Wholesale&Retail
LEADERSHIP CHAIR

Cape Peninsula University of Technology

W&RSETA WHOLESALE AND RETAIL SETA
Skills Development for Economic Growth

"Collaboration opens the window to a world of opportunities."

Project 2019/27:

Technology trends & challenges for retail managers in SA, with special emphasis on e-retailing.

March 2020

APPLIED RESEARCH
LEADERSHIP DEVELOPMENT
SERVICE TO RETAIL COMMUNITY

Project 2019/27:

Technology Trends & Challenges for Retail Managers

in SA with Special Emphasis on E-Retailing.

Prepared by:

Lead researcher: PJ Raap

Research team: A Buys, iFeedback

Dr KM Corbishley, Durban University of Technology

Professor R B Mason, WRLC, CPUT

Wholesale and Retail Leadership Chair

Cape Peninsula University of Technology

Cape Town

"Collaboration opens the window to a world of opportunities"

ISBN :   978-0-9946970-4-2

This report is available online at: www.wrlc.org.za

TABLE OF CONTENTS

List of Figures

List of Tables

CHAPTER 1
BACKGROUND AND CONTEXT

1.1 WHOLESALE AND RETAIL SECTOR EDUCATION TRAINING AUTHORITY (W&RSETA) PERSPECTIVE

The W&RSETA is tasked with the responsibility of contributing towards sector research and development of professional qualifications at Higher Education levels (http://www.wrseta.org.za/). To this end, the W&RSETA has established the Wholesale and Retail Leadership Chair (WRLC) at the Cape Peninsula University of Technology (CPUT). In 2019 the WRLC called for proposals for Project 2019/27 titled "Technology trends & challenges for retail managers in SA with special emphasis on e-retailing".

The main purpose of the study is to provide the W&RSETA with a report which informs sector retail managers of technology trends and challenges in South Africa, with specific emphasis on e-Retailing.

This report presents the findings of the investigation into this topic.

1.2 RESEARCH OBJECTIVES

The main objectives of the study are to

- Identify current and future technological trends internationally and in SA influencing in-store retailing
- Identify current and future technological trends internationally and in SA influencing e-retailing
- Identify consumer attitudes to, and use of, these new trends
- Identify challenges faced by retail managers in adapting to these trends
- Identify skills required of retail managers to adapt to these trends

1.3 TECHNOLOGY AND THE RETAIL ENVIRONMENT

Askew (2019) suggests that technological innovations, both online and in-store, will result in disruptive change in the sector. Meier, in an interview with van Eeden (2018) speaks of "technological convergence" where consumers can have quicker and easier access to what they want and have it delivered, all from one place. In a

study of four American retailers, Blitz (2016) found that those retailers that had adopted technology that enhanced customer value had experienced significant growth in revenue, while those that had not adopted technology that enhanced customer value had suffered a significant decline in revenue.

Simultaneous to technological innovations is the rise of Generation Z, the first true 'Digital Native' (Francis & Hoefel, 2018), with high levels of connectivity and trust in social groups rather than slavishly following large established brands.

These significant and rapid consumer developments have substantial impacts on store management where salespeople, merchandise planners and store managers need to prepare for technologies in-store and online in response (Adhi et al. 2019).

1.4 SUMMARY OF METHODOLOGY

A desk study was undertaken in order to establish the current state of technology and challenges facing management. This was followed by an online survey of consumer attitudes and intentions towards technology as well as a survey amongst retail managers to determine levels of preparedness of management and staff for technology adoption.

1.5 REPORT STRUCTURE

- This initial chapter introduces the topic and research approach in summary
- Chapter 2 presents the findings of the literature review with regard to technological trends and technological adoption as well as the development of the consumer questionnaire
- Chapter 3 presents the findings of the literature review with regard to management challenges and skills.
- Chapter 4 reviews the research approach and methodology
- Chapter 5 presents the findings of the research surveys
- Chapter 6 discusses the recommendations and conclusions for the W&RSETA.

1.6 CONCLUSION

This introductory chapter has set out the objectives, context and overall approach of the study. The following chapter will establish the current status of, and future, technological trends in the retail environment in South Africa with cognisance of international issues. It will further determine the basis of the consumer questionnaire.

CHAPTER 2
TECHNOLOGICAL TRENDS AND TECHNOLOGY ADOPTION

This chapter will establish the current status and future technological trends in the retail environment in South Africa with cognisance of international issues. It will further determine the basis of the consumer questionnaire.

2.1 TECHNOLOGICAL TRENDS

Grewal et al. (2017) provide a useful categorisation of the areas in which technological developments are taking place in the retail environment. These categories are represented in Figure 2.1

Figure 2.1: Organising Framework
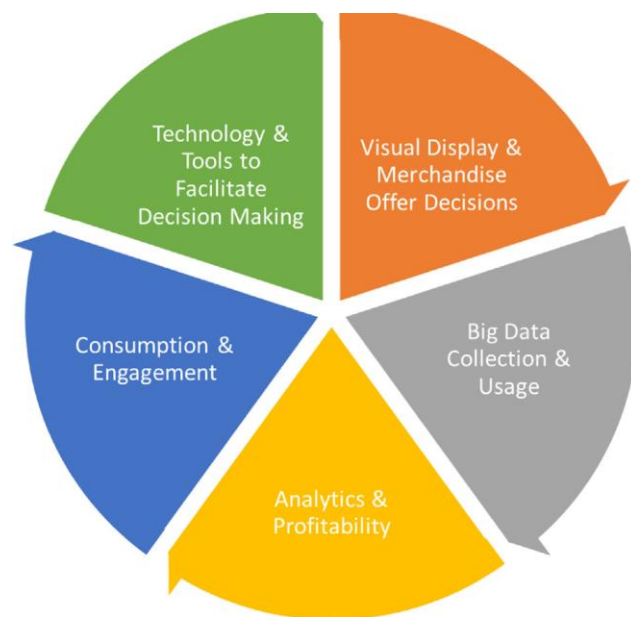
Source: Grewal et al. (2017, 2)

The category 'Technology and tools to facilitate decision making' refers to the two-way communication made possible by smartphones, which may facilitate self-scanning, self-service checkouts, personalised promotions and smart shelves. Consumers gather information on which to base their decisions, while retailers can directly tailored information towards consumers.

Secondly the category, 'Visual display and merchandise offer decisions', while not strictly electronic or digital technology based, is important as Grewal et al. (2017) propose that strategic visual presentations and merchandise assortments can influence spontaneous in-store and online purchases.

'Consumption and engagement' relates to customer experience by creating deeper emotional connections with customers, and identifying with customer values through service interface, retail atmosphere and assortment. Customer experience can also be improved by leveraging social media.

'Big data collection and usage' provides the opportunity to optimise prices and increase sales by improving on understanding of customer behaviour. Big data is analysed and interpreted in terms of the customer, product, location, time, and channel.

'Analytics and profitability' is central to well-developed strategies based on analytics. This may include personalized and dynamic pricing as well as development of multi- and omni-channels.

In support of Grewal et al. (2017), which is an academic paper, international and South African business publications provide their projections of the future of retail (Achille et al., 2018; Adhi, 2019; Askew, 2019; Broll, 2019; Esterhuizen, 2018; Frazer, 2019; Goldman, 2017; Kalis, 2019; Naigon, 2017; Smith, 2019). A thematic analysis (Braun & Clarke, 2006) is applied to these authors, attempting to classify their projections according to the Grewal et al. (2017) categorisation. A summary is provided of those areas of technology impacting on the retail sector. (Appendix 1).

Figure 2.2 reflects the frequency of the themes derived from the ten business publications.

Figure 2.2. Frequency of Themes of technology in Retail

Frequency of Themes

- Technology & Tools (1)
- Visual Display & Merchandise (2)
- Consumption & Engagement (3)
- Big Data (4)
- Analytics & Profitability (5)
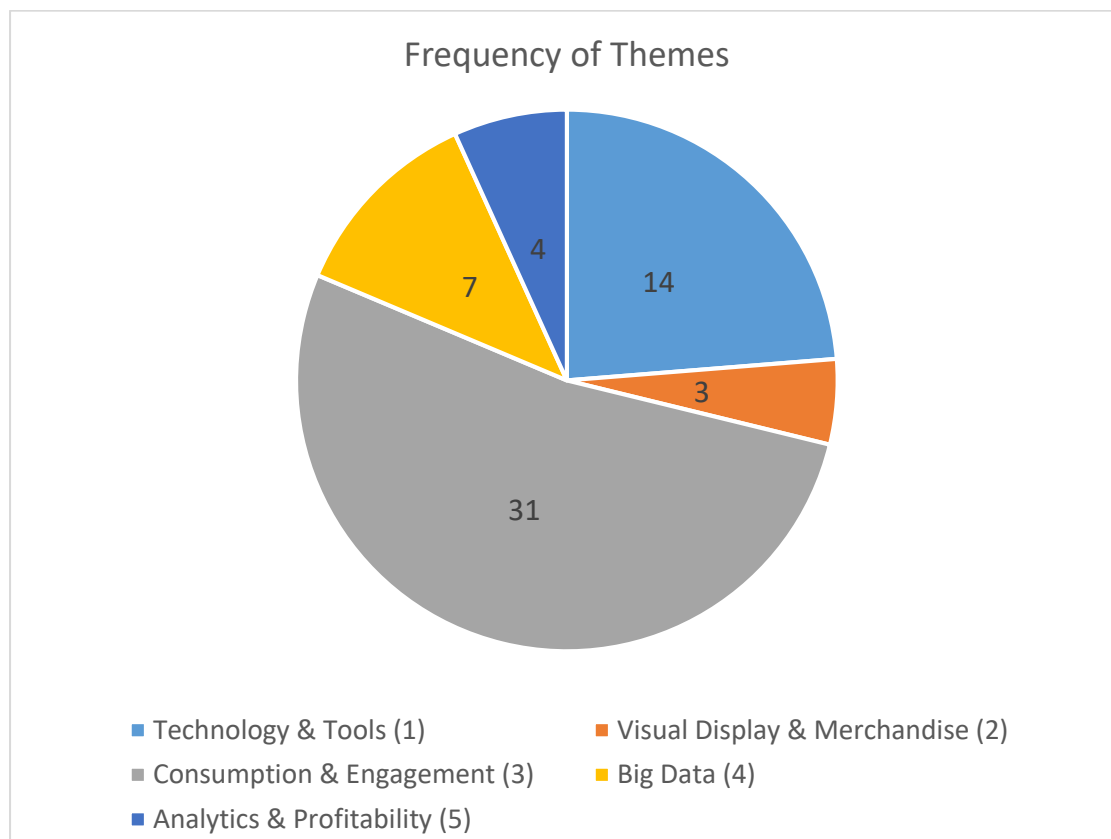
Derived from the Thematic Analysis. Appendix 1.

Perhaps surprisingly, the predominant theme is 'Consumption and Engagement' rather than any hard technology or process. These are the technologies that contribute to the customer experience. Customer acceptance of the technologies leads to the overall enhancement of the customer experience.

2.2 CONSUMER ATTITUDES AND ACCEPTANCE

The third objective of this study requires that consumer attitudes towards, and usage of, technology trends are identified. The methodology to achieve this was a large e-survey of these attitudes and usages. This section sets out the approach to determining the constructs to be measured by the survey and develops the questionnaire used.

Ajzen and Fishbein's 1980 Theory of Reasoned Action (TRA) and Ajzen's Theory of Planned Behaviour (TPB) grounds the powerful Technology Acceptance Model (TAM) (Taylor & Todd, 1995). TAM assesses the beliefs about two factors:

'Perceived ease of use' and 'perceived usefulness' of technology and as determined by many studies (inter alia Davis et al., 1989; Kaushik & Rahman, 2015; Taylor & Todd, 1995; Shih & Fang, 2004; Weijters et al., 2007; Javadi et al., 2012.), the TAM model shows a significant correlation between having a 'positive attitude' to a new technology as an antecedent to a consumer's 'intention to use', or adopt, a new technology. The questionnaire (see Appendix 2) measures the constructs of 'attitude towards' and 'usage of' for both self-service technology (SST) and online shopping on a five-point Likert scale, followed by demographic data. The questionnaire follows the constructs of several authors as identified in Appendix 3.

2.3 CHAPTER CONCLUSION

This chapter has traced local and international trends in technological developments and concludes that the mega trend in retail is "customer experience" (consumption and engagement) which is supported by various 'hard' technologies. The hard technologies need to be accepted and used by customers for relevant customer experiences to be developed and achieved. The TAM model provides the basis of a consumer questionnaire which was used to establish acceptance and usage.

The following chapter will investigate management skills and challenges of retail technology and will propose a second questionnaire accordingly.

CHAPTER 3
MANAGEMENT ISSUES

This chapter will consider the implications for the management of the technological trends identified and will suggest the areas for management skills development. It will also consider the basis of the management questionnaire

3.1 IMPLICATIONS OF TECHNOLOGY TRENDS FOR BUSINESS

For a business to stay abreast of technological advancements, it is necessary to not only understand these advancements and what they can do for a business, but also to understand the consumer trends and adoption of technology by consumers.
A recent report by McKinsey & Company (Begley et al. 2019) states that "*the winners in the sector will be those who understand the implications of automation and act quickly to respond to them.*" The report draws on research conducted by the McKinsey Global Institute over the past three years on automation across sectors. The research demonstrates that "… *about half of all activities in retail can be automated using current, at-scale technology.*" McKinsey concludes that the changes *"… will be less about job loss and more about the evolution of jobs, the creation of new ones, and reskilling.*"

The report identifies four 'new realities' in the way business automation is reshaping business models and the broader value chain in retail:

- "***Margin pressure has made automation a requirement, not a choice.****" Retail-margin pressure is mounting, driven by more intense competition, investment in e-commerce, and pressure to increase wages. While these cost pressures are not new, many retailers have already exhausted traditional cost-reduction levers.*
- ***"The bottleneck to automation is internal, not external."*** According to the authors "… *available automation technologies show that they can already operate a typical retail grocery store with up to 55 to 65 percent fewer hours*". The authors conclude that challenges in automation are in some instances inappropriate skills and capabilities but are primarily the result of businesses' inability to adapt*: "…the inertia of the businesses. Retailers struggle to break*

free from the soft tyranny of budget cycles and the replication of last year's capital spending."

- ***"If you aren't already implementing automation, you are falling behind."*** The authors point to Amazon as the biggest disruptor, including its recent trend concept of Amazon go which is also utilising high-tech in-store. Amazon has plans to open 3000 stores by 2021, giving a new meaning to the term 'omnichannel'.

- ***"The automation opportunity is bigger than operations."*** The report states that while much of the attention is on automation and artificial intelligence (AI) in stores, the supply-chain and headquarter functions (such as merchandising) will also be affected to a large extent. These changes could include advanced planning systems, dynamic systems with web-scraping and predictive impact analytics which could automate pricing and promotions; and even automation of some human resource (HR) processes.

Another McKinsey & Company report (Adhi et al., 2019) focusses on the impact of automation in store: "*Several new technologies have reached a tipping point and are set to spill over onto the retail floor. Machine learning and big-data analytics techniques are ready to crunch the vast quantities of customer data that retailers already accumulate. Robots and automation systems are moving out of factories and into warehouses and distribution centres. The Internet of Things allows products to be tracked across continents, or on shelves with millimetre precision. Now is a great time for retailers to embrace that challenge of bringing technology and data together in the offline world.*"

According to the report, *"… even by 2023, e-commerce (in the USA) is forecast to account for only 21 percent of total retail sales and just 5 percent of grocery sales. And with Amazon and other major internet players developing their own brick-and-mortar networks, it is becoming increasingly clear that the future of retail belongs to companies that can offer a true omnichannel experience.*"

Many retailers have chosen to add an online channel to their mix, becoming omnichannel retailers to provide a seamless customer experience (Piotrowicz &

Cuthbertson, 2014). Frasquet et al. (2017) found that this could be advantageous as trust and attachment established offline often translated to online loyalty.

However, it appears from the literature that SA retail businesses are lagging behind their global competitors in adopting technologies. Although on-line purchases/e-commerce were one of the first technologies to be adopted by retailers in the US – with disruptors like Amazon putting much pressure on retailers to 'adapt or die'- these retailers are now on the next curve of adopting technologies to increase customer in-store experiences and embed technologies in the entire value chain of organisations. Yet, SA retailers are still to fully embrace e-commerce and apply these technologies to improve their customers' experiences, grow sales and strengthen brands. As noted from the preceding section of this report (Consumer trends with technology), much of the discussions among SA businesses are still focussed on e-commerce as a decision-making tool and possible point of sale.

According to a research study recently commissioned by digital marketing agency Rogerwilco (Stewart, 2019), there are 18.43 million e-commerce users in South Africa today, with an additional 6.36 million users expected to be shopping online by 2021. Yet, e-commerce generates only R14-billion (1,4%) of retail sales in South Africa, compared to 14,3% in the USA and almost 8% in the UK.

Reasons for this low e-commerce uptake are believed to be multi-fold, ranging from the cost of data in SA to access to technology. However, it appears as though the low uptake may also be partially attributed to poor experiences with e-commerce by the SA consumer.

According to Singh (2019), research on online customer experience is still lacking. However, the Rogerwilco research (Stewart, 2019) recently set out to explore SA customers' e-commerce experience. The findings suggest that as many as 71% of South Africans reportedly abandon an e-commerce sale. This equates to an estimated loss of R34-billion per annum for SA (e-commerce) retailers. The research further set out to explore why this is happening and the impact of a consumers' e-commerce experience on the overall brand. Key findings from the report suggest:

- 44,5% of South Africans said that they would increase the amount of business they do with a brand if they were pleased by its online experience;
- If a brand pleases them, the likelihood of those earning more than R30k pm doing more business, increases to 57%;
- 71% have abandoned a purchase or an online transaction, accounting for a loss of R34 billion per annum;
- 53% said there is often no-one to help them online when they get stuck;
- 45% complained that sites or apps are too slow;
- 30% complained about a lack of information about a product or service;
- 48% still don't like sharing their credit card details online;
- 37% said that it's easier to go into a store or a bank branch;
- 73% of consumers said that when they do go online, they invariably need to contact a business personally for help;
- they are most likely to use old-school email;
- 39% reported that retailers often were out of stock of a product.

Furthermore:
- 49% of consumers have been disappointed by a brand purchased online; and 26% of them would share their negative experience on social media.
- 32% would not use a brand again if they had a negative online experience, leaving brands with very little room for error.
  In addition, 99.7% confirmed they would share a negative experience with friends and family;

In addition to the above findings, a recent Accenture survey in SA (McCabe et al., 2019) found that 69% of consumers in SA indicated that the inability to access information or buy a product using multiple channels is frustrating; while a further two thirds of online buyers indicated that the lack of consistency and the limited choice in payment methods, is a source of frustration. Singh (2019) concurred that customers who do not find satisfaction with their online experience will not seek to purchase again and will probably find an alternative provider. The word 'experience' was highlighted, indicating that this is of more importance to the customer than the actual product purchased.

These findings should encourage all SA business managers to pay attention to their e-commerce activities and how they may serve to build or destroy a brand. The findings also pose the question as to why SA consumers' e-commerce experience is so disappointing. The Accenture study (McCabe et al., 2019) suggests that retailers in South Africa are still putting most of their efforts into their core brick-and-mortar stores as they find online operations expensive to maintain and often unprofitable.

Retailers that do not view e-commerce as a viable or priority channel, may therefore effectively cause poor e-commerce uptake, as they are not optimising the potential of this channel. According to the Rodgerwilco report (Stewart et al., 2019), SA retailers are then also reluctant to make significant investments in e-commerce as they do not see this as a complementary channel, but fear that e-commerce may influence store purchases negatively.

In short, it appears as though most SA retailers are not yet viewing e-commerce as a value-add, and less so as an integral part of the broader omnichannel strategy which is already being adopted by their counterparts abroad.

3.2 BUSINESS READINESS FOR TECHNOLOGICAL CHANGES

While much can be found in the literature on technological trends in retail and on consumer behaviour and adaptation of technologies, there is limited information on *what* companies should do to stay abreast of technological changes and even less on *how* business should do this. One valuable resource on *what* SA retailers should do to scale their digital processes and online business, and which also provides numerous tactical examples of what businesses can do, is the Accenture report (McCabe et al., 2019).

The report elaborates on three strategic focus areas: integrating e-commerce with

Is your management team actively preparing for the future of work?
McKinsey (Begley et al., 2019) implore management to answer the following questions:
- What is the size and scope of the workforce that would be affected by your technology road map?
- What business changes or adjacencies could generate significant new jobs?
- Do you have a plan to train people for the skills of the future? Who will be your partners?
- Given the workforce implications across the economy, would you prefer to address them proactively or reactively?
- Do you have a plan to source new talent at all levels of the company?
- How do wages need to evolve so that you retain workers and attract good talent?

legacy business; building modern digital infrastructure; and improving customer trust and experience.

The McKinsey & Company report (Begley et al., 2019) takes a broader look by considering technology adoption in the full value chain (not only the customer interface) and elaborates on *how* businesses should organise and prepare themselves for adapting to technological trends. It identifies two core areas of focus for businesses to ensure that they can respond rapidly to technological trends:

- **Organizational structures and ways of working must be transformed.**
  Retailers must rethink their operating models across stores, distribution centres, and headquarters. Automation creates organizations with far fewer layers - each employee is responsible for a more diverse set of responsibilities. Real-time data and analytics will empower faster decision making. Retailers must therefore reconsider their organizational structure, shifting from strict hierarchies and siloed functions to "teams of teams" built around end-to-end accountability, with flexible resources that improve workflow. These teams must be empowered with real-time data and decisions purposefully decentralized.

- **Transformation in skills and human resource strategies:**
  - **Redeployment of labour.** As retailers implement automation technology, they create a large bank of hours with a trained and trusted workforce. The opportunity to redeploy a portion of these hours to more valuable activities provides an opening for a differentiating kind of innovation.
  - **Skilling and reskilling at scale.** As the demand for physical and manual skills declines, the need for technological skills will rise quickly. Competition for skilled employers will increase and companies already report that an inability to source talent is the main reason for delaying the adoption of technologies. This means retailers must reskill – a strategy with several benefits over the long term.

- o **Review talent-acquisition strategies.** Employers in the USA increasingly view talent - not real estate costs - as the primary driver of decisions regarding office locations, and many are moving their headquarters to optimize for talent. By engaging gig workers and outsourcing tasks to partners (rather than hiring), retailers can also expand the way they define the acquisition of talent.

- o **Wage reinvestments.** As retailers introduce additional automation into their retail models, they will end up with fewer but more highly skilled jobs. To get the right talent, retailers must invest in higher wages and benefits.

Based on the literature review and implications of technology trends on business, two other areas should be addressed by retailers striving to adapt new technologies in an ever-changing environment:

- **Organisational culture.** A change in organisational culture will be required to empower staff to be innovative, empower decision-making and take risks in an ever-changing environment. A flatter organisational structure will contribute towards a more responsive organisation, but not without decentralised decision-making. This calls for a supportive organisational culture and appropriate staff incentives. McKinsey & Company (Begley et al., 2019) then also refers to the 'inertia' in businesses which continue planning and budgeting as they have done in the pre-technology era. An entire cultural change and re-think of how to create an organisation which is more responsive to change - from top management right down the lowest skilled employees – must therefore be considered.

- **Manage internal failure.** Closely related to the above is how a business will deal with internal error or failure of new innovative approaches. What is the appetite for risk within the organisation? While businesses often have explicit rewards in place for success, the (implicit) assumed punitive measures which may follow failure may inhibit innovation and risk taking by employees. An organisation's response to possible failure should therefore be explicit and

consider the cost of possible punitive measures for failure against the cost of inhibiting risk taking and innovation.

- **Manage external failure/errors.** The advent of technology and social media does not only hold potential positives for companies, but also means that negative experiences are more easily shared by consumers through social media and other channels. Retailers must have strategies in place to deal with potential failures or errors to contain the damage which may result from a bad customer experience.

3.3 CONCLUSION

The challenges to management as well as their possible shortcomings that are evident from the literature have been identified in this section and resulted in the survey-based questionnaire around the themes of awareness, attitude, skills, training and readiness (preparedness) to implement. See Appendices.

The following chapter reviews the methodology adopted.

CHAPTER 4
METHODOLOGY

This section will review the methodology used to conduct the research and will include the sample selection and questionnaire design.

4.1 RESEARCH TYPE

In order to satisfy the objectives of the research a desk study was undertaken to consolidate the findings of the literature review. This also served as a basis for the development of the questionnaire for the consumer attitude survey as well as determination of the survey for the retail managers.

The research approach adopted here is quantitative, cross-sectional and descriptive.

4.2 SAMPLING

Sampling is based on a non-probability purposive or convenience sampling. Two different quantitative studies were conducted during the process both of which utilised an email to target databases of respondents. The databases utilised included the iFeedback Citizen Science Institute, CPUT retail database and the Interactive Direct database.

4.2.1 Population

The population is set at the size of the databases used for this study; it should thus be noted that the results reflect the opinion of consumers and retailers as represented on these databases and caution should be taken if drawing inference outside of this population area. These databases are skewed to the type of respondents who have access to a computer. The response rate may skew the results further by representing the opinion of respondents who are willing to assist with voluntary studies. The consumer attitude survey was sent to 5409 respondents. The retail management survey was sent to 12032 respondents.

4.2.2 Sampling method

Non-probability purposive or convenience sampling resulted in respondents being selected on their availability and willingness to respond.

4.2.3 Sample size

The consumer attitude survey resulted in 301 respondents who completed the survey. Some of these respondents were not willing to provide their income resulting in this question only having 291 responses. The survey for retail managers resulted in 94 respondents. The sensitive question about the respondents' company turnover question only received 72 responses.

4.3 DATA COLLECTION

4.3.1 Data collection instrument

Data collection was done electronically for consumer attitude determination. An existing data base of consumers was used. Respondents were recruited from three South African databases. The first was the Interactive Direct database which is a database of individuals in all provinces in South Africa. These respondents have been sourced ethically through an opt-in system. A secondary database used was iFeedback's Citizen Science Institute database, a database of individuals who have opted-in to take part in South African University studies. A total of 16244 emails were sent to 5409 people, one original mail and two reminders. Finally, the study utilised a third party's retail manager database to gather data for the retail managers' survey. This study was sent to 12032 respondents once.

4.3.2 Administration of the instrument

The data collection method included the use of a secure online survey tool for capturing data. The tool was selected due to its mobile responsiveness which is a key determinant as a large percentage of respondents complete their forms on smart phones. A link to the online survey was disseminated to potential respondents via an email delivery system owned by iFeedback. For privacy reasons the personal information is not shared with any third party. The email campaign lasted for two months and a maximum of two reminders were sent to potential respondents. Emails of respondents were collected in the process to limit reminders being sent to respondents who had already completed the study. This personal information was

not utilised in the study and personal information was handled with utmost care. Data was collected in a basic online report and excel data sheet for cleaning and processing. Potential risk to participants was considered to be low. If any participant felt uncomfortable during the survey/interview process they were free to withdraw without giving reasons. Findings are reported without reference to the interviewees' names to ensure anonymity and confidentiality.

4.4 DATA ANALYSIS

Data was captured online directly by respondents.

4.4.1 Consumer survey

The responses to the five-point Likert scale were converted to percentages. Where several questions we used for the TAM constructs, the responses to the questions were summed and then converted to percentages. For example:

Percieved Behavioural Control	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	
	Count	Count	Count	Count	Count	Sum
t is important to me that I can easily operate self-service technolo	8	12	41	136	103	300
It is important to me that I know enough to operate self-service t	7	9	32	144	107	299
It is important to me that I feel comfortable using self-service te	7	8	31	130	122	298
Total Self Efficacy	22	29	104	410	332	897
Percentage Respondents	2%	3%	12%	46%	37%	100%

Presentation of the findings are largely narrative in form with the use of graphics, tables and diagrams where appropriate.

4.4.2 Management survey

The responses to each question in this survey were converted to percentages. In order to interpret 'attitude', the percentage of 'agree' and 'strongly agree' were summed.

Presentation of the findings are in narrative form with the use of tables where appropriate in chapter 5.

The demographics for each group are presented graphically in chapter 5.

4.5 VALIDITY AND TRUSTWORTHINESS

4.5.1 Validity

The TAM model has been used extensively to test attitude to online shopping and various types of self-service technology and has been found to be valid. (see inter alia Davis et al., 1989; Kaushik & Rahman, 2015; Taylor & Todd, 1995; Shih & Fang, 2004; Weijters et al., 2007; Javadi et al., 2012.)

4.5.2 Trustworthiness

Results of the research were compared with findings in the literature wherever possible in an effort to verify the findings and determine a level of trustworthiness.

4.6 Ethical issues

Ethical clearance was received from the CPUT ethics committee prior to data collection – see Appendix 5 for the Ethics Clearance Certificate. A letter of informed consent (see Appendix 1) was presented to all participants and they were all informed that participation was voluntary, and they could withdraw at any time without giving reasons. They were also advised that their views were anonymous and where quotes are used that these would be kept confidential.

4.7 Conclusion

This section has presented the methodology followed in conducting the research and has explained the development of the questionnaire and how the results were analysed.

The following section presents the analysis and interpretation of the collected data.

CHAPTER 5
ANALYSIS AND FINDINGS

This chapter examines the data collected by the online surveys and provides the analysis and interpretation of the data for both the consumer and management surveys.

5.1 CONSUMER DATA

As identified earlier (chapter 2), the TAM model shows a significant correlation between having a 'positive attitude' to a new technology as an antecedent to a consumer's 'intention to use', or adopt, a new technology. The constructs used in the questionnaire firstly assessed the factors relating to behavioural intention, namely: attitudinal structure, subjective norm and perceived behavioural control. The questionnaire then determined to establish intention to purchase as well as actual usage of SST.

5.1.1 Self-service technology (SST)
5.1.1.1 Attitudinal structure

This comprises perceived usefulness, ease of use and compatibility of SST. Figure 5.1 illustrates how consumers perceive the usefulness of SST. A total of 71% positive responses, agree (37%) and strongly agree (34%), that SST is useful.

Figure 5.1 Perceived usefulness of SST
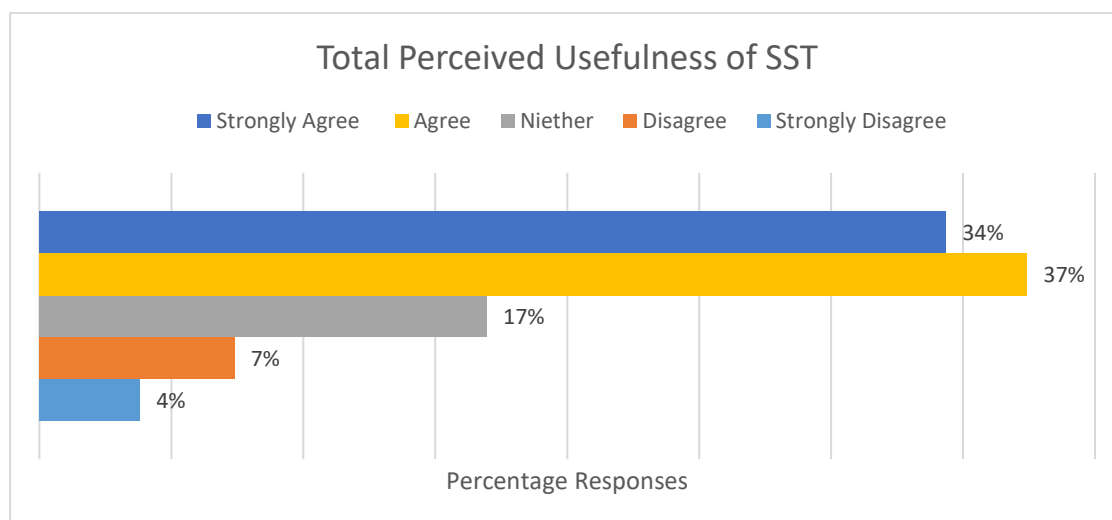
Figure 5.2 illustrates how consumers perceive the ease of use of SST. A total of 70% positive responses, agree (46%) and strongly agree (24%), that SST is easy to use

Figure 5.2 Ease of use of SST
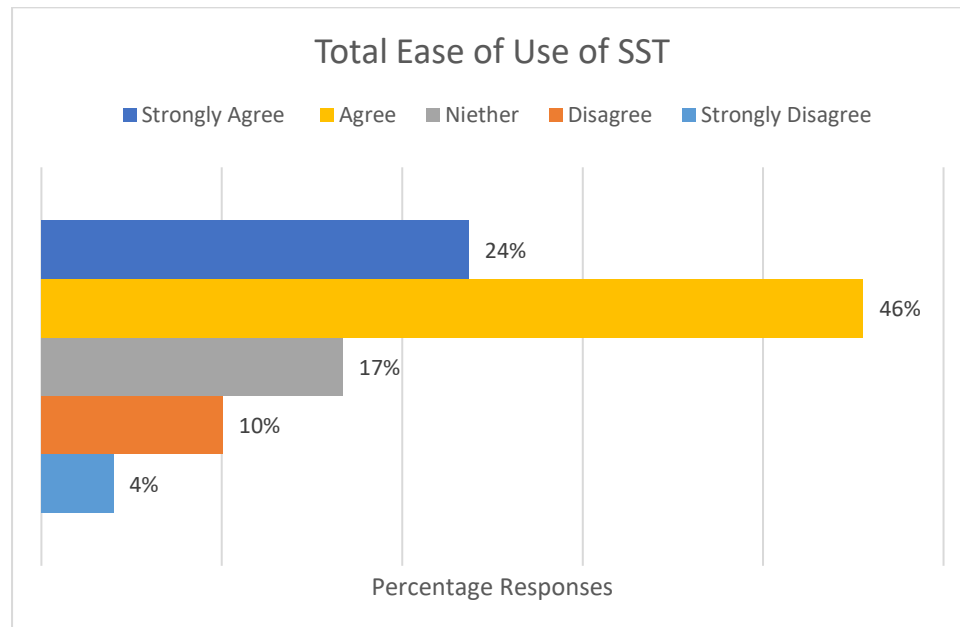
As shown in figure 5.3, a total of 64% positive responses, agree (37%) and strongly agree (27%), that SST is compatible with their lifestyle, while 20% appear undecided with a neither agree nor disagree response.

Figure 5.3 Compatibility of SST
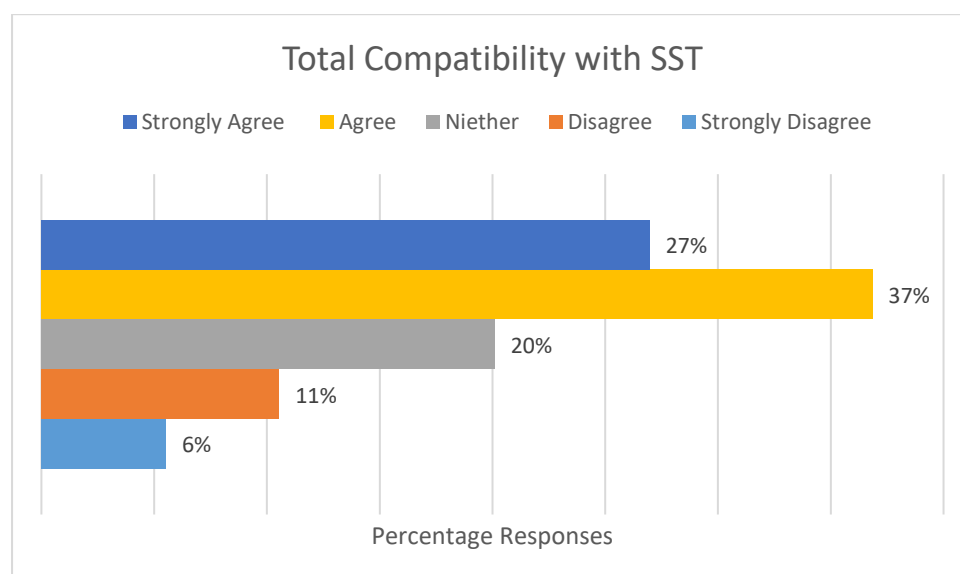
A summation of the components of attitudinal structure provides a composite response for attitudinal structure, as shown in Figure 5.4.

Figure 5.4 Summation of attitudinal structure of SST
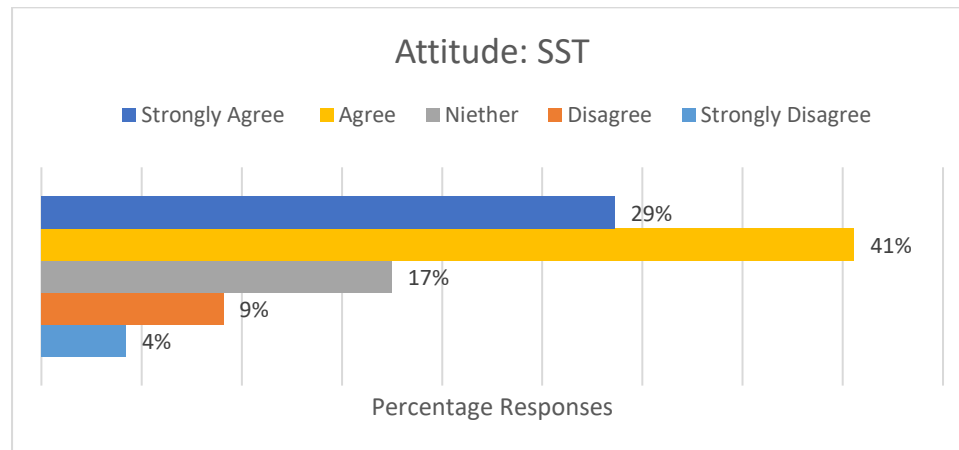
The responses above suggest that the respondents largely reflect a positive attitude (70%) towards SST. Compatibility is slightly lower than perceived usefulness and ease of use. Shih and Fang (2004), in their study of internet banking, suggest that this may be as a result of the respondents not yet having had access to SST and had therefore not having yet tried it.

5.1.1.2 Subjective norm
Figure 5.5 provides the results from peer influence which is the only component of the subjective norm construct.

Figure 5.5 Peer Influence of SST
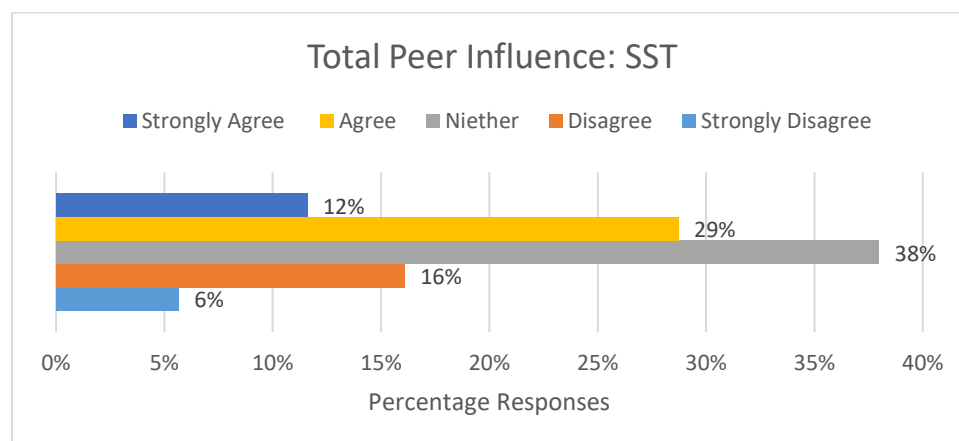
While 41% are positive, agree (29%) and strongly agree (12%), 38% are neutral to the influence of peers and 22% feel that peers have no influence on their attitude towards SST. That is, 59% are neutral or disagree that there is any peer influence on them.

5.1.1.3 Perceived behavioural control

Two components are considered. Self-efficacy, the ability to comfortably use the technology, and facilitating conditions, the conditions and availability of the technology. Figure 5.6 provides the findings related to self-efficacy. 83% of respondents agree (46%) or strongly agree (37%) that they need to feel in control of the technology they use.

Figure 5.6 Self Efficacy of SST
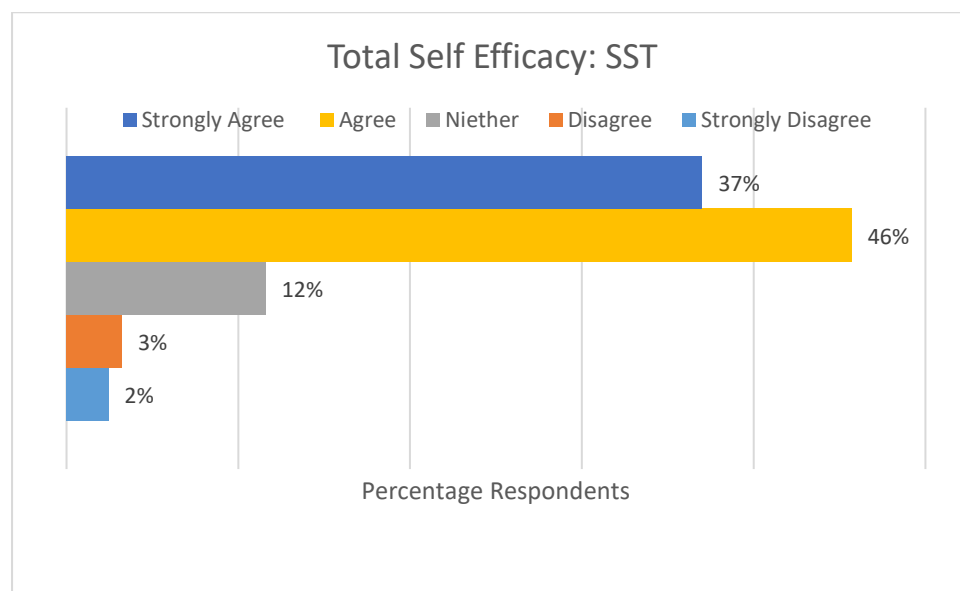
Figure 5.7 provides the results for the 'facilitating conditions' component. The level of agreement with the statements (71%), agree (37%) and strongly agree (34%), suggests that the SST must be easily available, and assistance must be available when required.

Figure 5.7 Facilitating Conditions of SST

Total Facilitating Conditions: SST

Strongly Agree ■ Agree ■ Niether ■ Disagree ■ Strongly Disagree

34%
37%
15%
8%
6%

Percentage Responses
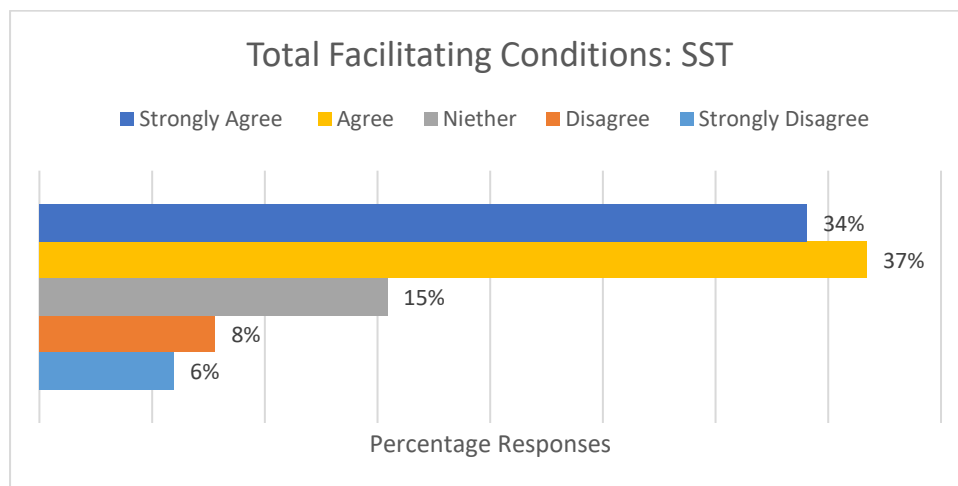
A summation (Figure 5.8) of the components of perceived behavioural control provide a composite response for perceived behavioural control

Figure 5.8 Perceived behavioural control of SST

Perceived Behavioural Control: SST

■ Strongly Agree ■ Agree ■ Niether ■ Disagree ■ Strongly Disagree

35%
41%
14%
6%
4%

Percentage Responses
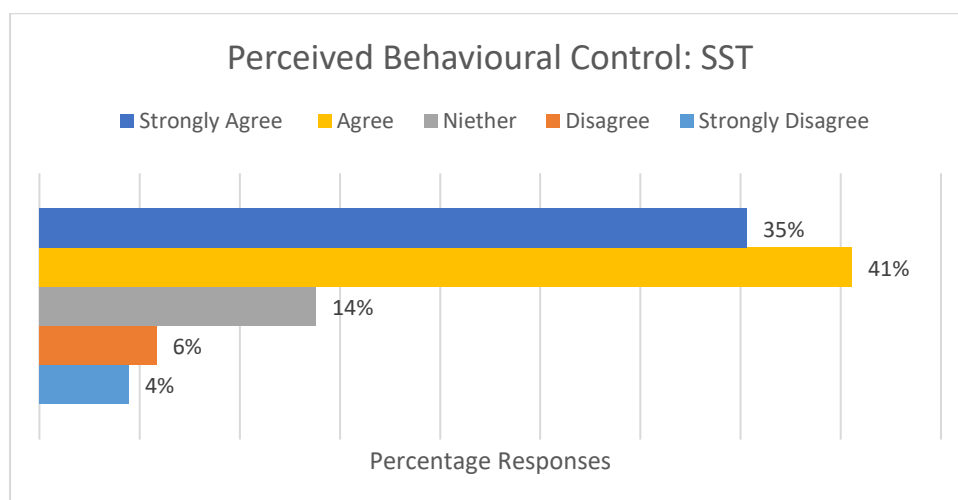
On a combined basis, positive responses to perceived behavioural control are 76%. The constructs analysed above assessed the factors relating to behavioural intention, namely: attitudinal structure, subjective norm and perceived behavioural control. The apparent high level of positive responses to these factors suggests that the behavioural intention, or the intention to adopt technology is positive. This appears to be confirmed by the statements relating to behavioural intention, the response to which is reflected in Figure 5.9.

5.1.1.4 Behavioural intention and actual usage

Intension to use and actual use are important measures regarding SST.

Intention is illustrated in Figure 5.9 - 82% of the respondents, agree (43%) or strongly agree (39%), conform to the statement "I like the idea of using self-service technologies".

Figure 5.9 Behavioural Intention of SST
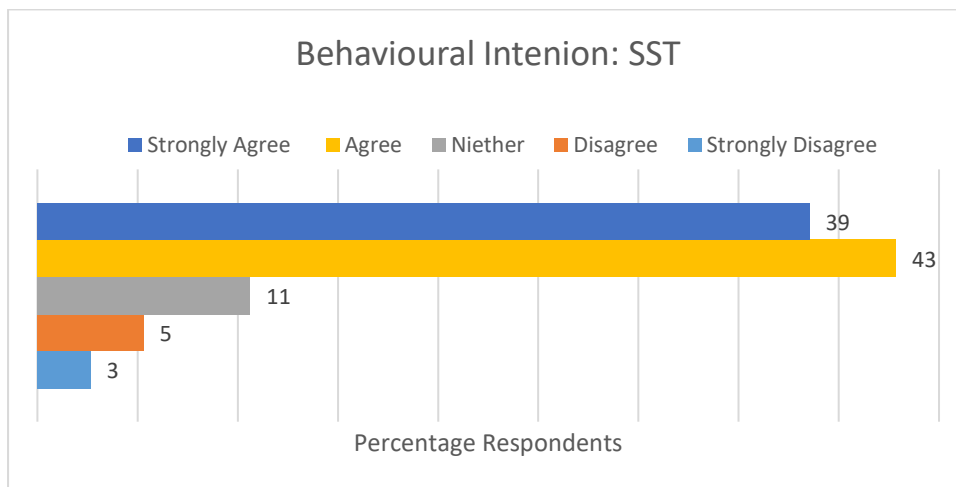
Figure 5.10 illustrates actual use of SST. Actual users of the technology while shopping amount to 54% of respondents, where 39% agree they are users and 15% strongly agree to actual usage.

Figure 5.10 Actual Usage of SST
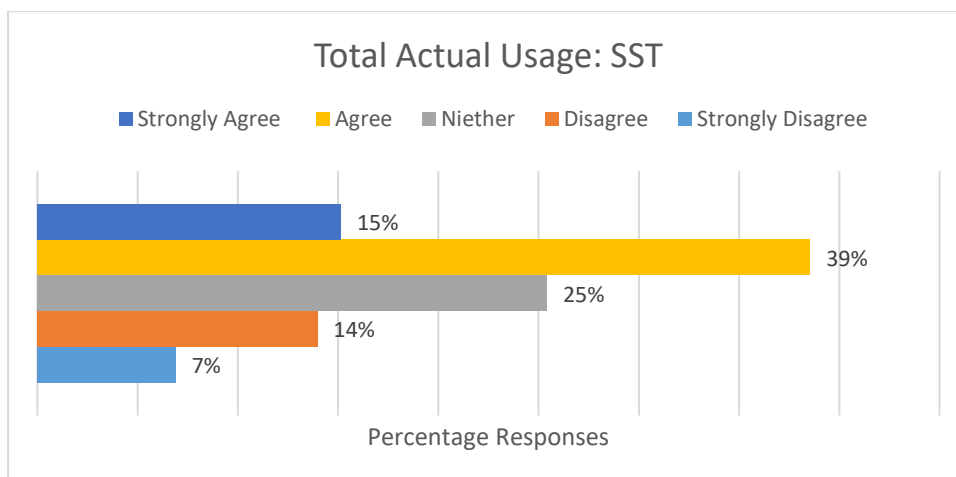
5.1.1.5 Summary: Self-service technology

Figure 5.11 presents a summary of the constructs related to acceptance of self-service technology as specified by the Technology Acceptance Model (TAM), by showing the positive responses combined, agree/strongly agree.

Figure 5.11: Summary of self-service technology
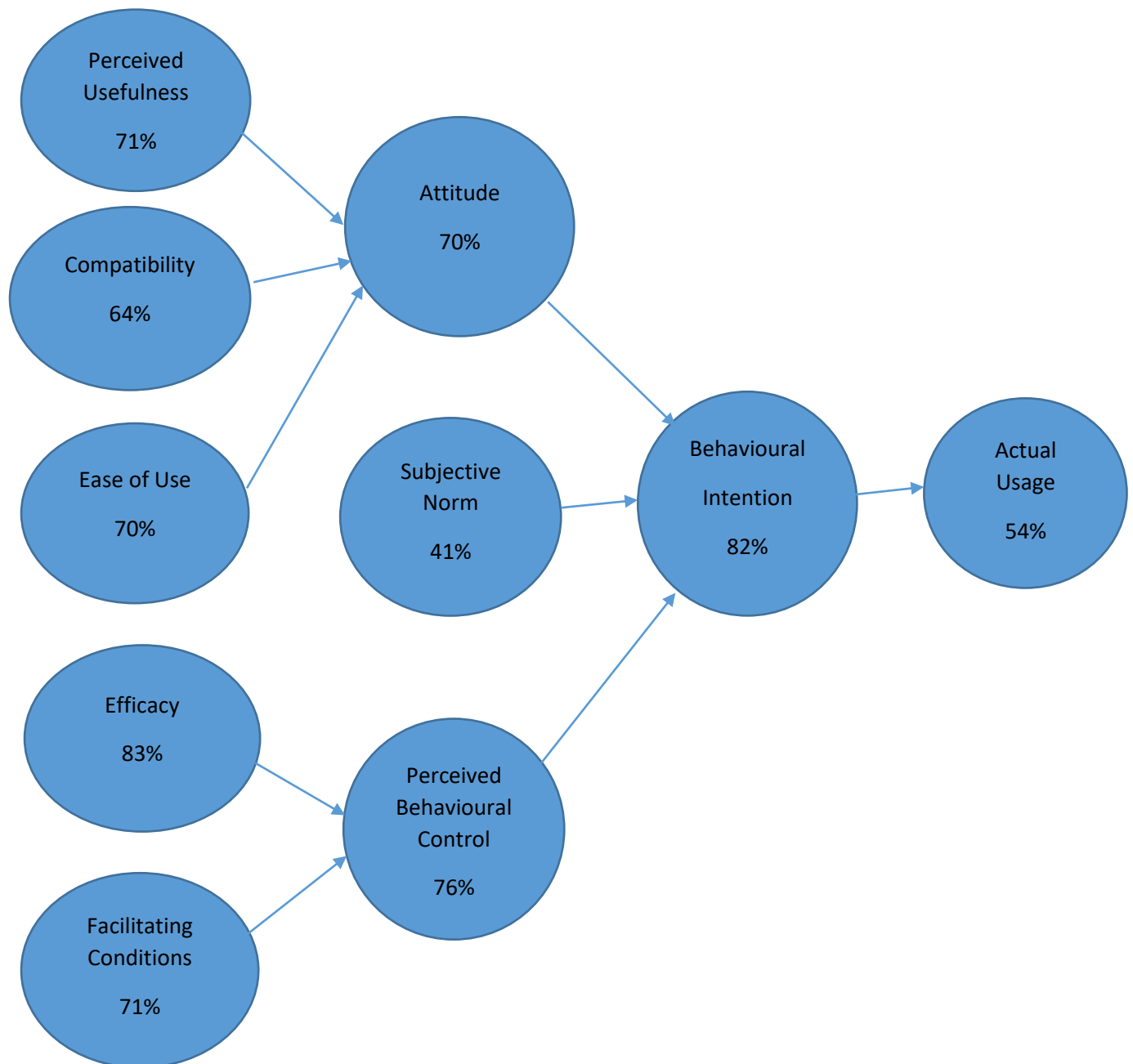
The majority positive responses to Attitude (70%) and perceived behavioural control (76%) support the high intention to purchase (82%). Actual usage is at 54% which may be explained by relatively low installations of self-service technology in South Africa, but also indicates the potential available in South Africa.

5.1.2 Online shopping (e-Retailing)

The constructs used for self-service technology in the previous section were modified and applied to a questionnaire about online shopping: Attitudinal structure, subjective norm and perceived behavioural control. These were followed by questions to determine intension to purchase and actual usage.

5.1.2.1 Attitudinal structure

This comprises perceived usefulness, ease of use and compatibility, with the findings being illustrated in Figures 5.12 to 5.14.

Figure 5.12 Perceived usefulness of online shopping
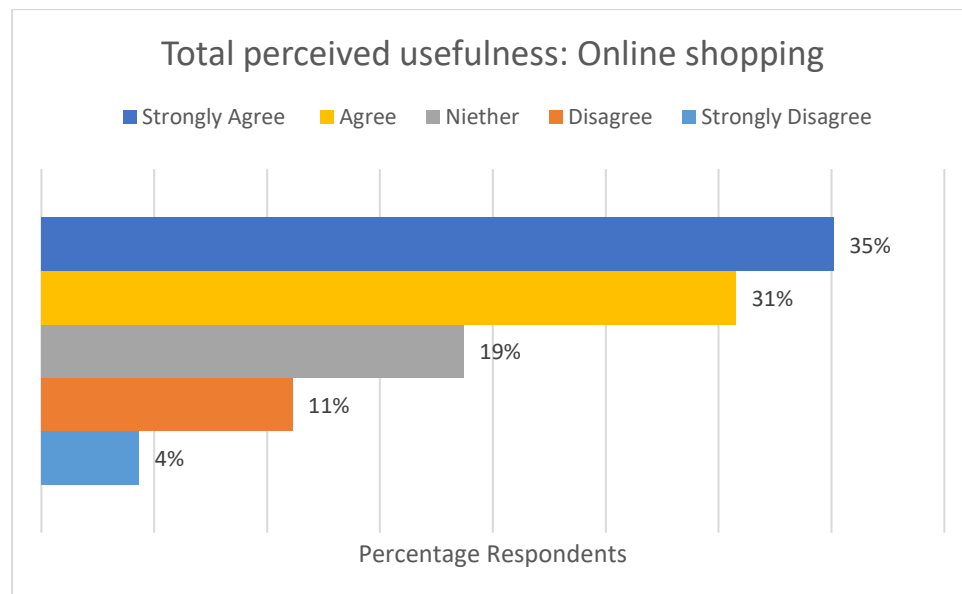
Positive responses to perceived usefulness amount to 65%, with 35% strongly agreeing and 31% agreeing to the statements

Figure 5.13 Ease of use of online shopping

Total Ease of Use: Online Shopping

■ Strongly Agree ■ Agree ■ Niether ■ Disagree ■ Strongly Disagree

Axis Title

35%
43%
11%
8%
4%

Percentage Respondents
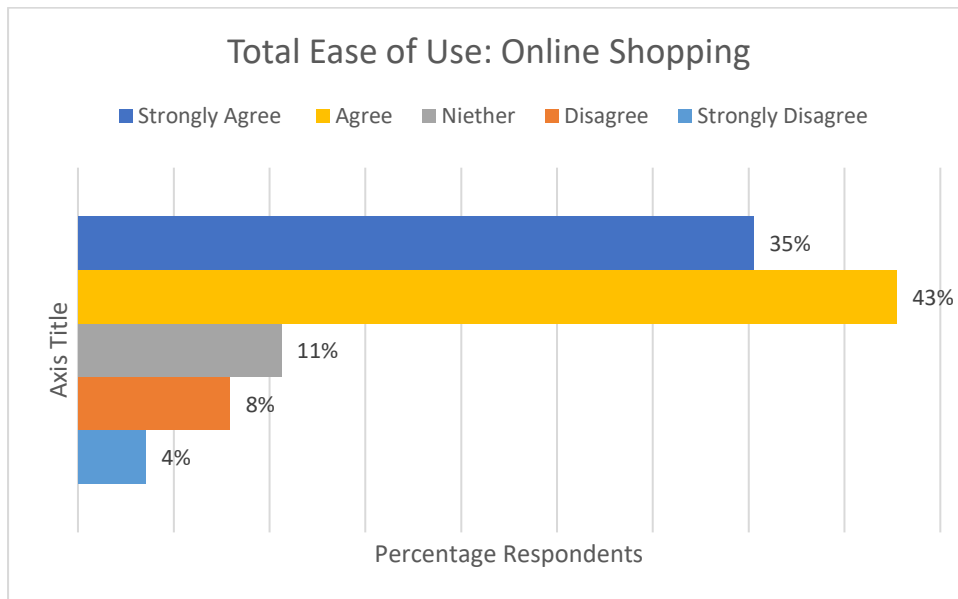
Figure 5.13 shows that 78% of the respondents consider online shopping to be easy to do. 35% strongly agree and 43% agree.

Figure 5.14 Compatibility use of online shopping

Total Compatibility: Online Shopping

■ Strongly Agree ■ Agree ■ Niether ■ Disagree ■ Strongly Disagree

29%
34%
20%
12%
6%

Percentage Respondents
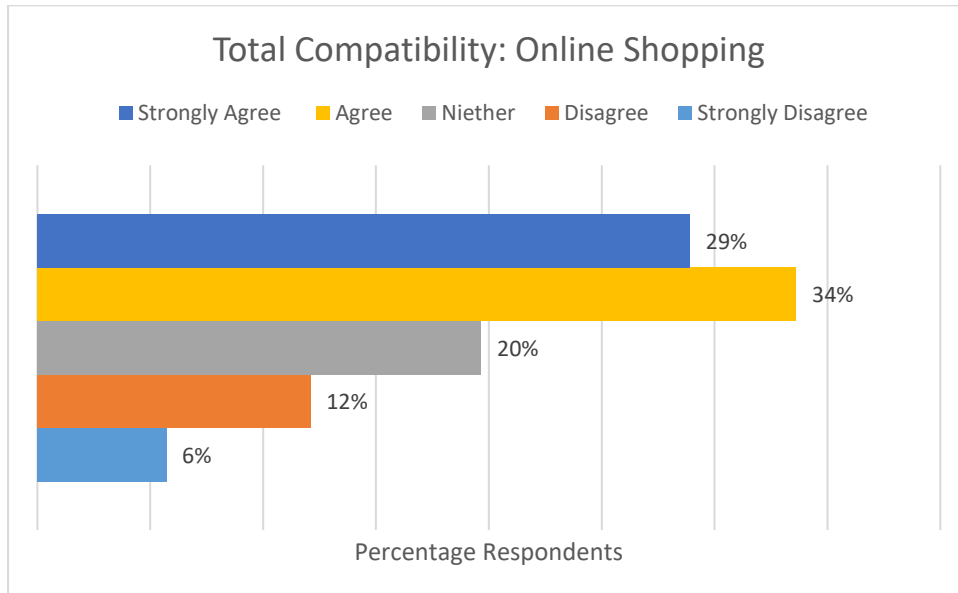
A total of 63% positive responses, agree (34%) and strongly agree (29%), show that online shopping is compatible with respondents' lifestyles, while 20% appear undecided with neither agree nor disagree responses.

A summation of the above components of attitudinal structure provides a composite response for attitudinal structure relating to online shopping, as Figure 5.15 shows.

Figure 5.15 Summary of attitudes to online shopping

Attitude Summed: Online Shopping

■ Strongly Agree ■ Agree ■ Niether ■ Disagree ■ Strongly Disagree

- 34%
- 36%
- 15%
- 10%
- 4%

Percentage Responses
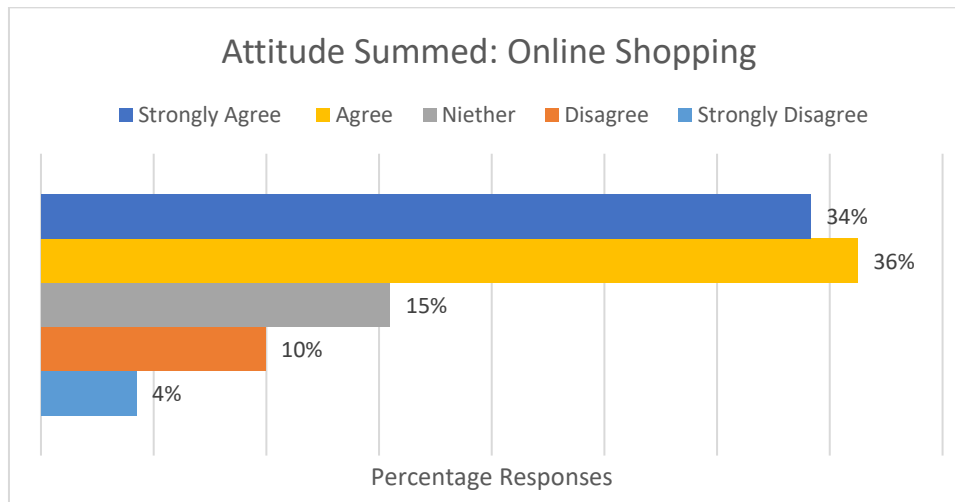
The responses above suggest that the respondents have a positive attitude (70%) towards online shopping.

5.1.2.2 Subjective Norm

Subjective norm is measured by peer influence, i.e. to what extent consumers are influenced by their peers to adopt new things or are influenced to change their attitudes to things.

Figure 5.16 Effect of peer influence on online shopping

Total Peer Influence: Online Shopping

■ Strongly Agree ■ Agree ■ Niether ■ Disagree ■ Strongly Disagree

- 14%
- 27%
- 33%
- 17%
- 10%

Percentage Respondents
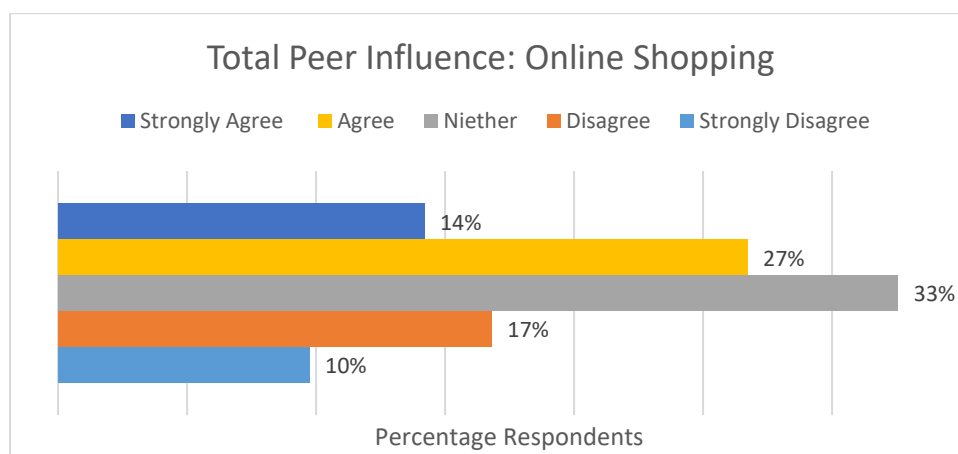
In Figure 5.16, while 41% are positive, agree (27%) and strongly agree (14%), 33% are neutral to the influence of peers and 27% feel peers have no influence on their attitude towards online shopping. That is, 60% are neutral or disagree that there is any peer influence on them.

5.1.2.3 Perceived behavioural control

Two components of perceived behavioural control are considered. Self-efficacy, the ability to comfortably use the technology, and facilitating conditions, the conditions and availability of the technology.

Figure 5.17 Self-efficacy for online shopping

Total Efficacy: Online Shopping
■ Strongly Agree ■ Agree ■ Niether ■ Disagree ■ Strongly Disagree

39%
47%
8%
4%
2%

Percentage Respondents
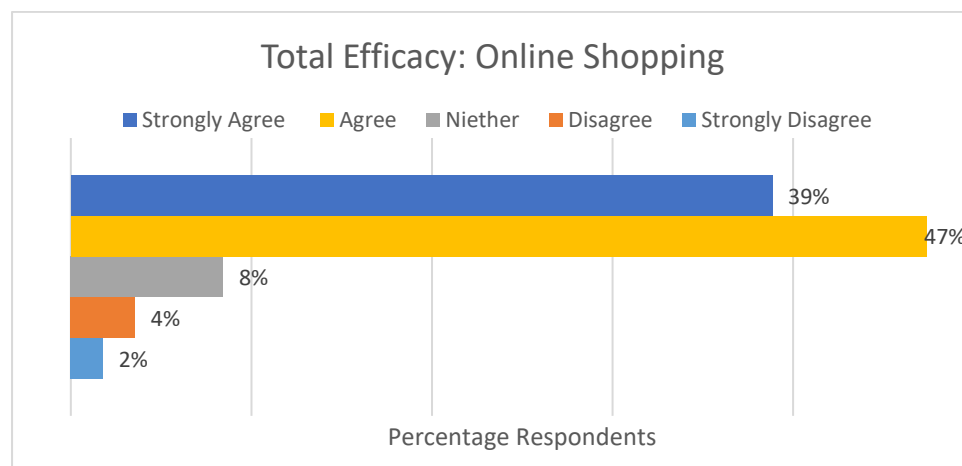
86% of respondents, agree (47%) or strongly agree (39%), responded that they need to feel in control of the technology they use for online shopping.

Figure 5.18 Facilitating Conditions

Facilitating Conditions B: Online Shopping
■ Strongly Agree ■ Agree ■ Niether ■ Disagree ■ Strongly Disagree

29%
26%
22%
12%
10%

Percentage Respondents
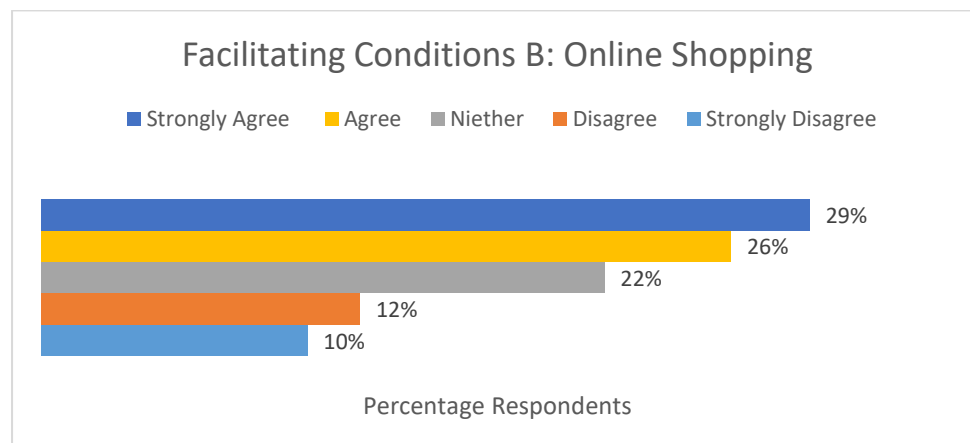
As shown in Figure 5.18, the high level of agreement with the statements (55%), agree (26%) and strongly agree (29%), suggests that online shopping must be easily available, and assistance must be available when required. It is interesting to note that the level of agreement for facilitating conditions for online shopping (55%) is lower than that expected for self-service technology (71%). This may be because online shopping is more familiar and more widely available currently than SST.

A summation (Figure 5.19) of the components of perceived behavioural control provide a composite response for perceived behavioural control.

Figure 5.19 Summary of perceived behavioural control use of online shopping
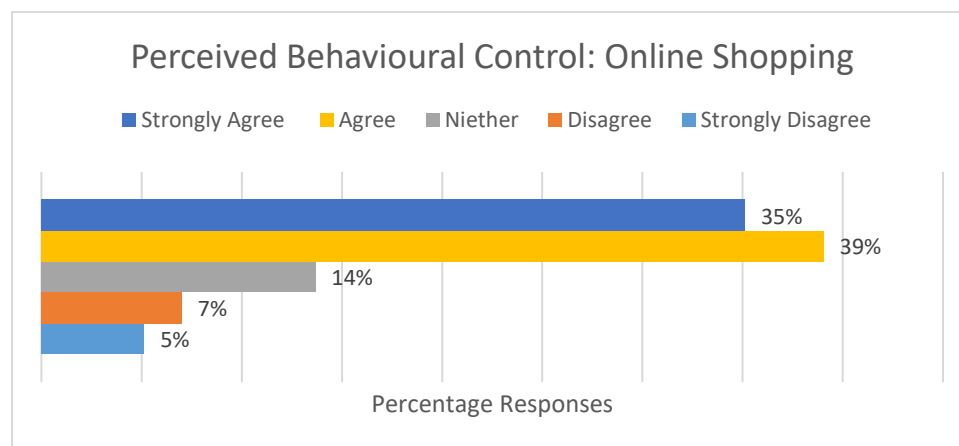
On a combined basis, positive responses to perceived behavioural control are 74%. The constructs analysed above assessed the factors relating to behavioural intention, namely: attitudinal structure, subjective norm and perceived behavioural control. The apparent high level of positive responses to these factors suggests that the behavioural intention, or the intention to adopt online shopping, is positive. This appears to be confirmed by the statements relating to behavioural intention, the response to which is reflected in Figure 5.20.

5.1.2.4 Behavioural intention and actual usage

Attitudinal structure, subjective norm and perceived behavioural control are constructs that influence intension to use and actual use of online shopping. These are illustrated in Figures 5.20 and 5.21.

Figure 5.20 Behavioural intention for online shopping

Behavioural Intention: Online Shopping

■ Strongly Agree ■ Agree ■ Niether ■ Disagree ■ Strongly Disagree

- 28%
- 41%
- 16%
- 9%
- 5%

Percentage Respondents
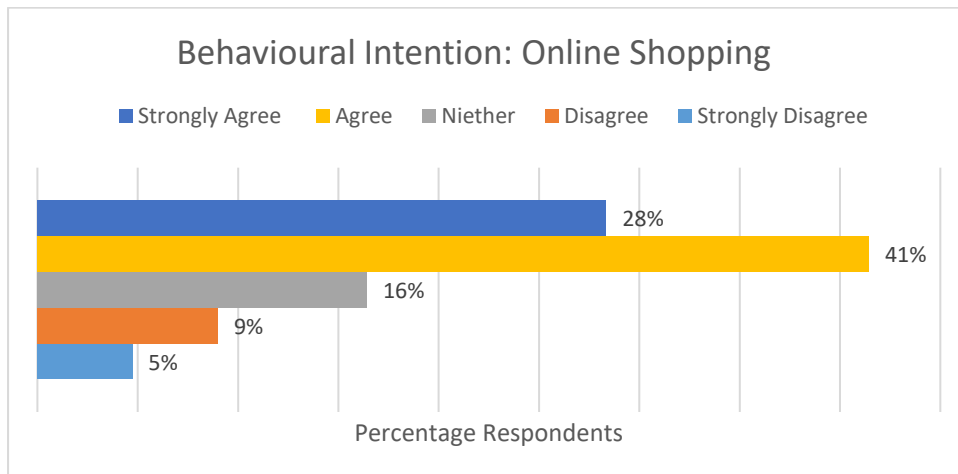
In Figure 5.20, 69% of the respondents, agree (41%) or strongly agree (28%), conformed to the statement "I like the idea of using self-service technologies", which is indicative of behavioural intention.

Figure 5.21 Actual Usage of online shopping

Actual Usage: Online Shopping

■ Strongly Agree ■ Agree ■ Niether ■ Disagree ■ Strongly Disagree

- 29%
- 25%
- 17%
- 17%
- 11%

Percentage Respondents
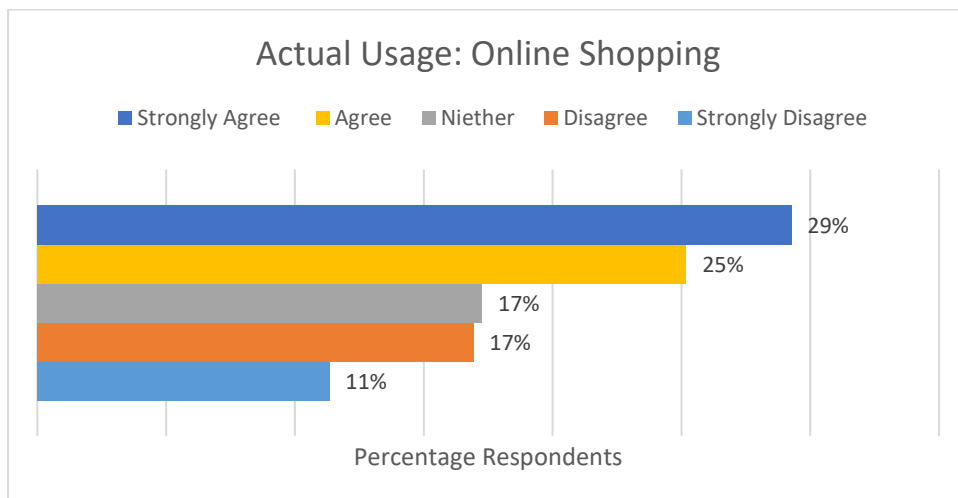
Figure 5.21 shows that actual users of online shopping amount to 54% of respondents, where 25% agree they are users and 29% strongly agree to actual usage, considerably lower than the 69% who indicate an intention to use online shopping.

5.1.2.5 Summary: Online shopping (e-Retailing)

Figure 5.22 presents a summary of the constructs for the TAM model for online shopping by showing the positive responses, agree/strongly agree, combined.

Figure 5.22 Summary of online shopping
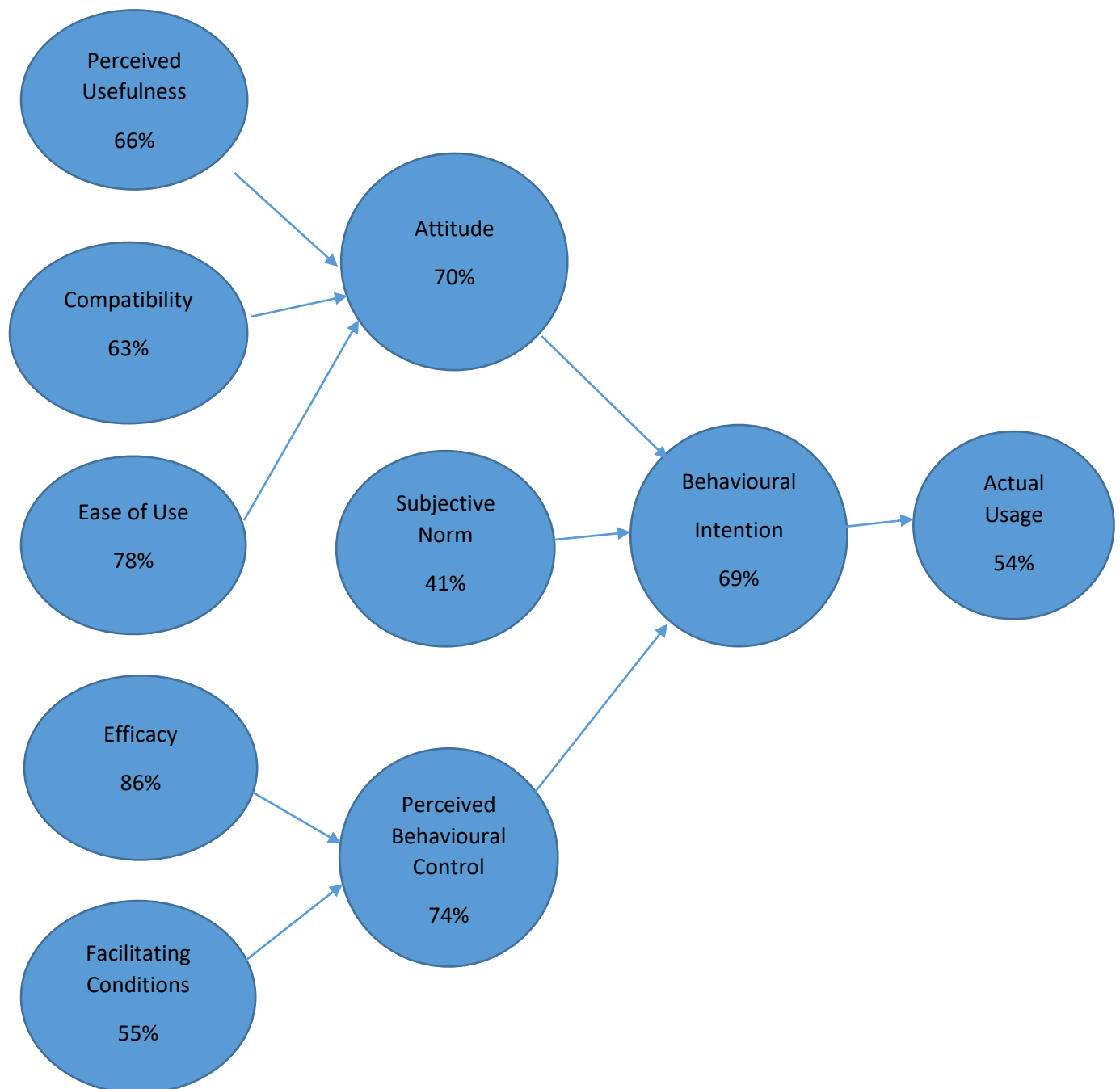
For online shopping, as summarised in Figure 5.22, the majority positive responses for attitude (70%) and perceived behavioural control (74%) support the relatively high intention to purchase (69%). Actual usage is lower at 54%, which may be explained by the low uptake of online shopping by SA retailers (McCabe - et al., 2019).

5.1.3. Demographics of consumer survey

The profile of the sample of consumer respondents is shown by Figures 5.23 to 5.26.

Figure 5.23 Age of consumer respondents
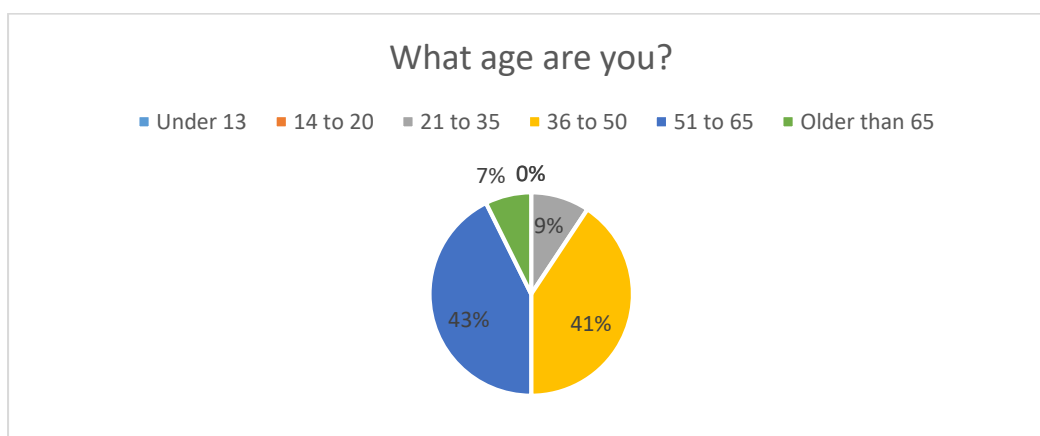
84% of the sample are between 35 and 65 years old.

Figure 5.24 Language of consumer respondents
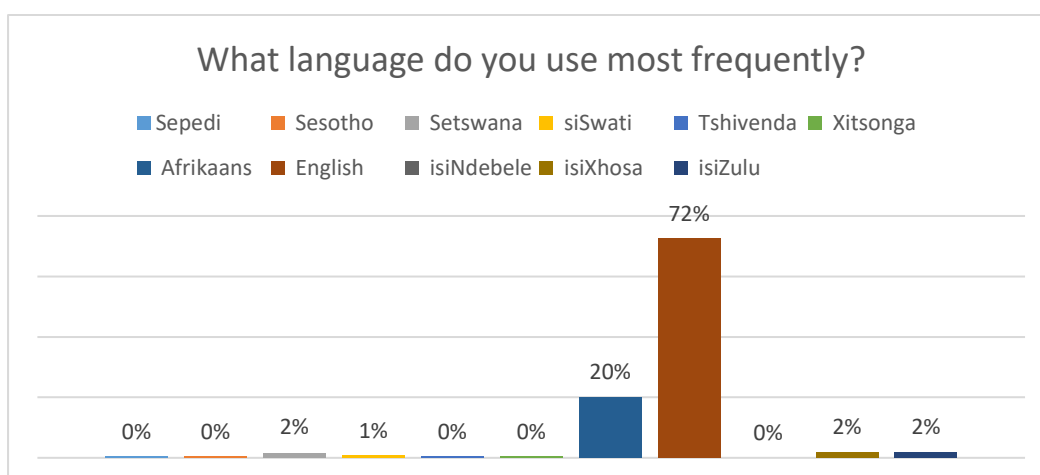
The language used most frequently is English (72%).

Figure 5.25 Location of consumer respondents
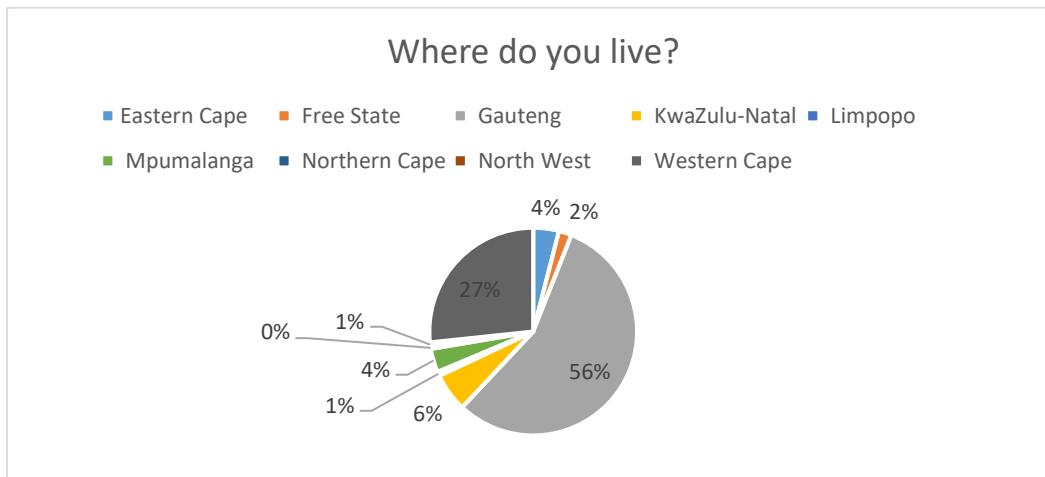
The largest portion of the respondents live in Gauteng province (56%) with the second largest group from Western Cape.

Figure 5.26 Income before tax and deductions of consumer respondents
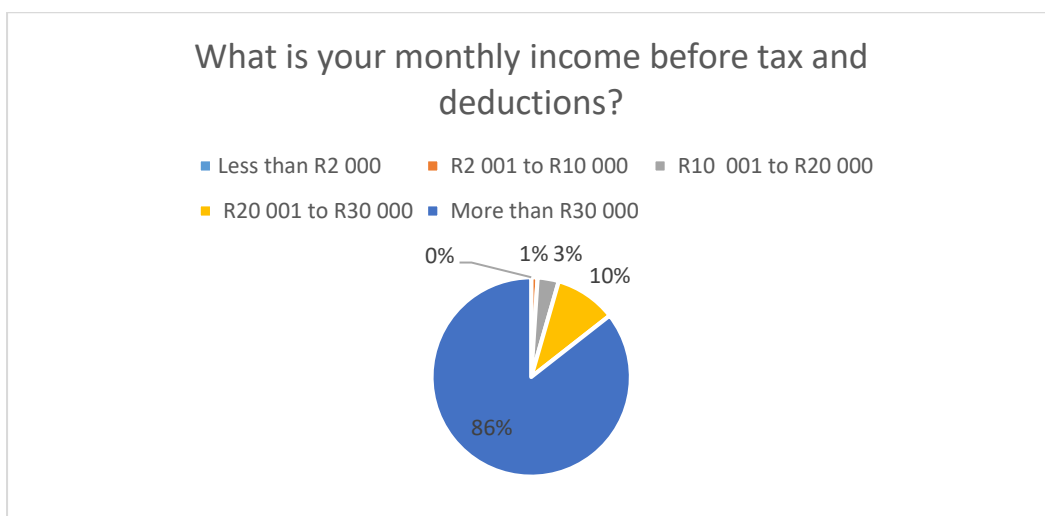
The majority of respondents (86%) earn more than R30 000 per month

5.2 Management challenges and skills

The challenges to management as well as their possible shortcomings that were identified from the literature resulted in the survey-based questionnaire around the themes of awareness, attitude, skills, training and readiness (preparedness) to implement.

5.2.1 Findings – awareness, skills, training, readiness

The highest frequencies of responses (out of the 5 Likert scale categories) are highlighted in the tables below (orange), while the combined agree/strongly agree category is highlighted in green to illustrate the highest frequencies.

Table 5.1 Technology effecting retail the most

1. What technology do you believe has affected the retail industry the most?						Agree +
	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Strongly Agree
	%	%	%	%	%	%
Self-service kiosks	18	17	29	29	8	37
Online retail	3	1	10	23	63	86
Warehouse automation	5	10	30	36	20	56
Social media	1	6	11	43	39	82
Internet of things (IOT)	6	2	29	35	29	63
Artificial Intelligence (AI)	10	25	24	24	17	41
Electronic payment	2	2	6	28	62	90
Virtual reality (VR)	16	26	37	12	9	21
Big Data	9	13	32	29	17	46

Table 5.1 shows that management felt that the retail industry is being most influenced by electronic payment, online retail and social media. Of least influence were virtual reality, self-service, artificial intelligence and big data. Table 5.2 shows that the respondents felt that their organisations were being influenced by the same issues, but at a lower level. There was also some indication that the Internet of Things is starting to influence their business.

Table 5.2 Technology changes that have affected business

2. These technology changes have affected my business significantly:						Agree +
	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Strongly Agree
	%	%	%	%	%	%
Self-service kiosks	43	23	21	9	5	14
Online retail	19	7	20	26	27	53
Warehouse automation	23	15	26	18	19	36
Social media	8	10	20	31	30	62
Internet of things (IOT)	13	11	20	30	26	56
Artificial Intelligence (AI)	27	16	33	15	10	24
Electronic payment	6	10	10	23	50	73
Virtual reality (VR)	33	21	27	11	7	19
Big Data	23	10	29	21	17	38

Table 5.3 Technology options we are planning to implement

3. My company is preparing a plan to implement:						Agree +
	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Strongly Agree
	%	%	%	%	%	%
Self-service kiosks	56	11	20	4	10	14
Online retail	22	6	16	23	33	56
Warehouse automation	30	14	20	18	18	35
Social media	6	6	12	27	49	76
Internet of things (IOT)	17	10	21	20	33	52
Artificial Intelligence (AI)	27	9	31	19	15	33
Electronic payment	10	0	7	23	59	83
Virtual reality (VR)	36	12	30	10	12	22
Big Data	26	9	25	15	25	40

Table 5.3 indicates that many retailers are planning to implement electronic payment and social media, with marginally fewer already implementing these technologies (Figure 5.4). About half the respondents said they were planning to, or were, implementing online retail and Internet of Things technologies.

Table 5.4 Technology options my company is busy implementing

4. My company is busy implementing:						Agree +
	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Strongly Agree
	%	%	%	%	%	%
Self-service kiosks	57	9	18	5	10	16
Online retail	22	6	20	16	35	52
Warehouse automation	32	9	31	9	19	28
Social media	10	2	14	30	44	74
Internet of things (IOT)	22	9	22	22	27	48
Artificial Intelligence (AI)	33	13	26	13	14	28
Electronic payment	14	3	9	25	49	75
Virtual reality (VR)	41	15	27	5	12	17
Big Data	28	10	24	15	22	37

Table 5.5 Technology issues our staff are skilled in

5. Our staff members highly skilled in the following:						Agree +
	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Strongly Agree
	%	%	%	%	%	%
Self-service kiosks	49	13	25	6	6	13
Online retail	24	12	24	21	20	41
Warehouse automation	34	16	25	11	13	24
Social media	8	8	24	39	22	61
Internet of things (IOT)	19	18	25	24	14	38
Artificial Intelligence (AI)	33	26	20	10	11	21
Electronic payment	9	4	13	32	43	74
Virtual reality (VR)	35	19	32	6	8	14
Big Data	28	16	33	10	13	23

Regarding the skills of the staff of the respondent companies, Figure 5.5 shows a reasonable level of confidence in skills related to electronic payment and social media, but a lack of skills in all other technologies. Table 5.6 shows that this level of confidence is probably because this is where training has been, and is still being, emphasised. It is very noticeable that there is a lack of skills in all other technologies, and a lack of training in these skills.

Table 5.6 Training staff are currently undergoing

6. Staff members are currently being trained in the following:						Agree +
	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Strongly Agree
	%	%	%	%	%	%
Self-service kiosks	54	9	18	8	11	19
Online retail	33	6	18	24	19	43
Warehouse automation	37	10	21	18	14	32
Social media	21	4	23	30	22	52
Internet of things (IOT)	28	6	28	19	19	37
Artificial Intelligence (AI)	39	5	32	9	14	23
Electronic payment	25	6	14	23	32	54
Virtual reality (VR)	41	11	32	5	11	16
Big Data	33	5	34	12	16	28

Table 5.7 Technology issues our management are skilled in

7. Management are highly skilled in the following:						Agree +
	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Strongly Agree
	%	%	%	%	%	%
Online retail	35	13	23	10	19	29
Warehouse automation	11	15	19	21	33	55
Social media	24	10	28	19	19	38
Internet of things (IOT)	9	10	20	30	32	62
Artificial Intelligence (AI)	17	9	27	26	21	47
Electronic payment	21	21	28	14	16	30
Virtual reality (VR)	12	7	10	24	48	71
Big Data	27	24	27	9	14	23

Table 5.7 shows that management are most skilled in virtual reality, which is surprising considering VR scored almost the lowest on all the other questions (effect on industry/firm, implemented or planning to implement, staff skills or training, etc. It is also interesting to note that the perceived management skills were in the more advanced technologies, e.g. virtual reality, Internet of Things and warehouse automation. Maybe this augers well for the retail industry, with management preparing well for the future, although this is not supported by the relatively low levels of management training reflected in Figure 5.8.

Table 5.8 Technology training our management are currently undergoing

8. Management are currently being trained in the following:						Agree +
	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Strongly Agree
	%	%	%	%	%	%
Self-service kiosks	52	9	21	6	12	18
Online retail	34	5	16	24	21	45
Warehouse automation	37	9	21	15	18	33
Social media	26	5	14	27	28	56
Internet of things (IOT)	28	7	23	15	26	41
Artificial Intelligence (AI)	35	10	28	8	19	27
Electronic payment	34	5	14	18	30	48
Virtual reality (VR)	39	13	24	11	13	24
Big Data	34	6	24	14	22	35

Table 5.9 Technologies our management are positive about

9. Management are positive about adopting these technologies:						Agree +
	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Strongly Agree
	%	%	%	%	%	%
Self-service kiosks	30	9	26	14	22	36
Online retail	13	5	17	18	47	66
Warehouse automation	20	9	18	24	29	53
Social media	5	3	18	20	55	75
Internet of things (IOT)	12	1	27	21	39	60
Artificial Intelligence (AI)	22	5	28	17	28	45
Electronic payment	14	2	7	18	58	76
Virtual reality (VR)	28	10	27	13	23	35
Big Data	20	8	25	11	36	48

Figures 5.9 and 5.10 show that both management and staff are most positive about technologies that they are familiar with, have been implementing and have been trained in, which is not surprising. People often worry about the unknown.

Table 5.10 Technologies our staff are positive about

10. Staff are positive about adopting these technologies:						Sum
	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Agree & Strongly Agree
	%	%	%	%	%	
Self-service kiosks	32	14	32	9	14	23
Online retail	19	3	24	21	33	53
Warehouse automation	24	6	28	15	26	41
Social media	9	5	22	23	41	65
Internet of things (IOT)	16	9	27	18	30	49
Artificial Intelligence (AI)	26	10	31	10	22	32
Electronic payment	17	4	12	18	49	67
Virtual reality (VR)	25	15	32	10	18	28
Big Data	24	10	29	13	23	36

To summarise these findings, in terms of awareness, managers are aware of technologies impacting on retail (Table 5.1) but seem less confident about the effect on their own business (Table 5.2). Regarding readiness (preparedness) to implement technology (Tables 5.3 & 5.4), the emphasis appears to be on online shopping, social media and electronic payments. Skills and training amongst staff (Tables 5.5 & 5.6)

are focussed on social media and electronic payments, whereas skills and training amongst managers (Tables 5.7 & 5.8) appear disparate with managers skilled at warehouse automation, Internet of Things and virtual reality, with training in social media taking place! Attitude to adoption is positive amongst management (Table 5.9) but slightly less so with staff.

5.2.2 Demographics of management survey

The profile of the sample of respondents for the management survey is shown by Figures 5.27 to 5.30

Figure 5.27 Position in organisation
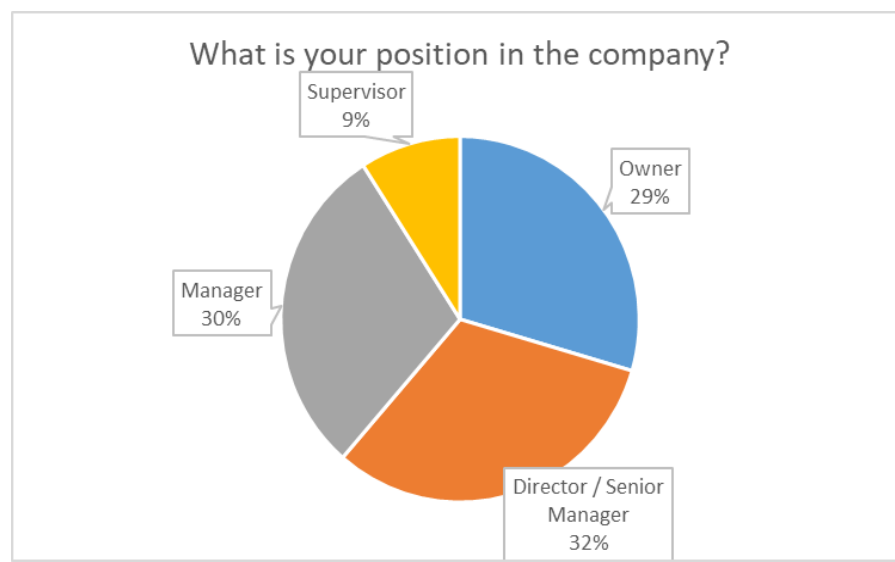
Owners and senior managers (decision-makers?) predominate at 61% of respondents. With such high-level participants who presumably have a strategic view of their firms, it is believed the findings are credible.

Figure 5.28 Size of company
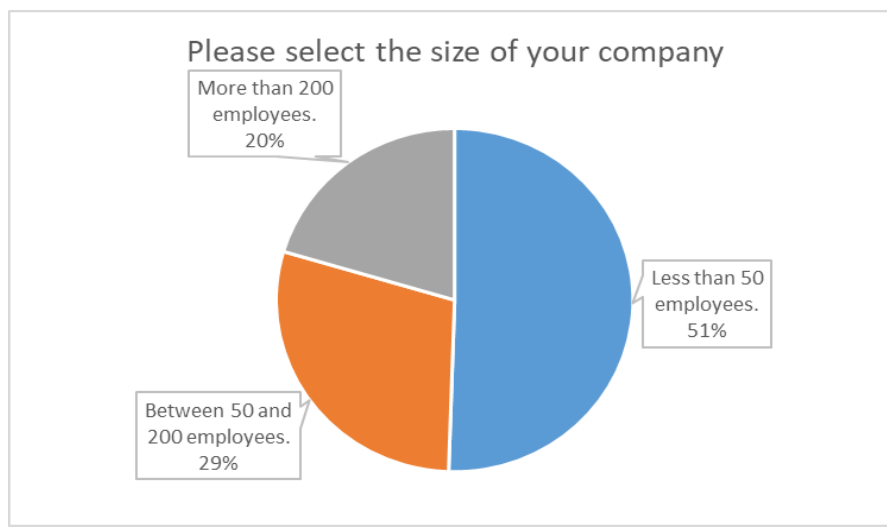
80% of respondents were from businesses with 200 employees of less. This is probably reasonably representative of the structure of the industry.

Figure 5.29 Location
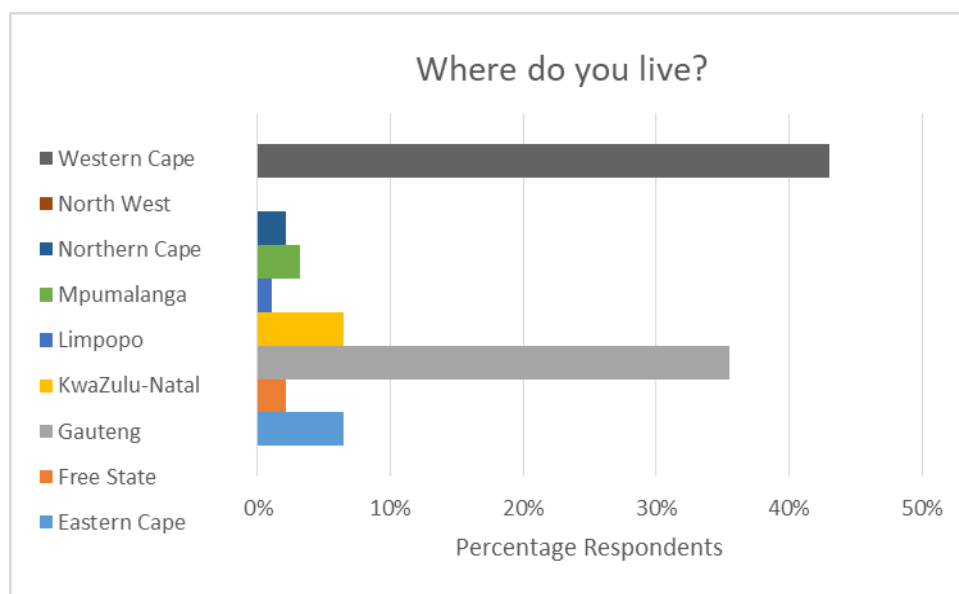
Respondents from the provinces of Gauteng and Western Cape predominate, although there were respondents from most provinces. Thus, we can be confident that the sample is reasonably representative.

Figure 5.30 Nature of products sold

The retail items your company sells

Category	Percentage
Electronic goods.	22%
Household accessories (i.e. cookware, crockery, etc).	10%
Household goods (i.e. cleaning products).	13%
Personal care (i.e. toiletries, beauty products, etc).	13%
Clothing and footwear.	7%
Prepared food (i.e. cooked in store).	15%
Food and beverages (i.e. fresh produce, packaged food goods, beverages).	20%

Percentage Respondents

Different types of retailers are fairly evenly distributed, again providing a spread of representation that makes us confident of the findings.

CHAPTER 6
RECOMMENDATIONS AND CONCLUSION

This section will review the findings and provide conclusions and recommendations to the study.

The paper set out to achieve the following objectives:

- Identify current and future technological trends internationally and in SA influencing in-store retailing
- Identify current and future technological trends internationally and in SA influencing e-retailing
- Identify consumer attitudes to, and use of, these new trends
- Identify challenges faced by retail managers in adapting to these trends
- Identify skills required of retail managers to adapt to these trends

6.1 Current and future technological trends internationally and in SA influencing in-store retailing and e-retailing.

The technology relating to in-store retailing and e-retailing converge into 'Consumption and Engagement' rather than any hard technology or process. The technologies contribute to the customer experience. Customer acceptance of the technologies leads to the overall enhancement of the customer experience. This convergence is evident in the development of omni-channels:

> "… this means that they [retailers] need to deliver across platforms, both physical and virtual, to provide the customer with what they want, when they want it, seamlessly" (Stewart, 2019).

6.2 Consumer attitudes to, and use of, these new trends

The Technology Acceptance Model used in this study suggests that the market is ready and waiting for applications of technology both in-store and online even though the majority of respondents fall into the 35 plus age group (Generations X and Y). This

bodes well for retailers who adopt omni-channel approaches (both online and in-store) as it is widely reported that Gen Z, the digital natives and next generation of shoppers, expect retail technology as a given (Priporas et al., 2017; Broll, 2019).

6.3 Challenges faced and skills required by retail managers in adapting to these trends

Management appears to view each technology independently rather than from an integrated view of technologies providing 'customer experience'. Thus, the emphasis on 'social media', 'online shopping' and 'electronic payments'. This finding is supported by the studies reviewed (McCabe et al., 2019; Stewart et al., 2019).

On the one hand, customers across the age groups are ready to adopt technologies, and the next generation of shoppers (Generation Z) expect technology to work for them. Managers, too, are enthusiastic about adoption of technology.
On the other hand, efforts at integrating the technology into a cohesive customer experience seem limited.

The international experience suggests a convergence of technologies with 'brick and mortar' retailing to provide the consumer with multiple channels to gather information, evaluate and compare offerings, develop trust in the retailer and to make their purchase via the most convenient channel, be that online or in-store.

The Accenture report (McCabe et al., 2019) elaborates on three strategic focus areas: integrating e-commerce with legacy business; building modern digital infrastructure; and improving customer trust and experience.

The McKinsey & Company report (Begley et al., 2019) takes a broader look by considering technology adoption in the total value chain (not only the customer interface), and identifies two core areas of focus for businesses to ensure that they can respond rapidly to technological trends:

- Organizational structures and ways of working must be transformed.
- Transformation in skills and human resource strategies

Retailers must employ talent that can embrace the digital world and integrate that world into a total customer experience.

References

Achille, A., Remy, N. and Marchessou, S. 2018. *The age of digital Darwinism*.
McKinsey & Company. Available:
https://www.mckinsey.com/~/media/mckinsey/industries/retail/our%20insights/l
uxury%20in%20the%20age%20of%20digital%20darwinism/the-age-of-digital-
darwinism.ashx [Accessed: 28 October 2019]

Adhi, P., Burns, T., Davis, A., Lal, S. and Mutell, B. 2019. *A transformation in-store*.
McKinsey & Company. Available:
https://www.mckinsey.com/industries/retail/our-insights. [Accessed 15 May
2019]

Askew, K. 2019. *2019 and beyond: Six trends shaping the supermarket of the future*.
In: FOODnavigator.com. Available: https://www.foodnavigator.com. [Accessed
22 August 2019]

Begley, S., Hancock, B., Kilroy, T. and Kohli, S. 2019. *Automation in retail: An
executive overview for getting ready*. McKinsey & Company. Available:
https://www.mckinsey.com/industries/retail/our-insights/automation-in-retail-an-
executive-overview-for-getting-ready. [Accessed: 25 May 2019]

Blitz, A. 2016. Beset by the digital revolution successful retailers embrace technology
that enhances customer value. *Strategy & Leadership*, 44 (6), 16-24

Braun, V. and Clarke, V. 2006. Using thematic analysis in psychology. *Qualitative
Research in Psychology*, 3(2), 77-101.

Broll Property Intel. 2019. *The Evolution of Retail Report*. Apr '19_1. Available:
https://www.broll.com/publications/ [Accessed: 30 October 2019}

Davis, F.D., Bagozzi, R.P. and Warshaw, P.R. 1989. User acceptance of computer
technology: a comparison of two theoretical models. *Management Science*,
35(8), 982-1003.

Esterhuizen, E. 2018. 5 technologies improving retail customer engagement. In
Bizcommunity.com. Available:
https://www.bizcommunity.com/Article/196/458/183434.html [Accessed: 24
October 2019]

Francis, T. and Hoefel, F. 2018. *True Gen: Generation Z and its implications for
companies*. McKinsey & Company. Available:

https://www.mckinsey.com/industries/retail/our-insights. [Accessed 22 August 2019]

Frasquet, M., Descals, A.M. and Ruiz-Molina, M.E. 2017. Understanding loyalty in multichannel retailing: the role of brand trust and brand attachment. *International Journal of Retail & Distribution Management,* 45(6), 608-625

Frazer, M. 2019. Retail in 2030: AI, IoT, big data, and omnichannel as teenagers. In *Bizcommunity.com.* Available: …..[Accessed: 24 October 2019]

Goldman, S. 2017. *8 retail technology predictions for 2017.* Available: https://search.proquest.com/docview/1856800109?accountid=10612 [Accessed: 11 May 2019]

Grewal, D., Roggeveen, A.L. and Nordfält, J. 2017. The future of retailing. *Journal of Retailing*, *93*(1), 1-6.

Javadi, M.H.M., Dolatabadi, H.R., Nourbakhsh, M., Pourseaeedi, A. and Asadollahi, A.R. 2012. An Analysis of Factors Affecting on Online Shopping Behavior of Consumers. *International Journal of Marketing Studies,* 4(5), 81-98.

Kalis, J. 2019. 10 Retail trends for 2019. In *Bizcommunity.com.* Available:https://www.bizcommunity.com/Article/196/168/193202.html [Accessed 24 October 2019]

Kaushik, A.K. and Rahman, Z. 2015. An alternative model of self-service retail technology adoption. *Journal of Services Marketing*, *29*(5), 406-420.

McCabe, J., Seedat, Y. and Watling, J. 2019. *Rethinking the e-commerce opportunity in South Africa: How retailers can pivot to digital customers.* Accenture. Available: https://www.accenture.com/za-en/insights/retail/ecommerce [Accessed 15 November 2019]

Naigon, V. 2017. How technology is transforming South African retail. In *Bizcommunity.com.* Available: https://www.bizcommunity.com/Article/196/185/164704.html [Accessed: 24 October 2019]

Piotrowicz, W. and Cuthbertson, R. 2014. Introduction to the special issue information technology in retail: Toward omnichannel retailing. *International Journal of Electronic Commerce*, 18(4), 5-16.

Priporas, C-V., Stylos, N. and Fotiadis, A. 2017. Generation Z consumers' expectations of interactions in smart retailing: A future agenda. *Computers in*

Human Behavior, 77, 374-381. Available:
https://doi.org/10.1016/j.chb.2017.01.058. [Accessed 15 May 2019]

Shih, Y.Y. and Fang, K. 2004. The use of a decomposed theory of planned behavior to study Internet banking in Taiwan. *Internet research*, *14*(3), 213-223.

Singh, R. 2019. Why do online grocery shoppers switch or stay? An exploratory analysis of consumers' response to online grocery shopping experience. *International Journal of Retail and Distribution Management,* 47(12), 1300-1317

Smith, M. 2019. What the latest technological innovation means for the future of retail. In *Bizcommunity.com*. Available: https://www.bizcommunity.com/Article/196/185/192677.html [Accessed: 24 October 2019]

Stewart, C. 2019. *The R34bn opportunity cost of online CX*. Rogerwilco. Available: https://www.rogerwilco.co.za/blog/2019-south-african-digital-customer-experience-report [Accessed 31 October 2019]

Taylor, S. and Todd, P.A. 1995. Understanding information technology usage: A test of competing models. *Information systems research*, *6*(2), 144-176.

Van Eeden, J. 2018. Retail technology - changing buying and delivery methods. In *Bizcommunity.com*. Available: https://www.bizcommunity.com/Article/196/185/182721.html [Accessed 11 May 2019]

Weijters, B., Rangarajan, D., Falk, T. and Schillewaert, N. 2007. Determinants and outcomes of customers' use of self-service technology in a retail setting. *Journal of Service Research*, *10*(1), 3-21.

Appendix 1: Thematic analysis of business publications - as per Grewal et al. (2017)

Grewal et al, 2017. Themes	Theme
Technology & tools to facilitate decision making	1
Visual display & merchandise offer decisions	2
Consumption & engagement	3
Big data collection & usage	4
Analytics & profitability	5
Adhi, 2019	
RFID, WiFi, Check out	3
Machine learning replenishment	4
Kalis, 2019	
Next gen flagship stores	3
Fast retail	3
Omnichannel	1
Frictionless retail (Pain points)	3
Artificial intelligence: communication/personalisation, pricing optimisation, inventory, and discovering new ways to engage with consumers.	1,5
Partner with start-ups	1
Responsive supply chains	3
Conscious consumption	3
Smart retail	1,3
Inclusivity	3
Smith, 2019.	
Human experience	3
Frictionless shopping	1
New business models	3
Take care of logistics	3
Take store to customer	3
Turn phone into buy button	1
Voice assistants (Chatbots)	1,3
Askew, 2019	
Online	1
Omnichannel	3
In-store guidance system	1
Personalised experiences	3
Social commerce	3
Supply chain technology	4
Traceability & data	1

Broll Property Intel, 2019	Theme
Omnichannel	3
Influencer marketing	1
Experiential stores	3
Cashless systems	3
Esterhuizen, 2018.	
AI Technologies	4,5
Augmented reality	2,3
Virtual reality	2,3
AI/VR/VA partnerships	3,4
Big data	4,5
Frazer, 2019	
AI	5
Iot	1
Big data	4
Omnichannel	3
Meaningful relationships	3
Achille et al, 2018.	
Customer experience	3
New business models	3
Future disruption. (Lifestyle)	3
Naigon, 2017	
VR	2
Omnichannel	3
Big data	4
AI	5
Goldman, 2017	
SS check outs	3
Sales personnel	3
Chatbots	3
Iot	1
Frequency of Grewal Themes	**Frequency**
Technology & tools to facilitate decision making (1)	14
Visual display & merchandise offer decisions (2)	3
Consumption & engagement (3)	31
Big data collection & usage (4)	7
Analytics and profitability (5)	4

Appendix 2: Consumer Questionnaire

There are significant technological developments in the retail environment and we are hoping you can assist us by telling us your attitude towards in-store and e-retailing (online shopping)technology as well as your intention regarding its use. Retailers are adopting self-service technologies (SSTs) to improve the quality of service. Self-service technologies can mean any technological application, but the most typical SST is interactive kiosks which refer to computer workstations for public access. Self-Service technology in retail stores may include: Tap n go, Self-scanning, Point of sale technology, mobile aids for sales personnel, amongst others.

<u>**Section A**</u>

This set of questions would like to establish your attitude and intention towards self-service technology in retailing.

(5 point Likert: Strongly disagree/disagree/neither/agree/strongly agree)

<u>**1. Attitudinal Structure**</u>

1.1 Perceived usefulness

Using SST will make shopping easier

Using SST will make shopping faster

SST will make shopping more enjoyable

I like to use technology

1.2 Ease of use

I find SST easy to use

Learning and operating SST is easy for me

My interaction with SST is clear and understandable

I find it easy to get SST to work for me

I am skilled at using SST

1.3 Compatibility

Using SST will fit in well with my lifestyle

Using SST is important to me

<u>**2. Subjective norm**</u>

2.1 Peer influence

People important to me think that using SST is a good idea

Most people important to me think I should use SST

People who influence my behaviour think I should use SST

Most people I know use SST

Using SST enhances my position within my group of friends

Most people I know are cautious of SST

3. Perceived behavioural control

3.1 Self efficacy

It is important to me that I can easily operate SST

It is important to me that I know enough to operate SST

It is important to me that I feel comfortable using SST

3.2 Facilitating conditions

I prefer to stand in a queue to wait for SST unit to be available

It is not important how many SST units are available in-store

SST in-store must be compatible with e-retailing (online shopping) technology

There is no need for in-store personnel to be available to assist with SST

4. Behavioural Intention

Using SST is a good idea

I like the idea of using SST

Using SST is a foolish idea

I use SST frequently to do my shopping

I use SST wherever it is available

5. Actual Usage

I use SST frequently where it is available when I shop

I prefer to shop at stores where SST is available

I have never used SST in-store

Section B

This section is about your attitude and intention towards shopping online with your mobile device or desktop/laptop computer.

E-retailing (online shopping)shopping includes searching for product features, prices or reviews, selecting products and services, placing the order, making payments, then delivery of the purchased products.

1. Attitudinal Structure

1.1 Perceived usefulness

Online shopping makes shopping easier

Online shopping makes shopping faster

Online shopping makes shopping more enjoyable

Online shopping is safe

I like to use technology

1.2 Ease of use

I find online shopping easy to use

Learning and operating online shopping is easy for me

My interaction with online shopping is clear and understandable

I find it easy to get online shopping to work for me

I am skilled at using online shopping

1.3 Compatibility

Online shopping fits in well with my lifestyle

Online shopping is important to me

2. Subjective norm

2.1 Peer influence

People important to me think that using online shopping is a good idea

Most people important to me think I should use online shopping

People who influence my behaviour think I should use online shopping

Most people I know use online shopping

Using online shopping enhances my position within my group of friends

Most people I know are cautious of online shopping

3. Perceived behavioural control

3.1 Self efficacy

It is important to me that I can easily operate online shopping

It is important to me that I know enough to operate online shopping

It is important to me that I feel comfortable using online shopping

3.2 Facilitating conditions

It is not important how long online stores take to download

Online stores must be compatible with my online devices

There is no need for online personnel to be available to assist with online shopping

I prefer to use a BOT to get assistance with online shopping

(A BOT, short for robot, is computer assistance with online shopping)

4. Behavioural Intention

Using online shopping is a good idea

I like the idea of using online shopping

Using online shopping is a foolish idea

I will use online shopping frequently to do my shopping

I will use online shopping wherever it is available

5. Actual Usage

I use online shops at least once a week

I use online shopping at least once a month

I prefer online shopping

I have never used online shopping

Demographics

Which age group do you fall into?

Under 13	14 to 20	21 to 35	36 to 50	51 to 65	Older than 65	

What language do you use most frequently?

Sepedi	Sesotho	Setswana	siSwati	Tshivenda	Xitsonga	Afrikaans	English	isiNdebele	isiXhosa	isiZulu

Where do you live?

Eastern Cape	Free State	Gauteng	KwaZulu-Natal	Limpopo	Mpumalanga	Northern Cape	North West	Western Cape

What is your monthly income before tax and deductions?

Less than R2 000	R2 001 to R10 000	R10 001 to R20 000	R20 001 to R30 000	More than R30 000

Appendix 3: Consumer Questionnaire Sources

Construct	Question	Adapted from:
A. Self-service technology		
1. Attitudinal Structure		Davis et al., 1989. Kaushik & Rahman, 2015. Taylor & Todd, 1995. Shih & Fang, 2004. Weijters et al., 2007.
1.1 Perceived usefulness	Using SST will make shopping easier	
	Using SST will make shopping faster	
	SST will make shopping more enjoyable	
	I like to use technology	
1.2 Ease of use	I find SST easy to use	
	Learning and operating SST is easy for me	
	My interaction with SST is clear & understandable	
	I find it easy to get SST to work for me	
	I am skilled at using SST	
1.3 Compatibility	Using SST will fit in well with my lifestyle	
	Using SST is important to me	
2. Subjective norm		Kaushik & Rahman, 2015. Taylor & Todd, 1995. Shih & Fang, 2004.
2.1 Peer influence	People important to me think that using SST is a good idea	
	Most people important to me think I should use SST	
	People who influence my behaviour think I should use SST	
	Most people I know use SST	
	Using SST enhances my position within my group of friends	
	Most people I know are cautious of SST	
3. Perceived behavioural control		Taylor & Todd, 1995. Shih & Fang, 2004.
3.1 Self efficacy	It is important to me that I can easily operate SST	
	It is important to me that I know enough to operate SST	
	It is important to me that I feel comfortable using SST	
3.2 Facilitating conditions	I prefer to stand in a queue to wait for SST unit to be available	
	It is not important how many SST units are available in-store	
	SST in-store must be compatible with online technology	

	There is no need for in-store personnel to be available to assist with SST	
4. Behavioural Intention		Kaushik & Rahman, 2015.
	Using SST is a good idea	
	I like the idea of using SST	
	Using SST is a foolish idea	
	I use SST frequently to do my shopping	
	I use SST wherever it is available	
5. Actual Usage		Shih & Fang, 2004.
	I use SST frequently where it is available when I shop	
	I prefer to shop at stores where SST is available	
	I have never used SST in-store	
B Online Shopping		
1. Attitudinal Structure		
1.1 Perceived usefulness	Online shopping makes shopping easier	Davis et al., 1989. Kaushik & Rahman, 2015. Taylor & Todd, 1995. Shih & Fang, 2004. Weijters et al., 2007. Javadi et al., 2012.
	Online shopping makes shopping faster	
	Online shopping makes shopping more enjoyable	
	Online shopping is safe	
	I like to use technology	
1.2 Ease of use	I find online shopping easy to use	
	Learning and operating online shopping is easy for me	
	My interaction with online shopping is clear and understandable	
	I find it easy to get online shopping to work for me	
	I am skilled at using online shopping	
1.3 Compatibility	Online shopping fits in well with my lifestyle	
	Online shopping is important to me	
2. Subjective norm		Kaushik & Rahman, 2015. Taylor & Todd, 1995. Shih & Fang, 2004.
2.1 Peer influence	People important to me think that using online shopping is a good idea	
	Most people important to me think I should use online shopping	
	People who influence my behaviour think I should use online shopping	
	Most people I know use online shopping	

	Using online shopping enhances my position within my group of friends	
	Most people I know are cautious of online shopping	
3. Perceived behavioural control		Taylor & Todd, 1995. Shih & Fang, 2004. Javadi et al., 2012.
3.1 Self efficacy	It is important to me that I can easily operate online shopping	
	It is important to me that I know enough to operate online shopping	
	It is important to me that I feel comfortable using online shopping	
3.2 Facilitating conditions	It is not important how long online stores take to download	
	Online stores must be compatible with my online devices	
	There is no need for online personnel to be available to assist with online shopping	
	I prefer to use a BOT to get assistance with online shopping	
4. Behavioural Intention		Kaushik & Rahman, 2015.
	Using online shopping is a good idea	
	I like the idea of using online shopping	
	Using online shopping is a foolish idea	
	I will use online shopping frequently to do my shopping	
	I will use online shopping wherever it is available	
5. Actual Usage		Shih & Fang, 2004. Javadi et al., 2012.
	I use online shops at least once a week	
	I use online shopping at least once a month	
	I prefer online shopping	
	I have never used online shopping	

Appendix 4 Retail Technology: Management Questionnaire.

There are significant technological developments in the retail environment, and we are hoping you can assist us by telling us of your company's experience with in-store and online technology as well as your intention and readiness regarding its use.

(5-point Likert: Strongly disagree/disagree/neither/agree/strongly agree)

1. What technology do you believe has affected the retail industry the most?

    1.1 Self-service kiosks

    1.2 Online retail

    1.3 Warehouse automation

    1.4 Social media

    1.5 Internet of things (IOT)

    1.6 Artificial Intelligence (AI)

    1.7 Electronic payment

    1.8 Virtual reality (VR)

    1.9 Big Data

    1.10 Other (Please state)

2. These technology changes have affected my business significantly:

    2.1 Self-service kiosks

    2.2 Online retail

    2.3 Warehouse automation

    2.4 Social media

    2.5 Internet of things (IOT)

    2.6 Artificial Intelligence (AI)

    2.7 Electronic payment

    2.8 Virtual reality (VR)

    2.9 Big Data

    2.10 Other (Please state)

3. My company is preparing a plan to implement:

    3.1 Self-service kiosks

    3.2 Online retail

    3.3 Warehouse automation

    3.4 Social media

    3.5 Internet of things (IOT)

3.6 Artificial Intelligence (AI)

3.7 Electronic payment

3.8 Virtual reality (VR)

3.9 Big Data

3.10 Other (Please state)

4. My company is busy implementing:

4.1 Self-service kiosks

4.2 Online retail

4.3 Warehouse automation

4.4 Social media

4.5 Internet of things (IOT)

4.6 Artificial Intelligence (AI)

4.7 Electronic payment

4.8 Virtual reality (VR)

4.9 Big Data

4.10 Other (Please state)

5. Our staff members highly skilled in the following:

5.1 Self-service kiosks

5.2 Online retail

5.3 Warehouse automation

5.4 Social media

5.5 Internet of things (IOT)

5.6 Artificial Intelligence (AI)

5.7 Electronic payment

5.8 Virtual reality (VR)

5.9 Big Data

5.10 Other (Please state)

6. Staff members are currently being trained in the following:

6.1 Self-service kiosks

6.2 Online retail

6.3 Warehouse automation

6.4 Social media

6.5 Internet of things (IOT)

6.6 Artificial Intelligence (AI)

6.7 Electronic payment

6.8 Virtual reality (VR)

6.9 Big Data

6.10 Other (Please state)

7. Management are highly skilled in the following:

7.1 Self-service kiosks

7.2 Online retail

7.3 Warehouse automation

7.4 Social media

7.5 Internet of things (IOT)

7.6 Artificial Intelligence (AI)

7.7 Electronic payment

7.8 Virtual reality (VR)

7.9 Big Data

7.10 Other (Please state)

8. Management are currently being trained in the following:

8.1 Self-service kiosks

8.2 Online retail

8.3 Warehouse automation

8.4 Social media

8.5 Internet of things (IOT)

8.6 Artificial Intelligence (AI)

8.7 Electronic payment

8.8 Virtual reality (VR)

8.9 Big Data

8.10 Other (Please state)

9. Management are positive about adopting these technologies:

9.1 Self-service kiosks

9.2 Online retail

9.3 Warehouse automation

9.4 Social media

9.5 Internet of things (IOT)

9.6 Artificial Intelligence (AI)

9.7 Electronic payment

9.8 Virtual reality (VR)

9.9 Big Data

9.10 Other (Please state)

10. Staff are positive about adopting these technologies:

10.1 Self-service kiosks

10.2 Online retail

10.3 Warehouse automation

10.4 Social media

10.5 Internet of things (IOT)

10.6 Artificial Intelligence (AI)

10.7 Electronic payment

10.8 Virtual reality (VR)

10.9 Big Data

10.10 Other (Please state)

BIOGRAPHICAL

1. Company

2. Province

3. What retail business are you in?

4. What is your position in company?

5. Annual turnover of the retailer.

6. Number of staff employed.

Appendix 5: Informed consent

From: Adriaan Buys

Subject: CPUT requests your assistance: retail technology survey

Dear [Name]

I am conducting a study on behalf of the Wholesale and Retail Leadership Chair at CPUT, which aims to gather information on the use of technology in retail businesses. The results will be available to you after the study via the W&RSETA website.

Please assist us in completing the online survey. The survey should not take you longer than 10 minutes to complete.

Please follow the link below or copy and paste it to your browser:

http://ifeedback.app/index.php?option=com_communitysurveys&view=survey&id=3&catid=89&Itemid=437&skey=xGAvHPf2iQX102cp

Your participation is voluntary, and you can withdraw at any time without penalty. The information you provide will be used for statistical purposes only, and individual responses will remain strictly confidential.

Thank you in advance for your participation. Please feel free to contact me with any questions.

Adriaan Buys
adriaan@ifeedback.co.za
0825208335

Appendix 6: Ethical clearance certificate

Cape Peninsula University of Technology

P.O. Box 1906 • Bellville 7535 South Africa •Tel: +27 21 4603291 • Email: fbmsethics@cput.ac.za
Symphony Road Bellville 7535

Office of the Chairperson Research Ethics Committee	Faculty: BUSINESS AND MANAGEMENT SCIENCES

At a meeting of the Faculty's Research Ethics Committee on 30 April 2019, Ethics Approval was granted to Prof Roger Mason for research activities at Cape Peninsula University of Technology.

Title of dissertation/thesis/project:	TECHNOLOGY TRENDS & CHALLENGES FOR RETAIL MANAGERS IN SA, WITH SPECIAL EMPHASIS ON E-RETAILING Lead Researcher/Supervisor: Prof R Mason

Comments:

Decision: Approved

	17 June 2019
Signed: Chairperson: Research Ethics Committee	Date

Clearance Certificate No | FOBREC677

Appendix 7: Turnitin similarity report

Document Viewer

Turnitin Originality Report

Processed on: 13-Mar-2020 14:06 CAT
ID: 1274934715
Word Count: 9662
Submitted: 1

Tech trends in retail By Peter Raap

Similarity Index	Similarity by Source	
5%	Internet Sources:	5%
	Publications:	0%
	Student Papers:	0%

include quoted   include bibliography   excluding matches < 3%   mode: quickview (classic) report   Change mode   print   refresh   download

5% match (Internet from 07-Mar-2020)
https://www.mckinsey.com/industries/retail/our-insights/automation-in-retail-an-executive-overview-for-getting-ready