal, cheaper price, customised product and a more suitable offer with a competitor. An example of a more suitable offer from a competitor in the South African market would be that operators have exclusive rights to distribute certain handset brands and if a customer is loyal to a brand they will churn.
- **Operational Push** – refers to customer service and service quality, Vanniarajan and Gurunathan (2009) identified the following potential service quality factors in mobile telephony (dropped calls, call set-up success rate, call retention rate network quality, core service quality and

value added service quality).

Hatton (2009) in his research on mobile customer retention and churn management identified the four strategies below for mobile network operators to reduce churn:

- **Increased satisfaction –** by providing value to customers, meeting customers' needs and improving customer care.
- **Increasing lock-in** – tying customers to the networks by utilising long term contracts, high switching costs and service bundling.
- **Reduce genuine churn** – by competing aggressively on the price of handsets or tariffs.
- **Address artificial churn –** by increasing device subsidies and offering incentives to stay on the mobile network.

2.4.2 Customer Loyalty

Customer loyalty has received significant attention from both academics and market researchers due to the impact it can have on an organisation. Serkan, Gokhan and Omer (2005) state that retaining your customer base and existing loyalty gives organisations a competitive advantage.

Oliver (1997:39) defines customer loyalty as:

"A deeply held commitment to rebuy or repatronise a preferred product or service consistently in the future, thereby causing repetitive same-brand or same brand-set purchasing, despite situational influences and marketing efforts having the potential to cause switching behaviour."

Malthouse and Mulhern (2007) defines customer loyalty as having attitudinal constructs that manifests itself in buying behaviour such as repurchases. Santouridis and Trivellas (2010) state that there is a general convergence that customer loyalty has both attitudinal and behavioural components.(Cronin and Taylor 1992; Lee et al. 2001) list attitudinal components as psychological such as brand preference, commitment, intention-to-buy while behavioural

components includes repeated purchases, hard-core loyalty, probability and brand switches.

Ganesh, Arnold and Reynolds (2002) list some of the benefits of loyalty being positive word of mouth resulting in new customers, repeat purchases and loyal customers that are not price sensitive and are prepared to pay a premium for a product. Loyal customers also require less marketing activity directed at them and reduces marketing costs of an organisation.

Caruana (2002) loyalty has evolved over time, in the early days the focus was on brand loyalty with respect to tangible goods. Malthouse and Mulhern (2007) distinguish between brand loyalty and customer loyalty by stating that brand loyalty is more closely associated with packaged goods whereas customer loyalty is more likely used in services industries such as telecommunications.

Blery et al. (2008) have identified repurchase intention as a possible measurement of customer loyalty. Santouridis and Trivellas (2010) do not believe that repurchase intention alone is a measure of customer loyalty and have identified that share of wallet and purchase frequencies are good indicators of customer loyalty from a behavioural point of view. Parasuraman, Zeithaml and Berry (1994) believe that a company's employees can play a major role in achieving customer loyalty by creating and maintaining trust between the company and the customer. Khatibi, Ismail and Thyagarajan (2002) however state that sometimes customers are loyal due to high switching costs or lack of alternatives. Kotler (1997) states that the two ways to retain loyal customers is to increase switching costs and to increase the level of customer satisfaction. Increasing switching costs however results in a false sense of loyalty and true loyalty can only be achieved through increasing the level of customer satisfaction.

Repurchase intention, word of mouth and the resistance to switch to a superior competitor's product will be used in this research to measure customer loyalty (Santouridis and Trivellas 2010).

2.5 Customer Satisfaction

Customer satisfaction is defined as a cognitive and affective evaluation of a service incident (Oliver 1980). Satisfaction results from experiencing a service quality encounter and comparing that encounter with what was expected. Harris and Harrington (2000) state that customer satisfaction is achievable through understanding a customer's expectations and ensuring that the services are provided in an effective and efficient manner. This however is not the only means by which customer satisfaction can be achieved. (Parasuraman, Zeithaml and Berry 1994) suggest that customer satisfaction is influenced by service quality, product quality and price. Santouridis and Trivellas (2010) however state that customer satisfaction is a very subjective matter and hence differing opinions exist on what to do to and how to achieve customer satisfaction.

Chada and Kapoor (2009) state that customer satisfaction is an important tool that can increase profits by preventing subscribers from churning. Bei and Chiao (2006) are in agreement and have found that increasing customer satisfaction results in a positive effect on customer retention thereby implying a positive effect on customer loyalty.

Numerous studies (Fornell 1992; Oliver 1997) have identified the following positive effects of customer satisfaction:

- Satisfied customers lead to higher profitability and they are prepared to pay premium prices.
- Satisfied customers provide recommendations and maintain loyalty to a company.
- Reduces operational costs due to increase in number of customers, economies of scale.
- Lower costs related to defective goods and services.

There are two broad conceptualisations of satisfaction: (1) transaction specific satisfaction, which is the customer's evaluation of his or her experience post-purchase and (2) cumulative satisfaction, which is the customer's overall

experience to date with a product or service. Serkan, Gokhan and Omer (2005) in their study of the Turkish mobile market found that a customer's evaluations are not based on a particular service transaction as GSM customers are continuously in flux and therefore evaluate on all service encounters to date. The cumulative satisfaction concept is also more widely utilised and current and will be utilised as the basis in this study.

Research conducted by Santouridis and Trivellas (2010) provide insight on how to measure customer satisfaction and they have found that a single item scale or a multi-item construct can be used effectively. For the purposes of this research a multiple item scale measuring the customer's overall feeling towards an organisation will be used. It is however noted that multiple item scales are prone to a poor response rate and artificial answers by respondents (LaBarbera and Mazursky 1983).

2.6 Relationship between service quality, customer satisfaction and customer loyalty

The three constructs of service quality, customer satisfaction and customer loyalty have received wide attention due to their practical significance (Cronin, Brady and Hult 2000). There has also been significant interest in antecedents, mediating and consequent relationships of the three constructs and this will be the basis of the research.

Caruana (2002) states that service quality can lead to customer satisfaction, customer retention, profit and cost reduction. Cronin et al. (2000) also found that service quality is one of the primary determinants of customer satisfaction. Zeithaml (1994) contend that service quality has a direct influence on customer loyalty. Seth, Momaya and Gupta (2005) state that the dominant perspective however, is that service quality has a positive correlation with customer satisfaction which results in customer loyalty.

One of the antecedents of customer loyalty mentioned in numerous articles is customer satisfaction (Cronin et al. 2000; Aydin and Ozer 2005; Bei and Chiao

2006). Fornell (1992) states that industries vary in how customer satisfaction affects customer loyalty. He found that the relationship between customer satisfaction and loyalty is dependent on factors such as market regulation, switching costs, and brand equity, existence of loyalty programmes, proprietary technology and product differentiation. Serkan, Gokhan and Omer (2005) found that switching costs and service quality are two of the most important factors that determine customer loyalty. They also found that customer satisfaction positively affects loyalty through many factors such as type of industry, switching costs and differentiation of products in a category. Mittal and Hasser (1998) however, in their empirical study found that customer dissatisfaction guarantees patronage switching but satisfaction does not guarantee loyalty. Switching costs have also been identified as a possible adjustment variable between customer satisfaction and customer loyalty.

Based on the information available and research already conducted it is not clear specifically in the South African market if service quality only affects customer loyalty through customer satisfaction, or if customer satisfaction is the mediation between service quality and customer loyalty; and lastly if service quality influence customer loyalty directly. This study thus proposes the following hypotheses to determine the relationships:

Hypothesis 1

H1: Service quality influences customer loyalty positively and indirectly through customer satisfaction.

Hypothesis 2

H2: Customer satisfaction influences customer loyalty positively and directly.

Hypothesis 3

H3: Service quality influences customer satisfaction positively and

directly.

2.7 Conclusion of literature review

The three constructs of service quality, customer satisfaction and customer loyalty have individually been proven to strategically aid organisations. The literature review reveals that there are relationships between service quality, customer satisfaction and customer loyalty.

Empirical research indicates that service quality is one of the primary determinants of customer satisfaction. Numerous studies have found that service quality only affects customer loyalty through customer satisfaction. There have however been some studies that have found that service quality has a direct impact on customer loyalty.

These relationships will be tested to determine their antecedents, mediating and consequent relationships. Understanding the relationships between the constructs will provide useful and insightful information for organisations to gain a competitive advantage.

Hypothesis 1

H1: Service quality influences customer loyalty positively and indirectly through customer satisfaction.

Hypothesis 2

H2: Customer satisfaction influences customer loyalty positively and directly.

Hypothesis 3

H3: Service quality influences customer satisfaction positively and directly.

CHAPTER 3: RESEARCH METHODOLOGY

This section focuses on the research methodology used in the study. A survey was utilised to gather quantitative data on perceptions of service quality, customer satisfaction and customer loyalty from mobile telephony users in South Africa. This section consists of the research design, research population, sample and sampling techniques, data collection instruments, data analysis and the validity and reliability of the research and its findings.

3.1 Research Design

The study used a quantitative approach to gather relevant data pertaining to the research questions. The research uses an explanatory approach to determine the cause and effect relationships between service quality, customer satisfaction and customer loyalty. Figure 3 below depicts the conceptual model used for the research.

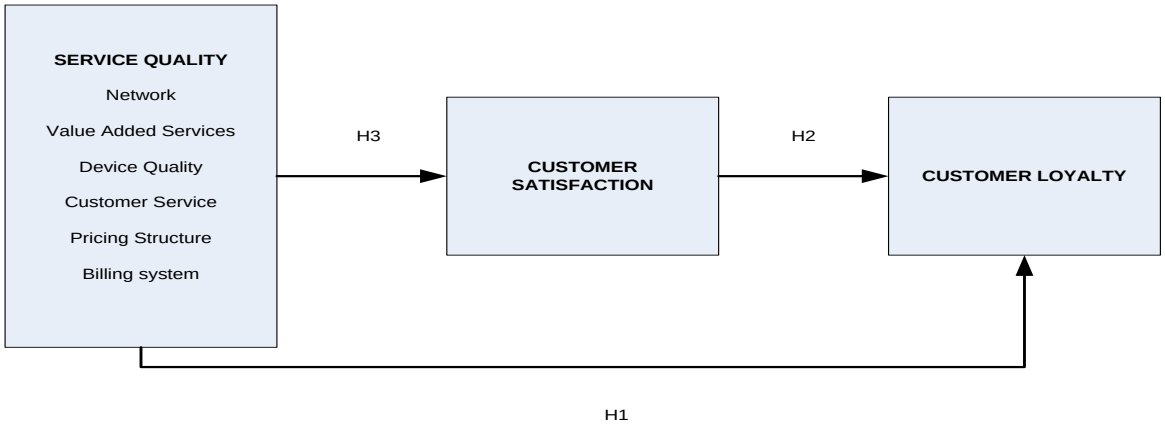


Figure 3: Conceptual Research Model (Santouridis and Trivellas 2010)

The research was conducted by means of a survey that was administered partly via personal interviews in shopping centres in Gauteng and, for the rest, distributed via email to a number of distribution groups obtained from friends and colleagues. The survey was designed by adopting and customising constructs from other reputable studies.

3.2 Measures

A five-point Likert scale ranging from 'strongly disagree=1' to 'strongly agree=5' is used to assess customer loyalty, service quality and customer satisfaction. For the purpose of this research the reliability based on Cronbach's coefficient alpha was assessed and the guideline suggested by (Kline 2005) was used; which stated that 0.90 is an excellent indication of reliability, 0.80 is a very good indication and 0.70 is an adequate indication of reliability.

The coefficient alphas for the respective manifest variables involved in the factors were analysed and they all fall between good and excellent except for VAS quality and pricing which indicate adequate reliability.

3.2.1 Service quality variables are based on (Kim, Park and Jeong 2004), they are however customised to the unique South African market. The service quality construct is made up of the following five dimensions of network quality: VAS, device quality, customer service, billing and pricing. The relevant statements used to measure and capture information on each of the five dimensions are also included.

- ***Network quality*** (6 items, α =.84) included perceptions of voice quality, dropped calls, network coverage, service reliability, call set-up success and quality differentiation between peak and off-peak hour utilisation.

Table 1: Network quality variables

1	My mobile service provider provides clean and undisturbed voice quality.
2	I do not currently experience dropped calls.
3	My mobile service provider has extensive geographical coverage to meet my needs.
4	My calls are always connected on the first attempt.
5	I am able to successfully make calls during the peak hours.
6	The services that are provided are reliable.

- ***Value added services*** (4 items, α =.77) measured the quality perception of the two largest value added services revenue streams in South Africa namely SMS and mobile data (GPRS and 3G). The general ease of use of VAS and its relevance is also measured.

Table 2: VAS variables

1	Value Added Services on offer from my mobile service provider are easy to use and up to date.
2	The SMS service quality provided by my mobile service provider meets my expectations.
3	The data performance (3G and GPRS) of my mobile service provider meets my expectations.

- ***Device quality*** (3 items, α =.82) is measured using handset variables such as variety, quality, latest technology and handset exclusivity to the mobile operator.

Table 3: Device quality variables

1	My mobile service provider has the latest handsets available.
2	My mobile service provider is first to market for new handsets.
3	My mobile service provider has the largest variety and best quality handsets on the market.

- ***Customer service*** (4 items, α =.87) items included the ability of the networks to provide individual attention to customers, respond to customers in time, resolve complaints efficiently and to have the knowledge and skill to serve customers effectively.

Table 4: Customer service variables

1	My mobile service provider ensures that customers receive individual attention.
2	My mobile service provider's employees are never too busy to respond to my requests.
3	My mobile service provider's employees have an adequate knowledge and skill to serve customers.
4	My mobile service provider ensures that complaints and faults are resolved on time.

- ***Billing dimensions*** (3 items, α =.80) include speedy resolution of billing problems, error free accounts and lastly the ease of use and understanding of billing.

Table 5: Billing variables

1	My mobile service provider ensures accurate and error free customer accounts.
2	Billing problems are resolved speedily.
3	My mobile service provider has detailed billing records that are easy to understand.

- ***Pricing*** (2 items, α =.79) measurements include competitive pricing, flexibility to change packages and lastly variety of packages and prices available.

Table 6: Pricing variables

1	My mobile service provider's pricing is competitive.
2	My mobile service provider has a variety of services at different prices to suit me.
3	My mobile service provider allows me the freedom to change my service package.

In total service quality consists of five dimensions listed above and 22 individual items. The survey questions are provided in Appendix A.

3.2.2 Customer satisfaction (5 items, α =.92) includes pre-purchase expectations, perception of service provider, general service expectations, service package and value for money. The customer satisfaction items were derived directly from Vanniarajan and Gurunathan (2009). Customer satisfaction is measured by the give statements in Table 7.

Table 7: Customer satisfaction variables

1	My overall perception of my mobile service provider is good.
2	My mobile service provider has met all my pre-purchase expectations.
3	The services that I utilise are worth the price I pay.
4	Service is good.
5	I am satisfied with my service package.

3.2.3 Customer loyalty (5 items, α =.94) of measurement include repurchase intention, perception of mobile operator image, mobile operator industry status in comparison to competition, willingness to recommend mobile operator to others and intention to switch to another operator. The relevant statements below are used to determine customer loyalty.

Table 8: Customer loyalty variables

1	I will go on using my current mobile service provider.
2	I would recommend my mobile service provider to friends and family.
3	My mobile service provider is a leader in its industry.
4	My mobile service provider has a positive image.
5	If I needed a new product or service I would purchase it from my current service provider.

The survey also consists of two further sections that aim to capture demographic data and general characteristics. The demographics included gender, age and education. The general characteristics provide details on the subscriber's mobile telephony usage and included variables such as monthly expense, network provider, the type of contract the subscriber has with the network, mobile device replacement frequency and the length of service on the network.

3.3 Population and sample

- **Population**

The population consisted of mobile telephony users from the three mobile operators in South Africa namely Vodacom, MTN and Cell C. The study was in English but included respondents from all language groups. The personal

interviews were conducted in Gauteng as it is the economic hub of the country.

The population consisted of both pre-paid and contract subscribers. Virgin Mobile was excluded as they utilise Cell C's infrastructure to provide their services. Heita (8ta), Telkom's mobile service, was not launched at the time of this study.

- **Sample**

It was envisaged that the sample population would be pre-paid and contract subscribers from all three networks and the sample would be representative of the individual market share that the network providers have. It was further envisaged that the proportion of pre-paid to contract subscribers will be reflective of the current market. The intention was to capture a minimum of 150 valid survey responses in order for the study to be statistically meaningful.

A pilot test on 10 respondents was conducted based on convenience to determine if the questionnaire was understandable. The pilot was successful with only minor grammatical errors being highlighted. These were corrected in the final version of the survey that was distributed.

The final research target sample was conducted among customers of the three mobile operators (Vodacom, MTN and Cell C). The survey took place in Gauteng due to convenience of access and time constraints.

Data was collected via two methods: email administered surveys as well as personal surveys administered in urban shopping malls in Gauteng. The email administered survey was obtained through the random distribution of the survey to distribution groups obtained from friends and colleagues. A total of 220 emails were sent and 100 responses were received.

The personal administered surveys conducted in urban shopping malls were chosen as one of the preferred contact methods to provide any explanation and clarity on the questions to the person being interviewed. Respondents were randomly approached at shopping centres in Gauteng to complete the survey. A

large percentage of the South African pre-paid market does not have access to email and other electronic devices and hence personal interviews were chosen to ensure that pre-paid users were included in the research. Personal interviews also ensured an immediate response and reduced the non-response rate. A total of 140 respondents were approached in malls and 68 agreed to complete the survey. The final total resulting sample is made up of 168 valid responses.

The demographic and general characteristic analysis is presented below. Table 9 is a presentation of the sample demographics. The sample is made up of 56% males and 44% females. The mean age of the respondents is 33.5 years and 39% of the sample is in the age group 25 – 34 years old, followed by 28% in the age group 35 – 44 years old. The majority of the respondents (63%) had a university degree.

Table 9: Survey respondents' demographics

Measure	Item	%
Sex	Male	56
	Female	44
Age	18-24	18
	25-34	39
	35-44	28
	45-54	9
	55-64	6
Education	None	0
	Primary School	0.6
	High School	17
	Degree	63
	Other	19.4

In terms of mobile telephony usage as indicated in Table 10 the majority of the sample was Vodacom subscribers followed by MTN and then Cell C. This is highly reflective of the current market share that these three operators have. The majority of the subscribers (74%) were on pre-paid packages; which is indicative of what the majority of the market is utilising. Considering that the

majority of the sample was pre-paid subscribers, the number of upgrades was significantly higher than what was expected. Pre-paid subscriber upgrades are not subsidised by the networks yet 41% of the sample upgraded more than three times during their tenure with their mobile operator.

Subscriber loyalty is very strong considering that 64% of the sample has been with their respective networks for a period of more than 48 months. Only six percent of the sample was with their network provider for less than 12 months. This could be as a result of them being new subscribers or switching networks.

Vodacom (2009) in their interim results reported average revenue per user (ARPU) of R85 for pre-paid subscribers and R411 for contract subscribers. The sample indicates that 87% spends R100 or more on services. This is higher than the ARPU supplied by Vodacom and this could be due to sample profile consisting of 63% of graduates who utilise the services for both professional and personal usage.

Table 10: Survey respondents' mobile telephony

Measure	Item	%
Operator	Vodacom	51
	MTN	38
	Cell C	11
Package	Contract	26
	Pre-paid	74
Upgrades	0 times	15
	1 time	15
	2 times	15
	3 times	13
	> 3 times	42
Period with Operator	< 12 months	6
	13 - 24 months	20
	25 - 36 months	12
	37 - 48 months	8
	> 48 months	54
Cell phone expense	< R50	3
	R50 - R100	10
	R100 - R500	40
	R500 - R1000	23
	> R1000	24

3.4 Data analysis and interpretation

The data collected from the survey was analysed statistically using the SAS 9.2.3 CALIS procedure. Structural equation modelling (SEM) was used to test the hypothesised model. This section describes the general SEM approaches and tests.

Sanchez, Jorgensen, Ryan and Hu (2005) described SEM as a flexible class of models that allow the modelling of multivariate data and their closely related predictors. SEM has been widely utilised in quantitative behavioural sciences. SEM as described by (Shook, Ketchen, Hult and Kacmar 2004) consists of a set of linear equations whose simultaneous relationships can be tested among directly observable or unmeasured latent variables. They go on to state that SEM is a complex analytical technique and like any other statistical tool the benefits are experienced only if properly applied.

Kline (2005) suggests a six step SEM process:

1) Specify the model, in this case it is a diagram. The model can also be described as a series of equations.
2) Determine if the model is identified, this basically refers to the ability of software to derive a unique estimate of every model parameter.
3) Select measures of the variables, in this case it is through a survey. The data then needs to be collected, prepared and screened.
4) Utilise a software program to analyse the data and estimate the model.
5) Re-specify the model if necessary.
6) Accurately and completely describe the analysis.

(Hu and Bentler 1995; Muller 2003; Kline 2005) provide guidance on evaluating the goodness of fit of structural models including significant tests. It is important to take multiple criteria into consideration as there is no single statistical significance test. The criterion used by all three authors are combined and described below.

Table 11: Model Fit Indices

Criterion	Good fit cut-offs
X^2	Non significance, p value (>.05)
SRMSR	<.10 preferably <0.5
RMSEA	<.10 preferably even <.05 - .08
RMSEA 95% CI	
CFI	>.90 - .95
NNFI	>.90 - .95
AIC	Lower = better model
CAIC	Lower = better model
SBC	Lower = better model

Muller (2003) and Kline (2005) recommend the model fit indices in Table11 above to assess the overall model, a detailed description of each parameter is provided below:

1) A ratio of X^2 model fit statistics by degree of freedom that should not exceed 2.5.
2) A root mean square error of approximation that should preferably be between .05 and .08.
3) A comparative fit index (CFI) which has to exceed a threshold of .90.
4) A non-normed fit index (NNFI) which measures relative fit and ranges in general from .90 to .95.
5) A standardised root mean square residual (SRMSR) which is the overall badness of fit measure that is based on fitted residuals, values less than .10 are considered favourable.
6) Akaike Information Criterion (AIC) is a predictive fit index that assesses fit in hypothetical replication samples of the same size and randomly drawn from the same population. The lower the value, the better the model.
7) Consistent Akaike Information Criterion (CAIC) also a predictive fit index which takes direct count of the sample size is measured in the same manner as AIC, the lower the value the better the model.

Testing initial factor structure and common method bias

Firstly, factor structure was tested using confirmatory factor analysis to ascertain whether the latent factors fit into a single common factor.

An issue to consider in testing factor structure is common method bias that can arise from same sample and same-method technique. The model was therefore tested for common method bias and was mitigated using a two prong approach as prescribed by Podaskoff, MacKenzie, Podaskoff and Lee (2003). The approach involved applying a methodological precaution by protecting anonymity of the survey sample and utilising scales of good previously tested studies. The previously tested studies refer to Vanniarajan and Gururnathan (2009) and Santouridis and Trivellas (2010).

Statistical tests and controls were then conducted based on latent variable modelling approaches. Harman's single factor testing using confirmatory factor analysis was used to test the fit of data to a single factor. The next step was to analyse the results for significant outliers as well as the data fit for SEM assumptions which relate to homoskedasticity, linearity, approximate multivariate normality and no serious multicollinearity. A partial or significant fit is an indication of common variance as expected in common method bias. The previous section gives references for what constitutes a good fit, and these are repeated in Table 12 below. The single factor results in Table 12 (Model 1) below were rejected as this model inadequately matches the data as indicated by various poor fit indices, in addition the single factor Model 1 produces Heywood cases.

The next statistical step is, as suggested by Podaskoff, MacKenzie, Podaskoff and Lee (2003), to test a factor structure including adjustments for common method bias. This involves a confirmatory factor analysis with latent factors as indicated Figure 4 below, including an extra common latent variable that underlies all manifest variables that reflects and controls for assumed common method bias. Initially all survey items were tried as manifest indicators but there

were too many for a stable factor structure. The survey items were then collapsed into sub-scales, which had high Cronbach alphas which were acceptable. Service quality, which consisted of six factors and 22 individual items, was collapsed into six factors by averaging out the individual items.

In the initial tests of factor structure, including the common method factor, device quality did not fit with other service quality elements and was split off as a separate factor. Parasuraman et al. (1985) state that services are intangible, heterogeneous and inseparable whereas products have tangible characteristics. Device quality does not meet any of the service criteria identified above and hence it makes sense that the data suggests that it is a separate factor. Device quality has tangible characteristics and should be considered as part of product quality.

Customer loyalty and customer satisfaction variables were parcelled in the CFA to improve the model estimation and initial fit using the original factors was found to be reasonably good as seen in Table 12 (Model 2) below.

The single factor and confirmatory factor analysis results are compared in Table 12. The fit criteria to compare the models was based on the analysis of RMSEA, NNFI, SMSR and CFI values according to good fit guidelines provided by Kline (2005). Confirmatory factor analysis had a better fit with all items loading highly on their corresponding factors, confirming unidimensionality of the constructs and proving their validity. The confirmatory factor analysis values of RMSEA=.08, NNFI=.94, SRMSR=.03 and CFI=.96 were also much better that the single factor analysis results of RMSEA=.14, SMSR=.14, NNFI=.78 and CFI=.80.

The comparative fit indices (AIC, CAIC and SBS) also indicate a superior model for the confirmatory factor analysis as opposed to the single factor analysis and based on this the factor structure with service quality, device quality, customer satisfaction and customer loyalty is retained as the basis for further modelling.

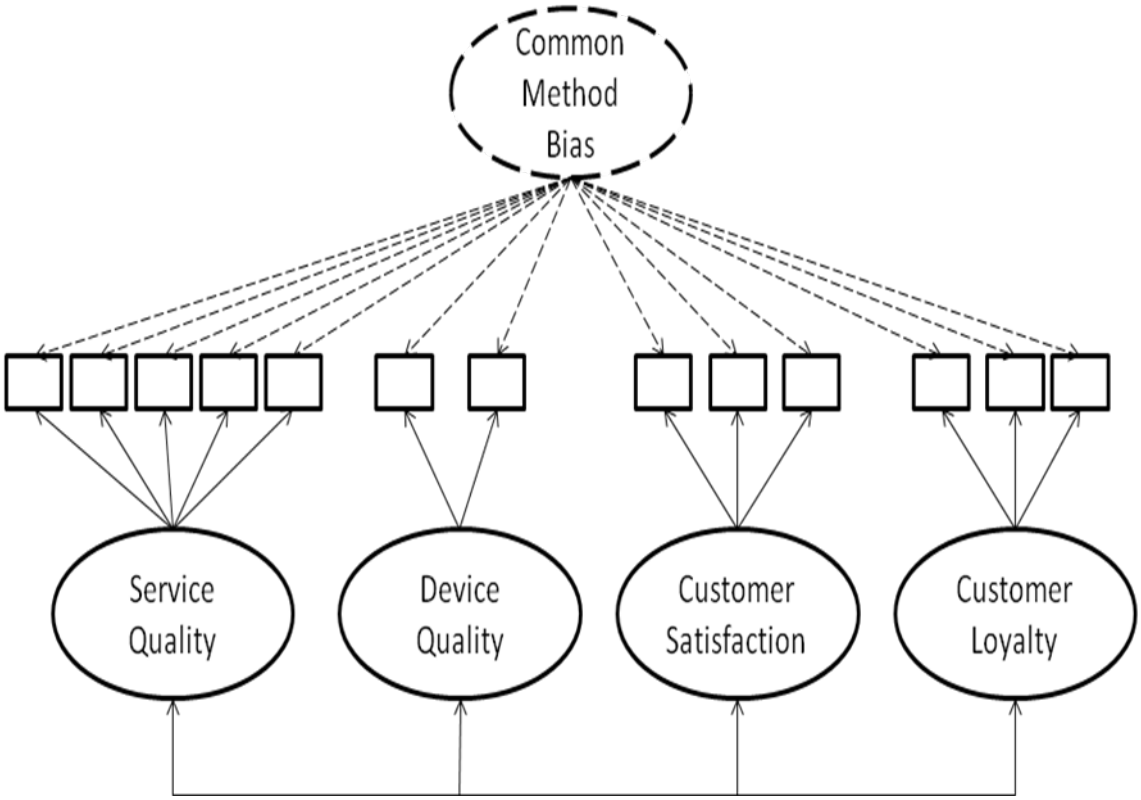


Figure 4: Common Method Bias

Table 12: Fit Statistics for Structural Equation Model

Criterion	**Good fit cut-offs**	**Model 1: Harman's Single Factor**	**Model 2: CFA**
X^2	Non-significance	619.98(57)**	114.25(53)***
SRMSR	<.10 preferably <0.5	.14	.03
RMSEA	<.10 preferably even <.05 - .08	.14	.08
RMSEA 90% CI		(.13 - .16)	(.06 - .10)
CFI	>.90 - .95	.80	.96
NNFI	>.90 - .95	.78	.94
AIC	Lower = better model	687.98	190.25
CAIC	Lower = better model	827.16	346.28
SBC	Lower = better model	793.17	308.28

Notes: Cut-offs for good fit are based on discussions such as Kline (2005). Significance in the chi-square is highly sample size sensitive so it is typically not taken as a poor fit necessarily. **=p<.01

3.5 Validity and reliability

3.5.1 Reliability

Reliability refers to the stability of the measure (Ghauri and Gronhaug 2002). Kline (2005) states that reliability is the degree to which scores are free from random measurement error and he defines random measurement error as clerical errors or good luck in selecting multiple choice items. The most widely used test of reliability is the Cronbach's coefficient alpha which tests for internal consistency reliability which is the degree to which responses are consistent across items within a single measure.

Furthermore confirmatory factor analysis gives assessments of internal reliability. Reliability of the research instrument was tested against a random sample of 10 mobile users before conducting the surveys in the market. The instrument was also reviewed by two academics, who made suggestions on adapting the survey to the South African context and ensuring that the service quality questions were realistic as experienced by everyday users of the mobile telephony service.

3.5.2 Internal validity

Internal validity refers to the extent to which one can infer that a causal relationship exists between two variables (Ghauri and Gronhaug 2002). Cresswell (2003) defines internal threats as experimental procedures, treatments, or experiences of the participants that threaten the researcher's ability to draw correct inferences. To some extent the convergent and discriminant validity assessed by the SEM structure measures internal validity.

To ensure compliance to internal validity the data collection procedure was uniform and conducted by one person in the same manner throughout the exercise.

3.5.3 External validity

Cresswell (2003) states that external validity threats arise when researchers draw incorrect inferences from the sample data. He has also identified threats to statistical conclusion validity that arise from inadequate statistical power or the violation of statistical assumptions, threats to construct validity is also mentioned and arises when inadequate definitions and measures of variables are used.

The SEM method of confirmatory factor analysis by Kline (2005) also provided a good indication of construct validity as it provides a good indication if the scores measures the hypothetical construct. The confirmatory factor analysis results were a good fit and hence it can be stated that the external validity is confirmed. SEM however, has limitations and is highly sensitive to misspecification which can influence the validity. (Sanchez, Jorgensen, Ryan and Hu 2005) state that misspecifications can occur as a result of the traditional approaches of fitting SEM's and highly parametric and distributional assumptions are imposed at both stages of the model. They further state that to overcome distributional assumptions correct covariance specification is required.

A critical factor of this research was to maximise validity to ensure credibility. This was done constantly through periodically reviewing the methodology and analysis of the data against the possible threats.

3.6 Limitations of the study

The sample chosen for the survey was based on convenience, cost and ease of access. There are many factors that could possibly influence customer loyalty and due to the quantitative analysis methodology, contextual data may have been missed. The survey was conducted in Gauteng only and is not a true representation of the population in the country. Spending profiles and ARPU for subscribers are different in all provinces. It is difficult to assess customer loyalty for contract subscribers as they are bound to operators for a period of 24 months.

A quantitative approach is adopted for this research and a possible limitation of this approach is that it is highly efficient in testing of hypotheses but may miss contextual data. It is thus considered an acceptable approach.

The research design is in the form of a survey and Leedy and Ormrod (2010) advise that surveys should be conducted with caution as the following drawbacks could arise:

- Surveys capture information at a particular point in time and while it is possible to extrapolate the information over a period of time, it should be done with caution.
- They also state that surveys are a form of self report and the researcher should be aware of answers being constructed on the spot without much previous thought into the subject.
- Lastly they found that the sample could misinterpret facts to present a favourable impression to the researcher.

The advantages of surveys however is a rapid turnaround time for data collection and the costs associated with data collection is significantly less than other methods such as focus groups. The survey is cross-sectional and easily administered with all data collected at one point in time. It was considered acceptable to use the survey for this research considering the budget and time constraints, all the limitations were duly noted.

The Cronbach coefficient alpha was one of the measures used to determine reliability of the study as it is widely used and published but Shook et al. 2004 state that Cronbach's coefficient alpha has several limitations as it wrongly assumes that all items contribute equally to reliability, they suggest composite reliability be used as it draws on the standardised loadings and measurement error for each of the items.

CHAPTER 4: PRESENTATION OF RESULTS

4.1 CORRELATIONS AND DESCRIPTIVE STATISTICS

Table 13 below shows correlations and descriptive statistics for the results of the aggregated variables. The correlations reveal that there is a significant positive correlation between the constructs. Customer satisfaction has a significant first-order correlation (.85) with customer loyalty. Pricing (.77) and customer service (.71) has the most significant first order correlation with customer satisfaction. The constructs of service quality also has a positive correlation with customer loyalty but they are not as large as the correlation with customer satisfaction. The individual constructs of service quality were also correlated against each other to determine which construct has the largest positive impact and it emerged that network quality has the largest influence on service quality followed closely by value added services.

The large sizes of the correlations between variables below can indicate strong relationships between variables and could also be an indication of the effects of common method bias. Common method bias will be dealt with via the Podsakoff methodology once the SEM analysis has been done.

Table 13: Correlations and Descriptive Statistics (N=165)

	M	SD	1	2	3	4	5	6	7	8	9
1.Loyalty	3.83	1.06	(.94)								
2.Satisfaction	3.65	1.02	.85	(.92)							
3.Pricing	3.48	1.00	.66	.77	(.79)						
4.Billing	3.71	.87	.54	.59	.56	(.80)					
5.Service	3.36	.98	.62	.71	.60	.58	(.87)				
6.Vas	3.82	.87	.60	.66	.56	.48	.63	(.77)			
7.Network	3.70	.85	.48	.55	.43	.43	.56	.59	(.84)		
8.Device Quality	3.79	.86	.43	.40	.35	.37	.31	.44	.36	(.82)	
9.Service Q	3.57	.78	.67	.76	.63	.63	.92	.78	.81	.41	(.92)

Notes: Correlations below diagonal, covariances above. All correlations significant at p<01.

Chronbach alpha coefficients in the parentheses.

The inter-factor correlations from the final CFA are presented in Table 14 below. It shows the partial correlations after the requisite common method bias and inter-factor error has been extracted. Customer loyalty has a strong first order correlation with customer satisfaction (.93), customer satisfaction has a first order correlation with service quality (.96) and service quality has a positive correlation with customer loyalty (.86). Device quality has a moderate direct effect on all three factors.

Table 14: Factor Correlation

	F1	F2	F3	F4
1. Customer Loyalty (F1)	1	.93	.86	.57
2. Customer Satisfaction (F2)	.93	1	.96	.50
3. Service Quality (F3)	.86	.96	1	.60
4. Device Quality (F4)	.57	.50	.60	1

Notes: All correlations significant at p<01.

4.2 SEM Analysis

The correlations above are strong however they do not assess simultaneous and dependent/causal inferences. Therefore structural equation modelling is used to assess the antecedents, mediating and consequent relationships of the constructs. Based on the hypotheses and the factor structure (see Figure 3), the direct paths are fitted in a structural model (Figure 5 Model 3) with device quality as a separate factor. The device quality relationship with customer satisfaction and customer loyalty is also tested and the results of the analysis presented below.

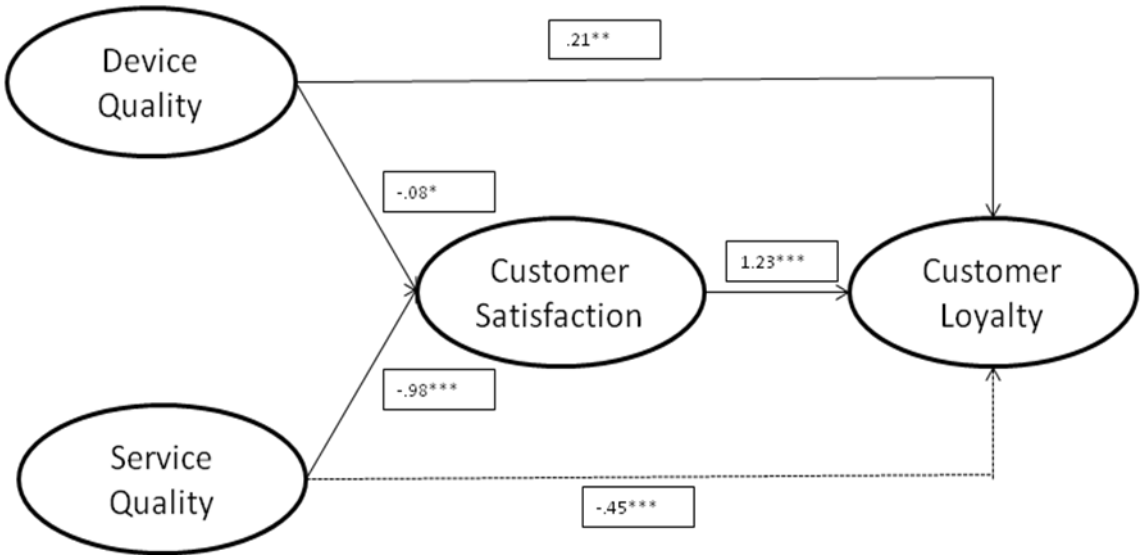


Figure 5: SEM Path Model 3

Note: All coefficients are standardised. ***=p<.01, **=p<.05, *=p<.10.

Table 15: Fit Statistics Model 3

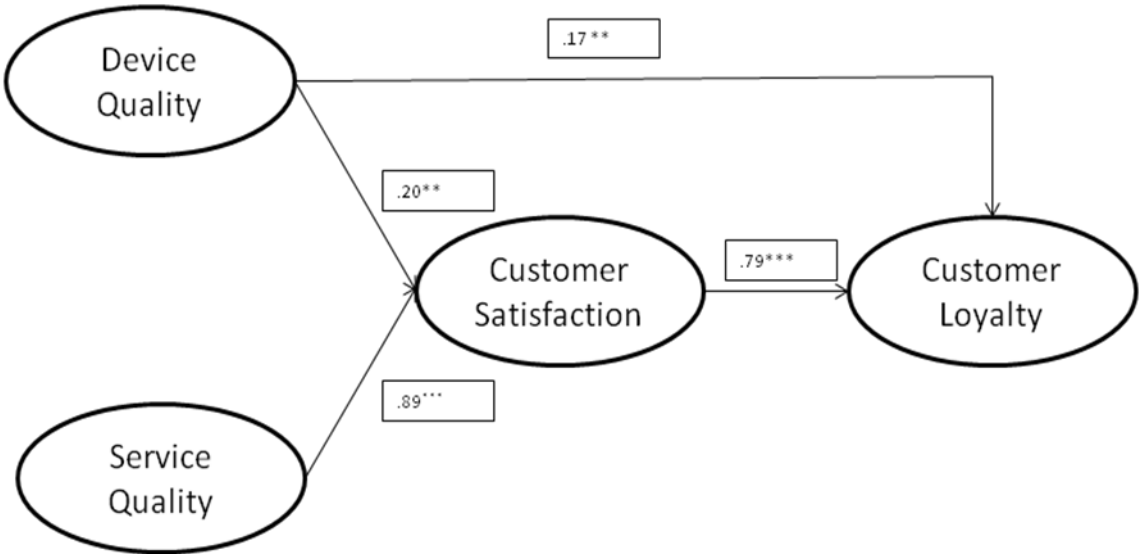
	Good fit cut-offs	Model Structural Model without Service Quality→ Loyalty path
X^2	Non-significance	114.25(53)***
SRMSR	<.10 preferably <0.5	.03
RMSEA	<.10 preferably even <.05 - .08	.08
RMSEA 90% CI		.06 - .10
CFI	>.90 - .95	.96
NNFI	>.90 - .95	.94
AIC	Lower = better model	190.25
CAIC	Lower = better model	346.28
SBC	Lower = better model	308.28

Notes: Cut-offs for good fit are based on discussions such as Kline (2005), they are debatable. Significance in the chi-square is highly sample size sensitive so it is typically not taken as a poor fit necessarily. ***=p<.01, **=p<.05, *=p<.10

The fit statistics in Table 15 were considered acceptable but (Figure 5 Model 3) produced Heywood cases and was excluded from any further analysis or discussion.

4.3 Alternative SEM Models

Due to the Heywood case that was experienced in (Figure 5 Model 3) above and the emergence of device quality as its own factor, an equivalent and alternative SEM model as indicated by (Figure 6 Model 4) was considered and the results presented below.



Note: All coefficients are standardised. ***=p<.01, **=p<.05, *=p<.10.

Figure 6: SEM Path Model 4

Table 16: Fit Statistics Model 4

	Good fit cut-offs	**Model 5 Structural Model without Service Quality→ Loyalty path**
X^2	Non-significance	113.40 (54)***
SRMSR	<.10 preferably <0.5	.03
RMSEA	<.10 preferably even <.05 - .08	.08
RMSEA 90% CI		.06 - .10
CFI	>.90 - .95	.96
NNFI	>.90 - .95	.95
AIC	Lower = better model	187.40
CAIC	Lower = better model	339.32
SBC	Lower = better model	302.32

Notes: Cut-offs for good fit are based on discussions such as Kline (2005), they are debatable. Significance in the chi-square is highly sample size sensitive so it is typically not taken as a poor fit necessarily. ***=p<.01, **=p<.05, *=p<.10.

(Figure 6 Model 4) above did not produce any Heywood cases and it converged well. The fit indices were good with device quality having a moderate indirect effect (β=.20, p<.05) with customer loyalty and a non-significant direct effect with customer satisfaction (β=.16). There are large direct positive effects between service quality and customer satisfaction (β=.89, p<.01) and a direct

positive effect between customer satisfaction and customer loyalty (β=.79, p<.01). Service quality also had an indirect effect (β=.71, p<.01) on customer loyalty.

(Figure 6 Model 4) shows the final standardised path coefficients and Table 17 shows a full effect of the decomposition of (Figure 6 Model 4) including direct, indirect and total path effects and R^2 statistics for the endogenous variables. The standardised path coefficients also indicate significant relationships among the constructs and all modification indices are at an acceptable level.

Table 17: SEM Effects decomposition and R for main outcome variables

	Customer Satisfaction			Customer Loyalty		
	B	**SE**	**β**	**B**	**SE**	**β**
Customer Satisfaction						
Direct				.96***	.10	.79***
Indirect						
Total				.96***	.10	.79***
Device Quality						
Direct	.33**	.25	.20**	.35**	.21	.17**
Indirect				.32**	.23	.20**
Total	.33**	.25	.20**	.67***	.38	.37**
Service Quality						
Direct	1.67***	.27	.89***			
Indirect				1.68***	.34	.71***
Total	1.67***	.27	.89***	1.68***	.34	.71***
R^2		.97			.79	

Notes: **B** = unstandardised oath effects, SE = standard errors, β = standardised path effects.
***=p<.01 **=p<.05 *=p<.10

4.4 Hypothesis Testing

H1 which proposed that service quality influences customer loyalty positively and indirectly through customer satisfaction was proved correct by testing the direct relationship between service quality and customer loyalty in the original model resulting in a Heywood case (β=1.23). The large positive indirect effect (β=.71) of service quality on customer loyalty also shows support for H1.

H2 proposed that customer satisfaction influences customer loyalty positively and directly. Results of the (SEM) analysis provided strong support for the hypothesis (β=.79, p<.01).

H3 proposed that service quality influences customer satisfaction positively and directly. The large positive effect of (β=.89, p<.01) provides support for the hypothesis. Device quality was not part of the hypotheses testing as it was a construct of service quality when the survey was done. The relationship of device quality with customer satisfaction had a moderate indirect effect (β=.20, p<.05) and a non-significant direct effect with customer satisfaction (β=.17). Hence we can conclude that that device quality has a indirect influence on customer loyalty through service quality.

CHAPTER 5: DISCUSSION OF THE RESULTS

The objectives of this study were to assess the relationships between service quality, customer satisfaction and customer loyalty in mobile telephony in South Africa. The results seem to indicate partial support for the conceptual model as depicted in Figure 3 and confirms some of the hypothesised relationships. The exception however is the service quality and customer loyalty relationship. In the original model the testing of this relationship resulted in Heywood cases and the model was discarded. In addition the SEM decomposition effects also show support for a strong positive indirect effect between service quality and customer loyalty and confirms our hypothesis H1.

The emergence of device quality as a separate factor from service quality was a key finding and was not expected. Parasuraman et al. (1985) state that services are intangible, heterogeneous and inseparable whereas products have tangible characteristics. Device quality does not meet any of the service criteria identified above and hence it makes sense that the data suggests that it is a separate factor. Device quality has tangible characteristics and should be considered as part of product quality.

Device quality was also found to have positive direct effects on customer loyalty and customer satisfaction. The relationship between device quality and customer loyalty can be attributed to the fact that mobile operators in South Africa subsidise handsets and lock subscribers into 24 month contracts to recoup the costs of the handsets. Subscribers can terminate the 24 month contracts but will be faced with penalties. This can be considered a false sense of loyalty. While handsets and subsidies are important, operators should also consider the spending and customer life time value. There is no point having loyal customers tied to 24 month contracts who do not utilise the services on the network and who are only loyal because they are receiving a free handset. In addition handset subsidies should be awarded correctly to loyal customers and not as a means to retain customers.

From an operator perspective device quality is vital as they are continuously offering new technologies and products that require handset capabilities.

Handsets allow customers to migrate and utilise the new technologies and access the respective services. New services mean increase in ARPU and justification of the handset subsidies.

It was observed that there was small direct positive effect between device quality and customer satisfaction which implies that device quality by itself does not lead to better customer satisfaction even though it may influence customer loyalty through the lock-in period of subsidies.

Vanniarajan and Gurunathan (2009) and Santouridis and Trivellas (2010) in their study of the Indian and Greek markets respectively found that service quality is a major predictor of both customer satisfaction and customer loyalty. Based on the data analysis, while there is a direct relationship between service quality and customer loyalty, the more significant relationship is the mediating relationship of customer satisfaction between service quality and customer loyalty. The correlation and descriptive statistics of Table 13 suggest that service quality has a positive correlation with customer loyalty but the correlation is not as strong as with customer satisfaction. Therefore service quality influences customer loyalty through customer satisfaction.

Hence mobile operators may need to ensure that they maximise customer satisfaction to enhance loyalty. This needs to be done by improving service quality. Of the six service quality dimensions that were measured and correlated against customer satisfaction the three most significant correlations were pricing, customer service and value added services. Santouridis and Trivellas (2010) also found pricing and customer support to have the most significant and positive relationship with customer satisfaction. Customers, especially pre-paid, are extremely price sensitive which would explain their desire for value for money and hence lead to their satisfaction (Vodacom 2009). It has been noted that the churn rate for mobile telephony in South Africa is extremely high (Vodacom 2009), one of the reasons is that the majority of the subscribers are pre-paid and they have multiple networks SIM cards and purchase/recharge from whoever has the best deal going. The various contract packages offered by the networks are very similar and contract subscribers are less price

sensitive than pre-paid users. Contract subscribers on the other hand are bound to networks for a period of 24 and are less likely to churn without having penalties imposed on them by the network providers. They agree to a contract upfront and know exactly how much they are going to pay over the 24 month period and hence they are only price sensitive during the initial procurement.

It is thus vital for network operators to continually innovate and review their price structures to stay competitive as this would lead to customer satisfaction and build loyalty. Brydon, Heath and Zadvorny (2006) identified the following key factors that MNO's should take in to account when developing pricing strategies:

- Limited capacity and cellular technology is different to that of fixed networks and pricing needs to reflect this.
- Pricing strategies need to maximise revenue potential in order to increase ARPU levels.
- Pricing needs to be affordable and meet the target segments needs.
- Pricing should encourage the adoption and usage of services.
- Pricing should be transparent and costs should be controllable by the subscriber.
- Pricing needs to integrate with overall business and marketing strategy.
- Long term consequences and short term benefits should be considered in developing pricing strategies.

The traditional pricing strategies adopted by MNO's have been service usage based pricing which is where services are priced according to the amount used and traffic volume based pricing which is charged according to the amount of data consumed. MNO's should consider bundle pricing for the future whereby multiple services are bundled into a package and a set fee is paid for a predefined limit or alternatively flat rate pricing which equates to set price irrespective of amount or number of services used.

The South African mobile market is well established with mobile penetration being over 100%. This means that a percentage of the population has more than one contract/prepaid SIM card. In terms of mobile technology South Africa

is one of the leaders in the African continent having provided mobile services for over 15 years. South Africa and its operators were the first to market for pre-paid services and are considered pioneers in mobile technology, specifically in Africa. In terms of core voice services between networks, there is very little to differentiate between operators as the product is highly commoditised. For many subscribers their mobile device is the sole means of communication and entertainment and this is an opportunity for operators to leverage. It is therefore no surprise that subscribers consider VAS an important service quality factor.

VAS services from operator perspective are thus critical, especially in a saturated market as it is a potentially new revenue stream and it can help to differentiate and gain competitive advantage from other operators.

Morrish (2010) in his study of mobile content applications which can be referred to as VAS found that it is vital for mobile network operators to have a VAS strategy. He identified numerous benefits for an MNO for implementing a VAS strategy such as subscriber acquisitions, revenue generation and reducing churn. For subscriber acquisitions and revenue generation Morrish (2010) identified the following five categories that MNO's should try and leverage:

- Cross-platform content plays - this refers to content being available across multiple devices and exclusive access by an MNO e.g. fixed and mobile internet as well as television. He states that this ability to have exclusive content available through the different media channels can add value for an MNO through customer acquisition, churn reduction and ARPU increases.
- Next generation convergence – refers to fixed mobile convergence, whereby converged solutions can be used as a differentiator to gain competitive advantage as well as reduce churn.
- Differentiated mobile services – refers to exclusive differentiated content and services that an MNO can offer to its subscribers. By offering exclusive content it was found that MNO's could influence user buying behaviour as well as the ARPU of its subscribers.
- Low value content – refers to services that subscribers have come to

expect and do not consider it to be VAS. This content includes news and other readily and freely available content over the internet.

In terms of churn management Morrish (2010) identified the following VAS services that could aid churn management:

- M-payments – mobile payments are consistently credited with reducing churn. Banks are not easily accessible for a large percentage of the population in rural areas and there are a few economic hubs in the country where people migrate to earn a living and support their families in the rural areas. Money transfer via cell phone is the most convenient method to get money to the rural areas. If subscribers are using MNO's as banks they are unlikely to churn.
- Subscription services – are also utilised to reduce churn. If a subscriber subscribes to a one year package of VAS services, they need to stay with the operator until the one year period is complete or they might incur penalties for breach of contract.

It therefore can be concluded that not only is VAS highly regarded as a critical service quality factor by subscribers, it is also mutually beneficial for MNO's.

Customer support services were also regarded by the sample as a significant factor of service quality as evidenced by the standardised path of model 4. Roos and Edvardsson (2008) state that customer support services is the function of enabling and supporting the core services of the telecommunication provider. They have found that telecommunication subscribers chose a service provider based on total package that they offer and this includes core service, value added services, price and support services. Support services are hence a leading deciding factor for subscribers to join, stay or leave a service provider. The mobile device has become a critical communication and information tool that people cannot do without, it is hence important that should subscribers experience problems they would like the problem resolved as quickly as possible with the least amount of effort. Mobile operators need to have systems and structures in place to deal with customer faults and queries quickly and

efficiently.

Network quality had the least significant effect on customer satisfaction and can be attributed to the fact that MTN and Vodacom services are highly commoditised and have similar coverage and hence provide very similar network quality. In addition when subscribers procure services from any operator they ensure that they have coverage in the areas they utilise the service. ICASA also monitors network quality in the interest of subscribers and have provided stringent guidelines for the operators to adhere to. Consumers also have various means of communicating and making public issues with network quality and bad service such as the consumer website hellopeter.com. Operators do not want to risk the bad publicity and have representatives on these sites to identify problems and communicate it to the relevant engineering departments to resolve. It can thus be seen that network operators do take network quality and service issues seriously. Device quality had a moderate indirect effect on customer loyalty and a non-significant direct effect on customer satisfaction. (Kim et al. 2004) also did not find evidence explaining the effect of mobile devices on customer satisfaction. This can be attributed to the fact that consumers are knowledgeable enough to know that the quality of the handsets is outside the control of the operators. Operators decide which handsets to market but they do not control how they perform on the networks. It is generally accepted that the handset manufacturers will conform to GSM standards. In hindsight device quality should not have been surveyed as part of service quality since it has a moderate effect on customer satisfaction and customer loyalty. Morrish (2010) in his study identified device quality as a market driver for value added services. This research supports this view as device quality has the highest correlation with VAS as indicated in Table 13.

One can thus conclude that the research findings support other similar studies (Caruana 2010; Vanniarajan and Gurunathan 2009; Gerpott, Rams and Schindler 2001) by confirming that customer satisfaction performs a mediating role between service quality and customer loyalty. The positive relationship that was established between customer satisfaction and customer loyalty in this study is also supported by numerous literature studies (Caruana 2002; Kim et

al. 2004; Aydin and Ozer 2005).

CHAPTER 6: CONCLUSIONS & RECOMMENDATIONS

This chapter aims to conclude the research by discussing the results presented in Chapter 5. Research recommendations are provided based on results obtained in this study as well as gaps that have been identified in the research literature.

6.1 Suggestions for further research

Future research may consider broadening specification through the addition of other variables and their interactive effects. What are the other factors that influence customer satisfaction? What are the other factors that influence customer loyalty? What are the other factors that influence service quality? And lastly what is the relationship between these new factors?

The impact of switching costs on the customer satisfaction loyalty link would provide useful insight.

Due to the large pre-paid market in South Africa a similar study should be conducted with pre-paid subscribers only as contract subscribers are bound by 24 month contracts and this might present a false sense of loyalty.

The study should be broadened to include a representative sample from all major provinces as well as rural areas. This would eliminate any regional bias and provide a more balanced understanding of the relationship between the constructs.

6.2 Conclusions of the study

The objective for this research was to understand the antecedents, mediating and consequent relationships of the three constructs of service quality, customer satisfaction and customer loyalty.

One can thus conclude that the research findings support other similar studies by confirming that customer satisfaction performs a mediating role between

service quality and customer loyalty. It has been established that customer satisfaction is the most important factor influencing customer loyalty. The positive relationship between customer satisfaction and customer loyalty in this study is also supported by numerous literary reviews.

The direct relationship between service quality and customer loyalty could not be established or confirmed through SEM analysis as the conceptual model resulted in a Heywood case. Other similar studies in MNO's have been able to successfully prove this relationship and it is worth further exploration.

Of the six service quality constructs that were measured and correlated against customer satisfaction VAS, customer support services and pricing had the strongest correlations. In other studies conducted in the Greek, Indian and Taiwan's MNO's the perceptions of service quality varied. In most of the studies subscribers considered network quality to have the strongest correlation with customer satisfaction. The fact that network quality did not correlate strongly with customer satisfaction in this study can be attributed to the two dominant networks having very similar network coverage and quality.

The implications for MNO's are that they need to focus their efforts on service quality initiatives which in turn will lead to customer satisfaction and enhance customer loyalty. MNO's should concentrate their service quality efforts on VAS, customer support services and pricing strategies if they are to improve customer satisfaction. That being said there are many other factors that could influence service quality, customer satisfaction and customer loyalty which was considered outside the scope of this research but is nevertheless important in order to get a holistic view.

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APPENDIX A

CUSTOMER QUESTIONNAIRE

Dear Sir/Madam

I am conducting research as part of my MBA studies at The University of the Witwatersrand, Johannesburg. The research is based on perceptions of Service Quality, Customer Satisfaction and Customer Loyalty in Mobile Networks in South Africa. This questionnaire aims to establish your opinion of your Mobile Service Provider.

I would appreciate it if you could take a few minutes of your time to answer the questions in the following sections.

This questionnaire consists of 3 sections (section A to section C). Your answers will be used purely for academic purposes, and will be treated confidentially.

Thank you for your kind assistance.

Yours sincerely,

Theesen Munsamy

082 994 6501

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A. GENERAL CHARACTERISTICS

Please complete SECTION A and B by marking “X” in the block that is most applicable to you.

1. Your current mobile operator?	
Vodacom	
MTN	
Cell C	

2. Current package	
Pre-paid	
Contract	

3. How many times have you upgraded your cell phone?	
0 times	
1 time	
2 times	
3 times	
More than 3 times	

4. Length of time with current mobile operator	
Less than 12 months	
13 - 24 months	
25 - 36 months	
37 - 48 months	
More than 48 months	

5. Monthly cell phone expense	
Less than R50	
R50 - R100	
R100 - R500	
R500 - R1000	
More than R1000	

B. DEMOGRAPHICS

1. Gender	
Male	
Female	

2. How old were you on your last birthday?	

3. Education	
None	
Primary school	
High school	
Degree	
Other	

C. CUSTOMER PERCEPTIONS

Read each statement below and indicate how much you agree or disagree by marking “X” in the block that best describes your perception of your Mobile Service Provider.

		Strongly disagree				**Strongly agree**
		1	**2**	**3**	**4**	**5**
1	My mobile service provider provides clean and undisturbed voice quality.					
2	I do not currently experience dropped calls.					
3	My mobile service provider has extensive geographical coverage to meet my needs.					
4	My calls are always connected on the first attempt.					
5	I am able to successfully make calls during the peak hours.					
6	The services that are provided are reliable.					
7	Value Added Services on offer from my mobile service provider are easy to use and up to date.					
8	The SMS service quality provided by my mobile service provider meets my expectations.					
9	The data performance (3G and GPRS) of my mobile service provider meets my expectations.					
10	My mobile service provider has the latest handsets available.					
11	My mobile service provider is first to market for new handsets.					
12	My mobile service provider has the largest variety and best quality handsets on the market.					
13	My mobile service provider ensures that customers receive individual attention.					
14	My mobile service provider’s employees are never too busy to respond to my requests.					
15	My mobile service provider’s employees have an adequate knowledge and skill to serve customers.					

16	My mobile service provider ensures that complaints and faults are resolved on time.					
17	My mobile service provider ensures accurate and error free customer accounts.					
18	Billing problems are resolved speedily.					
19	My mobile service provider has detailed billing records that are easy to understand.					
20	My mobile service provider's pricing is competitive.					
21	My mobile service provider has a variety of services at different prices to suit me.					
22	My mobile service provider allows me the freedom to change my service package.					
23	My overall perception of my mobile service provider is good.					
24	My mobile service provider has met all my pre-purchase expectations.					
25	The services that I utilise are worth the price I pay.					
26	Service is good.					
27	I am satisfied with my service package.					
28	I will go on using my current mobile service provider.					
29	I would recommend my mobile service provider to friends and family.					
30	My mobile service provider is a leader in its industry.					
31	My mobile service provider has a positive image.					
32	If I needed a new product or service I would purchase it from my current service provider.					