

HONOURS RESEARCH PAPER

TARE MUTENDADZMERA

STUDENT NUMBER: 14009651

LECTURER: HELENA VAN WYK

SUPERVISOR: KELLY DUNCAN

RESEARCH NAVIGATOR: ASHEEL SINGH

***BIG BRANDS NEED BIG DATA: INVESTIGATING
HOW MAJOR RETAIL BRANDS IN SOUTH AFRICA
SHOULD USE CONSUMER DATA TO SHAPE
CONSUMER-BRAND ENGAGEMENT.***

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CHAPTER 1 – NATURE AND SCOPE OF STUDY

1.1 Introduction

Never before has society generated such vast amounts of data pertaining to how we communicate, interact, shop and spend our free time. For most people living in this digitally connected world, our digital companions (computers, laptops, tablets and phones) record and store vast amounts of data on our state of fitness, what we eat and the places we go. Your phone for example, just by being in your pocket can record 'how much exercise you've been getting and how many stairs you have been walking up and so on' (Katz, 2012). Every time we make a call, send a text message, email, swipe our bank or loyalty cards, we leave behind a digital 'paper trail' that can be used to accurately determine who you are and how you choose to live your life.

Over the past two years humans have generated more data than we had recorded in the whole of human existence prior (Shaw, 2014). This data is stored in different databases around the world, and while it is scattered and unusable to most in its raw form, 'data analytics' has made it possible for this raw data to be 'mined' (Oliver and Vayre, 2015; Osei-Bryson and Rayward-Smith, 2009; Power, 2014). Once mined, patterns can be established. These patterns can be used to successfully predict how one will live their life, down to predicting what brands one will purchase in favour of competitors. This information for brands is priceless as companies look for the competitive edge in a tightly contested market place.

According to the McKinsey Chief Marketing and Sales Officer Forum (2013), big data represents the biggest opportunity for marketers and sales since the advent of the internet. This is particularly true because of the 'unprecedented array of insights into customer needs and behaviours it makes possible' (McKinsey Chief Marketing and Sales Officer Forum, 2013). On the opposite end of the scale there has never been a time when marketers could target consumers as accurately as they can today. Millions of internet users 'dutifully follow suggestions' made by algorithms powered by information collected from servers owned by companies such as Facebook, Google and Amazon to name a few (Yoo, 2015, pp.63). Our online activity allows brands to recommend books, movies, music, recipes and even partners to date based on our internet activity. Social media now has the power to influence 'traffic

patterns, political elections and stock prices' (Yoo, 2015, pp.63), yet many South African brands still do not seem to acknowledge the power that can be harnessed by using big data to create 'customised' brand consumer relationships.

1.2 Research Problem

Currently, there is literature that looks at how big data has benefited business operationally. However, there is limited literature in reference to the value, if any, placed on big data by South African brands with insights into how it is informing brand and branding strategy in the country.

Secondly, there is limited literature referring specifically to using big data to forge lasting brand-consumer relationships through consumer engagement strategies. This is particularly true of the South African market where literature on the subject could not be located at the time of this study.

Marketers today need insights into consumer thoughts about brands in order to adequately satisfy their needs (Solomon, 2003, pp.181). With this in mind this study will look to uncover the value placed on big data and investigate how this perceived value has shaped the role that big data plays in brands engagement with their consumers. The study will focus on Pick 'n Pay as a market leader in the South African Retail sector. By comparing the model Pick 'n Pay use with a global leader in using big data to engage consumers, Tesco, the study will uncover whether big data and data analytics have begun to shape the engagement strategies of leading South African retailers.

1.3 Objectives of Study

The objective of this study will be to investigate the value attached to big data in the South African retail space. According to Woerner and Wixom (2015, pp.60) the core issue that leads to such limited use of big data is the fact that although data may be viewed as potentially useful, the 'recording, measurement and assessment' structures that have been put in place by organisations are designed to aid decision making and not something as interactive as real time customer relationship management.

The study assumes that 'Big Brands' in South Africa are aware of the potential benefits that big data could have for their business' and that the barriers restricting this use are either based in South African corporate culture or in a lack of technical and other related skills in utilising the data these brands have access too.

By ascertaining the value placed on data analytics the study will seek to uncover how brands in South Africa's retail space are implementing or planning to use big data as part of their consumer engagement framework to inform decisions and strategies. With marketers being asked to push the bounds on increasingly tight budgets ROI is of the utmost importance to marketers and although the outlay on big data analytics can be costly the ROI, when done right, will far outweigh investment.

The study will also look to investigate whether the adoption of data analytics is more to do with South African corporate culture or whether the issue lies in a lack of resources and knowledge about the vast potential benefits that big data has to offer for an organisation. By gaining these valuable insights the study looks to expose the key issues holding South Africa's retail sector from beginning fully customise brand-consumer relationships.

1.4 Research Questions

Given the objectives of the study, research questions were crafted in order to fulfil the research objectives.

These being:

1. What is big data and why is it so important?
2. How have major brands successfully used big data to inform consumer engagement strategy?
3. As a major retail brand in South Africa, what value does Pick 'n Pay place on big data as a means of informing engagement strategy?
4. What are the major hindrances Pick 'n Pay faces in adopting big data analytics as a key strategic tool?

The research problem can thus be summarised as an investigation into the importance of big data to the retail sector in informing key branding and marketing consumer engagement strategies.

1.5 Importance of topic

This paper will contribute significantly to the pool of knowledge regarding the use of big data in South African retail both commercially and academically.

“Companies that understand customer needs best – likely from using big data – and deliver upon that understanding win”, (Woerner and Wixom, 2015, pp.62). Understanding consumers and creating genuine, long lasting relationships with consumers has become a priority in a rapidly changing African landscape. With the vast amounts of data available to brands it is crucial that brands begin to use this data in order to create and maintain these relationships. From a commercial view point, understanding industry perceptions on big data and data analytics will allow branding thought leaders to gain insights into how they can tackle the issue of introducing the subject of big data analytics into the market.

As noted by Gandomi and Haider (2015), academia has been slow to react to the issue of big data and the undoubted benefits big data analytics will have for business’ across all sectors. Using Pick ‘n Pay as case study and comparing their engagement strategy to the Tesco model, the study will fill the gap in South African academic literature on how brands should use big data to influence core business decision making to better serve their customers.

1.6 Scope of Study

This study looks to investigate the value of big data to big retail brands in South Africa. The paper will attempt to give a clear indication on the readiness of the South African retail sector to invest in data analytics systems and software as a tool to inform strategies for consumer relationship management and development. It will inform further studies into market readiness for such investment as well as serving as a reference for strategy papers in developing methods for integrating data analytics into South Africa.

This work focuses on benefits and pitfalls of implementing big data analytics in organisations to inform strategic branding decisions. As such it will be limited to information provided by participants of the interview candidates and other information provided by the brands in question. Case studies of retail brands already

implementing data analytics will be used as a point of comparison in order to ascertain where in relation brands in South Africa stand in regards to the topic.

1.7 Delimitations

The study of big data analytics is closely related to the ongoing debate on the ethics of how big data is collected and how that information is used. Although vitally important to the debate this paper cannot tackle this issue as there are many legislative issues that are still to be resolved in the country. The enactment of the Protection of Personal Information act has gone some way in setting boundaries on how personal data may be collected and used by organisations. However there are still a number of loopholes and grey areas that can and will be exploited by organisations. For the purposes of this paper this issue will not be covered as an individual issue.

Time limitations will also affect the study. Gaining access to the right people to give answers on the topic requires time, in some cases months, time which is not available under the current schedule.

Access to databases will also restrict the scope of the study. With no access to industry standard databases such as Emerald the review of literature is limited.

Given the nature of the study and the fact that participants need to have in-depth knowledge of data analytics, consumer engagements strategies and the South African retail sector the population of eligible participants was very small.

This study is a qualitative study relying on information gathered from interviews. This leaves room for bias and personal opinions to influence findings. Due to time limitations it is difficult to consult more than a handful of industry decision makers in reference to the topic. Whilst those consulted may not represent the industry as a whole the insights derived from the interview process will be taken as a representation of the industry for the purposes of this paper.

1.8 Research Methodology

This study is a qualitative study looking to uncover big brands perceptions on big data and how they can use this to create lasting brand-consumer relationships. To successfully cover the research objectives, the research questions were formulated

in order to derive the perception of big data, its current use and future use within the organisation. A detailed analysis of the research methodology employed in this paper is provided in chapter 3. As such the overview is as follows.

1.8.1 Sources of information

1.8.1.1 Primary Sources of information

Interviews were conducted in order to ascertain the value placed on big data and data analytics from within the brands. Respondents were chosen based on availability and their knowledge on the field of study. They were contacted via email and telephonically and interviews will be conducted either face to face or via skype given that geographic locations make face to face interviews difficult. Additional information as provided by the brands will also be incorporated as primary data.

1.8.1.2 Secondary Sources of Information

A comprehensive review of branding, information technology and marketing literature was conducted in relation to big data and consumer engagement models. The analysis of secondary data included the use of books, online journals, articles, theses, conference papers and industry websites. The Vega library was the starting point of this analysis. Attention then shifted to international databases including EBSCOHOST and Palgrave online.

1.8.2 Respondents

The sample is made up of consumer engagement specialists and Pick 'n Pay brand managers. The rationale behind the selection is that these individuals would be best equipped to give meaningful insights into the study subject with limited speculation.

1.8.3 In-depth Interviews

In-depth interviews were conducted where possible with Skype interviews filling the gap when geographical restrictions made face to face interviews difficult. The interviews were designed to firstly gain insights into the perceived value of big data by the respondents, then to investigate the value they see big data adding to engagement strategies for Pick 'n Pay. Finally the interviews investigated the perceived barriers big data brings along for major brands in South Africa's retail sector.

1.8.4 Research Methodology

This study is a qualitative study looking to uncover insights and opinions on big data analytics in the South African market. An exploratory study approach was undertaken as there is limited information regarding using big data to forge consumer-brand relationships. Big data being a relatively new subject, there is very little information pertaining to how previous research was conducted in the subject.

Data from interviews was analysed using a grounded theory approach. By using this framework, this allows the data collected to inform the theoretical outcomes of the study.

1.9 Rationale

The lack of literature on how big data is perceived and used in the South African market makes understanding its value in a local context extremely difficult. The aim of this study thus is to contribute to marketing literature by investigating the value placed on big data by Pick 'n Pay as a major retail brand in the country.

The value in this being that it will give future research a background on which to build research by providing some understanding of the current value of big data to the retail industry. By investigating the perceptions around big data and data analytics in South Africa, focusing on retail brands, this paper will look to uncover the value placed on data analytics to further give insight into the slow uptake of what could be the 21st century's biggest advancement in business analytics.

1.10 Literature Review Focus

The literature reviewed seeks to give understanding to the key background themes of this study. A theoretical framework on consumer engagement is provided to give insights into the value of consumer engagement and to look at how big data has added value this framework for brands.

Big data as a concept is fully explored to give greater understanding of what the term means for brands and branding. The advantages and rewards to investing in big data analytics will be highlighted in the analysis of the Tesco Case study in order to provide a framework to compare the insights derived from the in-depth interviews.

The pitfalls and obstacles in implementing big data analytics will also be explored through reviewing literature.

1.11 Definition of Key Terms

1.11.1 Big Data

To present a more accurate argument big data must be defined as a notion for the purposes of this paper. The definition that is the simplest and most universally understood, and that is that “big data is a term describing the storage and analysis of large and or complex data sets using a series of techniques including, but not limited to: NoSQL, MapReduce and machine learning” (Stuard-Ward and Barker, 2013).

1.11.2 Big Data Analytics and Data Mining

Data on its own is just that, data. It has no value to a brand, organisation or even individual on its own. The value of data is found by unlocking the context through data analytics (Power, 2014). Data analytics and data mining are often used interchangeably. A simplified, definition would be ‘the process of analysing large sets of data to find patterns, or relationships, and presenting this data that is a manner that makes it useful to the data owner’ (Hand et al, 2001; Aeron et al 2012). This definition provides an accurate analysis of analytics as it addresses the 3 key stages of analytics, these being analysing large sets of data to find patters, interpreting the patterns in order to create value from them, and using these patterns to solve business problems.

1.11.3 Major Retail Brands

For the purposes of this paper the term ‘major retail brands’ refers to the top retail brands in South Africa based on their sales revenue as of the last quarter of 2014. South Africa’s retail sector, direct selling only, was valued at US\$894.1 million in 2014 (Euromonitor, 2015). Of that, the Pick ‘n Pay retail group, which includes Boxer Stores, contributed 7.8% of the total retail revenue for 2014 (Euromonitor, 2015). Only Shoprite Holdings Ltd, with a contribution of 10.6% sold more during 2014. (Euromonitor, 2015)

CHAPTER 2 – CONSUMER ENGAGEMENT, BIG DATA AND BIG BRANDS

2.1 Consumer Engagement

2.1.1 Consumer Engagement – Theoretical Background

Consumer behaviour as an area of study has evolved as academics and marketers uncover more and more insights regarding the topic, thus the definition of consumer engagement has evolved with increased understanding of consumers. According to Cetina, et al (2014), consumer engagement is defined as “a strategic imperative for generating improved corporate performance, including increased sales, superior competitive advantage, and sustained profitability”. The theoretical base of this definition being that consumer engagement is rooted in relationship marketing (Vivek, et al, 2012; Ashley et al, 2011). Literature reviewed on this theoretical view refers to consumer engagement as an “expanded domain of relationship marketing” as elaborated by research done by Morgan and Hunt's (1994), Vargo and Lusch's (2004, 2008), and Prahalad and Ramaswamy's (2004). This research suggests that through consumer engagement brands focus on ‘existing and prospective customers, as well as consumer communities’ with the concept being limited to specific ‘interactive’ consumer experiences.

In 1964 Peter Michael Blau published the ‘Social Exchange Theory’ which, in relation to consumer engagement, argued that consumer who received great benefits from a relationship with a brand would develop ‘positive thoughts, recommendations, attitudes, behaviours toward a marketing object’ (Cropanzano and Mitchell, 2005). Today, marketers are all too aware that consumers are no longer passive recipients of brand messaging. Consumers today effectively insert themselves in the creation of brand value and thus are part of the creation of consumer engagement frameworks. According to Van Doorn et al (2010), ‘customers can co-create value, they can co-create the competitive strategy, collaborate in the innovation process of companies, and can become endogenous to corporations’. This is a view shared by Lusch and Vargo (2010) who suggest that the interactive consumer experiences which are ‘co-created’ are what can be interpreted as the act of “engaging”.

2.1.2 Consumer Engagement – Definitions

Reviews of literature on the topic offered several dimensions to the construct of consumer engagement. These can be categorised into cognitive, emotional and behavioural. This is a view shared Patterson et al (2006) who define consumer engagement as “the level of a customer's physical, cognitive and emotional presence in their relationship with a service organization”. Further research presented by Hollebeek (2011) defines consumer engagement as “the level of a customer's motivational, brand-related and context dependent state of mind characterized by specific levels of cognitive, emotional and behavioural activity in brand interactions”.

The first dimension of the construct, cognitive, is explored by Mollen and Wilson (2010), who define consumer engagement as “the cognitive and affective commitment to an active relationship with the brand”. The key theme being that the relationship has to be active for engagement to be successful. The second dimension, emotional, is explored by Bowden (2009) who views customer engagement as a “psychological process” made up of both cognitive and emotional aspects. Key themes in the emotional dimension of the construct are enjoyment (Calder et al, 2009) and enthusiasm (Vivek et al., 2012). Lastly, the behavioural dimension is explored by Bowden (2009) who prescribes that customer engagement is a process that begins with ‘customer satisfaction’ and ends with ‘loyalty’. He suggests that whilst stifle emotive, engagement ends with behavioural change by the customer.

2.1.3 Consumer Engagement – Working Definition

Having reviewed literature pertaining to consumer engagement a working definition that suits the exploratory nature of the study can be formulated.

For the purposes of this paper the following definition of consumer engagement, has been developed:

Consumer engagement refers to the process of crafting experiences between the brand and its consumers and/or other members of the community. The concept involves interaction between the brand and the consumer on both cognitive and emotional levels with the goal being behavioural change by the consumer in favour of the brand.

2.1.4 Measuring Consumer Engagement

With organisations looking for ways in which they can increase consumer interaction with their brands, the consumer engagement framework has garnered interest from a wide array of practitioners and academia (Hollebeek, 2011; Vargo and Lusch, 2008). Digital platforms have provided both consumers and brands with a number of points by which they can interact. Data analysis and data mining have given brands the power to gain insights into their consumer at real-time, through the monitoring of their online behaviours and brand-consumer interactions (Cetina, et al, 2014; Dholakia and Dholakia, 2013; Gallup Consulting, 2009). This presents both great opportunities and challenges for brands (Brodie et al, 2011). The greatest advantage has been that brands now have access to consumers across a wider array of touch-points. This means that consumer engagement has become a vitally important strategic branding tool rather than a marketing function.

Traditionally, measuring consumer engagement has been one of the major challenges in the implementation of consumer engagement initiatives (Cetina, et al, 2014). Technology has made this easier, especially in the retail sector where with the advent of the 'rewards programme' has allowed brands to measure the success of their marketing messages in real time.

Pick 'n Pays 'Smart Shopper' rewards programme is one of the leading rewards programmes in South Africa and is projected to reach 10 million members by the end of 2015 (Corporate Image, 2015). This personalised coupon based rewards programme analyses consumer data, based on the shopping patterns, and offers discount coupons as a reward for shopping and/or incentive to shop at the retail outlet. Data is collected on consumers when their card is swiped at the till, and once collected is analysed by algorithms that then recommend products to discount based on your brand and product preferences. The working definition of consumer engagement for this paper focuses on crafting interaction on both a cognitive and emotional level to shape behavioural change. This programme in its operation meets the defined requirements and thus has been chosen as the point of study for this research paper.

2.2 Big Data: Providing endless possibilities for brands

2.2.1 Defining Big Data

Depending on who you talk to, big data means something different. An early attempt at a definition provided by Dumbill (2014) is that big data is “data that exceeds the processing capacity of conventional database systems. The data is too big, moves too fast, or doesn’t fit the strictures of your database architectures”. However, this definition neither gave clarity to the concept nor did it help narrow the concept down. Laney (2001) provided what was to be the basis of most attempts to define big data being “big data is high-volume, high-velocity and high-variety information assets that demand cost-effective, innovative forms of information processing for enhanced insight and decision making”. A review of subsequent literature on defining big data identified three central themes that allowed data to be deemed ‘big data’.

The first of these is size. The scale of raw data is key in the determining if data can be considered ‘big data’ (Strong, 2013; Mayer-Schönberger and Cukier, 2013; Hilbert and López, 2011). Big data is just that, big. Although several attempts have been made to quantify how big is big enough to qualify to be big data (Hilbert and López, 2012; Yoo, 2015), no value has ever been universally agreed upon due to the ever increasing quantities of data we are creating on a daily basis. The second important theme is the velocity of the data. Big data can be collected and analysed at ‘real time’, through technologies such as ‘mobile telephony, RFID, Barcode scan downs, Click stream, online transactions and blogs’ (Moorthy et al, 2015; Woerner, and Wixom, 2015). The final theme is the wide variety of the data that can be collected per consumer. Data can now be collect from a much wider array of channels. Apart from the traditional forms of research data on consumers can now be collected from online search history, social media, cookies and a wide variety of technologically based channels (Boyd and Crawford, 2012; Markus, 2015).

For the purposes of this study the simplest and most universally understood, definition will be used as a working definition. “Big data is a term describing the storage and analysis of large and or complex data sets using a series of techniques including, but not limited to: NoSQL, MapReduce and machine learning” (Stuard-Ward & Barker, 2013).

2.2.2 Data Analytics

Literature, both academic and commercial, relating to big data provides insight into the affects data analytics has had on marketing. Several papers cite that big data has allowed marketers to gain greater understanding of their consumers through analytics (Berengueres and Efimov, 2014; Lycett, 2013; Davenport and Dyché, 2013), leading to many brands changing their strategic outlook on how the engage with consumers. The greatest advantages that big data has brought about for brands is that it has made consumer data at 'real time', at a large scale, with a large number of variables and with less structure allowing for unbiased analysis (Einav and Levin, 2014; Hastie et al, 2008).

However, data in its raw form is just that, data. It gives very little in terms of insight and understanding without first being analysed and mined. The true value of big data is in identifying patterns that give insight into consumers thoughts and feelings allowing brands to engage with consumers and thus change their behavioural patterns in favour of the brand (Chen et al., 2012; Aeron et al., 2012).

According to Osei-Bryson and Rayward-Smith (2009, pp.1043), "Data mining involves the use of a suite of techniques that aim to induce from data, models that meet particular objectives". Whilst this definition does address the use of multiple techniques and often complex algorithms to extract data it leaves out a number of key elements of data mining. Data warehousing giants Teradata provide the simplest definition for data analytics and mining being the "process of discovering and interpreting patterns in data to solve business problems" (Leventhal, 2010, pp.138). This definition does supply some insight into a very complex issue. It does however leave out some issues in that is does not address the fact that data analytics usually deals with large sets of data. A simplified, definition would be 'the process of analysing large sets of data to find patterns, or relationships, and presenting this data that is a manner that makes it useful to the data owner' (Hand et al, 2001; Aeron et al 2012). This definition provides an accurate analysis of analytics as it addresses the 3 key stages of analytics, these being analysing large sets of data to find patters, interpreting the patterns in order to create value from them, and using these patterns to solve business problems.

2.2.3 Creating Value from Data

Once data has been analysed and insights have been gained about consumers, brands can begin to craft customised engagement strategies that will eventually shift behavioural patterns of the consumer. Communication with consumers is no longer the one way messaging of old, nor is it simply about having a conversation (Cropanzano and Mitchell, 2005; Patterson et al., 2006; Hollebeek, 2011). Engagement in today's retail environment is about the co-creation of value between the brand and the consumer (Van Doorn et al., 2010; Lusch and Vargo, 2010).

Engagement, as defined prior, will bring about value for brands once strategically implemented. For brands to successfully begin to shape behavioural patterns consumers must have a strong sense of belonging (Wellman and Gulia, 1999) to the brand community, as well as feel that they contribute or actively participate to the engagement process (Jang et al., 2008; Casalo et al., 2007).

According to Writz et al (2013), 'Active consumer engagement in is likely to strengthen the brand through the fostering of higher brand commitment, spirited brand engagement, brand satisfaction and brand loyalty'. Consumers who engage and feel a commitment to and from the brand become 'vested in the successes and failures of that brand' (Ashforth and Mael, 1989). Thus the investment in data analytics begins to add value as brands shift consumers from passive to engaged and loyal consumers.

2.2.3 Challenges of Using Big Data

The review of literature on big data reveals that there are challenges brands must overcome to take advantage of the potential value of big data. With all of the benefits there are several pitfalls and hindrances that have slowed the adoption of big data analytics by firms. Some of these challenges are resultant of the very nature of the data.

2.2.3.1 Nature of Raw Data

95% of big data is raw and unstructured according to Gandomi and Haider (2015), and this unstructured nature of big data leaves many firms clueless as to where to begin to tackle data analysis. By definition big data consists of high volume, high velocity and high variety data sets. Therein lies a set of challenges firms must

overcome. Coping with the sheer ‘abundance, exhaustivity and variety, timeliness and dynamism, messiness and uncertainty’ of data leaves firms clueless on where to begin adopting data analytics (Kitchin, 2014; Miller, 2010).

In an interview for the Mckinsey Group, Tim McGuire summarises the main problems organisations looking at utilising big data analytics face. According to McGuire (2013), the main challenges faced by brands are “deciding which data to use (and where outside your organization to look), handling analytics (and securing the right capabilities to do so), and using the insights you’ve gained to transform your operations”.

2.2 Big Data and Big Brands

Brands are aware of the benefits of utilizing data analytics for the growth of their business. However a vast majority of retailers still have not successfully integrated big data analysis into their businesses (1010data, 2014; Clarkston Consulting, N.d). A study done by 1010data (2014), showed that 41% of retailers in the study struggled to gain ‘clear, unified interpretation of data’. 38% indicated the inability to analyse data and 34% struggled with accessing and integrating systems.

2.2.1 Tesco Case Study – The Power of Consumer Information

Even with these challenges some brands have gone on to lead the way in terms of big data informing their strategy. This paper will look at Tesco as a model by which the research brand, Pick ‘n Pay will be compared to in order to gauge the value big data has had for the brand in comparison to an established leader in the field. With similarities in the mechanisms of each programmes, using Tesco as a model to compare Pick ‘n Pay with will allow this paper to gauge the level to which big data has changed Pick ‘n Pays strategic approach to consumer engagement.

2.2.1.1 *Pioneering big data in Retail*

With the retail market becoming overcrowded and with profits dropping Tesco decided it needed a strategic change in the way they operated. In 1995 the company introduced the ‘Tesco Club Card’ a customer loyalty programme which would change their business and the retail industry irrevocably (Patil, 2014; Benady 2006). Tesco were not the first retail brand to introduce a loyalty card. Many retail brands at the time used these programmes as a means to run promotions (Bartram, 2013). The

difference however was that from the club cards inception the objective was to gather consumer data from till transactions and use this data to customise their engagement strategy for consumers (Bartram, 2013).

Tesco's decision to use 'customer-modelling approaches based on shopper behaviours incentivised customers to perform as they wanted them to' (Schultz, 2014). The brand would go on to implement systems that allowed them to process two thirds of information captured from till purchases. This information was used to build consumer profiles. From till data the brand now knew consumers 'buying patterns in different stores, at different times of the day, during different seasons and stages in one's life (Bartram, 2013). With this data the brand was able to begin to influence behavioural changes such as encouraging consumers to buy different products, shop at different stores, buy at "less expensive" times for the retailer, along with a multitude of other marketer-valued behaviours (Schultz, 2014; Byrom, 2001). The brand became so skilled and 'managing' and 'motivating' consumers that they soon began to rise to become one of the leading supermarket chains in the U.K (Schultz, 2014).

They began by segmenting their customers. This served a dual function. It firstly gave the brand accurate insight into the makeup of their consumer base (Byrom, 2001), and secondly allowed them to target their consumers more effectively (Patil, 2014). They began mailing customer specific vouchers and coupons to consumers and within a very short time the rate of redemption for coupons shot up from 3% to 70% (Patil, 2014; Wright and Sparks, 1999).The brand could also monitor consumer behaviour in order to predict the need for new products depending on demands.

With effective segmentation the brand could customise communication with consumers to include brands and products in matching ranges. 'Upmarket customers' could be sent information regarding their more premium product lines such as 'Tesco Finest', health-conscious customers were offered products from the brands 'Tesco Healthy Living' and 'Tesco Value' aimed to bring in price-sensitive Tesco's customers (Patil, 2014; Wright and Sparks, 1999). As more and more insights were gathered from analysing data, customisation of the mailing became increasingly complex (Patil, 2014; Uncles et al., 2003). From an initial 100 variants of the standard club card mailers, more than 145,000 variants were being sent out by 1999.

The image below depicts the rise of Tesco from a mid-table retail chain to market leader due to the implementation of data analytics.

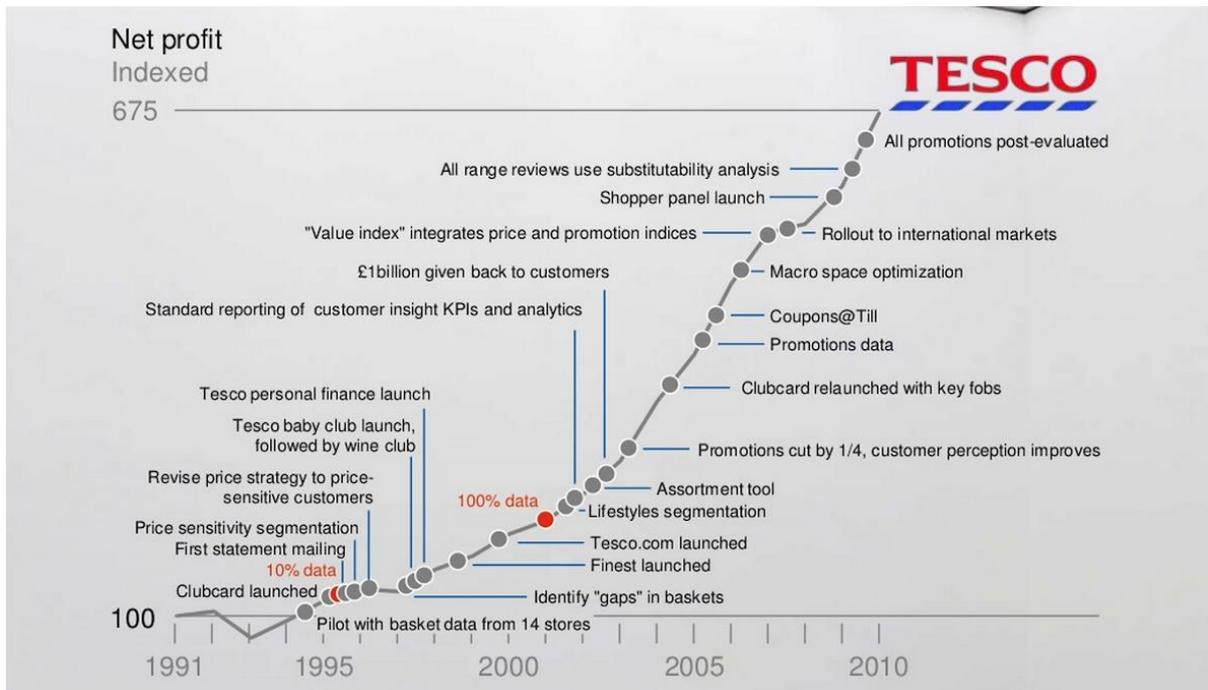


Image 1: Tesco's rise from near collapse to being a global retail giant was aided in no small part by their incorporation of big data analytics into their strategic framework. (Pital, 2014)

CHAPTER 3 – RESEARCH METHODOLOGY

3.1 Introduction to Research

‘Research is a logical and systematic search for new and useful information on a particular topic’ (Rajasekar et al., 2013). It is a process that allows researchers to investigate and test theories within a control environment. This is done to ‘gain knowledge and understanding’ of a topic.

Chapter two addressed the first two research questions as a background on this study. Big data is defined and a theoretical framework on its value to business is provided via reviews of literature on the subject. A model by which this study will measure Pick ‘n Pays successes and challenges in implementing big data is also provided. This chapter will outline the methodology and design of the research undertaken in order to investigate the research problem and answer the last two research questions.

3.1.1 Purpose of the study

The purpose of this study is to investigate the value placed on big data and data analytics in the South African retail sector especially by the major retails brands such as Pick ‘n Pay. By ascertaining the value this paper looks to uncover the role that data analytics has in informing brands consumer engagement strategies.

3.2 Research Design

According to Burns and Grove (2003), research design is the blueprint “for conducting a study with maximum control over factors that may interfere with the validity of the findings”. It is the plan by which the researcher collects and analyses data in the attempts to answer research questions and/or hypotheses (Parahoo, 1997; Polit et al., 2001).

3.2.1 Qualitative Design

This study is a qualitative study which made use of a Grounded Theory approach. Data collected through a qualitative approach is verbal and detailed in nature. It allows the researcher to gain insights into research categories and allows researchers to extract values attached to research problems (Bless & Higson-Son,

1995; De Vos et al, 2005). Thus a qualitative method was used as it would yield the most information.

3.2.1.1 *Grounded Theory Approach*

According to (Strauss and Corbin, 1994), the grounded theory approach is 'grounded in data systematically gathered and analyzed'. The core difference between this design and others is that data collection and analysis occur almost concurrently. An initial dataset is collected by the researcher from an initial interview or sample. This data is then coded and analysed before the researcher collects more data. Once coded and analysed the researcher will follow this process repeatedly moving between data collection and analysis. For this study data was coded after each interview allowing the next interview to fill in the gaps in the study the needed filling. By using this method the researcher was able to explore all aspects of the study.

This paper will gather insights from Pick 'n Pay brand management on the value of big data for South Africa's retail sector. These insights will then be analysed against the model provided in chapter 2.

3.2.2 Selected Research Method

3.2.2.1 *Exploratory Research*

This research paper is an exploratory research paper seeking to uncover the value placed on big data analytics by industry experts, thus uncovering its role in the development of consumer engagement strategies in the South African retail sector. The main purpose of exploratory research is to gain insights and in depth understanding on a research subject (Bless and Higson-Smith, 1995). Bryman et al (2014), note that exploratory research is also used when there is limited prior research on the topic of study. The main benefits of using an exploratory method would be that it 'makes initial work with the research data effective' (De Vos et al., 2005).

3.3 Research Population

According to Parahoo (1997), the population of a study refers to "the total number of units from which data can be collected". Member of a study population must qualify as noted by Burns and Grove (2003). For the purposes of this study this refers to

individuals who are known to be experts in the field of data analytics as well as management from Pick 'n Pay who worked on the smartshopper programme. Given the nature of the study and the fact that participants need to have an in-depth of the topic to qualify to be a participant, the study population is a small number of people.

3.4 Sampling

Polit et al (2001) define a sample as “a proportion of a population”. For this paper the sample refers to the respondents who were willing to participate in the study and/or available during the time of the study.

3.4.1 Sample Size

The size of a sample does not influence the quality of a study (Holloway and Wheeler (2002, pp.128). Due to this study being qualitative the number of participants was not the key driver. Experimental fit and the participant’s background knowledge on the topic were of more importance. According to Munhall (2007), experimental fit is defined as the process by which a researcher searches for participants based on their experience with a particular situation or phenomenon.

For this study a total of 15 participants were identified with 6 taking part in the study.

3.4.2 Sampling Method

This being a qualitative study non-probability sampling was used to determine a participant sample. According to Henry (1990), the main characteristic of non-probability sampling is that ‘subjective judgements play a role in the selection of the sample because the researcher decides which units of the population to include’.

Both convenience and purposive sampling were used for this study. According to Bryman et al (2014), a convenience sample is one that is available to a researcher by virtue of its availability. Purposive sampling refers to the use of some form of judgment by the researcher in which only ‘informative participants or those that best represent the population under study’ are chosen (Munhall, 2007, pp.230).

3.5 Data Collection

The chosen data collection method for the study was a field collection method with in-depth interviews being the chosen collection medium. With the purpose of the

study being to understand the value given to big data by participants this method was deemed by the researcher as being the most pertinent method of data collection. Interview guides and clarification statements were used to allow for detailed answers to be provided by participants. The interviews were recorded and notes were taken in order to capture as much detail as possible from the interviews.

3.5.1 Interviews

According to Ferreira et al. (1988), interviews are the most useful tool for any qualitative research. The value of interviews is that they allow the interviewer to control the tone and speed of an interview, thus being able to fully extract insights better than other forms of data collection. The interviews were semi-structured which gave room to explore the topic and encouraged discussion rather than simply answering questions. Semi-structured interviews are used by a researcher when the research looks to gain a detailed view in the participant's beliefs and attitudes about a particular topic (De Vos et al, 2005). In this case, the issue is complex and allowing the participant space to elaborate their sentiments would add value to the research.

Face-to-face and Skype interviews were conducted with participants. This allowed the researcher to take note of non-verbal communications and reactions to questions. This added great value to the data collected.

3.5.1.1 Interview Questions

The questions asked in the interviews were as follows:

Background

1. From an industry (retail) perspective, what do you think about big data and the role it plays in brand communications today?
2. In your own words, describe what value Big Data has added to your work firstly, and to the brand consumer relationship as a whole?
3. What future role do you see big data and data analytics playing in the South African retail sector?
4. What issues do you see in the widespread uptake of data analytics to guide retail branding in South Africa? I.e Investment, corporate culture, lack of skills and/resources.

Research Question 3 - As a major retail brand in South Africa, what value does Pick 'n Pay place on big data as a means of informing engagement strategy?

5. Apart from being a rewards programme the smart shopper cards represent the largest collection of consumer information to use for branding purposes in the retail sector. How valuable has the smart shopper programme been for a brand like Pick n Pay as a retail market leader?

Research Question 4 - What are the major hindrances Pick n Pay faced in adopting big data analytics as a key strategic tool?

6. What problems did you face in the launch and implementation of the smart shopper programme?
7. Did the investment required to launch the programme ever lead to people questioning its value for the organisation?
8. Has the programme showed enough value to justify the investment made by the brand?

3.5.2 Interview Process

All interviews were recorded using an audio recording application on a phone. Field notes were also taken to highlight responses that were non-verbal. According to De Vos (2005, pp.304) field notes should include both empirical observations and interpretations. After introductions and the signing or acceptance of the research participation consent form questions were asked from the interview guide which participants had a copy of.

3.5.3 Researcher's Role

Conducting interviews is a process that involves asking questions, listening to the given responses, probing for further clarity on issues and talking to participants in order to ensure they give the most accurate information they can (Hesse-Biber and Leavy, 2006). The quality of the data collected depends heavily on the quality of the interviews and interviewing skills of the researcher. In order to conduct productive interviews the interviewer must possess skills that include:

Probing: According to Roulston (2008), probing is a research technique used during interviews or focus groups that looks to 'generate further explanation from research

participants'. This can be achieved non-verbally by using gestures or verbally using follow up questions.

Clarifying: According to Wilson & Kniesi (1992, pp.150), clarifying is an attempt to understand the basic nature of a participant's statement. By asking for examples or reiterating given answers, the researcher encourages participants to clarify their answers in order to be understood.

Summarizing the session: Once the interview is completed, a summary of the session is given to the respondent. This allows them to think about whether they have provided all the relevant information. In most cases participants added extra information in regards to a particular question or gave further impetus on an issue discussed during the interview.

3.6 Ethical Considerations

This study was undertaken as part of an honour programme approved by Vega College. As such the researcher had to follow a strict professional ethical code which included:

3.6.1 Consent

All participants were informed of the study verbally (telephonically), electronically (via email, and in person on the day of the interview. Consent was provided by each participant on three separate occasions. Participants were assured that the information gathered from the interviews would only be used for the purposes of this research paper which was not to be published at the time of the study. Any intent to publish would require consent from the participants and representatives of the Pick n Pay brand.

3.7 Pilot Study

A pilot study was conducted with members of the researcher's honours class who had a great enough understanding of the field of study and thus met the sampling criteria. A pilot study can be defined as 'a small study for helping to design a further confirmatory study' (Arnold et al, 2009). Pilot studies have a number of uses including 'testing study procedures, validity of tools, estimation of the recruitment

rate, and estimation of parameters such as the variance of the outcome variable to calculate sample size etc' (Arain et al, 2010).

Strydom (2002, pp.337), states that pilot studies are important as they 'help to identify the problems that may arise during interviews before they can actually happen'. By conducting the pilot study the researcher was able to determine that the chosen was appropriate. The researcher did identify that there was a need to articulate the research questions more concisely. Questions that could be deemed repetitive by participants were also reviewed or removed as a result of the pilot study.

The study also aided in giving the researcher practice in conducting interviews using open ended questions. Practicing how to ensure participants did not diverge from the question was particularly useful.

3.8 Conclusion

This chapter describes in detail the rationale and methodology of this study. The research design was crafted in order to guarantee the quality of data and ensure participants provided valid answers to the research questions. By using a grounded theory approach the study was able to look at the topic of big data analytics in retail from a wide scope.

Data was collected via in-depth face-to-face or Skype interviews and coding was done after each interview in order to come to the development of categories. Chapter 4 discusses the data analysis and findings.

CHAPTER 4 – DATA ANALYSIS AND FINDINGS

4.1 Introduction

Chapter three gave a detailed description of the methodology employed in this study. In this chapter, the data analysis of the study will be explained with the findings being presented in the second part of the chapter.

The purpose of this study was to investigate the value placed on big data and data analytics in the South African retail sector by the major retailers brands such as Pick 'n Pay. Once established the study would then look to ascertain the level to which data analytics is informing brands consumer engagement strategies. Grounded theory methodology was used in the analysis of the six interviews conducted with industry gurus and Pick 'n Pay smart shopper representatives. The study explored the perceived value of big data analytics by brand practitioners and the variables that impacted the extent to which consumer data analytics informed consumer engagement strategies formulated by brands.

4.2 Data Analysis

Data analysis occurs when the interviewer begins to organise, provide structure and elicit meaning from raw data. According to Polit et al (2001, pp.383), data analysis in a qualitative study is an active and interactive process. Given the nature of this study, being based on the grounded theory, data analysis and coding began after the first interview.

Transcripts of interviews were analysed using the procedures prescribed by the grounded theory. Grounded Theory content analysis requires three phases of coding.

4.2.1 Grounded Theory Data Analysis

Coding is beginning of any form of qualitative data analysis (Bryman et al, 2014). This is the process by which raw data collected during interviews is interpreted and represented. Due to the fact that qualitative studies by nature deal with large volumes of data, coding is a form of condensing into workable chunks of information. Condensing refers to the process of 'selecting, focussing, simplifying, abstracting,

and/or transforming' data from interviews and other empirical material (Miles et al, 2013, pp.12).

Table 1: Examples of the coding procedure

Quotations	Open Coding: Concept	Axial Coding: Categories	Selective Coding: Main Category
We have noticed that consumers are spending less and choosing what they buy more carefully <i>(Participant 1)</i>	Consumers seeking greater value Consumers tightening belts	Rationality	Consumer Involvement
We all want to know that we are getting the best for the price paid. Technology allows consumers to research brands and products to ensure that <i>(Participant 5)</i>	Consumer seeking greater value Consumers researching products	Rationality	Consumer Involvement
Connectivity is a key issue in planning to roll out data analytics with real time capabilities in South Africa <i>(Participant 2)</i>	Telecommunications infrastructure needs improving	Connectivity	Future Value
Customers talk to us via social media and platforms that we provide via our website <i>(Participant 6)</i>	Consumer actively maintain a relationship with brands	Fulfilment	Consumer Involvement
The investment required for a project like the smart shopper programme will definitely scare away many retail brands <i>(Participant 3)</i>	Brands need capital to acquire such technologies	Fiscal Costs	Implementation Difficulties

4.2.1.1 Open Coding

Open coding is a preliminary process concerned with the identification of concepts that fit with data (Gambetti et al, 2013). By breaking down, examining, comparing,

conceptualising and categorizing data this coding process yields concepts in the form of key words, phrases or sentences (Strauss and Corbin, 1990).

4.2.1.2 Axial Coding

The next step, axial coding, 'consists of the progressive aggregation and condensation of codes into broader categories' (Gambetti et al, 2013, pp.666). This is done by placing data back together in new ways by making connections between categories (Strauss and Corbin, 1990). By reorganising data and linking it to causes, consequences, patterns and contexts the researcher groups information to create 'explanatory categories' (Bryman et al, 2014).

4.2.1.3 Selective Coding

Finally, selective coding is the process by which data categories are analysed in order to come to core categories that describe the issue being investigated (Gambetti et al, 2013, pp.666). A core category 'forms the basis for the theory which is the central focus around which all the other categories are integrated' (Strauss and Corbin, 1990).

4.2.2 Determining Trustworthiness

"Trustworthiness is the truth value of a piece of research", (Holloway, 1997, pp.161). Due to the fact that validity and reliability cannot be addressed in the same manner in qualitative research as in quantitative, the issue of trustworthiness has drawn much attention in academic literature (Shenton, 2004). According to Krefting (1991, pp. 214) 'a research project is trustworthy when it reflects the reality and ideas of the participants'. For a qualitative study to be deemed trustworthy the following issues must be addressed.

4.2.2.1 Credibility

Credibility refers to the confidence in the data presented in a study (Polit et al, 2001). Essentially credibility is achieved when the research findings and interpretations reflect the sentiments, perceptions and attitudes of the participants of the study (Miles and Huberman, 1994).

Of the steps identified by Lincoln & Guba's (1985) work into establishing trustworthiness in a qualitative study the researcher has taken several measures to gain credibility.

4.2.2.1.1 Triangulation

According to Patton (2002, pp.546), triangulation refers to the 'capturing and respecting multiple perspectives'. The researcher drew from various sources in the process of writing this paper. Literature pertaining to the subject was reviewed prior to conducting the interviews. Industry leaders were also consulted while developing the study to garner whether the information being gathered was in line with actual real world experiences.

4.2.2.1.2 Peer debriefing

Exposing research analysis and conclusions to peer debriefers or peer researchers will also add credibility to a study (Polit and Beck, 2006, pp.332). Throughout the process of conducting this research, the researcher the researcher corresponded with colleagues and supervisors regarding data analysis.

4.2.2.1.3 Member Checks

Once the coding is conducted and categories have been established further research must then be undertaken in order to validate the theory developed. According to Polit and Beck (2006, pp.332), member checking is the process by which the researcher takes the findings back to the participants to validate that their views have been accurately captured within the study. While participants were sent copies of the analysed data not all of them responded to communications.

4.2.2.2 Transferability

According to Lincoln and Guba (1985), "the naturalist cannot specify the external validity of an enquiry; they can only provide a thick description necessary to enable someone interested in making transfer to reach a conclusion about whether a transfer can be contemplated as a possibility". Put simply the concept of transferability look at the extent to which the findings can be transferred or generalized to other settings or groups (Polit & Beck, 2006, pp.332). The researcher to this point has provided a thick description of the methods of data collection, participants and interview settings.

4.2.2.3 Dependability

Dependability refers to consistency and stability of data (Polit & Hungler, 1997). According to Lincoln and Guba (1985), this involves 'examining the process of the inquiry, i.e. how data was collected; how data was kept; and the accuracy of data. Dependability for this study was tested primarily with the pilot study in order to determine whether the questions and format of the interview were appropriate and would generate the desired responses.

4.2.2.4 Confirmability

Confirmability refers to neutrality or objectivity of data (Polit et al, 2001, pp.315: Miles & Huberman, 1994). This addresses the fact that findings must be a result of the research and not previously conceived assumptions and notions. This study was audited by several supervisors in its development and the methodology was designed to ensure that the findings would be a result of the research.

4.3 Research Findings

Evidence gathered through the study suggests that consumer brand engagement is a top strategic priority for major retail brands in the South African retail sector. With the market getting more and more crowded brands find themselves 'clawing' for 'any type of competitive advantage'. It is in this regard that big data analytics has added great value to how their organisations function. In particular having such detailed information on consumers, their 'shopping and buying' habits has allowed retail brands to begin to engage with consumers on a more 'personal' level, leading to increased loyalty.

Brands have always communicated with their consumers; advertising has been around for decades. The difference now is that when we talk to Customer A and Customer B we can have different conversations. We can have 100 000 different conversation at the same time because now we know what customers want to talk to us about. (Participant 2)

What we do isn't about just getting you into the store. What we want to do is to make you feel like the store is part of your life. We want to make sure your shopping habits become your living habits. (Participant 5)

The coding process identified three main categories. When the three main categories are viewed simultaneously it is clear that big data analytics is extremely valuable to brands even though it is still considered to be in its infancy in terms of usefulness to organisations in the retail sector.

4.3.1 Main Categories

4.3.1.1 Consumer Involvement

Evidence from the study shows that there is a perception that brand consumer engagement is as much about the consumer engaging with the brand as the brand trying to engage with the consumer. Today's consumers are more aware of the choices they have available to them. Thus they actively seek to have 'relationships' with their brands that will provide them with some level of fulfilment.

Evidence suggests that today's consumer is a *rational consumer* who actively seeks information on brands, compares prices rigorously, reviews brands with peers and invariably feels responsible for their brands.

Consumers today don't just accept messaging about a brand. They are actively contributing to the story of the brand online. (Participant 6)

Consumers today know what they want from the hours of online research they do on products and brands. (Participant 4)

Consumers are also deemed to be unpredictable in their choices as economic, promotional and competitive factors all play a part in their purchasing behaviour.

Consumers look for the best price while still looking to maintain their relationships with their brands. (Participant 1)

All of this in the participants view is illustrative of a consumer seeking to have a *consumer cognitive and emotional* relationship with brands.

Consumers today don't just buy a product because you say so. They ask questions, share comments and criticise readily if need be. (Participant 5)

Table 2 shows the composition of this core-category.

Concepts	Categories
Actively Seek information online and through peer reviewing	
Seek Value for money given tough economic times	
Will share criticism about brands readily on social media	Rationality
They feel responsible for the fate of their brands and thus are more willing to contribute	
Buy most brands inconsistently due to budgeting	Unpredictability
Seek exclusivity	
Require aesthetic pleasure from brands	Fulfilment
Require innovation and charm	

Thus the role of consumer in the creation of big data is crucial in that they willingly supply brands with information that will allow brands to create an ongoing dialogue with consumers.

4.3.1.2 Implementation Difficulties

Evidence from the study suggests that for all the benefits data analytics presents for a retail organisation, the implementation presents as many challenges that make the uptake of data analytics by retailers in the market

The biggest, and most frequently mentioned challenge, is the issue of the sheer costs of implementing data analytics systems into a retail organisation. This is particularly true for an organisation the size of Pick 'n Pay which had over 500 stores nationwide at the time of the roll out of the campaign.

Once brands have a strategy in mind they must look very closely and the pros and cons of adding data analytics. The costs involved for a brand the size of Pick 'n Pay meant that everyone had to be sure that this would be best for the business. (Participant 3)

This is not a short term solution to bring in customers. The costs involved for most retail brands mean that this will see significant operational and strategic changes take place. (Participant 1)

Difficulties in getting staff to buy into strategic changes are also evident from the study. By nature humans will resist change for fear of being made irrelevant. In the case of such a major change for any organisation that is an issue that needs to be addressed before roll out commences.

I think most people will overlook the staffing aspect of such a big change. It takes time for people to unlearn what they have been doing for years and start thinking in a new way. (Participant 1)

Some people just resist change and that costs an organisation. This is at all levels from the boardroom down. (Participant 5)

Operational challenges also hinder the uptake of data analytics by retail brands in South Africa.

Changing systems can set brands back into the Stone Age if not properly managed. (Participant 6)

Table 3 shows the composition of this core-category.

Concepts	Categories
Software Development and Installation	
System upgrades for all stores	Fiscal Costs
Training staff	
Managing new system	
Time needed for staff to familiarise themselves with systems and procedures	Staffing
Installing new system whilst maintain operational integrity	
Testing system	Operational

4.3.1.3 Future Value

Although all the participants discussed in great detail the advantages that data analytics has provided from the Pick 'n Pay brand and other retailers, there was a general consensus that the true value of data analytics in regards to consumer-engagement strategies will only be truly realised in the future.

With the majority of the market still lagging in terms of connectivity and the use of the technologies that would make these investments truly great, the value of these investments still lies in the future. (Participant 3)

For a section of the market customised communication makes a signification difference in the consumer brand relationship. However for the majority of South Africans that is simply not the case. (Participant 4)

Participant responses suggest that the majority of brands would not be able to leverage the most out of data analytics systems as data connectivity infrastructure and pricing in South Africa would make the process of collecting data at real time difficult.

In an area where you barely have cell phone signal...the costs associated to alleviating this issue will out way the benefits of having the information from that area. (Participant 2)

Table 4 shows the composition of this core-category.

Concepts	Categories
Consumer access to technology	Connectivity
Bandwith and internet connectivity in rural areas	
Majority of retail market is mass market	Market Needs
Price is still main driver	

4.3.2 Findings Comparisons

The study produced findings that were in line with the literature reviewed. Pick 'n Pay like Tesco has adopted a customer-modelling approach which allows them to

engage with their consumer in real time allowing them to drive sales and enhance loyalty through the issuing of coupons and the till slip vouchers which have proved popular with bargain hunters.

What has been surprising is the level to which the rest of the retail market does not seem ready to adopt big data analytics to inform their brand strategies at this time. This is largely due to the costs and the fact that the majority of the market currently is for all intents and purposes driven primarily by price and not a relationship with the brands they purchase.

4.3.3 Success of study

The field research of this study looked to answer the last two research questions, being:

Research Question 3 - As a major retail brand in South Africa, what value does Pick 'n Pay place on big data as a means of informing engagement strategy?

Research Question 4 - What are the major hindrances Pick n Pay faced in adopting big data analytics as a key strategic tool?

The researcher is of the opinion that although the study unearthed more than it had sought out to discover, the research questions were significantly answered by respondents.

CHAPTER 5 – CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

By adopting data analytics brands such as Pick 'n Pay are creating relationships with their consumers that competitors will find hard to break. For this brand there is truly great value in big data analytics. Pick 'n Pays 'Smart Shopper' rewards programme is one of the leading rewards programmes in South Africa and is projected to reach 10 million members by the end of 2015. They have overcome the issues associated with implementing data analytics systems, issues that still hinder the majority of the retail sector to follow suit.

Whilst there is value to be gained from data analytics the market simply does not see the investment as being necessary at the moment. Retail brands serving lower LSM's especially will argue that while the operational advantages are undoubted, they cannot use many of the forms of communication required to run campaigns based on these technologies. Many brand would be well served by investing in data analytics platforms and systems now rather than later to avoid having to catch up, but justifying the spend on something that in many areas would be seen as an expensive add on service would be difficult.

There is great truth in the fact that data analytics lifted Tesco from obscurity to success and may see Pick 'n Pay follow a similar path. However the difference in the market needs and trends invariably is what is holding data analytic uptake back in respect to informing branding strategy. Operationally data analytics will continue to thrive in the market as organisations look for ways of increasing efficiencies to increase profit.

5.2 Recommendations for further study

5.2.1 Broaden Scope

Given the lack of information regarding the topic in the specified market a study with a greater scope would be best. By investigating the retail sector as a whole rather than one brand at a time a study would be able to more accurately depict the need for big data analytics in the market and what value is currently attached to analytics by brands in the industry.

5.2.2 Market Segmentation

Such a study would need to take into consideration what segment of the market each brand provides for. By doing this the study would be able to fully expand on the notion suggested in the findings that brands that provide for the mass markets are not convinced that investments needed will necessarily benefit their organisations. While this may be true a further study would be able to explore this notion and dig deeper into the roots of this perception.

5.2.3 Extend Time

A study of this nature requires at least a year of data collection and analysis. By doing a thorough study once of, researchers would be able to ascertain South Africa's retail sectors readiness to adopt data analytics into the strategic fold.

REFERENCE LIST

1010data, 2014. *2014 Big Data in Retail Study*, viewed 15 May 2015, from http://risnews.edgl.com/Libraries/RIS-Media/PDFs/rcas14_1010data.pdf

Aeron, H., Kumar, A., and Moorthy, J. 2012. 'Data mining framework for customer lifetime value-based segmentation', *Journal of Database Marketing and Customer Strategy Management*, 19, 17-30

Arain, M., Campbell, M., Cooper, C., & Lancaster, G. 2010. 'What is a pilot or feasibility study? A review of current practice and editorial policy', *BMC Medical Research Methodology*, 10(67)

Arnold, D., Burns, K., Adhikari, N., Kho, M., Meade, M., Cook, D. 2009. 'The design and interpretation of pilot trials in clinical research in critical care', *Critical Care Medicine*, 37(1), pp.69-74

Ashforth, B., and Mael, F. 1989. 'Social identity theory and the organization', *Academy of Management Journal*, 14(1), 20-39

Ashley, C., Noble, S., Donthu, N., and Lemon, K. 2011. 'Why customers won't relate: obstacles to relationship marketing engagement', *Journal of Business Research* 64,749–56

Bartram, P. 2013. 'The value of data', *Financial Management*, 42(2), 26-31

Benady, D. 2006. 'Tesco playing its trump card', *Precision Marketing*, 18(26), 19-21

Berengueres, J., and Efimov, D. 2014. 'Airline new customer tier level forecasting for real-time resource allocation of a miles program', *Journal of Big Data*, 1(3)

Bless, C., and Higson-Smith, C. 1995. *Fundamentals of social research: an African perspective*. 2nd ed. Cape Town: Juta

Bowden, J. 2009. 'The process of Customer Engagement: A Conceptual Framework', *The Journal of Marketing Theory and Practice*, 17(1), 63—74

Boyd, D., and Crawford, K. 2012. Critical questions for Big Data. *Information, Communication and Society*, 15(5), 662–679

Brodie, R., Ilic, A., Juric, B., and Hollebeek, L. 2011. 'Consumer Engagement in a Virtual Brand Community', *Journal of Business Research*, 14(3), 252-271

Bryman, A., Bell, E., Hirschsohn, P., dos Santos, A., du Toit, J., and Masenge, A. 2014. *Research Methodology: Business and Management Contexts*. Oxford University Press, Southern Africa

Burns, S., and Grove, S. 2003. *Understanding nursing research*. 3rd edition. Philadelphia: Saunders.

Byrom, J. 2001. 'The role of loyalty card data within local marketing initiatives', *International Journal of Retail & Distribution Management*, 29(7), 333 - 342

Calder, B., Malthouse, E., and Schaedel, U. 2009. 'An Experimental Study of the Relationship between Online Engagement and Advertising Effectiveness', *Journal of Interactive Marketing*, 23(4), 321-331

Casalo, L., Flavian, C., and Guinaliu, M. 2007. 'The impact of participation in virtual brand communities on consumer trust and loyalty: the case of free software', *Online Information Review*, 31(6), 775-792

Cetină, I., Dumitrescu, I., and Vinerean, S. 2014, 'Exploring consumer engagement in an e-setting: a qualitative research of marketing executives', *Economic Computation and Economic Cybernetics Studies and Research*, 48(2), 1-20.

Clarkston Consulting, N.d. *The Hype for Big Data is Over: Now's the Time for Retailers to Use It*, viewed 15 May 2015, from <http://clarkstonconsulting.com/insight/the-hype-for-big-data-is-over-nows-the-time-for-retailers-to-use-it/>

Corporate Image., 2015. *Pick n Pay's smart shopper ahead of the game in 2015*, , viewed 12 May 2015, from <http://www.corporateimage.co.za/pick-n-pays-smart-shopper-ahead-of-the-game-in-2015/>

Cropanzano, R., and Mitchell, M. 2005. 'Social Exchange Theory: An Interdisciplinary Review', *Journal of Management*, 31(6), 874-900

Davenport, T., & Dyché, J. 2013, 'Big Data in Big Companies', Company Report, SAS Institute Inc, North Carolina.

De Vos, A., Strydom, H., Fouche, C., and Delpont, C. 2005. *Research at Grass roots: For the social sciences and human professions*. Pretoria: Van Schaik Publishers.

Dholakia, R., and Dholakia, N. 2013. 'Scholarly Research in Marketing: Trends and Challenges in the Era of Big Data', *Working Paper Series*, 2013/2014 (10), 1-31

Dumbill, E., 2014., *Defining Big Data*, viewed 21 February 2015, from <http://www.forbes.com/sites/edddumbill/2014/05/07/defining-big-data/>

Euromonitor, 2015. *Retailing in South Africa*. Country briefing, Euromonitor International

Euromonitor, 2015. *Retailing Sector 2015: South Africa*. Country briefing, Euromonitor International

Ferreira, M., Mouton, J., Puth, G., Schurink, E., Schurink, W. (Eds.). 1988. *Introduction to qualitative research*. Pretoria: Human Sciences Research Council.

Gambetti, R., Graffigna, B., and Biraghi, S. 2013. 'The Grounded Theory approach to consumer–brand engagement The practitioner's standpoint', *International Journal of Market Research*, 54(5), 659-687

Gandomi, A, & Haider, M 2015, 'Beyond the hype: Big data concepts, methods, and analytics', *International Journal Of Information Management*, 35(2). 137-144

Gallup Consulting., 2009. *Customer Engagement | What's Your Engagement Ratio?*, viewed 10 May 2015, from http://www.brentobannon.com/wp-content/uploads/2012/11/Customer_Engagement_Overview_Brochure.pdf

Glaser, B., and Strauss, A. 1967. *The Discovery of Grounded Theory: Strategies for Qualitative Research*. Chicago: Aldine

Hand, D., Mannila, H., and Smyth, P. 2001. *Principles of Data Mining*, MIT Press, Cambridge, MA.

Hastie, T., Tibshirani, R., and Friedman. J. 2008. *The Elements of Statistical Learning: Data Mining, Inference and Prediction*. New York: Springer-Verlag.

Henry, T. 1990. *Practical Sampling*. Newbury Park, CA: Sage Publications

- Hesse-Biber, S., and Leavy, P. 2006. *The Practice of Qualitative Research*, Thousand Oaks, Sage Publications
- Hilbert, M., and López, P. 2011. 'The world's technological capacity to store, communicate, and compute information', *Science*, 332(6025), 60-65
- Hilbert, M., and López, P. 2012, 'How to measure the world's technological capacity to communicate, store and compute information?', *International Journal of Communication*, 6, 1042-1055
- Hollebeek, L., 2011. 'Demystifying Customer Brand Engagement: Exploring the loyalty nexus', *Journal of Marketing Management*, 27(7-8), 785-807
- Holloway, I., and Wheeler, S. 2002. *Qualitative Research in Nursing and Healthcare*. New York: John Wiley & Sons
- Jang, H., Olfman, L., Ko, I., Koh, J. and Kim, K. 2008. 'The influence of on-line brand community characteristics on community commitment and brand loyalty', *International Journal of Electronic Commerce*, 12(3), 57-80
- Katz, I., 2012. 'Tim Berners-Lee: demand your data from Google and Facebook', *The Guardian* [London], viewed 22 March 2015, from <http://www.theguardian.com/technology/2012/apr/18/tim-berners-lee-google-facebook>
- Kitchin, R. 2014. 'Big Data, new epistemologies and paradigm shifts', *Big Data & Society*, April-June, 1-12
- Kotorov, R., 2014. *The Disadvantages of Data Discovery*, viewed 12 March 2015, from <http://www.informationbuilders.com/blog/rado-kotorov/17854>
- Laney, D. 2001. *Controlling data Volume, Velocity and Variety*, viewed 21 February 2015, from <http://blogs.gartner.com/doug-laney/files/2012/01/ad949-3D-Data-Management-Controlling-Data-Volume-Velocity-and-Variety.pdf>
- Leventhal, B. 2010. 'An introduction to data mining and other techniques for advanced analytics', *Journal of Direct, Data and Digital Marketing Practice*, 12, 137-153

- Lincoln, Y., and Guba, E. 1985. *Naturalistic inquiry*. Newbury Park, CA: Sage Publications
- Lusch, R., and Vargo, S. 'S–D logic: accommodating, integrating, transdisciplinary', *Presentation at the Grand Service Challenge*. University of Cambridge, 2010.
- Lycett, M., 2013. 'Datafication: Making sense of Big Data in a complex world', *European Journal of Information Systems*, 22(4), 381-386
- Markus, L. 2015. 'New games, new rules, new scoreboards: the potential consequences of big data', *Journal of Information Technology*, 2015(30), 58–59
- Marshall, C., and Rossman, G. 1995. *Designing Qualitative Research* (2nd edition). Thousand Oaks, London and New Delhi: Sage Publications
- Mayer-Schönberger, V., and Cukier, K. 2013. *Big Data: A Revolution That Will Transform How We Live, Work and Think*. Houghton Mifflin Harcourt, Boston
- McKinsey and Company., 2013. *Big Data, Analytics, and the Future of Marketing and Sales*. McKinsey and Company. New York.
- McGuire, T., 2013. Making data analytics work: Three key challenges viewed March 2, 2015 from http://www.mckinsey.com/insights/business_technology/making_data_analytics_work
- Miles, M., Huberman, A., and Saldana, J. 2013. *Qualitative Data Analysis*. Thousand Oaks, London and New Delhi: Sage Publications
- Miller, J. 2010. 'The data avalanche is here. Shouldn't we be digging?', *Journal of Regional Science*, 50(1), 181–201
- Mollen, A., and Wilson, H. 2010. 'Engagement, telepresence and interactivity in online consumer experience: reconciling scholastic and managerial perspectives', *Journal of Business Research*, 63, 919–25
- Morgan, R., and Hunt, S. 1994. 'The commitment–trust theory of relationship marketing', *Journal of Marketing*, 58(3), 20–38

Moorthy, J., Lahiri, R., Biswas, N., Sanyal, D., Ranjan, J., Nanath, K., and Ghosh, P. 2015. 'Big Data: Prospects and Challenges', *Vikalpa: The Journal for Decision Makers*, 40(1), 74-96

Munhall, P. 2007: *Nursing Research: A qualitative perspective*. 4th ed. Boston: Jones and Bartlett Publishers.

Oliver, M., and Vayre, J.S. 2015. 'Big data and the future of knowledge production in marketing research: Ethics, digital traces, and abductive reasoning', *Journal of Marketing Analytics*, 2 March, 1-9

Osei-Bryson, K., and Rayward-Smith, V. 2009. 'Data mining and operational research: techniques and applications', *Journal of the Operational Research Society*, 60, 1043–1044

Parahoo, K. 1997. *Nursing Research: Principles, Process, Issues*. London: Macmillan.

Patil, R. 2014. Supermarket Giant Tesco pioneers Big Data: Turning Customer Loyalty into Royalties , viewed 18 May 2015, from <http://dataconomy.com/tesco-pioneers-big-data/>

Patterson, P., Yu, T., and de Ruyter, K. 'Understanding customer engagement in services. Advancing theory, maintaining relevance', *proceedings of ANZMAC 2006 conference*, Brisbane; 2006. 4–6 December

Patton, M. 2002. *Qualitative research and evaluation methods* (3rd ed.). Thousand Oaks, CA: Sage

Polit, D., Beck, C., Hungler, B. 2001. *Essentials of Nursing Research: Methods, Appraisal, and Utilisation* (5th edn). Philadelphia: Lippincott

Polit, D., and Hungler, B. 1997: *Essentials of nursing research; Methods, appraisals and utilization*. Philadelphia. J.B. Lippincott Company.

Power, D., 2014. 'Using 'Big Data' for analytics and decision support', *Journal of Decision Systems*, 2014(23.2), 222-228

Prahalad, C., and Ramaswamy, V. 2004. 'Co-creation experiences: the next practice in value creation', *Journal of Interactive Marketing*, 18(3), 5–14

- Rajasekar, S., Philominathan, P., and Chinnathambi, V. 2013. *Research Methodology*, viewed 18 May 2015, from <http://arxiv.org/pdf/physics/0601009.pdf>
- Roulston, K. 2008. 'Probes and Probing', in Given, L. *The Sage Encyclopedia of Qualitative Research Methods*, Thousand Oaks, Sage Publications.
- Schultz, D. 2014. 'Dead or Dying: The demise of irrational loyalty thinking', *Marketing Insights*, November/December (2014), 14-15
- Shaw, J., 2014. 'Why "Big Data" Is a Big Deal', *Harvard Magazine*, March-April, 30-35, 74-75
- Shenton, A. 2004. 'Strategies for ensuring trustworthiness in qualitative research projects', *Education for Information*, 22(2004), 63–75
- Solomon, M., 2003. *Consumer behaviour. 6th ed.* New York, N.Y.: Prentice-Hall.
- Strauss, A., & Corbin, J. 1990. *Basics of qualitative research: Grounded theory procedures and techniques*. Newbury Park, CA: Sage.
- Strauss, A., and Corbin, J. 1994. 'Grounded Theory Methodology', in Denzin, N., and Lincoln, Y., (Eds.), *Handbook of Qualitative Research*. Thousand Oaks, Sage Publications.
- Strong, C. 2014. 'The challenge of "Big Data": What does it mean for the qualitative research industry?', *Qualitative Market Research: An International Journal*, 17(4), 336-342
- Strydom, H. 2002. 'The pilot study', in De Vos, A., Strydom, H., Fouché, C., & Delpont, C. 2002. *Research at Grass Roots For the Social Sciences and Human Service Professions*. 2nd ed. Pretoria: Van Schaik Publishers
- Stuart-Ward, J., and Barker, A., 2013. 'Undefined By Data: A Survey of Big Data Definitions'. School of Computer Science, University of St Andrews, UK.
- Uncles, M., Dowling, D., and Hammond, K. 2003. 'Customer loyalty and customer loyalty programs', *Journal of Consumer Marketing*, 20(4), 294-316
- Van Doorn, J., Lemon, K., Mittal, V., Nab, S., Pick, D., Pirner, P., Verhoef, P. 2010. 'Customer Engagement Behavior: Theoretical Foundations and Research Directions', *Journal of Service Research*, 13(3), 253–266

Vargo, S., and Lusch, R. 2004. 'Evolving to a new dominant logic for marketing', *Journal of Marketing*, 68(1), 1–17

Vargo, S., and Lusch, R. 2008, 'Service-dominant Logic: Continuing the Evolution', *Journal of the Academy of Marketing Science*, 36(1), 1–10

Vivek, S., Beatty, S., Morgan, R. 2012. 'Customer Engagement: Exploring customer relationships beyond purchase', *Journal of Marketing Theory and Practice*, 20(2), 127–145

Wellman, B., and Gulia, M., 1999. 'Net-surfers don't ride alone: virtual communities as communities', in Wellman, B. (Ed.), *Networks in the Global Village: Life in Contemporary Communities*, Westview, Boulder, CO

Wirtz, J., den Ambtman, A., Bloemer, J., Horváth, C., Ramaseshan, B., van de Klundert, J., & Kandampully, J. 2013. 'Managing brands and customer engagement in online brand communities', *Journal of Service Management*, 24(3), 223-244

Woerner, S., and Wixom, B., 2015., 'Big data: extending the business strategy toolbox', *Journal of Information Technology*, 2015(30), 60–62

Wren, C., 2015. *Using Big Data To Shape Brand Experiences*, viewed Feb 15, 2015 from <http://www.brandingstrategyinsider.com/2014/10/using-big-data-to-shape-brand-experiences.html#.VPsyyPmUeSr>

Wright, C., and Sparks, L. 1999. 'Loyalty saturation in retailing: exploring the end of retail loyalty cards?', *International Journal of Retail & Distribution Management*, 27(10), 429-440

Yoo, Y., 2015. 'It is not about size: a further thought on big data', *Journal of Information Technology*, 2015(30), 63–65

BIBLIOGRAPHY

1010data, 2014. *2014 Big Data in Retail Study*, viewed 15 May 2015, from http://risnews.edgl.com/Libraries/RIS-Media/PDFs/rcas14_1010data.pdf

Aaker, D and Joachimsthaler, E., 2009. *Brand Leadership*. London: Somin and Schuster

Aeron, H., Kumar, A., and Moorthy, J. 2012. 'Data mining framework for customer lifetime value-based segmentation', *Journal of Database Marketing and Customer Strategy Management*, 19, 17–30

Alsultanny, Y. 2011. 'Selecting a suitable method of data mining for successful forecasting', *Journal of Targeting, Measurement and Analysis for Marketing*, 19, 207–225

Arain, M., Campbell, M., Cooper, C., & Lancaster, G. 2010. 'What is a pilot or feasibility study? A review of current practice and editorial policy', *BMC Medical Research Methodology*, 10(67)

Arnold, D., Burns, K., Adhikari, N., Kho, M., Meade, M., Cook, D. 2009. 'The design and interpretation of pilot trials in clinical research in critical care', *Critical Care Medicine*, 37(1), pp.69-74

Ashforth, B., and Mael, F. 1989. 'Social identity theory and the organization', *Academy of Management Journal*, 14(1), 20–39

Ashley, C., Noble, S., Donthu, N., and Lemon, K. 2011. 'Why customers won't relate: obstacles to relationship marketing engagement', *Journal of Business Research* 64,749–56

Ayankoya, K., Calitz, A., and Greyling, J., 'Intrinsic Relations between Data Science, Big Data, Business Analytics and Datafication' in J. P. van Deventer, M. C. Mathee, H. Gelderblom, and A. Gerber (eds.), *Proceedings of the Southern African Institute for Computer Scientist and Information Technologists Annual Conference 2014 on SAICSIT 2014 Empowered by Technology (SAICSIT '14)*, New York, NY, USA, 2014, 192-198

Bartram, P. 2013. 'The value of data', *Financial Management*, 42(2), 26-31

- Benady, D. 2006. 'Tesco playing its trump card', *Precision Marketing*, 18(26), 19-21
- Berengueres, J., and Efimov, D. 2014. 'Airline new customer tier level forecasting for real-time resource allocation of a *miles program*', *Journal of Big Data*, 1(3)
- Bless, C., and Higson-Smith, C. 1995. *Fundamentals of social research: an African perspective*. 2nd ed. Cape Town: Juta
- Bowden, J. 2009. 'The process of Customer Engagement: A Conceptual Framework', *The Journal of Marketing Theory and Practice*, 17(1), 63–74
- Boyd, D., and Crawford, K. 2012. Critical questions for Big Data. *Information, Communication and Society*, 15(5), 662–679
- Brodie, R., Ilic, A., Juric, B., and Hollebeek, L. 2011. 'Consumer Engagement in a Virtual Brand Community', *Journal of Business Research*, 14(3), 252-271
- Bryman, A., Bell, E., Hirschsohn, P., dos Santos, A., du Toit, J., and Masenge, A. 2014. *Research Methodology: Business and Management Contexts*. Oxford University Press, Southern Africa
- Burns, S., and Grove, S. 2003. *Understanding nursing research*. 3rd edition. Philadelphia: Saunders.
- Byrom, J. 2001. 'The role of loyalty card data within local marketing initiatives', *International Journal of Retail & Distribution Management*, 29(7), 333 - 342
- Calder, B., Malthouse, E., and Schaedel, U. 2009. 'An Experimental Study of the Relationship between Online Engagement and Advertising Effectiveness', *Journal of Interactive Marketing*, 23(4), 321–331
- Casalo, L., Flavian, C., and Guinaliu, M. 2007. 'The impact of participation in virtual brand communities on consumer trust and loyalty: the case of free software', *Online Information Review*, 31(6), 775-792
- Cetină, I., Dumitrescu, I., and Vinerean, S. 2014, 'Exploring consumer engagement in an e-setting: a qualitative research of marketing executives', *Economic Computation and Economic Cybernetics Studies and Research*, 48(2), 1–20.

Chen, D., Sain, S., and Guo, K. 2012. 'Data mining for the online retail industry: A case study of RFM model-based customer segmentation using data mining', *Journal of Database Marketing and Customer Strategy Management*, 19, 197–208

Clarkston Consulting, N.d. *The Hype for Big Data is Over: Now's the Time for Retailers to Use It*, viewed 15 May 2015, from <http://clarkstonconsulting.com/insight/the-hype-for-big-data-is-over-nows-the-time-for-retailers-to-use-it/>

Corporate Image., 2015. *Pick n Pay's smart shopper ahead of the game in 2015*, , viewed 12 May 2015, from <http://www.corporateimage.co.za/pick-n-pays-smart-shopper-ahead-of-the-game-in-2015/>

Cropanzano, R., and Mitchell, M. 2005. 'Social Exchange Theory: An Interdisciplinary Review', *Journal of Management*, 31(6), 874–900

Davenport, T. 2009. *Realizing the Potential of Retail Analytics: Plenty of Food for Those with the Appetite*. Working Knowledge Report, Babson Executive Education.

Davenport, T. 2014. 'How strategists use "big data" to support internal business decisions, discovery and production', *Strategy & Leadership*, 42(4), 45–50

Davenport, T., & Dyché, J. 2013, 'Big Data in Big Companies', Company Report, SAS Institute Inc, North Carolina.

De Vos, A., Strydom, H., Fouche, C., and Delport, C. 2005. *Research at Grass roots: For the social sciences and human professions*. Pretoria: Van Schaik Publishers.

Dholakia, R., and Dholakia, N. 2013. 'Scholarly Research in Marketing: Trends and Challenges in the Era of Big Data', *Working Paper Series*, 2013/2014 (10), 1-31

Dumbill, E., 2014., *Defining Big Data*, viewed 21 February 2015, from <http://www.forbes.com/sites/eddumbill/2014/05/07/defining-big-data/>

Euromonitor, 2015. *Retailing in South Africa*. Country briefing, Euromonitor International

Euromonitor, 2015. *Retailing Sector 2015: South Africa*. Country briefing, Euromonitor International

Fox, S., and Do, T. 2013. 'Getting real about Big Data: applying critical realism to analyse Big Data hype', *International Journal of Managing Projects in Business*, 6(4), 739-760

Ferreira, M., Mouton, J., Puth, G., Schurink, E., Schurink, W. (Eds.). 1988. *Introduction to qualitative research*. Pretoria: Human Sciences Research Council.

Gandomi, A, & Haider, M 2015, 'Beyond the hype: Big data concepts, methods, and analytics', *International Journal Of Information Management*, 35(2). 137-144

Gallup Consulting., 2009. *Customer Engagement | What's Your Engagement Ratio?*, viewed 10 May 2015, from http://www.brentobannon.com/wp-content/uploads/2012/11/Customer_Engagement_Overview_Brochure.pdf

Gambetti, R., Graffigna, B., and Biraghi, S. 2013. 'The Grounded Theory approach to consumer–brand engagement The practitioner's standpoint', *International Journal of Market Research*, 54(5), 659-687

Glaser, B., and Strauss, A. 1967. *The Discovery of Grounded Theory: Strategies for Qualitative Research*. Chicago: Aldine

Hand, D., Mannila, H., and Smyth, P. 2001. *Principles of Data Mining*, MIT Press, Cambridge, MA.

Hastie, T., Tibshirani, R., and Friedman. J. 2008. *The Elements of Statistical Learning: Data Mining, Inference and Prediction*. New York: Springer-Verlag.

Henry, T. 1990. *Practical Sampling*. Newbury Park, CA: Sage Publications

Hesse-Biber, S., and Leavy, P. 2006. *The Practice of Qualitative Research*, Thousand Oaks, Sage Publications

Hilbert, M., and López, P. 2011. 'The world's technological capacity to store, communicate, and compute information', *Science*, 332(6025), 60-65

Hilbert, M., and López, P. 2012, 'How to measure the world's technological capacity to communicate, store and compute information?', *International Journal of Communication*, 6, 1042-1055

Hollebeek, L.,2011. 'Demystifying Customer Brand Engagement: Exploring the loyalty nexus', *Journal of Marketing Management*, 27(7–8), 785–807

- Hollebeek, L. 2011, 'Exploring Customer Brand Engagement: Definition and themes', *Journal of Strategic Marketing*, 19(7), 555–573
- Holloway, I., and Wheeler, S. 2002. *Qualitative Research in Nursing and Healthcare*. New York: John Wiley & Sons
- Jang, H., Olfman, L., Ko, I., Koh, J. and Kim, K. 2008. 'The influence of on-line brand community characteristics on community commitment and brand loyalty', *International Journal of Electronic Commerce*, 12(3), 57–80
- Katz, I. 2012. 'Tim Berners-Lee: demand your data from Google and Facebook', *The Guardian* [London], viewed 22 March 2015, from <http://www.theguardian.com/technology/2012/apr/18/tim-berners-lee-google-facebook>
- Kitchin, R. 2014. 'Big Data, new epistemologies and paradigm shifts', *Big Data & Society*, April–June, 1–12
- Kotorov, R., 2014. *The Disadvantages of Data Discovery*, viewed 12 March 2015, from <http://www.informationbuilders.com/blog/rado-kotorov/17854>
- Laney, D. 2001. Controlling data Volume, Velocity and Variety, viewed 21 February 2015, from <http://blogs.gartner.com/doug-laney/files/2012/01/ad949-3D-Data-Management-Controlling-Data-Volume-Velocity-and-Variety.pdf>
- Lemieux, V., Gormly, B., and Rowledge, L. 2014. 'Meeting Big Data challenges with visual analytics', *Records Management Journal*, 24(2), 122–141
- Leventhal, B. 2010. 'An introduction to data mining and other techniques for advanced analytics', *Journal of Direct, Data and Digital Marketing Practice*, 12, 137–153
- Lincoln, Y., and Guba, E. 1985. *Naturalistic inquiry*. Newbury Park, CA: Sage Publications
- Lusch, R., and Vargo, S. 'S–D logic: accommodating, integrating, transdisciplinary', *Presentation at the Grand Service Challenge*. University of Cambridge, 2010.
- Lycett, M., 2013. 'Datafication: Making sense of Big Data in a complex world', *European Journal of Information Systems*, 22(4), 381–386

Markus, L. 2015. 'New games, new rules, new scoreboards: the potential consequences of big data', *Journal of Information Technology*, 2015(30), 58–59

Marshall, C., and Rossman, G. 1995. *Designing Qualitative Research* (2nd edition). Thousand Oaks, London and New Delhi: Sage Publications

Mayer-Schönberger, V., and Cukier, K. 2013. *Big Data: A Revolution That Will Transform How We Live, Work and Think*. Houghton Mifflin Harcourt, Boston

McKinsey and Company. 2013. *Big Data, Analytics, and the Future of Marketing and Sales*. McKinsey and Company. New York.

McGuire, T., 2013. Making data analytics work: Three key challenges viewed March 2, 2015 from http://www.mckinsey.com/insights/business_technology/making_data_analytics_work

Miles, M., Huberman, A., and Saldana, J. 2013. *Qualitative Data Analysis*. Thousand Oaks, London and New Delhi: Sage Publications

Miller, J. 2010. 'The data avalanche is here. Shouldn't we be digging?', *Journal of Regional Science*, 50(1), 181–201

Mollen, A., and Wilson, H. 2010. 'Engagement, telepresence and interactivity in online consumer experience: reconciling scholastic and managerial perspectives', *Journal of Business Research*, 63, 919–25

Moolla, A., 2010. 'A conceptual framework to measure brand loyalty', PhD Thesis, Faculty of Arts, North-West University, South Africa

Morgan, R., and Hunt, S. 1994. 'The commitment–trust theory of relationship marketing', *Journal of Marketing*, 58(3), 20–38

Moorthy, J., Lahiri, R., Biswas, N., Sanyal, D., Ranjan, J., Nanath, K., and Ghosh, P. 2015. 'Big Data: Prospects and Challenges', *Vikalpa: The Journal for Decision Makers*, 40(1), 74-96

Mouton, J., and Babbie, E. 2000. *The practice of social research*. Cape Town: Oxford University Press.

Munhall, P. 2007: *Nursing Research: A qualitative perspective*. 4th ed. Boston: Jones and Bartlett Publishers.

Oliver, M., and Vayre, J.S. 2015. 'Big data and the future of knowledge production in marketing research: Ethics, digital traces, and abductive reasoning', *Journal of Marketing Analytics*, 2 March, 1-9

Osei-Bryson, K., and Rayward-Smith, V. 2009. 'Data mining and operational research: techniques and applications', *Journal of the Operational Research Society*, 60, 1043–1044

Parahoo, K. 1997. *Nursing Research: Principles, Process, Issues*. London: Macmillan.

Patil, R. 2014. Supermarket Giant Tesco pioneers Big Data: Turning Customer Loyalty into Royalties , viewed 18 May 2015, from <http://dataconomy.com/tesco-pioneers-big-data/>

Patterson, P., Yu, T., and de Ruyter, K. 'Understanding customer engagement in services. Advancing theory, maintaining relevance', *proceedings of ANZMAC 2006 conference*, Brisbane; 2006. 4–6 December

Patton, M. 2002. *Qualitative research and evaluation methods* (3rd ed.). Thousand Oaks, CA: Sage

Polit, D., and Hungler, B. 1997: *Essentials of nursing research; Methods, appraisals and utilization*. Philadelphia. J.B. Lippincott Company.

Polit, D., Beck, C., Hungler, B. 2001. *Essentials of Nursing Research: Methods, Appraisal, and Utilisation* (5th edn). Philadelphia: Lippincott

Power, D., 2014. 'Using 'Big Data' for analytics and decision support', *Journal of Decision Systems*, 2014(23.2), 222-228

Prahalad, C., and Ramaswamy, V. 2004. 'Co-creation experiences: the next practice in value creation', *Journal of Interactive Marketing*, 18(3), 5–14

Rajasekar, S., Philominathan, P., and Chinnathambi, V. 2013. *Research Methodology*, viewed 18 May 2015, from <http://arxiv.org/pdf/physics/0601009.pdf>

- Roulston, K. 2008. 'Probes and Probing', in Given, L. *The Sage Encyclopedia of Qualitative Research Methods*, Thousand Oaks, Sage Publications.
- Schultz, D. 2014. 'Dead or Dying: The demise of irrational loyalty thinking', *Marketing Insights*, November/December (2014), 14-15
- Shaw, J., 2014. 'Why "Big Data" Is a Big Deal', *Harvard Magazine*, March-April, 30-35, 74-75
- Shenton, A. 2004. 'Strategies for ensuring trustworthiness in qualitative research projects', *Education for Information*, 22(2004), 63–75
- Solomon, M., 2003. *Consumer behaviour. 6th ed.* New York, N.Y.: Prentice-Hall.
- Strauss, A., & Corbin, J. 1990. *Basics of qualitative research: Grounded theory procedures and techniques*. Newbury Park, CA: Sage.
- Strauss, A.. and Corbin, J. 1994. 'Grounded Theory Methodology', in Denzin, N., and Lincoln, Y., (Eds.), *Handbook of Qualitative Research*. Thousand Oaks, Sage Publications.
- Strauss, A., & Corbin, J. 1998. *Basics of qualitative research: Techniques and procedures for developing grounded theory* (2nd ed.). Thousand Oaks, CA: Sage
- Strong, C. 2014. 'The challenge of "Big Data": What does it mean for the qualitative research industry?', *Qualitative Market Research: An International Journal*, 17(4), 336-342
- Strydom, H. 2002. 'The pilot study', in De Vos, A., Strydom, H., Fouché, C., & Delport, C. 2002. *Research at Grass Roots For the Social Sciences and Human Service Professions*. 2nd ed. Pretoria: Van Schaik Publishers
- Stuart-Ward, J., and Barker, A., 2013. 'Undefined By Data: A Survey of Big Data Definitions'. School of Computer Science, University of St Andrews, UK.
- Uncles, M., Dowling, D., and Hammond, K. 2003. 'Customer loyalty and customer loyalty programs', *Journal of Consumer Marketing*, 20(4), 294-316
- Van Doorn, J., Lemon, K., Mittal, V., Nab, S., Pick, D., Pirner, P., Verhoef, P. 2010. 'Customer Engagement Behavior: Theoretical Foundations and Research Directions', *Journal of Service Research*, 13(3), 253–266

Vargo, S., and Lusch, R. 2008, 'Service-dominant Logic: Continuing the Evolution', *Journal of the Academy of Marketing Science*, 36(1), 1–10

Vivek, S., Beatty, S., Morgan, R. 2012. 'Customer Engagement: Exploring customer relationships beyond purchase', *Journal of Marketing Theory and Practice*, 20(2), 127–145

Weill, P., and Woerner, S., 2013. *The Next-Generation Enterprise: Thriving in an increasingly digital ecosystem*. Center for Information Systems Research, Sloan School of Management, Cambridge, MA: Massachusetts Institute of Technology. Research Briefing, April, 13(4)

Wellman, B., and Gulia, M., 1999. 'Net-surfers don't ride alone: virtual communities as communities', in Wellman, B. (Ed.), *Networks in the Global Village: Life in Contemporary Communities*, Westview, Boulder, CO

Wirtz, J., den Ambtman, A., Bloemer, J., Horváth, C., Ramaseshan, B., van de Klundert, J., & Kandampully, J. 2013. 'Managing brands and customer engagement in online brand communities', *Journal of Service Management*, 24(3), 223-244

Woerner, S., and Wixom, B., 2015., 'Big data: extending the business strategy toolbox', *Journal of Information Technology*, 2015(30), 60–62

Wren, C. 2015. *Using Big Data To Shape Brand Experiences*, viewed Feb 15, 2015 from <http://www.brandingstrategyinsider.com/2014/10/using-big-data-to-shape-brand-experiences.html#.VPsyyPmUeSr>

Wright, C., and Sparks, L. 1999. 'Loyalty saturation in retailing: exploring the end of retail loyalty cards?', *International Journal of Retail & Distribution Management*, 27(10), 429-440

Yoo, Y. 2015. 'It is not about size: a further thought on big data', *Journal of Information Technology*, 2015(30), 63–65

Yoo, Y. 2012. 'The Tables Have Turned: How can the information systems field contribute to technology and innovation management research?' *Journal of Association of Information Systems* 14(5), 227–236