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WITS BUSINESS SCHOOL
APPLIED RESEARCH PROJECT (ARP)
MBA 2024

Machine learning in marketing strategy:

A socio-technical approach in South Africa





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DUE DATE	29 February 2024
WORD COUNT	14 128

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Machine learning in marketing strategy: A socio-technical approach in South Africa

Abstract

The purpose of this research study was to determine whether the existing market segmentation, targeting and positioning (STP) approaches are optimal for marketing strategy in South Africa, and to what extent AI and machine learning are being used to improve marketing strategy in South Africa. The methods used have drawn on qualitative data research and document analysis. There were 10 participants in the study, the industries include Banking, Telecommunication and Medical Insurance. The methods used have drawn on qualitative data research and document analysis. The key results of the research have determined that Machine Learning is in its inception phase in terms of being used in marketing strategy in corporate South Africa. The research further finds that there are factors that are slowing the development in this field that are aligned with both hard and soft capabilities, for example, along with infrastructural capabilities like software integration, strategic capabilities like interdepartmental alignment are required for effective deployment of these technologies. Further, the research finds that the current segmentation, targeting and positioning methods used in isolation are not optimally contributing to marketing strategy, rather a blended approach including insights from customer data will provide a more accurate STP strategy. This research supports marketeers, technologists, business structures, researchers in South Africa, as well as strategists who deal with mass consumer bases, because market segmentation, targeting and positioning underpin how marketing strategy is rolled out throughout corporate South Africa and AI and Machine Learning are emerging technologies that are highly topical and are only at the inception phase of optimal utilisation.

Keywords:

Market segmentation, targeting, positioning, living standards measure (LSM); socio-economic measure (SEM), marketing strategy, machine learning, artificial intelligence.

1 Introduction

Machine Learning and Artificial Intelligence, these highly topical buzzwords have been used in the corporate sphere for the last few years (McGrath, 2024), but to what degree are these technologies implemented? A 2020 Deloitte survey found that 67% of companies are using machine learning, and 97% are using or planning to use it in the next year (Brown, 2021). What is Machine Learning? It is a “subfield of artificial intelligence that gives computers the ability to learn without explicitly being programmed” (Brown, 2021, p.2).

This study looks at how the current segmentation, targeting and positioning criteria affect strategy and how the potential gaps are being addressed using Machine Learning (ML). ML implementation is being used by marketeers worldwide and is currently deployed with the aid of technology giants like Google and Amazon and smaller marketing companies. Marketing methods like online search and advertisement, social networking, mobile monitoring and engagement, online purchase, and in-person purchasing experiences are becoming more fuelled by adaptable and sophisticated algorithms (Ma & Sun, 2020).

To find applications of ML within strategy, a marketing framework for strategy is introduced. The segmentation, targeting and positioning (STP) model by Philip Kotler (2016) provides that framework. Segmentation the first part of the STP model, allows marketeers to target groups of customers based on specific criteria and therefore enables businesses to create specialised marketing campaigns that appeal to certain customer groups by discovering and evaluating these segments. This strategy enables businesses to optimise their return on investments as spend is focused (Martin, 2011).

The current segmentation criteria commonly used in South Africa are Living Standards Measure (LSM) and SEM or Socio-Economic Measure. LSM aimed to divide the South African population into 10 population groups based on wealth rather than income, this type of segmentation aims to classify the population groups based on what they have (Bratt, 2017) and was created in the late 1980’s by the South Africa Audience Research Foundation (Ntloedibe & Ngqinani, 2020). SEM was created in 2016 to correct the gaps in LSM, and SEM differs from LSM as it relies

more on the infrastructure of the home and community, and less on durable goods (Publisher Research Council, 2023). SEM aims to focus more on how people live.

SEM introduced in 2016 tried to correct the bell curve which the LSM measure would categorise people into, however this too poses some restrictions in data and segmentation analysis (Langschmidt, 2017). This means that naturally if those are the default categories, the maximum marketing strategies outlined will be based on 10 categories. Both indices are highly correlated with income even though they don't take income into account.

With more data available as AI and Machine Learning are being implemented, this means that the way we target and position products to customers can be improved and revised in real-time, it may mean that the groups are more detailed and find that there are commonalities between or across segments, which would affect the outcomes and effectiveness of the marketing strategy.

1.2 Problem statement

Living standards measures and other measures used in South Africa are composite measures based on a list of proxy indicators, for example 'whether people have a TV or have a car" and based on this segmentation offers to categorise where on the scale of haves or have nots the segment falls under (Ncube and Serumaga-Zake, 2015). LSM uses variables such as having a microwave or a garage to understand how people live and in this way a problem arises, as more and more the percentage of how many people own durable goods increases (Martin, 2007). It is also not an indication of available spend as purchases can be on credit, which is not taken into consideration, their debt may have climbed because they are simply using more appliances, not because they are living a better life. (Bratt, 2017).

For the purposes of this research the available literature (Fischer & Reinecke, 2022; Ullal, Hawaldar, Soni, & Nadeem, 2021; Huang & Rust, 2021; De Bruyn, 2020 ; Ngai & Wu, 2022 Berthon, Pitt, Plangger, & Shapiro, 2012; Kumar, 2015; Lehmann, 2005; Van Aardt, 2008; Davids, & Gaibie, 2011; Martins, 2002; Ungerer, & Joubert, 2011; Visser, 2016) provides insight into current segmentation and targeting methods, however there is no definitive study on how segmentation methods affect marketing

strategy in South Africa, nor whether AI and Machine Learning are being used in South Africa, or to what degree.

The problem/opportunity conceptualisation table, in appendix A outlines four pieces of literature which look at the themes outlined above, a review of this table is detailed below.

In the study by Ungerer and Joubert (2011), their research aim was to include additional elements such as psychological variables and to determine whether these can be included in the current model for Living standards measure. While this paper attempts to address the gaps in the current segmentation and targeting criteria in South Africa there are other properties that influence individuals, like race, education employment, that can also be included to better understand the market, there is also the element of understanding the impact such a study would have on marketing strategy that would provide effectiveness in the South African context.

(Janardhanan and Muthalagu, 2020, p.2) aim to bring in the “use of big data to further understand consumer behaviour” Their current segmentation, targeting and positioning criteria focuses on a few areas of customer behaviour not various properties that influence customer decision making in the paper. The focus is on customer buying behaviour, from a business to customer perspective, to determine correlations between products and customer behaviour to determine top products. The gap here is that while the buying behaviour being studied is in relation to segmentation, targeting and positioning, the key area of focus is to determine top products to position to customers in the United Arab Emirates. Which leaves room for such a study in the South African market.

Johan Martins in “The South African consumer market” (2007) outlines that segmentation criteria misses other consumer characteristics like “expenditure group and race” (Martins, 2007, p.168) that affect buying behaviour and marketing strategy. Therefore, this paper includes Living standards measure (LSM), race, a calculation of the South African consumer market, and the expenditure groups in South Africa. While this paper does aim to include more criteria than just LSM, there is still an opportunity to discover how segmentation affects marketing strategy in South Africa.

The position of using big data for marketing strategy is outlined in “Market segmentation analysis and visualisation using K-mode clustering algorithm for E-commerce” (Kamthania, Pahwa and Madhavan, 2018). This paper aims to look at how to use business intelligence in market segmentation, targeting and positioning in the e-commerce space. The opportunity gap here is that this is a study very specific to ecommerce in India. It is not a South African study; therefore, it also does not consider the current segmentation criteria in South Africa.

1.3 Justification of the study

STP or Segmentation, Targeting, and Positioning is the foundation of every marketing plan. A business identifies various market needs and groups, focuses on those that it can better serve, and subsequently positions its offering such that the target market can recognize it for its distinctive offering and brand (Kotler & Keller, 2016). This study is significant for academics and scholars as there is a gap in research with regards to marketing strategy and the application of ML in South Africa. Practitioners who work with marketing strategy in South Africa would also benefit from this research. The research could contribute toward the work of data managers and data practitioners as the ways they use and process data for marketing strategy purposes can evolve.

Based on the existing literature available it is clear there is an opportunity to discover the effects of market segmentation, targeting and positioning in South Africa and to discover the implications of including further criteria in understanding customer purchasing behaviour as well as needs. With the availability of big data and machine learning getting further data on consumer behaviour, needs and factors that influence buying decisions are accessible and should be used to re-determine target markets in the South African context. Finally, the research has implications for policy makers who for example the study's conclusions can influence policy choices around data management and data processing made in corporations in South Africa,

1 .4 Delimitations of the study

The delimitations of this study are that it is limited geographically as its South Africa specific therefore its restricted to the South African population. It is limited empirically

as its restricted to the sample population with the limitations set out in 3.5.4.1, being a firm-level analysis, examples of the types of South African Companies who will be targeted for interviews are listed in Appendix B, therefore while inferences can be made to smaller companies, the data will be limited to the parameters above. A further limitation is that the study deals specifically with market segmentation, targeting and positioning and is not transferrable with other marketing strategy models.

The study will not include detailed information on how specific Machine Learning Models have been deployed in the listed companies participating, information including how data is managed, obtained as well as the names of projects will also be excluded from the study, as this level of detail is highly confidential.

1.5 Operational definitions

The following definitions are adopted in this paper within the ambit of marketing in the South African context:

Table 1 Operational Definitions

Marketing strategy	Marketing strategy is the process of developing a plan to promote and sell a product or service. It involves a series of decisions that a company makes to achieve its marketing objectives. A well-designed marketing strategy can help a company to reach its target audience, increase its customer base, and ultimately increase its revenue. (Varadarajan, 2010). Segmentation, targeting and positioning form part of a marketing strategy introduced by Philip Kotler called the STP model. It provides a framework for implementing marketing strategy (Ma & Sun, 2020).
Marketing segmentation	Marketing segmentation involves dividing a market into groups of customers with similar needs, characteristics, and behaviours (Dickson,1987). By understanding these

	segments, firms can develop targeted marketing strategies that address the specific needs and desires of each group (Srivastava, Fahey & Christensen, 2001). Targeting entails assessing each segment's attractiveness considering its size, potential for growth, level of competition, and suitability for the organization's goals and skills. A business can more successfully focus its advertising funds and efforts by selecting certain target categories (Dickson,1987). Positioning entails creating a value proposition that sets the product apart from rivals and conveys its advantages to the target market. An advantage over competitors can be gained by effective positioning, which also affects how consumers view and select a product or brand (Kotler & Keller, 2016).
Market Segments in South Africa : LSM & SEM	Market segments in South Africa often are interchangeably referred to using the Living Standard Measure (LSM) or Socio-economic Measure (SEM) standards. Due to South Africa's segregated past there was a general understanding amongst marketeers that the physical, social and racial barriers meant that product marketing did not need to further segment the consumer market, instead they simply targeted using the existing race and geographic locations. As the country progressed into an emerging middle class it became clear that further segmentation was required. The South African Advertising Research Foundation (SAARF) introduced the Living standards measure or LSM in 1989 and it has had many revisions since then (McClelland, 2019). The measure is based on a scale of 1 – 10, with 1 being the lowest living standard level and 10 the highest. This measure uses a list of variables to determine living standards. SEM is an alternative to LSM created by a team at Kantar in 2016, which aimed to even out the bell curve of the LSM which

	placed the majority of the population in the middle, in an attempt to measure “how people live, not necessarily by what they have.” (Bratt, 2017). The artificial intelligence discipline known as "machine learning" is concerned with developing statistical models and techniques that enable computers to learn from data without being explicitly programmed. The aim of machine learning is to create systems that can learn from given data and make forecasts or decisions based on those learning. Machine learning algorithms use mathematical techniques to find patterns and relationships in large sets of data, and these “patterns are used to make predictions or decisions.” (Murdoch, Singh, Kumbier, Abbasi-Asl, 2019, p4)
Machine Learning	The field of ML can be broken into four major areas namely supervised learning which is when the machine is given a given a known dataset by the administrator, which contains the intended inputs as well as the results. The algorithm's task is to figure out how to get those inputs and outcomes (Wakefield, 2023). Unsupervised learning works with unlabeled data, and the algorithm looks for structure or relationships in the data without providing specific instructions. Semi supervised learning as the name suggests comprises of both of the above methods, in the sense that it entails using a dataset with both labeled and unlabeled instances to train a model. Reinforcement learning where a collection of actions, parameters, and end results are given to a machine learning algorithm. After establishing the criteria, the machine learning algorithm monitors and assesses each outcome to ascertain which is ideal before attempting to investigate various options and possibilities.

1.6 Structure of the study:

To identify and defend the research gaps examined in this work is the goal of the next section in the critical examination of the literature. The paper's research questions and assertions will be justified theoretically. An argument in support of the research methods will come after the justification for the theoretical framework, which is approached from a qualitative standpoint. The results will be provided after an exchange and analysis of the study's findings. The final section will include a summary of the findings as well as the managerial, policy, and practice effects of the study. Remarks on the study's limits and ideas for additional research are also included.

2. Systematic Review of Literature

2.1 Introduction

The premise of the study is around the fact the world's marketing is at the brink of a new generation of ways of work because of computational power and ML. This study aims to find out to what extent that revolution is being implemented in South Africa.

The research gap is that there isn't existing research about the use or applications of ML or AI in marketing strategy in South Africa, creating an opportunity for research to understand its application. This literature review's objective is to review the body of prior research around the themes of the proposed research topic, namely, to understand the existing literature around market segmentation, targeting and positioning (STP) in South Africa, how STP affect marketing strategy and further, how AI and ML are currently applied to enable and influence marketing strategy.

2.1 AI in Marketing

Worldwide expenditure on artificial intelligence (AI) in marketing, which includes mac hine learning, is projected to increase more than double by 2025 (Statista, 2022). Over the last two decades the use of Machine Learning has greatly advanced in the field of marketing, examples of this can be seen more commonly in the field of Digital Marketing (Brown, 2021). According to Grand View Research (2023) The growing need for customised marketing solutions is expected to drive the usage of machine learning in marketing, which is expected to increase at a CAGR of 28.6% from 2023 to 2028. In programmatic advertising for example, AI has greatly improved businesses' capacity to use context, customer history, and preferences to provide more relevant ads with higher conversion rates through programmatic advertising (Flinders, 2023). In search engine optimization (SEO) Using artificial intelligence (AI) to improve SEO helps businesses create more effective campaigns and raise page rankings. Marketers may generate and optimise content with AI's assistance to satisfy the new criteria. AI is used extensively in E-commerce, by automating activities and streamlining workflows, AI assists businesses in enhancing their e-commerce initiatives and digital marketing skills. It also gives them a more

sophisticated understanding of the demands and purchasing patterns of their customers (Flinders, 2023).

2.2 Benefits and Challenges of implementing AI in Marketing strategy

McKinsey research (2023) claims that companies using machine learning in their marketing have a 15% increase in sales and a 20% increase in customer satisfaction. The marketing industry has evolved over the last few decades through an investment-oriented approach to become a core component of organisations. Like other industries, marketing is transitioning to a more digital format. Many digital marketing strategies are accessible because of the implementation of digital transformation, all of which are intended to add value for customers. While AI can assist marketers in implementing a company's strategic orientation in addition to the segmentation, targeting and positioning matrix (Huang & Rust, 2017), Challenges emerge in the context of growing data privacy concerns as various laws are being developed to tighten obligations for customer data (Ngai & Wu, 2022). A further challenge is the lack of available experts in the field as well as use cases in the South African market as there is little literature specifically covering the successful implementation of AI and ML in marketing strategy nor is there literature that covers the success of the current STP criteria in effective strategy.

2.2 Identification of core themes for STP, AI and ML

Research papers were retrieved using four different themes related to the study, looking at the history and evolution of STP, marketing segmentation and living Standards measures in South Africa, machine learning and artificial intelligence and its application in marketing as well as future trends and considerations of marketing. Having completed a screening and review of 33 articles, four areas that are directly relevant to the subject at hand presented a gap in the research that has already been done:

2.2.1 Literature search strategy, including search terms and exclusion criteria

In order to conduct a literature review the search strategy undertaken involved defining the key concepts. These concepts were retrieved from the study, namely;

machine learning, marketing strategy in South Africa and Socio-technical theory. Once the concepts where understood and key definitions of the related concepts studied the researcher created the operational definitions which are in Table 1, p9, this aided in providing related detail about the concepts and further, gave the researcher keywords. The keywords are stated following the abstract in page 1 of this research paper. It is out of these words that the search criteria were created, namely the terms and related wording that interlinks and are commonly associated with both Machine learning and Marketing strategy.

Using Google scholar, Marketing Journals and leading business research repositories, multiple searches including these keywords in various combinations were undertaken. Examples include:

"Machine Learning" AND "Marketing ", "Machine Learning" AND "Marketing in South Africa", "Artificial Intelligence" AND "Marketing". After the researcher found that the search had to be narrowed to attain papers relevant to the study, exclusion criteria were introduced. These included searches which were in the field of AI or Machine Learning digital marketing, as while the adoption is significant the study focuses on Marketing Strategy, another exclusion included ML adoption research done in very niche or specific fields of study like Health and farming as this is irrelevant. Before exclusions were completed, the key words became more refined and generated 41 hits, once exclusions were applied the search then identified 33 papers that were relevant.

Table 2 Literature review: themes of literature

Theme	No. of Articles	References	Research Gap
History of Marketing & Segmentation, targeting and positioning	3	Berthon,Pitt., Plangger, & Shapiro. (2012). Kumar, V. (2015). Lehmann, D. R. (2005).	• Limited analysis on the role of STP and successful strategy in SA • Bases for STP in SA • Application of STP on strategy in SA
Marketing Segmentation and living Standards	5	Van Aardt, C. J. (2008) Davids, Y. D., & Gaibie, F. (2011). Martins, J. H. (2007). Ungerer, & Joubert, J. P. R. (2011).	• Perspectives of marketeers lacking • Lack of consideration of the link between segmentation and strategy effectiveness

measures and & South Africa		Visser, J. H. (2016).	• Limited analysis of the role of LSM and SEM in South Africa
Machine Learning & Artificial Intelligence and its application in Marketing	20	Volkmar, G., Fischer, P. M., & Reinecke, S. (2022). Flinders & Flinders, 2023; Volkmar, Vasilopoulos, Theodorakopoulos, & Giotopoulos, 2023 Huang., & Rust. (2021) De Bruyn, A. et al. (2020). Ngai, E. W., & Wu, Y. (2022). Ullal, M. S., Et al. (2021). Miklosik, A., & Evans, N. (2020). Jarek, K., & Mazurek, G. (2019). Vlačić, B., Et al. (2021). Verma, S., Et al. (2021). Brei, V. A. (2020). Dzyabura, D., & Yoganarasimhan, H. (2018). Ma, L., & Sun, B. (2020). White Papers: Vashisth, Linden, Hare & Krensky (2019). Padilla, Nicolas, Ascarza, & Netzer (2023) Brei (2020). Statistics: Mckinsey (2023), Grandview Research (2023), Statista (2022)	• Limited focus on how AI and ML can be implemented in marketing Strategy • None of the papers provide the context of AI and ML in marketing in South Africa • Lack of specific capabilities required by Marketeers. • The papers do not specify use cases of successful implementation and strategy realignment
Future trends and considerations of Marketing	5	(Rao, Verweij & Cameron, (2017) Schoeman, W., Moore, R., Seedat, Y., & Chen, J. Y. J. (2021). Petzer, & De Meyer, (2013). Hugo-Burrows, R. (2004)	• Limited exploration of the position of ML and AI in developing marketing strategy • The papers do not provide considerations of the importance or use cases of successful implementation of the ML or AI in South Africa

Here is a description of the outcomes from the empirical review of the literature:

2.2.2 History of Marketing & STP

The research gaps identified within these themes were that there is a limited analysis on the role of segmentation, targeting and positioning in South Africa and successful strategy, bases for STP, and the application of STP on strategy in South Africa when looking at the evolution of marketing. It becomes clear in the literature that several

changes in the way marketeers strategise correlates with technological change. (Kumar, 2015). Initially changes in how data is stored and then processed, enabled a wave of marketers to understand consumer behaviour enough to categorise and segment markets. A further wave with increased amounts of data and the ease of data collection allowed marketers to individualise feedback which deepened the methods of enablement (Kumar, 2015). It is advised to consistently keep up with technological advancements, consumer trends, and social media. To put this into practice, marketers must successfully engage customers, embrace technology, limit the influence of bureaucracy, train and invest in personnel, (Berthon, Pitt, Plangger, & Shapiro, 2012). In this context the proposed research will aim to provide clarity on the new era of strategy in South Africa which is aligned with the world view of leveraging computational power for highly targeted marketing methods.

What is segmentation, targeting and positioning?

Segmentation forms a part of three interrelated concepts which help businesses reach and engage their target customers called Segmentation, Targeting and Positioning (STP) (Kotler & Keller, 2016). Kotler & Keller (2016) argue that for marketing efforts to be successful, marketers need to segment a market which involves identifying and describing groups of consumers with different demands and preferences. Thereafter they should target these markets by choosing one or more market sectors to enter. Finally, they need to position by conveying, and delivering the company's market offering for each target category.

The method of splitting a target market into sub-markets or segments based on several criteria, like demographics, psychographics, behaviour, or location, is known as marketing segmentation (Kotler & Armstrong, 2010).

2.2.3 Marketing Segmentation in South Africa

When looking at marketing segmentation within the context of South Africa, there is sufficient research in this field, the gaps however are identified by noting that the perspectives of marketeers are lacking, there is also a lack of consideration of the link between segmentation and strategy effectiveness, as well as the fact that there is a limited analysis of the role of LSM and SEM in South Africa,

There is literature on the bases for segmentation (Ungerer & Joubert, 2011), there is also literature on the ways in which the current segmentation criteria can be explained to include other variables and how these can be applied, along with the fact that the strongest variables that correlate to the South African market are not the LSM methods but rather Income and Race (Van Aardt, 2008).

In an exploratory study called the "bases of market segmentation success" Visser (2016) looks at the fact that there is no uniform method for segmentation, used by marketing professionals so, there is a knowledge gap on the methods used by marketing professionals to segment markets. It is not apparent to what extent decision-makers agree with the marketing idea that market segmentation is a factor in marketing success. There is no consistent method of market segmentation used by marketers, which is the most important conclusion of the review in this study.

2.2.4 Machine Learning & Artificial Intelligence and its application in Marketing

"Machine Learning focuses on the use of data and algorithms to imitate the way that humans learn, gradually improving its accuracy" (IBM, 2023). Using statistical methods, algorithms are trained to make classifications or predictions, and to uncover key insights in data mining projects. These insights subsequently drive decision making within applications and businesses, ideally impacting key growth metrics (Brown, 2021). As a subset of Artificial Intelligence, Machine Learning refers to computational techniques that leverage experience to enhance performance; experience in this context refers to previous knowledge that the machine has access to (Mohri, Rostamizadeh & Talwalkar, 2018).

The applications of artificial intelligence and machine learning in different industries, including marketing, are well documented in the literature (Flinders & Flinders, 2023; Volkmar, Vasilopoulos, Theodorakopoulos, & Giotopoulos, 2023; Fischer & Reinecke, 2022; Ullal, Hawaldar, Soni, & Nadeem, 2021; Huang & Rust, 2021; De Bruyn, 2020 ; Ngai & Wu, 2022 ; Miklosik & Evans, 2020; Jarek & Mazurek ,2019; Vlačić Et al, 2021; Verma, Et al, 2020; Brei, 2020; Dzyabura & Yoganarasimhan, 2018; Ma, & Sun, 2020)

In their whitepapaer, Vashisth, Linden, Hare & Krensky, (2019) Discuss how AI aids in processing in real time which Is useful to marketeers wishing o keep abreast with market and social changes. Another whitepaper from Harvard Business School creates a model that can create customer data from the customer journey and solves

for the no data at the onset problem to best target customers for marketing strategies (Padilla, Nicolas, Ascarza, & Netzer, 2023).

The literature shows that there are focuses on the types of machine learning methods, the types of data produced and how it can be used, the application of this on marketing methods and segmentation, targeting and positioning of products to customers. The gaps identified within the research were that there are few recent use cases of how AI and ML can be implemented in marketing segmentation, targeting and positioning, there is a limited exploration of the impact of ML and AI on future marketing methods in South Africa. There is also a lack of specific capabilities required by marketeers for ML deployment. The papers do not specify use cases of successful implementation and strategy realignment. Which identifies the opportunity for the proposed research and the various cases, the results can be transferred.

2.2.5 Future trends and considerations of Marketing

The common thread in all the reviewed literature is the importance of these emerging technologies on the future of marketing. For this, information management must be rigorous and newly created data must be checked for useful information. The research shows that marketing managers today need to become more data- and market-driven (Miklosik & Evans, 2020). Literature reviewed shows that there is a strong focus on contextualising the challenges marketeers face in South Africa, there are however research gaps identified specifically the fact that the application of ML and AI in building marketing strategy is not sufficiently explored, as well as the significance or examples of effective implementation.

Looking at the benefits of AI and ML applications in marketing, a key trend that is already being utilised on many online platforms as well as on all social networking sites is mass customization (Grandinetti , 2020). With machine learning companies are already using customer information like where the customer is in the marketing funnel, what content is she most likely to spend time on, and what her previous purchase behaviour has been, in order to position specific adverts of products that she would most likely be interested in, to her. With most companies having online stores customisation that pushes user driven, personalised content is a trend that will continue and develop further into the future (Kotras, 2020).

Sustainability is a key trend that will continue to grow into the future as well, with 77% of customers who are motivated to buy from companies who want to make the world a better place according to a report by Harvard Business School (Stobierski , 2021). AI and Machine Learning aid in reducing a company's carbon footprint by creating business efficiencies (Kemper & Ballentine, 2018). Data concerns and data privacy is a growing trend, that is protected by laws to ensure customer data is used with high considerations (Ngai & Wu, 2022).

The literature does well to contextualise marketing in South Africa, the variety of South African consumers, competitiveness, infrastructure problems, governmental regulations, and bureaucracy are a few of these concerns and trends. The literature makes it clear that South African marketers must modify their marketing plans. In order to succeed, marketing techniques must also be modified to address the increased consumer diversity concerns in South African marketplaces. (Petzer & De Meyer, 2013).

In the South African context, there are numerous issues that could prohibit businesses from integrating AI technology into the economy, limiting the potential advantages of growth and competitiveness that AI offers. According to the studied literature, future success will depend on altering interaction, reimagining organisational structures and processes, creating a positive ecology, and effectively using data. The literature states that to stay up with technological progress, South African enterprises will need to prioritise training and development, encourage the creation of an AI code of ethics, and create self-improving legislation (Schoeman, Moore, Seedat, Chen, 2021).

2.3 Socio-Technical theory

Socio-technical theory emphasises the importance of considering both social and technical factors in the design and implementation of technological systems (Trist & Emery, 2005). According to this theory, technology is not just a tool, but it is also shaped by social factors such as culture, organizational structures, and power dynamics. Thus, to create effective and sustainable technological systems, it is crucial to understand and address both social and technical factors. The socio-technical theory has been applied in various fields (Mumford, 2003). STT suggests that technology should not be viewed in isolation, but rather as a system of elements which

are all connected, including people, processes, and the environment (Trist & Emery, 2005). According to STT, successful implementation of technology requires the alignment of technical components and social factors such as work practices, organizational culture, and user needs (Trist & Emery, 2005).

2.2 Resource based theory

These two concepts can be applied together in marketing to create a more effective marketing strategy. According to RBT, a firm's resources and capabilities are unique and difficult to imitate, providing a source of competitive advantage (Gupta & Malhotra, 2013). By leveraging these resources, a firm can create offerings that meet the specifics of customer segments, allowing it to target those segments and differentiate itself from competitors (Fahy & Smithee, 1999). “Resource-based view (RBV) and marketing considerations in the context of generating and sustaining customer value can refine and extend each other’s traditional frames of analysis.” (Srivastava, Fahey & Christensen, 2001).

Whilst a resource- based view is indeed the lens through which the entire marketing strategy is looked at, for this research the dominant theory which will assist in capturing the constructs, and conceptual framework is the socio-technical theory, due to the pivotal role of AI and Machine learning technologies in this study.

2.2 Socio- technical theory (STT) through the lens of marketing STP AI and Machine learning

Marketing is an area where this approach can be particularly relevant, as technology is often used to support marketing efforts (Kumar & Venkatesan, 2018), and understanding the social and cultural context of technology use is critical to success.

The argument can be made that STT can be applied to segmentation and targeting of audiences as this area of marketing is particularly data and technology reliant. “Socio-technical theory posits that marketing strategies must be designed to accommodate the social and technical complexities of products, as well as the cultural norms and values of the target market." (Yi et al., 2016, p. 430).

One way in which STT can be applied to AI and ML systems is through the design of these systems to be more transparent and accountable. The major way in which the

application of STT to AI and ML systems is the design of systems that consider the needs and values of their users. These systems should be designed with an understanding of the social context in which they will be used and the potential impacts they may have on individuals and society (Kumar & Venkatesan, 2018).

By taking a socio-technical approach to both marketing segmentation and AI and ML more effective and efficient work systems that are better suited to the needs of the organisation and its marketing goals.

2.4 Theoretical Framework for Socio-technical theory

Eric Trist and Fred Emery, pioneers in the area of socio-technical systems theory, initially put out the hexagonal structure of socio-technical theory. This framework was created by Trist and Emery in the 1950s and 1960s as a tool to examine the interactions between social and technological systems in organizations. The theory emphasises that the design and implementation of technology should consider the social context in which it will be used and the impact it will have on society. By analysing the interaction between the element, can create more effective and sustainable systems that meet the needs of both the technical and social systems involved. (Friend, 1992); (Trist & Emery, 2005); (Mumford, 2005).

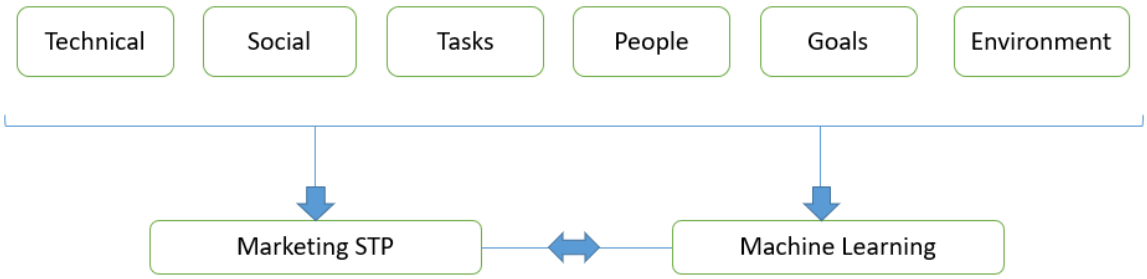


Figure 1: Theoretical Framework for Marketing STP and Machine learning

Source: Researcher

2.4.1 Linking STT, Marketing STP & Machine learning

The framework of this study based on Figure 1 above, seeks to explore the relationship between marketing strategy, AI and Machine learning through the lens of the key elements within Socio-technical theory.

3. Proposition Development

Research Questions for this study :

1. To what extent machine learning is being used in market segmentation, targeting and positioning in South Africa
2. What are the conditions for effective deployment of machine learning in market segmentation, targeting and positioning

Having looked at existing literature on marketing segmentation, targeting and positioning in South Africa and the emergence of AI and Machine learning in business, there is a gap in sufficient research on how these intersect. Therefore, the need for further exploration into how companies are using big data and to effectively target market segments arises. The theoretical foundations of this are explained in this section to further define and conceptualise the study. Based on the findings of the literature review and the nature of ML technology studied, a two-layer conceptual framework for ML applications in marketing is proposed. The first layer aims to explore to what extent ML is being used in segmentation, targeting and positioning strategies in large corporates in South Africa.

The second layer of the theoretical framework requires a framework due to the fact that in order for companies to adopt these new approaches to market segmentation it requires significant organisational change and skills. The framework aims to look at what technical capabilities are there, but further that employees must be aware of how it can be used, for what purpose and how it can render the best results. Based on this I believe that for companies to benefit from AI in market segmentation, targeting and positioning that both hard and soft capabilities are required.

Hard capabilities can be divided into subsections, namely, infrastructural capabilities and technical capabilities, infrastructural capabilities refer to the ability to collect, store and organise the data. Technical capabilities refer to the ability to assimilate and analyse the data.

When looking at infrastructural capabilities that fall under hard capabilities, the tools, procedures, and resources required to create, test, and use machine learning models are included in machine learning infrastructure. It is also sometimes referred

to as MLOps (Machine Learning Operations) or AI infrastructure. Literature reviewed (Flinders & Flinders, 2023; Volkmar, Vasilopoulos, Theodorakopoulos, & Giotopoulos, 2023; Fischer & Reinecke, 2022; Ullal, Hawaldar, Soni, & Nadeem, 2021; Huang & Rust, 2021; De Bruyn, 2020 ; Ngai & Wu, 2022 Hazelwood, Bird, Brooks, Chintala, Diril, Dzhulgakov, 2018; Wamba-Taguimdje, Wamba, Robert, & Tchatchouang, 2020; RunAI, 2023; Brown, 2021) describe the need for scalable infrastructure, distributed training algorithms, robust hardware, soft and hardware partnerships, machine learning frameworks, and data frameworks for the successful implementation of ML in an organisation. Model selection, model testing and monitoring are also highlighted as key for successful ML implementation. This leads to the first proposition which is:

> *Proposition 1. Infrastructural capabilities are required for successful implementation of ML in Marketing segmentation, targeting & positioning.*

The second element to hard capabilities proposed is technical capabilities, herein lies the capacity and ability for trained staff to understand the technical elements that are required for the successful deployment of ML in an organisation. Literature reviewed by (Flinders & Flinders, 2023; Tandon, 2023; Wamba-Taguimdje, Wamba, Robert, & Tchatchouang, 2020; Brown, 2021; Breck, Polyzotis, Roy, Whang & Zinkevich, 2018) describe that to ensure the success of AI, a number of crucial components data, talent mix, domain expertise, important decisions, and external partnerships must be combined. (Wamba-Taguimdje, Wamba, Robert, & Tchatchouang, 2020). To get the optimal outcome, machine learning scientists must spend time doing data clean-up and management, revalidations and revising and optimising data management processes (Tandon, 2023). Therefore, the second proposition is:

> *Proposition 2. Technical capabilities are necessary for the successful implementation of ML in Marketing segmentation, targeting & positioning.*

Soft capabilities refer to strategic capabilities and human resource capabilities. Strategic capabilities are the ability to communicate through multiple channels within the organisation at the same time, campaign strategy and the ability to use the available data optimally (Ullal, Hawaldar, Soni, & Nadeem, 2021; Huang & Rust, 2021; Byrd & Turner, 2001; Wamba-Taguimdje, Wamba, Robert, & Tchatchouang,

2020; Tandon, 2033; Brown, 2021). The literature reviewed establishes that a comprehensive data strategy is required to execute against a clear and achievable vision, created with successful use cases in mind and that is devised by highly skilled strategists (Tandon, 2023). This leads to the third proposition:

> Proposition 3. Strategic capabilities are necessary for the successful implementation of ML in Marketing segmentation, targeting & positioning.

Human resource capability refers to how successfully training is deployed and how to effectively cascade the ML based segmentation through the organisational channels.The delivery and acceptability of any significant modernisation project depe nd on change management and training, and ML deployment is no different in that re gard (Tandon, 2023). The literature reviewed in (Flinders, 2023; Tandon, 2023; Brown, 2021; Nasila, 2023) shares that people management, executive sponsorship, effective change management, a clear deployment process as well as ensuring the roles and responsivities are clear and defined are critical in the successful implementation of ML in business. Organizations can more successfully traverse the challenges of AI implementation and reduce resistance by giving the people component of change priority (Nasila, 2023). Therefore, the fourth proposition is:

> *Proposition 4. Human Resource capabilities are necessary for the successful implementation of ML in Marketing segmentation, targeting & positioning.*

Based on my reading in the literature above I hypothesise that both hard and soft capabilities are required for successful deployment of machine learning in South Africa. The conceptual framework below realises this.

Capabilities	Conditions	Propositions
Hard Capabilities	Infrastructural Capabilities	Infrastructural capabilities are necessary for the successful implementation of ML in Marketing segmentation, targeting & positioning.
	Technical Capabilities	Technical capabilities are necessary for the successful implementation of ML in Marketing segmentation, targeting & positioning.
Soft Capabilities	Strategic Capabilities	Strategic capabilities are necessary for the successful implementation of ML in Marketing segmentation, targeting & positioning.
	Human Resource Capabilities	Human Resource capabilities are necessary for the successful implementation of ML in Marketing segmentation, targeting & positioning.

Figure 2: Conceptual Framework

Source: Researcher

2.3 Conclusion for literature review

Based on the reviews undertaken, it becomes clear that there is a significant research gap pertaining to ML and their implementation in market strategy in South Africa. Technology should not be considered in isolation, according to socio-technical theory, it should be seen as a system of interconnected aspects, including people, processes, and the environment (Trist & Emery, 2005). This solidifies the need for including hard and soft capabilities in the conceptual framework. STT is the main theory that will aid in capturing the constructions and conceptual framework, because of the significant roles that marketing strategy and machine learning technologies have played in this research.

4. RESEARCH METHODOLOGY

Conducting quality research is a must-have to confirm the accuracy of the research question or deepen comprehension of the idea, therefore understanding the methods, approach, and types of research to be conducted in a study is key. In the context of a research proposal, research entails the methodical gathering, evaluation, and interpretation of data to respond to a query or address an issue (Leedy & Ormrod, 2021).

This chapter's goal is to provide information on the study's research component, which is to assess the degree to which machine learning is employed in marketing strategy in South Africa. Research includes the type of data analysis that was used, information on the respondents, the data management technology that was used, the way the data was processed, how the data was organised, and the general methodology that the data was handled by (Creswell, 2014) which will all be covered in this chapter.

4.1 Research Paradigm

Research paradigms are a view through which researchers might see the nature of reality, the researcher's position, their interaction with participants, and the processes through which knowledge is created (Creswell, 2018). The paradigm functions as a framework that moulds the researcher's perspective and affects their decisions about the research design, technique, data collecting, analysis, and interpretation. (Tashakkori & Teddlie, 2010).

Positivism, interpretivism, constructivism and pragmatism are examples of paradigms through which researchers can view the research at hand (Denzin & Lincoln, 2018). This study employs pragmatism as the approach lends itself to integrating components from various paradigms and aims to employ the ideas and methodologies most suitable for answering research concerns (Denzin & Lincoln, 2018).

High-quality data has been collected using qualitative research methods, such as semi-structured interviews, which has then been analysed to identify important themes and patterns (Cohen, 2018; Creswell, 2018; Denzin & Lincolin, 2018). A

qualitative analysis of the viewpoints and experiences of the participants is required for the proposed study.

4.2 Research Approach

This study will use a qualitative approach. Researchers can utilise three methods in order to conduct the required research. These are qualitative, quantitative, and mixed methods (Cohen, 2018). To fully understand complex questions, qualitative research is preferred, this is because qualitative research requires acquiring and analysing non-numerical data. This strategy, which is characterised by sample sizes much smaller than quantitative research, uses forms of interpretive analysis to derive meaning from the data (Creswell, 2014).

In quantitative research, data are often collected from a sample, the information gathered is often expressed as numerical measures or answers to closed-ended questions due to the sample size (Leedy & Ormrod, 2021). Statistical methods are then used to examine this data in order to develop inferences and generalisations about the data (Cohen, 2018).

To provide a more thorough grasp of the research issue, a mixed methodology style combines quantitative and qualitative research styles. This strategy might offer a more thorough understanding of the issue under consideration and assist in addressing the drawbacks of each technique (Tashakkori & Teddlie, 2010).

As aforementioned the research methodology used in this study is qualitative research. The research question lends itself to open ended questions and exploratory understanding of how and to what degree machine learning are used in marketing segmentation, targeting and positioning. Qualitative research is useful for handling unstructured interviews with respondents in which longer text answers are given in response to two queries. Additionally, the need for analysis and the smaller sample size of respondents lead to the conclusion that a qualitative approach was necessary to determine the hypothesis. (Denzin & Lincoln, 2018; Leedy & Ormrod, 2021; Tashakkori & Teddlie, 2010)

4.3 Research Design

A well-designed research study is necessary to ensure the research objectives are met and that accurate and valid data are obtained.

This study has employed semi-structured interviews with respondents to gain the experiences that strategists and marketeers in South Africa face with marketing segmentation. The units of analysis are the survey participants namely the marketeers, data scientists, data analysts, and marketing strategists. The interviews being held via online meetings have ensured the sample is representative as participants will all have access via an internet connection and can be accessed via laptop or mobile device.

Semi-structured interviews make it possible to get rich and in-depth qualitative information (Cooper & Schindler, 2019). Participants are free to use their own words to describe their ideas, emotions, and experiences thanks to the open-ended nature of the questions. Semi-structured interviews are ideally suited for research involving a variety of participants due to their adaptability. Each participant's unique features, backgrounds, and requirements can be considered (Abbott & McKinney, 2013). The inclusiveness and applicability of the research findings are increased by this adaptability.

The disadvantages that can be considered for this research are the fact that not all participants could take part in the study which would lead to data bias and the sample not being sufficiently representative. Although semi-structured interviews have many advantages, they also call for preparation, attentive listening, and effective interviewing methods. To produce valid and trustworthy study results, researchers must strike a balance between structure and flexibility, ensure ethical considerations, and effectively evaluate and interpret the data acquired.

For the purposes of this research study however, utilising a semi-structured interview means that the pros outweigh the cons, and to mitigate the cons, fair timelines for interview completion as well as a wider net of participants will be considered.

4.4.1 Sampling

Sampling in data collection refers to a group of a certain population that is representative of it, researchers must choose the right sample size and sampling strategy when gathering primary data (Ravikiran, 2023).

This research looked at the population of companies in South Africa, and choose between 3, specifically those who are of a larger size and have access to AI and

Machine Learning tools, examples of said companies are detailed in Appendix B. The logic behind larger companies is that due to the cost, skills and infrastructure needed, the likelihood of AI and Machine learning being used in market segmentation is more likely in these companies. The study will aim to find between 2-3 respondents in each listed company, as it is likely that in a larger business there are multiple roles who deal with segmentation, The respondents should work either in marketing, with marketing segments or in data management analysis and analytics. Respondents must market to mass consumer markets, with access to large data bases and the availability of technology. Because a sample is thought of as a smaller, more manageable fraction of a bigger group, the sample should be representative of the whole and considerations about the sample size and demographics of data scientists, data analysts, marketeers and strategists in South Africa will be made.

4.4.2 Sampling Design

Overall, the research aims to effectively obtain high quality data from the sample, therefore the type of sample method is key. According to Ravikiran (2023) Within the ambit of sampling, there are two types of sampling: probability sampling and non-probability sampling. In the former, the researcher applies a few criteria to the sample group, whereas in the latter, the sample is chosen at random. Within the two groups of sample methods are various sub-categories which speak to these methods. The method used for the study will be a non-probability sampling strategies called quota sampling, a method by which scientists select a sample of people who accurately represent the entire community. Researchers will identify participants based on specific qualities or traits. They make choices and create quotas to make sure the samples used for market research are efficient at gathering data (Denzil & Lincolin, 2018; Ravikiran, 2023; Van Zyl, 2014).

As the literature review suggests, the gap in data available lies in the fact that the extent to which Machine learning is used in segmentation, targeting and positioning in South Africa is lacking, therefore the unit of analysis is a firm level analysis, the population refers to the number of firms that meet the criteria established. The criteria of the target firm are outlined in 4.5.4.1 below and a list of proposed

companies are outlined in appendix B. Once the firm-level parameters are met, further qualifying criteria regarding the target respondents were likewise met.

Parameters of the targeted respondents:

- Must be working at an identified firm
- Respondents must be Marketeers, Data scientists, Strategists, Data analysts, working with segmentation targeting and positioning in South Africa
- Must be marketing to the mass South African audience
- 2-3 respondents per firm
- Must not be employed at Vodacom SA to minimize the risk of bias

When looking at the interview group the group must have the above characteristics in order to be able to contribute meaningfully to the study, therefore qualifying questions were asked of participants before they actually started the interview, further in order to answer the research question the participants dealt with the differing capabilities proposed in the conceptual framework namely; infrastructural capabilities, technical capabilities, strategic capabilities and human resource capabilities . As the study is exploratory and qualitative in nature, open ended questions were given to participants to seek insights from participants.

4.5 Data Collection

Introduction

To answer research questions or objectives, data collecting entails acquiring facts and information. For research to be valid and accurate, data collection is necessary. Researchers should carefully consider each stage, making sure that data gathering methods are well-designed, morally sound, and in line with the research goals (Marczyk, DeMatteo, & Festinger, 2010; Price & Jhangiani, 2017).

There are various facets to data collection that were considered when conducting data collection for the purposes of research, which will be detailed in this section.

4.5.2 Research Instruments & Data Collection Procedures

Unstructured interviews are a qualitative research technique that allows for a flexible and exploratory approach to data collecting by allowing the interviewer the

interviewer to use the participant's comments to lead the conversation, allowing for a deeper examination of the subjects and the emergence of fresh themes or discoveries (Denzil & Lincolin, 2018; Price & Jhangiani, 2017).

In a structured interview, the interviewer adheres to a planned list of questions and a prescribed format (Abbott & McKinney, 2013). Unstructured interviews have a number of drawbacks, including the potential for prejudice and distortion. They can also be unpredictable because they are such a flexible technique of selection. (Marczyk, DeMatteo, & Festinger, 2010). Structured and unstructured interview components are combined in semi-structured interviews. Although the interviewer has a series of pre-set questions or themes to use as a starting point, there is still room for follow-up inquiries and the investigation of untapped potential. Interviews that are semi-structured offer some structure while yet allowing for participant participation and flexibility (Kallio, Pietilä, Johnson, & Kangasniemi, 2016; Price & Jhangiani, 2017).

To gain the benefits of both structured and unstructured interviews, this study uses the semi-structured interview methodology. The Interview questions are contained in appendix D. This will ensure that there is some consistency in the questions as well as room for flexibility and new insights.

The method used to process this was to record the sessions via the Microsoft Teams application, transcribe them and then process the data.

4.6 Data Analysis

The process of organising, categorising, analysing, and making meaning of the qualitative data gathered throughout the study is known as data analysis in qualitative research (Cohen, 2018). For this research, the data obtained will be analysed and interpreted using the qualitative approach. The methodology will be outlined in the section below.

4.6.1 Thematic Analysis

According to Kiger & Varpio (2020) When analysing qualitative data, thematic analysis offers a flexible method that enables researchers to gain understanding of participants' experiences and perspectives. The flexibility and iterative nature of thematic analysis allows for the exploration of new directions, revision of codes and

themes, and improvement of interpretations throughout the process. Researchers can carry out a systematic analysis that captures complexity of qualitative data by following these procedures.

The processes that the researcher will undertake to conduct a thematic analysis are provided below:

• Become familiar with data: The data type and the content must be familiar to the researchers.

• Be on the lookout for data gaps: The validity of the data must be verified by the researchers.

• Recognise new themes: From the responses, the researchers must determine codes and create developing themes.

• List prevalent topics: The responses must be sorted by the researcher based on what they have in common and connect them to the research topics.

• Completed themes: The themes and names should be finalised by the researchers.

• Analysed themes: The themes' identities should be examined and ensure that no information is missing.

• Document themes: The themes' results should be electronically analysed and then explain the themes

4.6.2 Pretesting the Research Instrument

Mikuska (2017) in ‘The Importance of pre-testing semi structured interviews’ states that pretesting entails testing the interview methodology on a small sample of participants before beginning the actual data collection process. Collins (2001) Outlines that semi-structured interviews can be pre-tested by researchers to improve the efficiency and quality of their data collection process. It enhances the questions' clarity, enables the detection and correction of any potential issues, and helps participants comprehend the goals of the study. Pre-testing ultimately helps to verify that the interviews produce valid and reliable data that is in line with the research objectives. (Mikuska, 2017).

To gain the above benefits of pre-testing or piloting, in this research the interviews were piloted with two respondents in marketing roles at Vodacom. The reason for this is that Vodacom is the company the researcher is currently employed at and for the main interviews will be excluded from the study to minimise the risk of bias.

4.6.3 Descriptive Analysis

In qualitative research, descriptive analysis entails systematically compiling and synthesising the gathered qualitative data. It focuses on giving a thorough and in-depth summary of the data, highlighting trends, topics, and important details (Creswell, 2014; Leedy & Ormrod, 2021). Researchers' comprehension of the data set is improved through descriptive analysis, which also makes it easier to interpret the data and come to useful conclusions (Mikuska, 2017). Descriptive analysis was indeed used as a step in the analysis process in this study because it allowed for a conclusive understanding of the research issue and assisted in generating a more in-depth analysis.

4.6.4 Reliability and Validity

The consistency and stability of the data that was gathered are referred to as reliability (Van Zyl, 2014). It evaluates the extent to which the data collecting, and interview processes provide consistent results over time and among various interviewers. Validity speaks to the degree to which the interviews in this case accurately measure what they are meant to measure. It evaluates how well the information gathered through interviews captures the participants' actual experiences, viewpoints, and meanings (Golafshani, 2003).

To best ensure reliability and validity of the data, a few methods can be employed, namely controls including encompassing participant selection, construct validity, standardisation, transcription accuracy, coding consistency, and member verification (Golafshani, 2003).

4.6.4.1 Construct Validity

Construct validity tests whether a study's measurements or variables accurately reflect the theoretical construct under investigation (Golafshani, 2003).

It aims to assesses how effectively the operational definitions, measurement techniques, or variable manipulations capture the desired construct. With a clear and well-defined construct of the study, as well as defined operational definitions, accurate instruments of measurement this study aims to accomplish construct validity (Golafshani, 2003).

4.6.4.2 Standardisation

Research standardisation is the process of ensuring consistency and uniformity across numerous study components, such as data collection, measuring techniques, and analysis (Morse, Barrett, Mayan, Olson, & Spiers, 2002). To guarantee that research techniques are uniform across various researchers, places, and time periods, it requires establishing and adhering to standardised protocols and guidelines (Mikuska, 2017). The dependability, comparability, and replication of study findings are therefore all improved by standardisation. In terms of standardisation in this research, this was managed by having clear guidelines and protocols for conducting the interview including what to do when probing for more information and how to follow up a question.

4.6.4.3 Transcription accuracy

MacLean, Meyer & Estable (2004) detail that to ensure a correct transcription, it's crucial to check recordings for accuracy and remove errors that could compromise the dependability of the results. To protect the data's integrity and aiding the analysis and interpretation process, it is crucial to ensure transcribing accuracy (MacLean, et. al, 2004). To secure accuracy in the transcription all meetings were all conducted via Microsoft Teams where an accurate transcription and recording of the entire interview took place, therefore there is no room for the researcher to deviate from responses or the transcript that is digitally available.

4.6.4.4 Coding consistency

The degree of agreement and dependability in the process of categorising and assigning codes to qualitative data is referred to as "coding consistency" in research (Morse et al., 2002; Golafshani, 2003). Data are methodically analysed and categorised through coding to find trends, themes, or concepts pertinent to the research goals (Golafshani, 2003). Coding consistency was achieved in this study as

the researcher used the data and created common themes. The construction of themes that would serve as the foundation for thematic analysis was created by the individual review of participant replies.

4.6.4.5 Member Verification

Member verification is when study participants are revisited, and interview points are considered to confirm the accuracy (MacLean, et. al, 2004). By including participants in the interpretation and validation of the data, this can increase the credibility and reliability of findings. In this study therefore the researcher disclosed research results to participants, requesting their opinions, corrections, or feedback (Mikuska, 2017).

4.6.5 Validity

Validity, according to Creswell & Miller (2000) is a term used to describe how accurately the research's findings, interpretations, and conclusions reflect the participants' experiences which were the purpose of the research. To establish the credibility, reliability, and significance of the findings, qualitative research highlights a number of interconnected factors of validity.

4.6.4.1 Quality of data and Sampling

In order to gain construct validity, the ideal population is key, therefore in order to gain a thorough understanding of the use of AI and Machine Learning in market segmentation in corporate South Africa, a pool of sampling included a number of companies with the following criteria;

- Must market to mass audiences – this necessitates the need for market segmentation
- Must be targeting the South African Market and more than 1 million customers per annum. The reasoning for this is that to use AI and Machine learning, large datasets are required
- Must have access to AI and ML tools which are expensive technology, furthermore, have access to skilled employees who can utilise these tools it can be predicted that companies with access to this have a turnover of more than R100 million per annum

The unit of analysis is a firm level analysis, the population refers to the number of firms that meet the criteria established. This study sampled 3 firms based on the criteria and identified key informants from these forms who would be share insights on how they use AI and ML in marketing. As the size of the firms are large and usually have multiple departments that could work with the data, this study interviewed 2-3 people per firm, the advantage of which is that data can be corroborated and findings into how data is shared, and segmentation managed across business.

The following conditions will be met to guarantee data validity:

1. Questions and content that are easy to understand. Interviewees must be very specific in their responses and leave no room for doubt.
2. Ensure the conversion procedure is accurate and that the transcriptions don't lose their quality.
3. Data is gathered consistently, and the same set of guidelines are used for retrieving, storing, and analysing the data.

4.6.4.2 Transferability

The research aims to provide insights into the use of AI and Machine Learning in marketing across South Africa, the findings can be applied in other contexts as the use of emerging technologies is something that is being used in other countries and there is a gap in the research on the application in South Africa. As it involves other groups like technologists, data analysts, corporate companies, and academics the research is transferable, with of course exception to the delimitations abovementioned.

4.7 Considerations for Ethics

4.7.1 Appropriate permission to conduct the Study

In accordance with Wits Business Schools Ethics procedure, a digital ethics form was submitted with the Project proposal, Participant information sheet and consent form. As the Study was minimal risk this required an outline of the participant information, data types, interview stye as well as details about the research study. permission from Wits University was then granted to conduct the study, found in appendix C. The study was checked to make sure it complies with all applicable laws

and regulations. Participants in the study, members of the public, and the academic community can feel confident that the results will be trustworthy and helpful by following these guidelines.

4.7.2 Informed Consent

In order to carry out interviews, the researcher has required the respondents' consent. The submitted information and data are protected not just by the ethical considerations in the study but also by governing laws like the POPI Act or Protection of Personal Information Act 4 of 2013 which seeks to protect peoples right for data privacy. (Staunton, Adams, Anderson, Croxton, Kamuya, Munene & Swanepoel, 2020) Informed permission was used to confirm that participants have understood the purpose of the study.

4.7.3 Voluntary Participation

The study has provided participants the choice to participate at their discretion. Participants were made aware that they are not subject to coercion or other forms of undue pressure to participate in the study and that they are free to pull back. It was necessary for each participant to complete a consent form attesting to the information above.

4.7.4 Confidentiality and Anonymity

In order to maintain anonymity, all participant data will be kept private. The participants' right to privacy and confidentiality will be upheld, and precautions will be taken to reduce or breaches of confidentiality while the research is being conducted.

4.7.5 Data Management

The study's researcher has ensured that just the data that was obtained was used, and only in the ways that were specified. Throughout the project, the researcher ensured that there were no data breaches and that the data collected is stored securely.

4.9 Researcher positionality on research design

The researcher, Aleasha Govender is a career Marketeer, specialising in marketing in large multinational technology and telecommunications companies. Having spent several years creating campaigns to customers, the researcher along with other

colleagues experienced that the current methods of segmentation of the customer markets were not optimised and despite these organisations having AI strategies as well as the means, resources and data available, rather outdated methods were still being used. This then created the concept for the study, the researcher acknowledges bias because of this. Having a network of well positioned people in other industries the researcher used her resources to find senior people in the related fields to interview for the study. Seeing as the topic is an emerging field and very data-centric, interviewees felt that the sessions could contain trade strategies and implicate how organisations use customer data, the participants simply could not go into detail about specific use cases or strategies used**.**

5. Results and Analysis measures

5.1. Results

In this section the results of the interviews as well as the findings will be presented according to the predefined research methodology in chapter 4. As prescribed the research was conducted via semi-structured interviews. The themes of the research were structured along the theoretic framework outlined in chapter 2, namely hard and soft capabilities, further identified themes will be outlines in this chapter. The relevant questions and responses according to the capabilities were based on the participant area of expertise. The outcomes and findings of the research found in chapter 5 will be detailed in chapter 6. The diagram below indicates the method followed by the researcher in the research and analysis phase.

5.1.1.



Figure 3:Results and Analysis outline

Source: Researcher

5.1.2 Participant Data

In the participant data below the firm and industry level context is provided, the targeted firms are in accordance with provisors outlined in chapter 4 and appear in the firm examples provided in Appendix B. The participants are similarly in line with the titles and areas of expertise provided in chapter 4 and 3 participants from each aligned firm were interviewed.

Table 3: Participant data

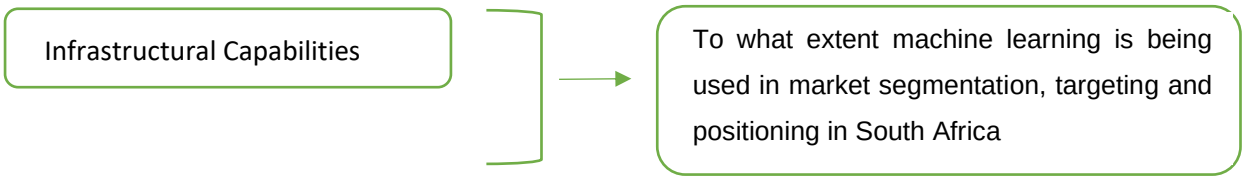
Industry and Firm	Participant	Participant area of expertise
Firm A: Banking	A1	Customer Data & Analytics
	A2	Technology & Business Transformation Head
	A3	Strategic Marketing
	A4	Head Data engineering, data science & AI
Firm B: Medical Aid	B1	Marketing & Strategy
	B2	Sales & Marketing
	B3	Marketing
Firm C: Telecommunications	C1	Segmentation & Marketing
	C2	Digital Transformation & Strategy
	C3	Marketing

Source: Researcher

5.2 Themes and theoretical categories

In marrying the themes of socio-technical theory and the research propositions for successful deployment of ML and AI in marketing strategy, the conceptual framework in chapter 3 was provided. The approach to analysis is therefore aligned to this framework and the research questions in figure 5 below.

5.2.1



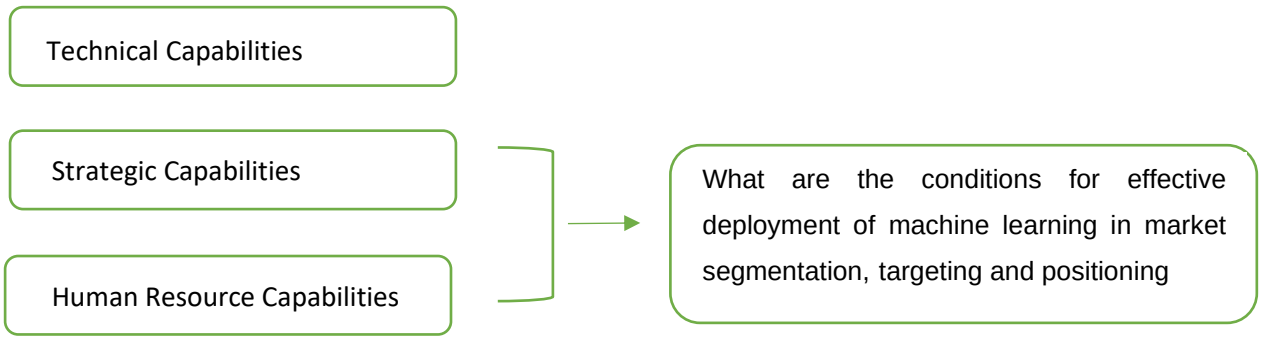


Figure 4: Themes linked to research questions

Source: researcher

5.3

The themes outlined in the section above highlight the areas from which the research interviews were conducted. Due to the nature of the interviews being semi-structured this allowed the creation of emerging themes to be highlighted.

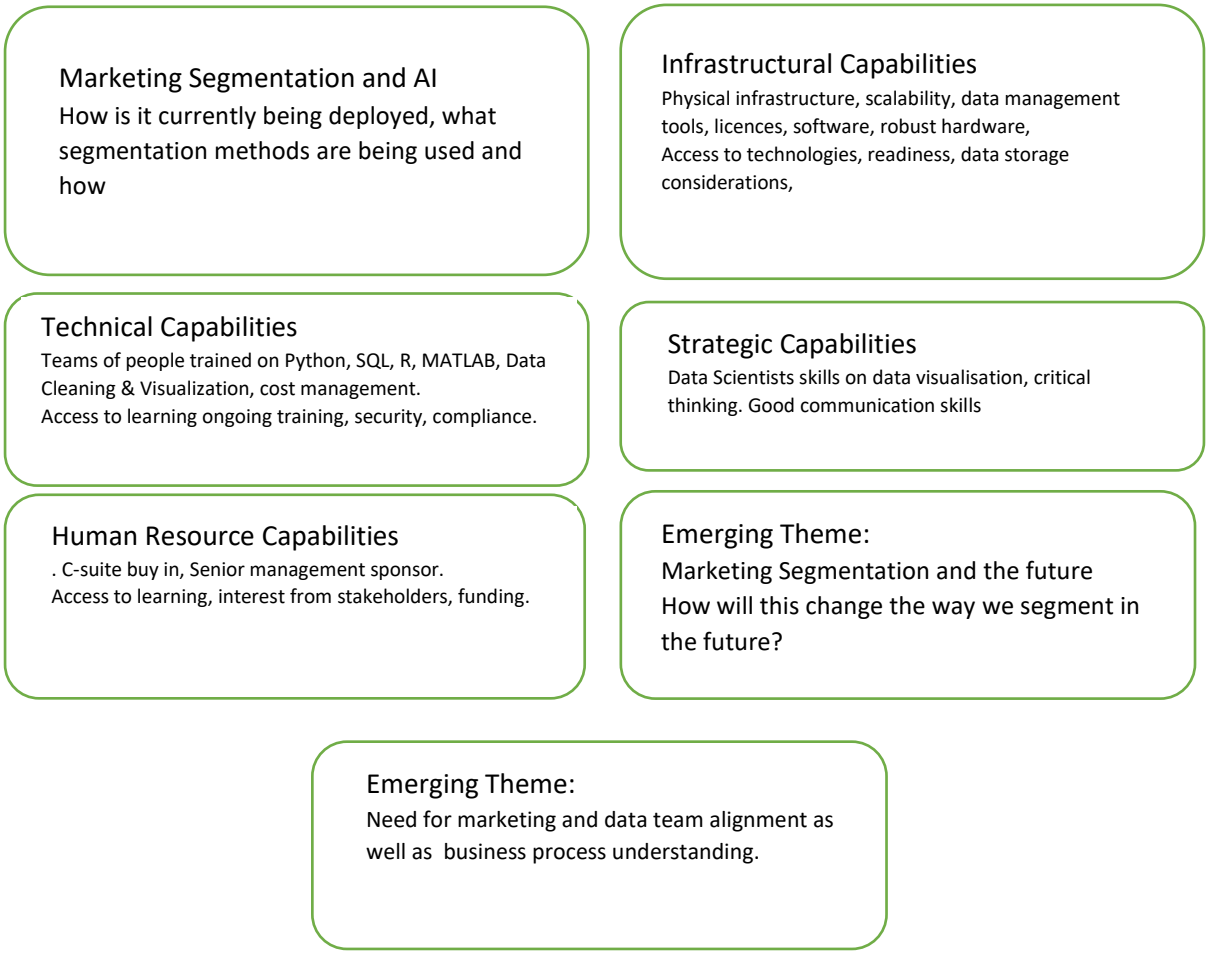


Figure 5: Themes and sub-categories

Source: Researcher

5.4. Presentation of Results

5.4.1 Marketing segmentation methods and AI

This sections focuses on the first research question, which is; To what extent machine learning is being used in market segmentation, targeting and positioning in South Africa?

The research shows that all the participants found that over time the Living Standards Measure (LSM) has less of a role in marketing STP, 9 out of 10 participants knew what LSM was. With regards to Socio-Economic Measure (SEM), only 2 participants out of 10 understood what the measure was. Out of the participants who understood LSM and SEM, the participants found the measure to be lacking as a commonly used segmentation tool. There are other means of STP all based on the different business requirements. The respondents know that Machine learning is being used for digital marketing and below-the-line activity level meaning for email and SMS campaigns, but do not believe that Machine learning is being used at a strategy level for segmentation, targeting and positioning. All respondents feel that this type of technology is still at an infancy stage.

5.4.1.1 LSM as a segmentation, targeting and positioning tool

"*So we normally see the LSM, being used from brand when they present information to us or when they present.* Umm, you *know, sort of a positioning strategy to us.*" Participant C3

(On LSM's relevancy) "it's an older method." Participant A3

"I am familiar (with LSM) and know it's not used at all." Participant B1

"*Over time, it proved to be inefficient because of, I think the logic has changed. We've got much more customer data now. It was a limited methodology for us to develop segments."* Participant A2

(On segmentation) *"It's very much data driven by the organization and I guess, UM, you know campaign specific, but no LSM were used."* Participant B1

(On using LSM) "So we don't look at it at that level anymore. We'll simply look at it from a willingness to spend". Participant C3

(When asked about the usage of LSM) "*it's sort of a model that has fallen by the wayside in, in our space."* Participant C1

5.4.1.2. SEM as a segmentation targeting and positioning tool

(I'm) "Not familiar with SEM" Participant B1

5.4.1.3 ML usage in Segmentation strategies

" We use Classification and clustering methods" Participant A4

" I think that could be done more effectively and also leaning towards you know predictive analytics as well could be, could be improved." Participant B2

" I think with some of the segmentation that we have is information that we've used you know for like at least a decade, honestly speaking". Participant C1

" Now we'll look at that available data and say is the data enough to build one of these models cause each one of the models will have its requirements.' Participant A2

(Ways of Segmentation) "We look at different segments based on their uses." Participant A2

(On using data driven by machine learning) "Only received on a quarterly basis - the second team that supports us is the usage team." Participant C3

"It's almost commercial modeling and business analytics and those are the ones who would tell us who uses what." Participant C2

"So the thing is, I don't know if it's fair to assume that the data analysis put together is been made use of." Participant C3

5.4.1.4 ML usage in Targeting Strategies

"we'll start with the base model that fits the data that we have and then over time we'll start ramping up the models as we get additional data points." Participant A2

" We use Predictive models" Participant A4

“So now you've gotten your campaign where you're targeting young families, you work with the DATA team who provides a data set” Participant B1

“ So based on those common variables that we've picked up and the trends, we will now group that segment and label it correctly so that the business knows how to target.” Participant A2

“There's a team that looks after insights and research directly from customers, So we will get and it's usually done on a quarterly” Participant C1

“we really try to use first party data in our social media stuff so that we are actually talking to the people who want to reach and not just spray and pray.” Participant A3

5.4.1.5 ML usage in Positioning strategies

“We will then offer them this type of proposition, but we I don't think we fully understand who we actually positioning our promotions to our propositions too, right?” Participant C1

(Methods of segmentation) “So we are aware that there's a group of customers that hardly use voice at all because they're comfortable calling on WhatsApp or Instagram and ours would be, should we build a product for that group”. Participant C*3*

“we just we just launch, and we then sort of hope that you know people wanting will then obviously sign up either to the lowest plan that we have because it's probably more aggressive and attractive in the market.” Participant C1

(On updates from dashboards that use ML) “t doesn't necessarily mean that our decisions always lean towards what they suggest.” Participant C3

5.4.2. Infrastructural Capabilities

The following themes 5.4.2 to 5.4.6 focus on the second research question, namely; what are the conditions for effective deployment of machine learning in market segmentation, targeting and positioning. Infrastructural capabilities as a necessity of successful deployment of ML in Marketing STP have been uncovered in chapter 3, as a result this theme was included in the interview guide specifically for the respondents.

Overwhelmingly respondents felt that their organisations had the infrastructural capabilities, and if required could ascertain these requirements.

Respondents felt that their organisations have the requisite access to technology and tools due to their size and influence in the South African Market. These companies are also large scale and have the financial means to gain these advantages. If anything held these companies back from moving forward into using AI more it's the legacy systems that these large corporates have as well as integration of these technologies into their eco-systems.

This was a section that all respondents answered. Some feedback in line with this sentiment is provided below.

"We've spent a lot of time and money on, you know, business intelligence and building a data lake and a central repository of data for all for all our markets and all our teams to connect to." Participant C2

" And we did get new systems, but then the challenges that we ran with there was, yes, we get all these amazing things this new systems can do, but then they don't have the right fit in terms of the organization." Participant A1

"it takes like years before they can actually stabilize within the business because you find that there aren't sufficient integration points. You know, systems can't talk to each other and that it hammered a lot of the things and even AI." Participant A1

The research showed that initiatives aimed at advancing artificial intelligence and machine learning depend on infrastructure capabilities. In the creation and implementation of AI applications, they have an impact on data handling, computing capacity, scalability, real-time processing, security, cooperation, and overall operational efficiency. The capabilities require not just sound technology but considerations like end-to-end integration into existing business models.

5.4.3 Technical Capabilities

In this research the technical capabilities discussed here refer to the skills required by data scientists and analysts as well as technologists who deal with the technical portion of the implementation of these technologies into the business. In this section

4 respondents participated as it required a more technical approach to the questions. Respondents also provided their ideas on exactly what skillsets are required to achieve the level of AI integration into business processes like marketing.

"*One thing is extracting the data and the other one is making sense of it and so you need someone to have the ability to run queries whether it's Python or SQL queries, and then we also need people to understand and analyze the data and then also you need People to extract from a flat file and make the data usable."* Participant A2

"But you know, in terms of actually analyzing this data, I don't think that capacity is there like we have the actual you know the ability to collect and store the data, but to actually analyze and now ensure that it's the correct data, no." Participant C2

"*I think it's limited in its infancy stage; I've just now employed a robotics and AI engineer to start this process"* Participant A2

"I think as a starting point for me, (the skills needed) will be our ability to do research and understand what is the best model to use. Participant A1

*So things like Python Anaconda. All these things, they bring a lot of efficiencies in terms of how we run models. (*Participant A4)

I mean, once you've done the data prep, which is takes a lot of the time, but if you've got those key skills around programming and building more efficient models and I think that is one of the biggest things that could equip analysts" (Participant A3)

5.4.4 Strategic Capabilities

As outlined in chapter 3, in order to successfully integrate AI in large corporate settings, a talented and interdisciplinary team of data scientists, engineers, and specialists are necessary to drive the innovation and adaptation. In the research the respondents feel skills like communication and strategy as well as hard skills like understanding code are key for successful implementation of AI for marketing segmentation.

"*What I've seen is a lot of analysts just go and find the first model that they come across and then they come and try to implement.*

But I think the first thing is your ability to do research and try to understand what works within your industry and within your particular context. And the next thing, once that is done is ability to use the new tools." Participant A1

"Often we are very much siloed from a product centric approach and as you move across the business from product centric to customer centric, having better access, you have better insights." Participant A 2

"Hence you find that true data scientists in the true sense of the word, they are actually quite limited. I mean in my it my experience in the last four or five years, I'll say I've only met 2-3 data scientists in the true sense of the word and linking to your previous question, one of the key things is around how you engage stakeholders and your ability to tell stories." Participant A1

5.4.5 Human Resource Capabilities

To assemble a team with specialists in data science, AI, and machine learning, organisations must make investments in talent development and acquisition. In many cases, upskilling current workers is essential to closing the skills gap. Hence this portion of the interviews were asked to all respondents. All respondents when asked: Have you been trained or upskilled by the business in the field of AI or machine learning? Participants responded that they have the option to learn should they wish, but that this isn't actively pursued unless employees opt into it.

(On training) "It's *not sort of something we're mandated to, to learn or understand about machine learning or AI"* Participant C3

"*I don't think we are there. We're quite rigid in our structures and if something is new like new technology, it takes a very long time to actually implement at scale. So, we may be doing training and hiring people with AI and machine learning skills, but the work takes a very long time, there's a lot of red tape"* Participant C2

"We need to work on it (communication) because of the high unemployment rate in South Africa, whether informal or formal, you know, how do we manage the hybrid workforce and how do we use humans for higher cognitive work as opposed to seeing we being replaced by this new workforce being automation and robotics

Participant A2

There is a bit of reluctancy to take to take risks based on what the what technology suggests about what customers are needing." Participant C1

While companies are portraying a keen interest in the emerging technologies space the evidence here is that not enough interdepartmental buy in, skills, upliftment and development is there in order to achieve success.

5.4.6 Marketing Segmentation in the future

As outlined in Chapter 3, in the future marketers will be able to target audiences more precisely and responsively, greatly increasing the efficacy and efficiency of their campaigns. The research conducted overwhelmingly showed that all respondents felt that the way we segment, position and target our customers will be greatly affected by ML and that we will be able to be more precise and accurate in our predictive models and targeting our customers.

" *As of today, we use ML for the necessity products, but in future ML and AI form a part of each and every products, we will have a form of ML in it will give an insight based on a missing learned insights." Participant A4*

"But I feel like organizations are not ready to actually take on this AI thing, but also AI is going solve the things you still need." Participant A3

" And also, just looking at customers and how they're using their data, you know on an individual level, which is which would involve a lot of data mining, I think that could be done more effectively and also leaning towards you know predictive analytics as well could be, could be improved. Participant C2

"Yeah, I think, the thing that we need to work out, is because of the high unemployment rate in South Africa, whether informal or formal, you know, how do we manage the hybrid workforce and how do we use humans for higher cognitive work as opposed to seeing we are being replaced by this new workforce being automation and robotics" Participant A2

(On the potential benefits of AI in Marketing segmentation) *" So as much as we have a daily view of numbers, who's coming in, who's going, churn, inflow upgrades, all of that, we don't really get to a point where we have a daily view of what are the thoughts, you know"* Participant C1

5.4.7 Missing Alignment between Marketing and Data Teams

An emerging theme from the research came about as a result of challenges in Human resource and strategic capabilities, as a general misalignment between the marketeers and the technologist particularly in the section regarding how ML is currently being used in marketing STP. The technologists are confident that the technology is used, the marketeers are uncertain of how or when the technology was used. Evidence of this is shown in direct *quotations below:*

From Marketeers:

"So, the thing is, I don't know if it's fair to assume that the data analysis put together is been made use of." Participant C3

(Is ML or AI being used ?) "I feel that I want to say yes, but it's not done by me." Participant B1

" I think with some of the segmentation that we have is information that we've used you know for like at least a decade, honestly speaking". Participant C1

"Besides, obviously presenting (strategy) or the agency presenting (to client), you know when, when we went to launch something, I think it would be great if we if we did a deep analysis(Regularly) , right?" Participant C3

From Data Engineers:

"But then now the rest of the team needs to understand data understanding and analytical thinking so that the insights that we generate, we can actually leverage them and be able to go implement are with a common understanding and not what the data scientists said" Participant A2

"The marketing teams, they are being, they are getting a training with knowing how to use these platforms and then that that is where like because they are the one who knows how to, they are the marketing experts" Participant A4

6. Discussion and Conclusion

6.1 Limitations and suggestions for future research

With reference to both research methods theory and research precedent the limitations for this study are considerably more than the researcher found through

the interview process. This study's requirement to go deeper into the level of how ML and AI are deployed as well as examples of use cases limited the participation as this data is extremely confidential. Additionally, information about how data is managed or obtained for any particular projects was also prohibited. In the literature review it was clear that whilst this was an emerging study there is a lot of interest about AI and its applications in marketing, there were not many papers with detail about marketing strategy. In the literature review there were no papers of this nature done in relation to the South African market, it was also limited to the sample population with the restrictions outlined in 3.5.4.1. Recommendations for future studies would be to get the necessary legal permissions from companies willing to participate so that the future researcher could be at liberty to go into detail about types of models used and use cases of successful deployment.

6.2 Implications and recommendations

The study's main findings indicate that machine learning is still in its infancy as a tool for corporate marketing strategy in South Africa. It also reveals certain factors that are impeding the field's advancement and are related to the hard and soft skills, which are the Infrastructural, Technical, Strategic and Human Resource capabilities needed for the efficient application of these technologies. Additionally, the study discovers that in alignment with the reviewed literature (Van Aardt, 2008; Davids & Gaibie, 2011 Ungerer & Joubert, 2011; Visser, 2016; Martins, 2010) the segmentation, targeting, and positioning techniques including LSM, when applied separately, do not optimally support marketing strategies. AI & ML are being used in marketing STP, but these tools are at its inception phase, the data engineers and digital transformation heads are currently running small scale ML Projects to create proof of concept type campaigns.

The implications of the aforementioned insights are that the issues that are halting the adoption of these technologies are linked to the types of capabilities, namely, technical as there is a lack of quality skilled professionals with a proven record of implementing ML and AI. Infrastructural, due to legacy issues there is a lack of quality data, there are also integration issues. In Strategic, there is a lack of an overall ML implementation strategy that is aligned across the business and within Human Resources there are potential people problems like issues with hierarchical

structured organisations where strategy and change cannot be fulfilled easily, there are issues around red tape and lack of push to skill all workers, not just those who are in the technology space.

All participants feel in alignment with the current literature (Flinders & Flinders, 2023; Volkmar, Vasilopoulos, Theodorakopoulos, & Giotopoulos, 2023; Fischer & Reinecke, 2022; Ullal, Hawaldar, Soni, & Nadeem, 2021; Huang & Rust, 2021; De Bruyn, 2020 ; Ngai & Wu, 2022) that ML will revolutionise the way marketing STP is done in the future.

The recommendations for practitioners in marketing and technological side of corporate South Africa are aligned with the socio-technical approach (Mumford, 2003). Which is to ensure that ML is not just run in the technology side of the business but rather that a core team including marketers, strategists, HR and other representatives from business processes are upskilled and included in the trial phase where optimal algorithms are defined for the particular product strategy. This way perspectives from business, the social factors as well as marketing methods are considered, and learnings can be improved on in real time. This will allow for a more robust system of implementation and integration into the business process. In summary, Infrastructural, technical, strategic, and human resource capabilities are considered crucial for effective ML deployment and use in marketing strategy.

6.2 Conclusion

Having looked specifically at academic literature, white papers and statistics provided in the literature review on Table 2, p.15 the review found existing research showing that there was room for more research on the first research question (Van Aardt, 2008; Davids & Gaibie, 2011 Ungerer & Joubert, 2011; Visser, 2016; Martins, 2010) . The first research question is :To what extent machine learning is being used in market segmentation, targeting and positioning in South Africa. The methodology proved adequate, but the researcher found the level of detail that the participants were comfortable sharing not in depth. For the second research question: What are the conditions for effective deployment of machine learning in market segmentation, targeting and positioning. the interviewed participants could share more information as they felt their organisations lacking in the readiness, cohesion and strategy required to successfully deploy ML in their organisations.

This is reflected in the findings. The methodology worked well for this study as the researcher found that interviews allowed the participants room for expanded conversation and more insights. The required population sample in South African companies would not have been sufficient for quantitative methods.

Machine Learning is not just a buzzword in corporate South Africa, it is indeed a technology that corporates are becoming familiar with. Marketing strategies are adapted to resonate with target audiences when insights are used, which results in more engaging campaigns. Despite dealing with legacy issues, lack of skills, strategic misalignment, and HR issues, across industries employees feel ML will revolutionise the way we segment, target, and position our products to customers. While the technology is in its inception phase, once the right processes and interdepartmental strategies are synergised, success in this field is imminent. With the right technology for deployment, a refined strategy, a close knowledge of effective marketing tactics and a robust HR structure, the intersection of these four capabilities, will provide greater efficiency and effectiveness of marketing segmentation, targeting and positioning strategies in corporate South Africa.

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Appendices

A. Problem/Opportunity Conceptualisation table

Author (Year)	Organisational Problem	Research Problem	Conceptual Frame Used	Population & Sample	Research Gap
L.M. Ungerer & J.P.R. Joubert (2011)	Market segmentation limits the parameters of marketing strategy by the methods used in segmentation criteria	Whether elements such as psychological variables can be included in the current model for Living standards measure	Market segmentation the role of values in MS and LSM (living Standards measure)	Adult South Africans 2566	Other properties that influence individuals, like race education employment, location.

Sruthi Janardhanan and Raja Muthalagu (2020)	Current segmentation criteria focuses on a few areas of customer behaviour not various properties that influence customer decision making.	Focus on buying behaviour to determine correlations between products and customer behaviour and determine top products	k means clustering & ARIMA (Auto Regressive Moving Average) to understand consumer behaviour	200 tuples, 102 customers	Focus is non South African and is product related behaviour in relation to sales not regarding the customers market segmentation and how this affects marketing strategy
Johan Martins (2010)	Segmentation, targeting and positioning criteria misses other consumer characteristics that affect buying behavior and marketing strategy.	This paper includes Living standards measure, race a calculation of the south African consumer market, and the expenditure groups in South Africa	Existing survey data , qualitative and quantitative,	Various samples used	Includes various other data sources including LSM, however there is still an opportunity to discover how STP affects marketing strategy
Deepali Kamthania, Ashish Pahwa and Srijit S. Madhavan (2018)	Using Business intelligence for market segmentation, targeting and positioning and strategy in South Africa	This paper aims to look at how to use BI in market segmentation in the e-commerce space	k-mode clustering algorithm and user geographical distributions.	200 users of an e-commerce site	Is not a South African study that takes into account current STP criteria in SA

B. Proposed List of companies that meet the criteria for the study

- Must market to mass audiences – this necessitates the need for market segmentation
- Must be targeting the South African Market and more than 1 million customers per annum. The reasoning for this is that in order to use AI and Machine learning, large datasets are required
- Must have access to AI and ML tools which are expensive technology, furthermore, have access to skilled employees who can utilise these tools it can be predicted that companies with access to this have a turnover of more than R100 million per annum
- 2-3 respondents per firm; 3 firms targeted

MTN	Discovery LTD	AB inBev
Cell C	Standard Bank	Absa

Nedbank/Old Mutual	Takealot	Woolworths
FNB	Multichoice	Takealot
Telkom	Bidvest	PicknPay Group

C. Ethics approval

Graduate School of Business Administration
University of the Witwatersrand, Johannesburg

Wits Business School

Wits Business School Ethics Committee
Constituted under the University Human Research Ethics Committee (Non-Medical)

Ethics Clearance Certificate

Ethics protocol number: WBS/BA0609587W/199
This certificate is only valid with a legitimate ethics protocol number and signed by the Researcher (below).

Project title	Machine learning in marketing strategy: A socio-technical approach in South Africa
Investigator / Researcher	Mrs Aleasha Govender
Nature of Project	MBA (Research Article)
Decision of the Committee	Approved, provided stakeholders and participants are guaranteed confidentialty.
Issue Date of Certificate	9/12/2023
Expiry date	Date of submission of the project / research report
Chairperson	Dr Pius Oba ☎ +27 11 717 3976 +27 82 733 6587 ✉ pius.oba@wits.ac.za

Declaration by Researcher

One copy must be signed by the Researcher and returned to the Chairperson of the Wits Business School Ethics Committee.

I fully understand the conditions under which I am authorized to carry out the abovementioned research and I guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I undertake to resubmit the protocol to the Committee.

DocuSigned by:
Aleasha Govender
030651EFA65B4D8...

Signature

2023-09-15

Date:

D. Interview Guide

Interview Guide for Research Study

TOPIC: A study of Machine Learning in Market Strategy: A Socio-Technical Approach in South Africa

SECTION A: Demographics

1. Could you please tell me a little bit about background and your role in the organisation?
2. What is your job title at this organisation?
3. How long have you been working in this field?
4. How long have you been at the company you are currently employed at?

SECTION B: Market Segmentation, Targeting and Positioning (STP)

5. How do you approach the segmentation, targeting and positioning of your marketing strategy?
6. Please elaborate which segmentation methods are used?
7. Please elaborate which targeting and positioning methods are used?
8. What is the rationale for the choice of the methods you use? under what circumstances they are employed?
9. What do you know about the Living standards measures? Are they used in segmentation at your company? To what degree?
10. Are you familiar with socio-economic measure, are they used in segmentation at your company? To what degree?
11. What informs the selection of the target audience you to focus your marketing attention on?
12. In your opinion, how would you describe the role of segmentation in your marketing strategy design and implementation at your company?
13. How are the current methods of segmentation, targeting and positioning (STP) effectively used in the current marketing strategy? Are they successful?
14. In what ways can the STP criteria/methods be improved to effectively roll out marketing campaigns?

SECTION C: Hard capabilities

Infrastructural Capabilities

1 Do you understand what Machine learning is? How does AI differ from ML

2 Does your company have the infrastructural capacity to collect store and analyse data for the purposes of machine learning?
3 Are AI and ML being used on your data for the purposes of segmentation, targeting and or positioning?
4 How do you envisage ML to help improve on how the segment the market, target and position your product to your target audience?

Technical capabilities

1. What is Machine learning ? How does AI differ from ML
2. What kind of skills do you consider to be crucial in implementing ML in your organisation? at your company who are skilled in understanding Machine Learning?
3. What ML methods are used in segmentation at your company, eg cluster analysis or linear regression?

SECTION D: Soft capabilities

Strategic Capabilities

1. What is Machine learning? How does AI differ from ML?
2. To what extent are marketing campaigns within your company using segmentation, targeting and positioning methods that employ machine learning?
3. How could segmentation, targeting and positioning (STP) be improved on by Machine learning?

Human Resource Capabilities

1. What is Machine learning? How does AI differ from ML?
2. How have you been trained or upskilled in understanding the field of AI?
3. How is organizational structure well positioned to adopt new technology and ways of work?