Title: The use of big data in marketing: An emerging market financial services industry perspective

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Abstract

As a result of the competitive nature of financial services, this industry is positioned to leverage big data to gain a competitive advantage. The financial services industry, in South Africa and in emerging markets, has been known not to leverage big data optimally. Creating personalized customer relationships through big data has been found to be a source of competitive advantage. This study aims to identify the extent to which big data is used in a financial institution. This will be done from a marketing perspective, using a model developed by Byrom, Bennison, Hernandez and Hooper (2001, p.336). Qualitative research was conducted, including in-depth personal interviews with marketers in the financial services industry. The Morse and Field approach was used for data analysis. Findings indicated that although big data was being utilized, it was not optimally exploited. The study identified gaps in the usage of big data for marketing decision making.

Key words: Big data, Business intelligence, Marketing, Financial services, Customer intelligence, qualitative research

1. Introduction

The importance of data within an organization cannot be disputed, as it can become indispensable information once transformed. This information can then be used by organizations to develop strategic initiatives and develop a competitive advantage (Allemann, 2016; Deloitte, 2013; Lee, Lee & Sohn, 2012, p.1565). The growth in digital information has led to the development of "big data", which refers to the pool of resources that enables an organization to extract value from both structured and unstructured data and represents a source for organizations to approach their customers strategically (Arthur, 2013; A.T. Kearney Analysis, 2013; Dumbil, 2012;

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Parise, Iyer & Vesset, 2012, p.1). Big data is needed in the financial services industry, as it will allow for increased customer customization, satisfaction, and ultimately greater profits. Yet, the South African financial services industry has not taken up the opportunity that big data provides even though nearly 65% of customers indicated they are willing to share their data with their financial services provider (IT-online, 2018; WARC, 2017; Allemann, 2016). Big data is specifically useful to marketing departments, as it can lead to improved decision making with regard to customer acquisition, customer engagement, customer retention and loyalty. In turn, this leads to marketing and business optimization and improved performance (IT online, 2018; Hasan & Dutcher, 2012).

It was found that 90% of organizations' data remains inert and underutilized and that South African banks especially need to utilize big data more effectively to become profitable (Gibson, 2017; Bose, 2009, p.160) state that 90% of an organizations' data remains inert and underutilized. What is currently being missed is an opportunity for organizations to benefit from big data, which can lead to an increase in their triple bottom line and can increase profitability by at least 6% (Haile, 2013). Organizations that use big data effectively have shown at least a 4% increase in productivity and profits (McKinsey & Company, 2013; Skomoroch, 2011). The financial services industry in South Africa has lagged in exploiting big data and needs to identify how to leverage its benefits. This industry does not yet understand the positive impact big data brings to an organization (Haile, 2013; Pearson & Sundarrajan, 2013, p.3, Wright, 2013).

2. Literature Review

2.1 The evolution of data

The initial phase of the evolution of data commenced with the transactional data phase in the 1970s and 1980s – also known as the data generation and storage phase. Data warehousing was established during this phase, as millions of transactions were processed daily and stored in a database where patterns were identified in the data (Castelein, 2012; Parise et al., 2012, p.1). Transactional data was generated from a single source such as credit card transactions and point-of-sale data. The

transactional data was used to provide organizations with records of the current operational state of the organization by producing structured data such as market share (Meer, 2013; Pauly, 2012). Bose (2009, p.156) states that from 1990 onwards (the relational phase), data usage evolved into business intelligence. During the relational phase, the aim was to improve organizational performance by providing the right information at the right time, to the right people. Data evolved even further in the early 2000s into the third phase called the "data driven era" or "big data era".

The term "big data" refers to the ability to extract value from a variety of data which could be structured (e.g. transactional data) or unstructured (e.g. customer trend analysis and anticipated consumer behavior, customer complaints, click-through rates and information provided by customers on social media) and convert this data into business information (Arthur, 2013; Davenport, 2013; A.T. Kearney Analysis, 2013; Dumbill, 2012). Big data can be utilized across functional areas of an organization, however its specific value lies in its usefulness to the marketing department. Customer information collected by the marketing department used in conjunction with big data obtained from the finance and operational departments provides an organization with the opportunity to make optimal strategic decisions (SAS, 2014). This is of particular value within the finance industry as indicated in Figure 1 where all the areas of big data are presented.

Figure 1: A breakdown of the term big data within the financial services industry.
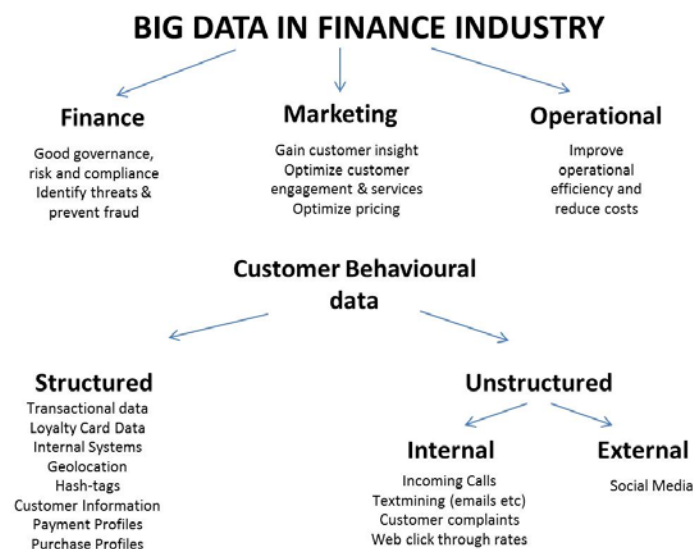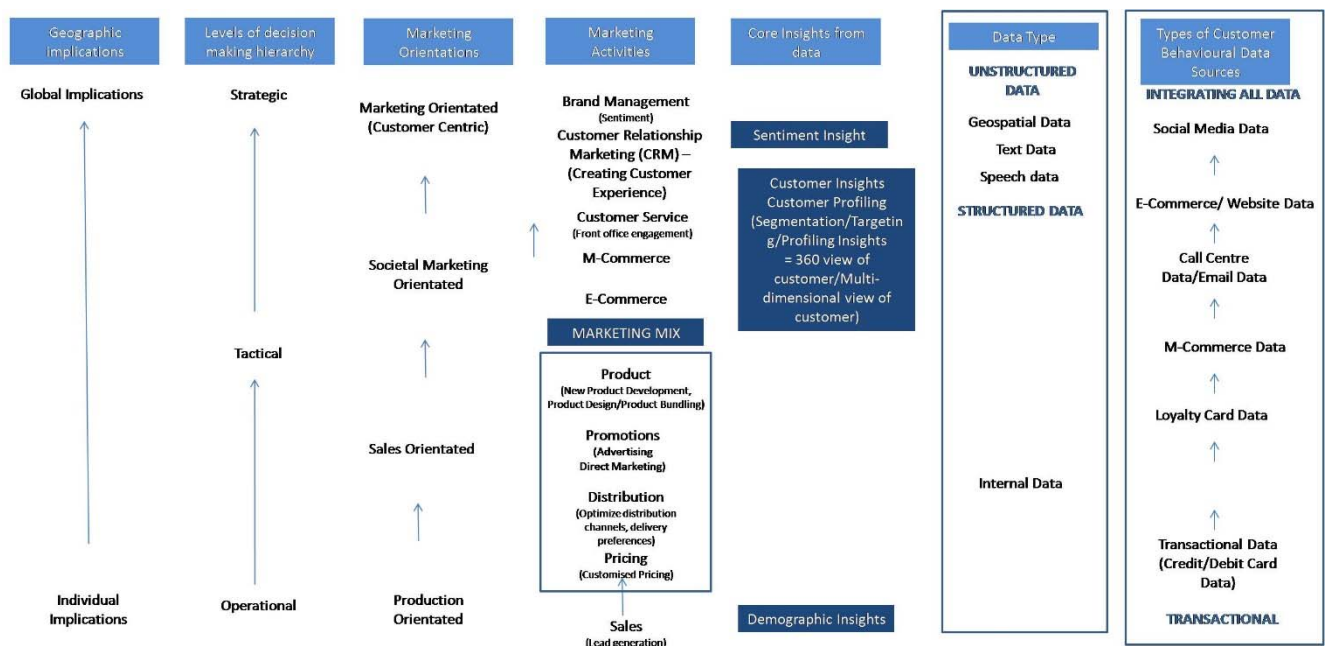

Source: Adapted from HP (2013).

Big data is valuable to a marketing department as it allows for the development of relationships with individual customers. It allows marketers to identify patterns in consumers' behavior which can assist in anticipating and reacting to their needs (Rometty, 2013) and assist in customer acquisition, retention and engagement which can ultimately result in increased organizational revenue (Mackintosh, 2014, SAS, 2014). Although executives understand the need for the use of big data for increasing profits, less than a quarter of them believe their organization makes effective use of big data (IT-online, 2018).

Byrom et al. (2001, p.336) have developed a model depicting the types of big data that organizations can use. However, this model does not consider the use of big data from a marketing perspective, nor does it include the modern marketing methods of gathering data which have been made possible by social media, for example. Although various other models exist, an adapted model has been developed for the study which draws on Byrom et al.'s (2001, p.336) model as it is the most comprehensive, as well as on the marketing aspects of big data within the financial services industry (Figure 2).

Figure 2: The use of big data in the financial industry from a marketing perspective.

Source: Adapted from Byrom et al. (2001, p.336).

1.2 The use of big data in the financial industry from a marketing perspective

Central to the model developed for the study (Figure 2) is the integration of big data from various sources, with the aim of gathering marketing intelligence and actionable insights and strategies within the organization. What follows is a discussion on each data source:

- Transactional data

  There is a vast amount of transactional data available for use by marketers. For example, there are over 1.9 billion MasterCard credit cards in circulation worldwide, and these are used to enact over 65 billion transactions per year. Transactional data is traditionally the first data source that marketers consider (Poyser, 2014). By combining this data with customers' demographic data, marketers will be able to improve their direct marketing campaigns (a main marketing strategy in the financial services industry). This will be effected by gaining a 360 degree real-time view of the customer based on their retail and online spending habits (Wallace, 2014).

- Intelligence from loyalty cards

  Loyalty cards were designed not only to provide customers with discounts or rewards, but to provide organizations with data and knowledge about their customers, however, organizations have not been able to leverage this data effectively (Schumarzo, 2012). The loyalty levels of customers in the financial services industry has decreased steadily from 2007, indicating that the loyalty schemes developed by the financial services industry has not been effective (PWC, 2011, p.11). Yet, Poyser (2014) states that organizations which have embraced the insights provided by loyalty card data have been able to develop lasting customer relationships and increase their revenue. Combining information obtained from loyalty cards and transactional data, organizations are able to reward customers based on their purchases (IT-online, 2018; Capgemini Consulting, 2014, p.9).

- Internal data

  Over 50% of financial services organizations indicated that internal data was their primary source of big data. Yet, there is still a range of internal data not utilized

effectively (Allemann, 2016, Palmer, 2013). KPMG (2013) identified that marketers mainly use internal information such as call center conversations for identifying key phrases that can assist in providing solutions for customer complaints. The main benefit of internal data lies in combining it with other big data sources in order to increase up-selling, reduce customer churn, and improve customer retention strategies (Kumar, 2014 & Bharal & Halfon, 2013, p.8).

- External data

Data sources such as government data and industry data have become more prevalent in the South African emerging market. Using big data effectively requires combining real-time data from internal data, loyalty card data and transactional data with external data about the industry or the economy (KPMG, 2014, p.15).

- E-commerce data

E-commerce data refers to any data originating from a website used to facilitate the sale of services or products online (Kotler & Keller, 2012, p.460). Customers, even in emerging markets, spend time on the Internet, and they leave a legible trail of information (Hazan & Banfi, 2013). An observable trend is that customers are choosing more convenient ways of purchasing, or are looking for better deals on the internet rather than developing a relationship with their local provider (Gutierrez, 2014, p.9). This means that financial services organizations need to evolve from broad-based marketing to more effective digital marketing. Using E-commerce data as big data in advertising campaigns, for example, allows organizations to measure an audience response to advertisements by monitoring click rates (Hazan & Banfi, 2013). Organizations are able to develop a customer profile based on a customer's web history use (Breur, 2011, p.101). Salkowitz (2014, p.10) states that E-commerce data allows organizations to identify customers' buying cycle and buying preferences. Specifically, the financial services industry can use e-commerce data to refine their website content and increase customer engagement (Capgemini Consulting, 2014, p.6). By combining e-commerce data and other data sources, marketers can customize a web experience (Bharal & Halfon, 2013, p.8).

- Mobile commerce data

Mobile data refers to any data generated from a mobile device. This data will be a main source of big data for organizations during the next decade (Zhang and Chng,

2014). The trend of the "cashless society" has led to the next generation of e-commerce, namely, m-commerce. Customers can easily use their smartphone to find a bank branch, or conduct Internet banking (Oanda, 2013). The data obtained from m-commerce can include sources such as location, travel patterns, as well as the time that customers spend interacting with organizations during the day (Salkowitz, 2014, p.10). The financial services industry can increase mobile engagement through an effectively structured reward program, and this would give rise to stronger relationships through customization (Poyser, 2014).

- Social media data

  Chikandiwa and Contoglannis (2013, p.365) assert that social media is a valuable tool to develop customer relationships. Social media provides a platform for customers to reveal their social connections and brand sentiment, which is a beneficial source of big data (Salkowitz, 2014, p.10). McKee (2012) states that social media allows for marketers to analyze customers' conversations and identify areas for product and service improvement.

1.3 Effective decision making using big data

Using big data effectively from a strategic management point of view, and not only from an operational perspective, will lead to organizations being more customer centric, competitive and having increased revenues. Utilizing big data from a strategic perspective requires enhanced personalization and customer targeting (Allemann, 2016). Given this, it is surprising that only 11% of organizations indicate that they use big data for decision making (IDG Connect, 2013). The main reason for not effectively utilizing big data is a lack of employees who are trained in data mining and statistical analysis (Allemann, 2016; Deloitte, 2013). In addition, a lack of technology and the high cost of data analysis programs also leads to a low adoption of big data (Lee et al., 2012, p.1565). The Protection of Personal Information Act (POPI) in South Africa and the privacy laws can also have also resulted in many organizations being skeptical about collecting data (Fowler, Pitta & Leventhal, 2013, p.512). Although these factors have led to a low adoption of the use of big data by organizations, the benefits of effectively and correctly using and collecting big data such as increased profits, customer relationships and competitiveness outweighs the drawbacks (Haile, 2013; Pearson & Sundarrajan, 2013, p.3, Wright, 2013).

3. Problem Statement

Research has shown that the effective implementation of big data leads to organizations becoming 4% more productive, gaining deeper insight into their customers, and obtaining a 6% increase in profits (McKinsey & Company, 2013; Nevill, 2012; Rao, 2013). However, organizations often have too much data and not enough information (Lee et al., 2012, p.1565), leading to big data remaining underutilized (Duffy, 2014; Wegener & Sinha, 2013).

Allemann (2016) Pearson and Sundarrajan (2013, p.3) state that the financial services industry has started utilizing big data, but has been unable to access the benefits of effectively using big data. This industry has the most to gain from the use of big data as it is able to generate higher volumes of data than any other industry (IT-online, 2018; SAS, 2014). Big data is therefore the greatest untapped marketing asset in the financial services industry (Gibson, 2017; Duffy, 2014). It can assist the financial services industry to become customer centric, which is essential to remaining competitive (Wagle, 2013). The industry is in the top 6 industries which have lost 12% of revenue due to unleveraged data and unexploited opportunities in brand sentiment analysis and transforming customer experiences (Oracle, 2012). Therefore, it is necessary to identify, from a marketing perspective, how to leverage big data. Although big data has been well researched within the contexts of developed countries, limited research has been conducted on an emerging market, specifically South Africa.

Based on the aforementioned, it can be asserted that big data can yield major benefits for organizations, for example increasing their profits and customer retention and improving their strategic decision making *(SAS, 2014; Kerwin, 2013). However, South African companies, specifically in the financial services industry, are known for not using big data (Harris, 2013). This can lead to a loss of competitive advantage and poor customer relationships with are necessary for success in an emerging economy (Allemann, 2016; Gutierrez, 2014:10; PWC, 2013). However, within South Africa it is currently lagging behind (Gibson, 2017; PWC, 2013). By leveraging global best practice and big data, South African financial services organizations will be able to*

differentiate themselves and implement local strategies that support local South
African communities (PWC, 2013; Wronski, 2014).

4. Objectives and propositions

The primary objective of this study is to investigate the extent to which a financial services institution in South Africa uses big data from a marketing perspective.

To reach the primary objective the following propositions were developed for the study:

Proposition A: The financial services institution uses big data in its B-2-B marketing.

Proposition B: The financial services institution uses big data in its B-2-C marketing.

Proposition C: The financial services institution uses various data sources.

Proposition D: The financial services institution integrates data sources from the various marketing disciplines to better understand its customers.

Proposition E: The financial services institution uses big data to glean consumer insights.

Proposition F: The financial services institution uses various customer insights within the various marketing disciplines/activities.

Proposition G: The financial services institution uses big data from a market orientation.

Proposition H: The financial services institution uses big data to make decisions

5. Research methodology

The research method employed in this study requires in-depth rich data to illuminate the topic of big data usage, specifically within a financial services institution within South Africa from a marketing perspective. The model adapted from Byrom et al. (2001, p.336), as illustrated in Figure 2, was used to determine the level of big data usage for marketing decision making and business strategies. A qualitative, exploratory research design was used to acquire the understanding needed (Hair, Celsi, Ortinau & Bush, 2017, p.79) from a South African financial services industry. A case study approach was utilized since it is suggested by Cooper and Schindler (2011, p.182) that this is best when the researcher selects a specific organization to research. This method requires that participants share their experiences related to the topic at

hand. Data was collected through in-depth personal interviews lasting no longer than 50 minutes with marketing managers and other individuals dealing with data and big data within the financial services organization, as well as with secondary data, which is information that already exists (Wild & Diggines, 2013, p.74). The population under investigation includes all employees within the financial institution working with big data from a marketing perspective. The sampling elements included employees working across marketing fields (rewards programs, social media, customer relation management, e-commerce) in various positions (marketing managers, senior brand managers, e-commerce managers, digital managers, brand managers, marketing assistants) as well as members of the IT department who gather and prepare the data (business and systems managers, analysts). Snowball sampling was used to identify a set of initial respondents who could in turn identify other potential respondents (Hair et al., 2017, p.147). Onwuegbuzie and Leech (2007, p.116) suggest that a sample size of between 6 and 12 people is sufficient for a case study approach. A discussion guide was constructed based on the themes and data sources mentioned in the model (refer to Figure 2). The respondents were required to answer a screening question, which served as a protocol in order to ensure that the respondents did have enough knowledge of the topic at hand. Each interview was recorded and transcribed, and sent back to the respondents for their confirmation that nothing was misinterpreted.

Consent was obtained for all respondents being interviewed, and a confidentiality agreement was signed, assuring them that the researcher understands the sensitivity around big data and its ability to provide a competitive advantage. Hence, no reference will be made to the specific institution or to respondents who participated in the study.

Data was analyzed through content analysis, which, according to Hair et al. (2017, p.89), "requires the researcher to implement a systematic procedure of taking individual responses and categorizing them in to a larger themed categories or patterns, simplifying according to rules derived from existing theory". Hence the discussion guide was structured around themes identified in Figure 2. Data was analyzed using the four cognitive processes of the Morse and Field approach, namely comprehending, synthesizing, theorizing and decontextualizing (De Vos, 1998, p.340-341; Morse, 1994, p.25). During comprehension, the researcher transcribes, checks, corrects and codes data to write a complete, detailed, coherent and rich description.

Synthesizing requires inter-participant analysis and comparison analysis, which allows the researcher to combine, interpret, link, see relationships, speculate and verify findings (Elo & Kyngas, 2007, p.112). Theorizing refers to fitting alternative models to the data and constructing alternative explanations until the best fit is obtained. Decontextualizing requires developing emerging theory so that the theory is applicable to other settings (Galli, 2009, p.74, Morse, 1994, p.34).

To assess the quality of the research, credibility/authenticity (through triangulation), transferability (by using an original theoretical framework developed by Bryom et al, 2001, p.336), dependability (by asking a co-worker to verify the results) and confirmability (by getting approval of the data from the financial services organization involved) (De Vos, Strydom, Fouche & Delport, 2011, p.420; Elo, Kaariainen, Kanste, Polkki, Utriainen & Kyngas, 2014, p.2) were utilized.

For this research, three interpretation categories and seven subcategories were identified from the in-depth interviews, as indicated in Table 1, with specific quotes from various participants for each category provided in Appendix A.

Table 1: Interpretation categories and subcategories for research results.

	Interpretation subcategory (a)	Interpretation subcategory (b)	Interpretation subcategory (c)
Interpretation category 1: Big data in a financial services institution	1(a). Characteristic of the term big data in the financial services institution	1(b). Data sources used in the financial services institution	1(c). Integration amongst data sources
Interpretation category 2: The usage of data from a B-2-B and B-2-C marketing perspective	2(a). Consumer insight gleaned from data	2(b). Implementation of consumer insights	
Interpretation category 3: The impact of big data on the financial services institution	3(a). Data driving change in organizational structure of the analytics department	3(b). Big data impacting decision making	

Source: authors own construct

6. Discussion of findings and recommendations

The findings for Interpretation category 1 (big data in a financial services institution) lead to the identification of three subcategories. Respondents indicated that the characteristics of the term big data in the financial services institution (subcategory 1a) are that big data includes a variety of data sources, adds value and can be structured or unstructured as well as external or internal. In addition, respondents indicated that big data should always be used ethically across marketing disciplines, without contravening any privacy laws. The results from data sources that the financial institution uses (subcategory 1b) indicates that respondents were able to identify seven data sources that were used, including customer data, transactional data, external data, loyalty data, e-commerce data, social media data and mobile data. Specifically, the following was identified:

- Customer-based data is considered a primary internal source
- Transactional data is widely used, but with caution
- There is a limited use of external data
- Loyalty data forms part of transactional and internal data
- E-commerce data has a promising outlook
- Social media data is used at a basic level but has huge potential
- Mobile data is used to a small degree but has huge potential

Subcategory 1c considered how data sources were integrated in the financial institution in order to develop deeper customer insights. Results indicate that in most cases, data was housed independently, resulting in fewer departments being able to use the data although all respondents indicated that integrating sources is an important task.

Interpretation category 2 looks specifically at the usage of data from a B-2-B and a B-2-C marketing perspective. Participants indicated that big data needs to be used to understand the customer (B-2-B customer), how they behave, and how to drive them towards online platforms (Consumer insights obtained from data – subcategory 2a). The financial institution used the loyalty reward program to reward customers with both brick and mortar and online behavior. In addition, big data is used to identify "nano

customer segments" or small groups of customers with unique needs. The implementation of consumer insights (subcategory 2b) presents the results which reflect how participants believe the consumer insights are being used within the organization. The participants indicated that data is used differently by different disciplines within marketing. As different marketing messages are used for various phases in the customer life cycle, personalized messages can be created through the use of big data, which in turn can enrich the relationship with the customer.

Interpretation category 3 identified how big data is impacting the financial services institution. Two subcategories were identified. Subcategory 3a (big data driving change in organizational structure of analytics department) generated a variety of responses from participants. Some were of the opinion that a centralized analytics department should be used across the organization, while others were of the opinion that the analytics department should be decentralized. One participant summarized the debate by stating that even though the organization has a decentralized analytics department, analytics is becoming more important to the executives, and the strategy of the organization is to drive analytics. For this reason, big data is becoming more important – specifically the matter of how to process it. Subcategory 3b (big data impacting decision making) showed that participants agreed that data is critical in decision making, but not all participants use the available data. The use of big data is dependent on the person championing data usage, and on whether they see the value in it. Participants indicated that in some cases, intuition and not data should drive decision-making.

Table 2 summarizes the findings based on the propositions set for the study, while Figure 3 presents an overview of the model based on the findings of the study.

Table 2: Summary of the findings per proposition set for the study

Proposition	Proposition result
A: The financial services institution uses big data in its B-2-B marketing.	**Partially supported:** 2 out of the 8 participants use big data from a B-2-B perspective.
B: The financial services institution uses big data in its B-2-C marketing.	**Fully supported:** Big data is mainly used within the organization use data from a B-2-C perspective.
C: The financial services institution uses various data sources.	**Fully supported:** The institution only uses 2 data sources comprehensively, with the other 5 sources being used as supportive data sources, with the aim that they will be used more extensively in the future.
D: The financial services institution integrates data sources from the various marketing disciplines to better understand its customers.	**Partially supported:** All participants agreed to the importance of the integration of data integration to better understand the customer, however only partial integration has occurred.
E: The financial services institution uses data to glean consumer insights.	**Fully supported:** Data is mainly used for segmentation and profiling insights but there are still gaps for using data for sentiment insights.
F: The financial services institution uses various customer insights within the various marketing disciplines/activities.	**Fully supported:** All marketing activities are heavily reliant on big data, with direct marketing and customer relationship management being the most dependent, with room for growth in other areas.
G: The financial services institution uses data from a market orientation.	**Fully supported:** The institution asserts that they only use data to add value to their customer's lives. It is for this reason the institution is considered to have a market orientation.
H: The financial services institution uses data to make decisions.	**Partially supported:** All marketing disciplines are highly dependent on data, but only to make decisions on an operational and tactical level, leaving room for growth in the future to drive more strategic decision making.

Source: authors own construct

Figure 3: Summary of results using the big data model
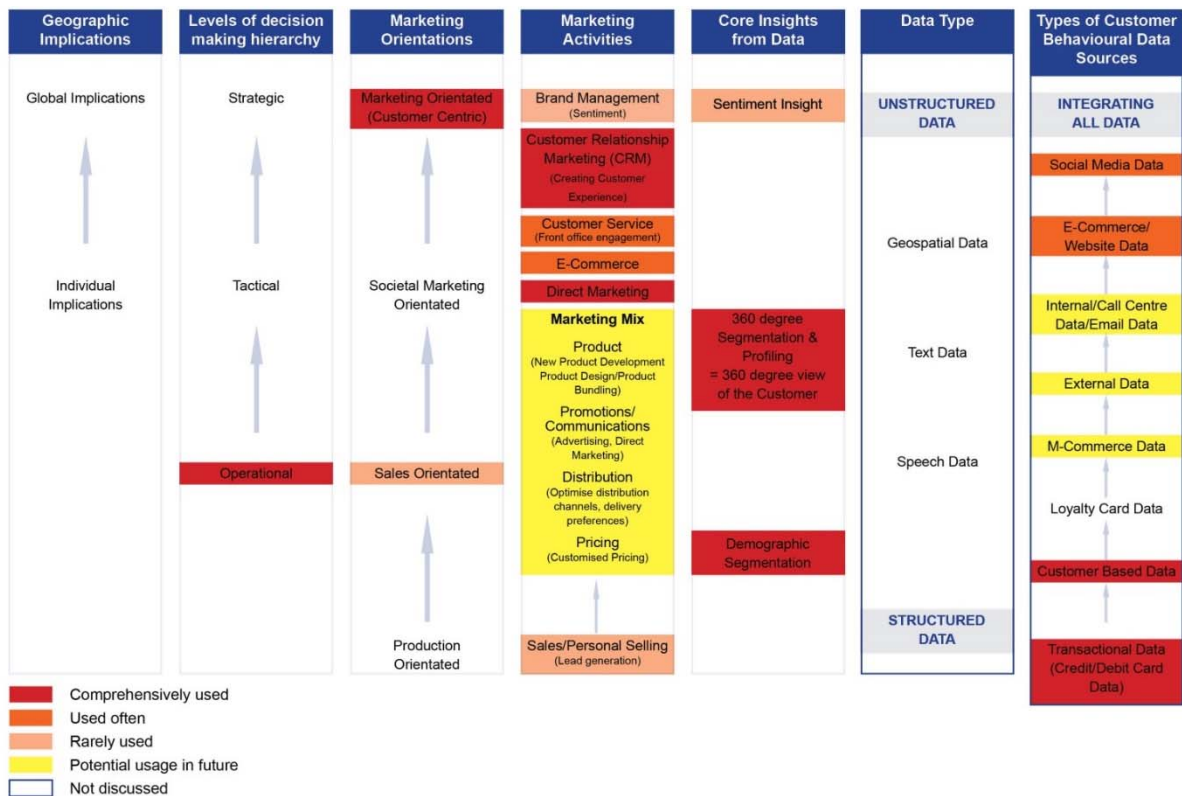
Source: Authors own construct

From these results, the main recommendations include:

- The financial services institution should focus on using big data from a B-2-B perspective and realize that the data is used differently from a B-2-B compared to a B-2-C perspective.

- The loyalty program should better incentivize the B-2-B customer. For instance, free entrance into business-related seminars could be offered.

- All marketing disciplines should integrate with the e-commerce division.

- Social media data should be integrated with the customer data base using predictive modelling.

- The decentralized analytics team members of each department should meet on a regular basis and share data and information.

- All employees in analytics should be sent on regular statistical and analytical courses to keep their skills updated on new techniques and technologies.

- By sharing information and data from various sources and disciplines within the organization, deeper sentiment insights can be gained, specifically by using social media data.

- The organization should invest in new technologies and software, such as predictive analytics, which will allow marketers to use historic data to be used to predict future trends.

- The adapted model used in this study should be provided to marketers and users of data within the organization so that they can understand where potential opportunities for better utilizing big data within the organization lies.

7. Conclusion

This study has concentrated on the use of big data from a marketing perspective within a specific financial services organization. Although the findings reveal that big data sources are being used at different levels of the organization, there is an opportunity for the organization to use big data more effectively. This will assist in increasing profits, customer retention and loyalty. The study fills a gap in the study of big data within an emerging market, namely South Africa, where limited research on big data has been conducted. The study provides an adapted model of big data usage, which other organizations can use to determine their levels of big data usage.

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APPENDIX A: QUOTES FROM PARTICIPANTS FOR EACH INTERPRETATION CATEGORY

Interpretation category 1:	Big data in a financial services institution
Subcategory 1(a) Characteristic of the term big data in the financial services institution	• "I'm referring to the four 'V's', a **large amount** of high **volume** data transferred at high **speeds** and **velocity** … contains variety of facts …. it's **veracity** and complexity" – Respondent A • "Make sure that **data integrity** is important, you have to have clean data" – Respondent A • "… monitor behaviour in **real-time**" – Respondent B • "It is a **huge amount** of data which is absolutely growing" – Respondent C • "It is important from a marketing perspective you use data to **add value**" – Respondent D • "Data is hugely **personal** ... use it in a way that doesn't infringe on the customer, in a **non-invasive** way" – Respondent D • "There is a fine line between being intrusive and contravening CPA" – Respondent E • "**Real-time** is important for me now" – Respondent H
Subcategory 1(b) Data sources used in the financial services institution	• "In the financial services industry we have access to customer, product and **transactional** information" – Respondent A • "The main source of external data would be credit bureaus and **government** institutions… there are secondary sources available, but arguably ethics becomes a problem" – Respondent A • "We use social media data from a B-2-B space for either selling or operations, however there is a whole **department** that deals with it" – Respondent A • "It's all data around the **customer**, what he has done, what he holds" – Respondent C

	- "I might leverage loyalty data now and again, but there is a rewards department who has their own loyalty engine" – Respondent C
	- "**Increasingly we are using** mobile data because what mobile does is it opens up location and mobility, its certainly a big focus area" – Respondent C
	- "I use social media data in how we report on social media… I work with the **team** that manages it" – Respondent D
	- "The main source of data is our **customer** base" – Respondent E
	- "We don't personally use e-commerce data, we have a **department** that looks at that" – Respondent E
	- "We don't really use it, we have outside teams that do **research** for us" – Respondent H
	- "The largest section of our data is **transactional**" – Respondent F
	- "We haven't touched on e-commerce data yet, but it is something we are **looking at moving** to" – Respondent G
	- "In my role we are still at a very **low level of maturity** in utilizing social media data" – Respondent G
	- "We are **hoping** to use mobile data but we aren't yet at this stage" – Respondent G
	- "Data used is **customer** data, so all their **demographics** and information" – Respondent H
Subcategory 1(c) Integration amongst data sources	- "**External** is completely integrated, there is even a feedback loop, but **internally** are housed independently" – Respondent A
	- "The integration of data is a bit of a journey, it **can never be fully integrated**" – Respondent B
	- "It is **extremely important** to integrate, although it can be quite **complex**" – Respondent G

Interpretation category 2: The usage of data from a B-2-B and B-2-C marketing perspective	
Subcategory 2(a) Consumer insight gleaned from data	• "We use the data for **behaviour changing activities**… the patterns we see are behavioural characteristics" – Respondent B • "Get a **single** view of the customer, a more **holistic** customer point of view" – Respondent C • "From a B-2-C level we use data to look at **customer behaviour**… with B-2-C there is already a lot of work that has been done in this regard" – Respondent D • "We try to move our customers from **face-to-face**, face-to-phone, to **digital**, do it yourself" – Respondent E • "Use data to try put customer into groups and see if we get similar characteristics across all to have better **target groups**" – Respondent H
Subcategory 2(b) Implementation of consumer insights	• "Identifying where the customer is in their **lifecycle** with us… leveraging off data to see what products and services we have to make that relationship that much better" – Respondent A • "Whether it is B-2-B or B-2-C, data helps us **tailor** communications… the biggest thing I look at is **relevance**" – Respondent D • "Our initiative is to go towards a **direct marketing** approach" – Respondent E • "It is essentially increasing customer loyalty which means you are **entrenching** the customer, increasing the **value** of each customer" – Respondent G • "Use data with the aim to speak to the right customer with the right message… to **personalize** products to specifically suit their needs" – Respondent H

Interpretation category 3:	Big data impacting the financial services institution
Subcategory 3(a) Big data driving change in company structure of the analytics department	• "The analytics department has always ever been considered as **separate**… because of organizational silo's and structure, little communication happens" – Respondent A • "The problem comes when you want to **integrate** with other areas in the business, this is when we get the data analysts involved" – Respondent B • "Previously there would be one analytics team that every department would pull on but now it's getting to the point where every department requires their **own analytics team**" – Respondent G
Subcategory 3(b) Big data impacting decision-making	• "One thing you can't see in data is **instinct** or **gut feel** … in future we want to apply patterns and correlations to **human psychology**" – Respondent B • "Make sure with data you don't become isolated in a bubble of data… don't lose track of qualitative measurement around actually talking to **people**" – Respondent C • "My current environment is very much focused on the numbers so data is very important to make decisions, however 20% of the time we **veer off** and base decisions off of **intuition** as well as what the **market is doing outside**" – Respondent H