FOREWORD

Prof MC Cant
Editor
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The year 2022 promises to be different in many respects to previous years. All businesses in all sectors and in all countries are grappling with transformation on may fronts. Added to this pressure there are pressures in terms of global issues such as the Ukraine / Russia conflict, clime change, political challenges, human rights issues and many more. In a nutshell the business landscape is on a fast track of change and it is the responsibility of businesses to adapt to these changes.

An idea of how these changes are impacting on businesses operations are briefly indicated below and how things are evolving is evident from these emerging trends below.

1. Organisations are expected to operate in a sustainable manner- that implies reducing environmental costs. Decarbonisation is on the top of the list and organisations will do well to be focussed on sustainability issues .
2. A fine balance between the use of artificial intelligence and people is needed. Automation is here to stay and will form an integral part of all businesses. This change need to be managed correctly by business leaders
3. Permanent employment at one company seems not to be important to the new generation of workers. More workers want to have flexibility and work remotely. This opens the door for companies focussing more on contract workers than permanent employees
4. There is a greater emphasis to speedier reaction to market trends, and this requires less rigid organisational structures. Flexibility is becoming the norm.
5. The consumer is today becoming more concerned about the brand , what it stands for as they want to identify more with these brands. These brands need to project care, honesty, integrity and other values that consumers identify with.
6. Organisations are more and more coming under pressure to show meaning for being there- why is it needed? What contribution is it making to society and not only to make profit.
7. Organisations the world over has realised that working together in some form of cooperative agreement may be the solution to solve many issues and to co survive in an increasingly complex and fast changing environment

It is clear that the pace of change has escalated to warp speed proportions . Daily new technologies are launched and consumers adopting to the changes at speed as well. Linked to this is the fact that consumer habits are changing, their preferences, attitudes, opinions and brand loyalties. These changes as well as the challenges during the pandemic are forcing retailers to reset regarding their offerings, adapting to consumer needs and being more hands on corporate citizens.

It can be expected that 2022 will bring its own challenges and opportunities! Businesses and retailers allke should embrace these challenges and take a committed path to the future.

A pursuit to identify brick-and-mortar and online consumer decision-making styles that are globally relevant

Prof Alet C Erasmus*
Gordon Institute of Business Science,
University of Pretoria
erasmusa@gibs.co.za

Dr Suné Donoghue
University of Pretoria
sune.donoghue@up.ac.za

Prof Thomas Dobbelstein
Durban University of Technology

*Corresponding author

ABSTRACT

This cross-country comparison of consumer decision-making styles for brick-and-mortar and online shopping was inspired by notable changes in the marketplace. Conflicting evidence of the popularity of brick-and-mortar versus online shopping globally and the emergence of the so-called "global consumer" are increasingly questioning our understanding of consumers' behaviour in the marketplace, challenging ways retailers can optimise their service offering to meet consumers' needs. Extensive research on consumers' decision-styles, conducted over more than three decades, aiming to indicate how consumers cognitively and emotionally deal with shopping decisions, have produced conflicting findings, further complicating retailers' predicament. This quantitative survey was conducted before the COVID-19 pandemic in 2019 and involved South African (N=1495) and German adults (N=1344) as representatives of a developing and developed economy. The Sproles and Kendall (1986) Consumer Styles Inventory served as the point of departure to identify the prevailing consumer decision styles for the respective shopping modes in both countries. Data analysis was conducted separately for the two countries, using Exploratory Factor Analysis, t-tests/Anova, and relevant reliability measures. For the first time, this study presents consumer decision-making styles for brick-and-mortar and online shopping that concur for both countries, having achieved satisfactory internal consistency for the final factors. Particularly noteworthy for retailers is that "Perfectionism" is the most important decision style irrespective of the shopping mode. This translates as a prioritisation of trusted, good-quality products. A concern raised is the confusion experienced in physical stores due to the array of products and apparent impulsiveness when shopping online, which suggests consumer-friendly rather than product-oriented approaches by retailers to reduce consumers' cognitive dissonance. The findings suggest that the so-called "global consumer" is not a far-fetched idea, as consumers' needs and behaviour are more consistent than different despite demographic and geographic differences.

Keywords: consumer decision-making styles, shopping styles, brick-and-mortar shopping, online shopping, global consumer, demographic differences

INTRODUCTION

Changes in consumers' shopping behaviour, particularly an increase in online (OL) shopping, contributed to the mass closure of shopping malls in the US since the early 2010s. Omni-channel retailing that integrates online shopping and physical retailing in brick-and-mortar (B&M) stores then seemed a viable alternative for retailers to retain their presence in the market. Forecasts of "the end of the High Street" in Britain (Martin 2018) were aggravated by the COVID-19 pandemic that raised even more questions about the future of B&M stores. Although alarming, the permanent closure of many major stores in Western countries during the pandemic was not surprising (Hult, Sharma, Morgeson & Zhang 2019: 10; Business Insider 2020). Globally, around 16% of all retail transactions are conducted online (Daniel 2020).

In comparison, in South Africa, online sales represented merely 1.4% of the total retail market in 2018 during the pre-COVID-19 period, just before this study was conducted. Spurred by COVID-19 induced lockdowns, online retail more than doubled to around 4% in 2020 in South Africa (Business Insider SA, May 2021). According to a Mastercard survey on consumer spending (Mastercard Engagement Bureau 2020), 68% of South African consumers have increased their online shopping since the onset of the COVID-19 pandemic. Still, while this upward trajectory in online sales is expected to continue, the pace is likely to slow down after the Coronavirus-induced boom. Therefore, notwithstanding considerable growth in online retail in South Africa since 2020, its e-commerce market still lags behind the global curve (Daniel, 2020).

Admittedly, the Fourth Industrial Revolution determines how people live in today's digital era, which is bound to change retail environments forever (Schulze 2019). The surge in online shopping during the COVID-19 pandemic has simply fast-forwarded the predictions of global changes in the marketplace and related measures to accommodate online shopping (Barari, Ross & Surachartkumtonkun 2020: 53). With an increase in OL shopping, the term "global consumer" has become more pronounced, as consumers now have easy access to service providers across the world. For retailers, online retailing implies considerable financial benefits, such as reducing overhead costs to manage and maintain physical retail spaces, employing less personnel, and lower operating costs (Ye, Lau & Teo 2018: 658). Inconsistencies, however, exist. Amidst a definite increase in online shopping worldwide, with undeniable associated advantages for both consumers and retailers, B&M shopping still offers attractive benefits that consumers find difficult to resist (Worldwide share of e-commerce sales 2015 - 2024). Indications are that consumers find it easier to recall B&M store environments due to consistency in branding, signage, and store layout (Ainsworth & Foster 2017: 28).

Moreover, modern retailing in physical stores is associated with personalised customer service, the opportunity to socially interact and exercise - particularly in large shopping malls - to enjoy live entertainment and sensory stimuli as part of experiential retailing, and to appreciate skilfully crafted store atmospherics (Retief, Erasmus & Petzer 2018: 2). Based on year-on-year performance figures of the past century, the Financial Mail (Muller 2021) has confirmed physical stores' popularity in South Africa, despite the economic slump caused by COVID-19 lockdowns. Existing retail space per person in the USA, Canada, and Germany, also indicate that B&M shopping is still an option to be reckoned with (Nicasio, 2020). Therefore, declining shopping malls may merely be a natural market correction due to the overproduction of malls in the past. Notwithstanding impressive growth in OL shopping, globally, more than 85% of consumer purchases still occur in physical stores (Souiden, Ladhari & Chiadmi 2019: 286; Worldwide share of e-commerce sales 2015-2024). Consequently, the complexity of explaining consumers' behaviour and needs poses many challenges to retailers, especially for OL retailers who want to attract global customers (Ye et al. 2018: 659).

One way to understand consumers' behaviour in the marketplace is to focus on their decision-styles (CDS) that culminate in their cognitive and affective appraisal of different purchase situations, whether physically shopping in brick-and-mortar stores (B&M) or online (OL). Research spanning more than three decades since introducing the Consumer Styles Inventory (CSI) of Sproles and Kendall in 1986 indicates that researchers have paid considerable attention to this phenomenon. Conflicting findings, however, do not accommodate the current situation where both OL and B&M shopping should be acknowledged and a reality where consumers can now shop online across borders. Therefore, the so-called contextual differences mentioned in previous research and previous concerns about the CSI (Bakewell & Mitchell 2006: 1299; Lysonski, Durvasula & Zotos 1996: 19; Mitchell & Walsh 2004: 345; Potgieter, Wiese & Strasheim 2013: 11; Radder, Li & Pietersen 2006: 20) are worth noting. Williams, Brown, and Onsman (2012: 2) ascribe disparities in previous research to differences in studies' objectives, language issues, contextual differences, and differences in scale content. Some studies have included up to 40 items per instrument, eventually producing as many as 15 consumer decision-making styles (CDS) (Musika 2018: 37-49). Researchers concur that contextual differences have to date, complicated the alignment of the results of previous CDS research performed in developed countries (Bakewell & Mitchell 2006: 1297; Lysonski et al. 1996: 19; Mitchell & Walsh 2004: 345), with results originating from developing contexts (Potgieter et al. 2013: 11; Radder et al. 2006: 20). Influences such as cultural and societal values and views, the advancement of both physical and online retail in a particular country, and a country's economic development may jeopardise the suitability of the original Sproles and Kendall (1986) CSI when applied in different contexts (Andersson, Hallberg & Ingfors 2016: 42). Given the considerable changes in retail and

consumers' shopping behaviour in recent years and the clouding of the applicability of the original CSI in the current global context - where the future of B&M stores seems uncertain and contextual differences are vast - a comparison of CDS across counties has become very complex, yet worthy to pursue.

This quantitative, cross-sectional, pre-COVID-19 research project was conducted to compare the prevailing CDS of consumers in an emerging country, namely South Africa, with a Western country where OL shopping is well established. Germany was a convenient choice, firstly for logistical reasons, as one of the researchers was operating in Germany, frequently travelling to South Africa for academic purposes. This facilitated a hands-on approach with data gathering and simultaneous data analysis for the two countries. Secondly, Germany represented the second-largest e-commerce market in Europe in 2019, when the study was conducted, also being the fifth largest e-commerce market globally. An impressive 84% of Germany's population had done internet shopping before the COVID-19 pandemic, and it was expected to increase to 95% by 2020 (Preus 2020). This growth was not expected to be negatively affected by external influences such as Brexit, with the top-selling product categories being clothing, furniture, and beauty and personal products. The apparent differences in consumers' shopping behaviour in South Africa (RSA) and Germany (FRG), the latter a Western country where online shopping is well-established, therefore seemed plausible to represent an emerging and a developed country, respectively, for the simultaneous comparison envisaged in this research.

The study aimed to distinguish and compare the relevant CDS for B&M and OL shopping, respectively, across the two countries, as an indication of the sought-after characteristics that would retain consumers' interest and address their needs (Chen, Chen & Lin 2012: 176; Hänninen 2019: 380; Zhou Pereira& Yu 2010: 45). Therefore, the CDS were to be identified independently for the two countries' two shopping scenarios (B&M and OL). Apart from being 18 years or older, the only pre-requisite for participation in the study was that individuals had to have had personal experience of both shopping contexts within the preceding six months. Respondents had to reflect on a shopping scenario in a physical store (B&M) versus shopping online (OL) in general, irrespective of whether a particular retailer offered both shopping options and what respondents preferred or primarily employed. Previous research had only reported on consumers' CDS without attending to the relative importance of the different CDS, indicating consumers' needs. By also suggesting the prominence of the various CDS in different geographic and shopping contexts, this research aimed to highlight similarities and differences of significance, to indicate a possible existence of universal traits associated with the so-called "global consumer". Such evidence could enhance retailers' understanding of their customers. Furthermore, evidence of significant demographic differences within the respective contexts would explicate different consumer segments' behaviour in the marketplace. Subsequently, three research questions directed the research:

- How do the consumers' CDS in South Africa, an emerging economy, and Germany, a typical developed economy, compare for B&M and OL shopping?
- How do the most prevalent CDS for B&M and OL shopping compare across the two countries?
- Which distinct demographic differences in consumers' CDS should be noted for the respective countries to facilitate retailers' efforts to augment consumers' shopping experiences in the diverse shopping contexts?

The following section provides the theoretical foundation for the research that followed a deducto-hypothetico approach, allowing hypotheses to be deduced from established research. The research methodology is presented, followed by an explication of the data analysis, and the presentation and discussion of results. Theoretical contributions of the findings are presented to expand an understanding of CDS in a globalised consumer world. Limitations are acknowledged, along with suggestions for future research.

CONCEPTUAL DEVELOPMENT AND RESEARCH HYPOTHESES

THE EMERGENCE OF ONLINE SHOPPING

In 1979, Michael Aldrich used Videotext technology - a two-way message service - to introduce the idea of e-commerce in the form of online shopping. In 1984, the first-ever shopper to buy online completed a transaction at Tesco in the USA, where after online shopping escalated to other companies. In 1991, with the commercialisation of the Internet, online shopping took the world by storm, expanding retail and marketing to levels that have inspired scholars' interest (Thomas 2015). In 2018, an estimated 1.8 billion people worldwide purchased goods online, and global e-retail sales soared to 2.8 trillion US dollars, with a projected growth of up to 4.8 trillion US dollars by 2021 (Clement 2019). A study by Deloitte across 19 countries indicated that 87% of executives believed that forthcoming changes in business associated with the digital era would be beneficial. However, only 14% were confident that their organisations were ready to harness this technological revolution at the time (Viljoen 2018). Another concern was whether consumers from different parts of the world were equally equipped to deal with the envisaged changes in retailing, specifically online shopping that were not equally established across the globe (Bigcommerce 2018).

Countries such as South Africa have made massive investments to support the rapid adoption of new shopping channels, including mobile and Instagram shopping, while most established OL retailers have intensified their digital presence (Businesstech 2019). In emerging economies such as South Africa, however, OL shopping is more prevalent among higher-income, higher-educated consumers who have access to the appropriate technology and are competent to use it (Effective Measure 2017). Unfortunately, generalisable evidence concerning consumers' online consumer decision-making styles (OLCDS), which is essential to address consumers' needs aptly in a global context, is still lacking.

RELATED RESEARCH AND THE RELEVANCE OF THE CSI IN DIVERSE CONTEXTS

The CSI of Sproles and Kendall (1986) aimed to depict consumers' decision-making styles (CDS), particularly in B&M contexts, proposing the instrument as a tool to investigate consumers' behaviour in the marketplace. The CSI followed a consumer characteristics approach (Lysonski et al. 1996: 10) and acknowledged different cognitive and affective dimensions of consumer decision-making to indicate how consumers deal with decisions in the shopping environment. Eight CDS were distinguished, namely: *Perfectionism/Quality consciousness; Brand consciousness; Price and value for money consciousness; Novelty-fashion consciousness; Recreational and hedonistic consciousness; Confusion by over choice; Impulsiveness/carelessness*; and *Habitual/brand loyalty* (Sproles & Kendall 1986). Accordingly, a consumer's predominant CDS reveals a person's regard for specific evaluative criteria and appreciation of some aspects of the shopping environment (Potgieter et al. 2013: 12).

CDS research is invaluable in creating awareness of the relationship between cues in the retail context and consumers' thought and behavioural processes while shopping (Chen et al. 2012: 175; Karimi, Papamichail & Holland 2015: 138; Sproles & Kendall 1986). A predominant CDS indicates how consumers deal with shopping endeavours, cognitively and emotionally. For example, when the prevailing CDS of a particular consumer market signals perfectionism, customers are likely to investigate product specifications more diligently and expect access to various product information formats. In reality, more than one CDS might be prominent at any point in time, providing more precise guidelines as to how consumers can be expected to operate. So-called perfectionists may, for example, also have a relatively strong sense of *recreational and hedonistic consciousness* (Bakewell & Mitchell 2006: 1298). They may also place a high premium on ease of shopping and a pleasurable shopping encounter derived from a logic store layout or web design with intelligent product presentations. Differences may also be observed among different demographic subsets of a particular market segment, in that, a specific CDS may be more typical of females or young consumers (Musika 2018: 112; Potgieter et al. 2013: 24; Radder et al. 2006: 29). A South African survey conducted by OneDayOnly, involving near 6,000 adults, concluded that almost 62% of online shoppers in the country are between 25 and 44 years of age, therefore Millennials (Daniel, 2020).

A scrutiny of the original CSI revealed that the reliability statistics of the scales were borderline for certain factors (Cr α<0.60), possibly contributing to conflicting findings of later studies (Musika 2018: 112; Potgieter et al. 2013: 25; Radder et al. 2006: 29). The four-country comparison of Lysonski et al. (1996: 10) that involved respondents from New Zealand, Britain, the US, and India, provided compelling evidence concerning context-specific differences, although questioning the reliability of the dimensions of the CSI (Sproles & Kendall 1986) across different contexts. They concluded that consumers' choices are influenced by prevailing conditions and a country's level of economic development and made a pertinent plea for the original scale to be validated in different contexts. Over time, several studies have voiced similar concerns. Radder et al. (2006: 21), who involved Caucasian, Chinese, and Motswana university students in South Africa, could only confirm three common CDS across the different population groups, questioning the general applicability of the original CSI (Sproles & Kendall 1986) that was based on a relatively small sample of US students. A South African study by Potgieter et al. (2013: 11) explored demographic differences in the CDS of adults when purchasing general household items and identified ten CDS, of which only six concurred with the original CSI (Sproles & Kendall 1986). Conflicting evidence was also reported by Alavi, Rezaei, Valaei, and Ismail (2015: 300) when studying consumers' shopping styles in B&M stores in Malaysia and Kuala Lumpur. A cross-cultural comparison of the CDS of German and Indian consumers in B&M contexts revealed that the CSI still seemed more appropriate for application in developed countries like Germany, despite significant progress in India (Mehta & Dixit 2016: 207). Ample evidence, therefore, exists that the original CSI is context-specific and not a universal measurement instrument (Andersson et al. 2016: 39-42; Tanksale, Neelam & Venkatachalam 2014: 211). Over time, several scholars have hence reported different combinations and a range of alternative CDS to explain shoppers' behaviour in the marketplace, such as *Time and energy-conserving* (Bakewell & Mitchell 2006: 1298; Hafstrom, Chae & Chung 1992: 156; Walsh, Thurau, Mitchell & Wiedman 2001: 129); *Information utilisation* (Walsh et al. 2001: 129); *Confused; Time-restricted; Store loyal; Lower price seeking; Store promiscuous; Bargain seeking*; and *Imperfection* (Bakewell & Mitchell 2006: 1300). Scholars' quest to extend the CSI to be more applicable in emerging countries (Kavas & Yesilada 2007: 83; Park, Yu & Zhou 2010: 437) therefore seems valid.

Subsequently, this study proposed that:

H1: The prevailing CDS of consumers in emerging and developed countries differ, more specifically:

H1.1: Consumers' CDS for B&M shopping in South Africa (RSA), an emerging economy, differ from consumers' CDS for B&M shopping in Germany (FRG), a typical developed country.

Several attempts have also been made to apply the CSI to online (OL) shopping, thus identifying relevant online consumer decision styles (OLCDS). Considering the recent growth in OL shopping, this issue has not yet attracted the attention it deserves to expand literature. Cowart and Goldsmith's (2007: 639) study among US students with sample characteristics similar to the original study of Sproles and Kendall (1986) for B&M shopping could not confirm the same dimensions for OL shopping. Neither could more recent attempts (Goswami & Khan 2016: 309; Sam & Chatwin 2015: 106) produce a reliable measuring instrument for broader investigations of consumers' OLCDS. Sam and Chatwin (2015: 102) ventured into an alternative 20-item OLCDS inventory in a Chinese context, which distinguished seven OLCDS, of which only four reminded of the original CSI. The researchers deliberately eliminated specific dimensions of the original CSI in their study, reducing the original scale items from 40 to ten to rather include items about web design, website content, and product portability, totaling 20 items. A study conducted in India also modified the scale dimensions from the start (Kharea, Khareb, Mukherjeea, Goyala 2016: 31).

Acknowledging conflicting evidence from previous research, this study proposed that:

H1.2: Consumers' OLCDS in South Africa (RSA), an emerging economy, differ from the OLCDS that prevail in Germany (FRG), a typical developed country.

Due to differences in B&M and OL shopping, the study proposed that:

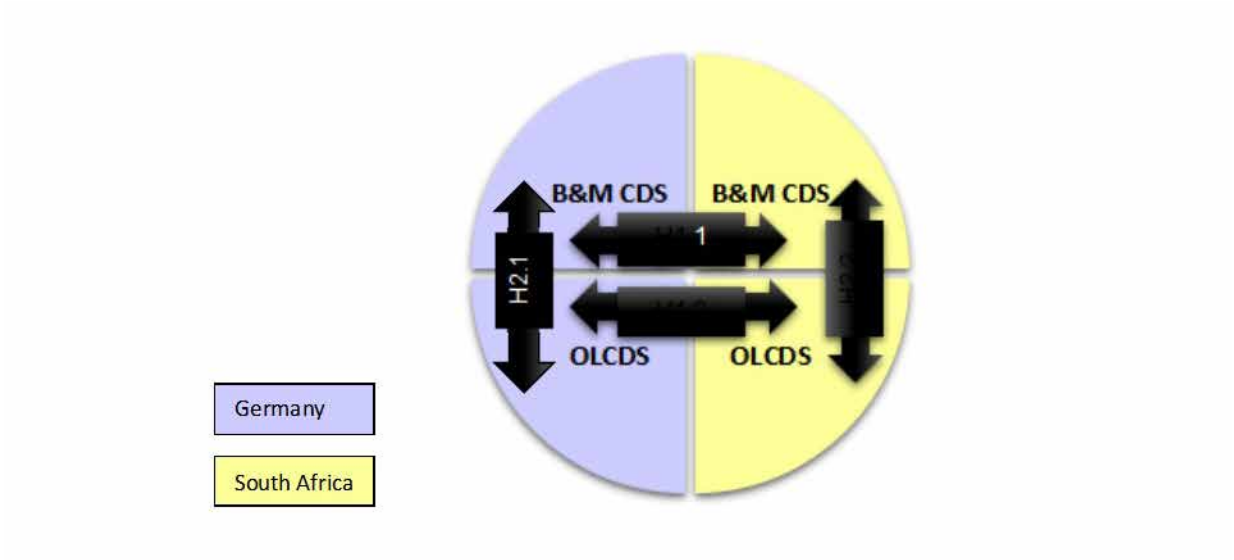
H2: Within a specific geographic location, specifically in South Africa and in Germany, the prevailing CDS of consumers differ for B&M and OL shopping, therefore:

H2.1: The prevailing CDS of RSA consumers for B&M shopping differs from their OLCDS.

H2.2: The prevailing CDS of FRG consumers for B&M shopping differs from their OLCDS

Figure 1 visually depicts hypotheses 1 and 2.

FIGURE 1
SCHEMATIC REPRESENTATION OF HYPOTHESES H1 AND H2



DEMOGRAPHIC DIFFERENCES IN CONSUMERS' DECISION-MAKING STYLES

Several studies have reported demographic differences in consumers' CDS, for example, the study by Mehta and Dixit (2016: 207) that compared Indian and German consumers; the study of Mishra (2010: 60) performed in India; the South African studies by Musasa and Moodley (2020: 98), as well as Potgieter and co-workers (2013: 11); and the Botswana study conducted earlier by Sangodoyin and Makgosa (2014: 52). Other South African studies indicated that CDS could be related to the product category, the relative complexity of the purchase, and consumers' risk perception (Olyott 2018: 104; Potgieter et al. 2013: 26). Also, researchers have speculated that a particular consumer does not consistently apply one CDM style to conduct different shopping decisions, for example, demonstrating different CDS for clothing and grocery purchases (Olyott 2018: 72; Wesley, Lehew & Woodside 2006: 545). In terms of **gender differences**, studies have reported that CDS related to *Perfectionism, Brand consciousness, Confusion due to over choice*, and *Impulsiveness* are not gender-specific (Hanzaee & Aghasibeig 2008: 534 [conducted in Iran]; Mokhlis & Salleh 2009: 582 [conducted in Malaysia]; Sangodoyin & Makgosa 2014: 50 [conducted in Botswana]). Time-related issues are processed differently by males and females (Bakshi 2012: 6 [conducted in India]; Chen et al. 2012: 180 [conducted in Taiwan]) in that females generally devote more time to shopping, and are also more *Recreational, Novelty-* and *Fashion conscious* (Walsh et al. 2001: 129 [conducted in Germany]). Concerning **age differences** in consumers' CDS, findings have been inconsistent, as reported in a study conducted in the United Kingdom (Bakewell & Mitchell 2006: 1298). Indications are that younger consumers enjoy shopping more, spend more time shopping, and are more willing to try out novel products (Lambert-Pandraud & Laurent 2010: 119 [conducted in France]). Regarding **education level differences**, especially younger adults with higher education levels in Jordan (Al-jawazneh & Ali Smadi 2011: 246, 248) and India, respectively (Mishra 2010: 60), are more *Quality conscious, Price-conscious, Impulsive, Confused by over choice,* and *Brand conscious*. Income level differences that may impose restrictions

on consumers' shopping behaviour were excluded in this research discussion to focus on more comparable criteria across the two contexts. Although the research instrument of this research stipulated income categories for the two countries based, an income comparison across the two countries did not make sense eventually as the respective countries' so-called low-, middle-, and high-income levels are vastly different due to differences between emerging and more affluent, developed markets such as Germany: according to the World Bank Group, Germany has a Gini coefficient of 31.7, compared to a figure of 63.0 for South Africa (World Population Review 2021).

Based on the above discussion, the following hypotheses were proposed:

H3: Significant demographic differences exist in consumers' application of the relevant CDS for B&M and OL shopping in South Africa as well as in Germany, more specifically:

H3.1: Concerning consumers' CDS for B&M shopping, significant demographic differences exist within the two countries, specifically (H3.1.1) gender; (H3.1.2) age; and (H3.1.3) education level differences.

H3.2 Concerning consumers' OLCDS, significant demographic differences exist within the two countries, specifically (H3.2.1) gender, (H3.2.2) age (H3.2.3), and education level differences.

RESEARCH METHODOLOGY

The research was driven by the notion that consumers can now shop online across borders amidst diverse frames of reference that direct the so-called 'global consumers' shopping behaviour. This cross-sectional study adopted a positivistic approach. The Research Ethics Committee of the Faculty of Natural and Agricultural Sciences, University of Pretoria, approved the research (reference number EC170220-104). Through a survey that implemented a structured questionnaire, quantitative data were gathered to statistically distinguish and compare consumers' consumer decision styles for B&M and OL shopping in the two countries. Germany represented a typically developed, financially stable economy with well-developed infrastructure, where online shopping is well-established across the population (Preus 2020). South Africa, in contrast, represented an emerging economy where online shopping has not yet gained momentum to reach full potential (Worldwide share of e-commerce sales 2015-2024), and the erection of new shopping malls across the country signifies support for B&M shopping. This was later confirmed, despite COVID-19 lockdowns (Muller 2021).

INSTRUMENT DESIGN

The structured questionnaire was a collaborative undertaking of scholars from both countries. This study intended to compare consumers' CDS in a single exercise for B&M and OL shopping in both countries. Due to the scope and comparative nature of the study, the length of the questionnaire had to be limited. Following a critical review of previous studies, the researchers concluded that the original CSI excluded dimensions relating to store design, visual display, and accessibility. The additional elements included by Sam and Chatwin (2015: 106) to explore OLCDS, after randomly excluding other elements from the original CSI, would have complicated the comparison of consumers' CDS for B&M and OL shopping, as the point of departure differed vastly. Instead, this research departed from the original CSI scale content (Sproles & Kendall 1986: 267) for both shopping modes. One concern in the questionnaire design was that previous research could not agree on the number of dimensions (CDS) that aptly constitute the CSI for B&M shopping (Musika 2018: 54). Bergkvist and Rossiter's (2007: 177) recommendations were followed to enhance the predictive validity of the instrument, namely to reduce the length of the questionnaire to limit repetition and subsequent respondent boredom while completing the questions. Therefore, the researchers critically assessed the original CSI scale items to retain fewer items and try to even out the number of items per dimension while valuing the original dimensions. A recent study (Olyott 2018: 35) conducted in South Africa across three product categories guided the item selection, relying on favourable reliability statistics (Cronbach's α >0.75) reported in the study across several

outputs. In cases where an over-representation of items existed for specific scale dimensions, such as *Perfectionism*, the four items with the highest factor loadings without cross-loading during factor analysis were retained. Reverse coded statements were rephrased to prevent confusion, particularly for *Impulsiveness/carelessness* and *Enjoyment*. No reference was made to any product category.

The final questionnaire distinguished separate B&M and OL shopping sections, containing a similar but shuffled list of 21 identical statements for each shopping scenario, anchored by a five-increment "Agreement" rating scale. However, the items' wording was slightly adapted to specify B&M or OL shopping, and instructions were rephrased for each set of questions to prevent misinterpretation.

Demographic information was captured at the end of the questionnaire, distinguishing between gender groups, four age categories, and three comparable education levels for the two countries. The English version of the questionnaire was translated into German and back-translated to verify the content. Pretests were run with 30 respondents in each country to ensure clarity of instructions, constructs, and scale items. Minor adjustments were made to the cover page of the questionnaire to restrict participation to individuals of at least 18 years of age with B&M and OL shopping experience.

DATA COLLECTION

Trained fieldworkers distributed structured, hard copy questionnaires simultaneously across densely populated urban areas in Baden-Württemberg, Germany, and Gauteng, South Africa, to recruit diverse samples under the researchers' supervision. Due to time and resource constraints, non-random convenience sampling was employed in both countries. Trained fieldworkers in both countries were purposively assigned to recruit a large, diverse sample from selected residential areas that differed in socioeconomic status. They were instructed to recruit a diverse spectrum of willing respondents, aged 18 years and older, not targeting close-by neighbours, and drop down hard copies of the questionnaires at individuals' residences or workplaces for completion in their own time, for collection per appointment within three days. Data collection was completed after three weeks in both countries. Through snowballing, electronic copies of the questionnaire were later distributed to increase the representation of older, higher-income, highly educated respondents in the German sample. All the respondents participated willingly and could withdraw anytime, without penalty. The final sample sizes (RSA: N = 1345; FRG: N = 1493) were comparable in terms of gender, but additional efforts did not resolve age, income, and education level imbalances in the German sample adequately. Due to the relatively large sample sizes and because demographic subsets were adequate for statistical analysis, the two data sets were accepted, noting imbalances for the sake of interpretation of the results. Table 1 presents the demographic characteristics of both countries.

TABLE 1:
DEMOGRAPHIC CHARACTERISTICS OF THE SAMPLE FOR BOTH COUNTRIES

	South Africa (N=1345)		Germany (N=1493)	
Characteristics	**RSA (n)**	**RSA (%)**	**FRG (n)**	**FRG (%)**
Gender				
Male	590	43.87	603	40.39
Female	752	55.91	883	59.14
Missing	3	0.22	7	0.47
Age (years)				
Up to 29	382	28.40	935	62.63
30-39	282	20.97	189	12.66
40-59	466	34.65	298	19.96
60 and more	212	15.76	71	4.76
Missing	3	0.22	0	0
Education level				
< Grade 12/ Abitur	330	24.54	1103	73.88
Gr 12 + B Degr, dipl	600	44.61	244	16.34
Post grad	401	29.81	142	9.51
Missing	14	1.04	4	0.27
Household Income				
<R10 000/ 1.000 €	220	16.36	532	35.63
R10 000- R29 999/ 1.000 -2.999 €	418	31.08	634	42.46
R30 000- R49 999/ 3.000- 3.999 €	318	23.64	141	9.44
≥R50 000/ ≥4.000 €	305	22.68	179	11.99
Missing	84	6.25	3	0.20
Total	1345	100	1493	100

(At the time of the study, 1€ ≧ R16)

DATA ANALYSIS AND FINDINGS

Respondents' CDS for B&M and OL shopping for the two countries were explored separately for each country, using basic descriptive statistical analyses followed by exploratory factor analysis (EFA), t-tests and ANOVA, and reliability testing. Principal Component Analysis with Varimax Rotation and Kaiser Normalization (Pallant 2007:190; Williams et al. 2012: 1) served to identify the least number of CDS/factors for both shopping modes per country that correlated well. Bartlett's test of Sphericity was significant (p = 0.000), and the Kaiser-Meyer-Olkin (KMO) measure of adequacy at 0.8 indicated that analysis of the data to identify the relevant CDS could proceed. T-tests, ANOVA, and post hoc Bonferroni tests were used to distinguish significant demographic differences.

B&M CDS AND THEIR RELEVANCE FOR THE TWO COUNTRIES

After five iterations each, five similar factor solutions emerged for the two countries for B&M shopping. Of the 21 questionnaire items, 19 were retained with satisfactory reliability statistics (Overall RSA: Cr α = 0.85; % Variance explained: 66.8%; Overall FRG: Cr α = 0.79; % Variance explained: 63.2%). One item in the FRG configuration for F3: "Sometimes it is hard to choose where (which stores) to shop", had a factor loading of 0.347. Based on a Cronbach's alpha = 0.74 for the factor, the decision was made not to delete the item as it made sense to honour the corresponding factor content for the two countries, particularly because all the other factors' contents concurred. This similarity between the factor solutions for the two countries was encouraging, amidst critique raised against the original CSI, and poor outcomes reported in previous investigations with reliability coefficients <0.07 for up to four factors in different contexts (e.g., Bakewell & Mitchell 2006: 1299; Hanzaee & Aghasibeig 2008: 534, 535; Mokhlis &

Saleh 2009: 583; Nayeem 2012: 50; Potgieter et al. 2013: 25; Sangodoyin & Makgosa 2014: 50). The factor solutions for both countries are presented in Table 2.

TABLE 2
STRUCTURE MATRIX FOR B&M CDS FACTORS FOR BOTH COUNTRIES

Item	RSA: N = 1342					Germany: N = 1543				
With regard to B&M stores …	**F1: Enjoym**	**F2: Heuris**	**F3: Conf**	**F4: Perf**	**F5: Imp/ Carel**	**F1: Enjoym**	**F2: Heuris**	**F3: Conf**	**F4: Perf**	**F5: Imp/ Carel**
To me, shopping at B&M retail stores is an enjoyable activity	0.857					0.863				
Shopping in B&M retail stores is a pleasant activity for me	0.903					0.909				
I enjoy B&M shopping just for the fun of it	0.841					0.840				
It's fun and exciting to buy new products in B&M retailers	0.794					0.794				
To me, the higher the price of the product, the better the quality		0.730					0.655			
The more expensive brands are usually my choice		0.777					0.725			
I prefer buying the best-selling brands		0.766					0.758			
I prefer well-known brands		0.718					0.738			
I regard the most advertised brands as very good choices		0.739					0.557			
The more I learn about specific products, the harder it seems to choose the best			0.714					0.750		
I tend to be confused by all the information about products			0.784					0.761		
Sometimes it is hard to choose where (which stores) to shop			0.639					0.347		
There are so many brands to choose from in B&M stores that I often feel confused			0.836					0.712		
I make a special effort to choose the very best quality products				0.802					0.829	
I usually try to buy the best overall quality				0.837					0.843	
Getting very good quality products is very important to me				0.820					0.815	
I often make careless purchases that I later wish I had not					0.818					0.750
I tend to be impulsive when shopping around in B&M stores					0.786					0.770
I should plan my shopping at B&M stores more carefully than I do					0.647					0.728
Cronbach's alpha	0.86	0.87	0.84	0.85	0,82	0.85	0.75	0.74	0.80	0.82
Mean	3.34	2.90	2.89	3.95	2.69	3.13	2.76	2.61	3.51	2.44
SD	0.97	0.80	0.80	0.69	0.91	0.94	0.70	0.71	0.79	0.84
% Variance explained			66.8					63.2		

Enjoym = Enjoyment; Heuris = Heuristics; Conf = Confusion; Perf = Perfectionism; Imp/ Carel = Impulsiveness/ Carlessness
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 5 iterations

Factor labels were linked to the original CSI dimensions where item content permitted. F1: *Enjoyment*, merged three items from the original *Recreational* and *Hedonistic consciousness* CDS, and one item from the original *Novelty-fashion consciousness* CDS; F2: *Heuristics*, merged four items from two of the original CDS, namely *Brand consciousness, and Price equals quality;* F3: *Confusion by over choice*, retained the four original CDS items; F4: *Perfectionism*, retained three items from the original CDS; and F5: *Impulsiveness/carelessness*, retained three items from the original CDS.

In summary, three CDS that coincided for both countries concurred with the dimensions of the original CSI, although two of the CDS, namely *Perfectionism* and *Impulsiveness/carelessness*, contained fewer items than the original scale. The remaining two factors resembled a merge of the original CSI factors and were labelled accordingly: *Enjoyment* merged three items from the original *Recreational and hedonistic consciousness* CDS, and one item from the original *Novelty-fashion consciousness* CDS. The newly chosen label for the CDS *Heuristics* could be defended theoretically in that it merged four items from the original CDS *Brand consciousness*, and *Price equals quality.*

Therefore, Hypothesis H1.1, proposing that the prevailing B&M CDS in South Africa, an emerging economy, differs from the prevailing CDS in the same shopping context in Germany, a typical developed country, is not supported.

The relevance of the CDS for B&M shopping was interpreted in terms of the respective factor means (M) shown in Table 2 and interpreted as: M_{Max}= 5; M>4: Strong/pertinent CDS; M>3.5<4: Relatively strong CDS; M>2.5<3.5: Moderately strong CDS; M>1.5<2.5: Relatively weak CDS; and M<1.5: Weak CDS.

Four CDS were equally relevant in both countries, with *Perfectionism*, which indicates concern about quality, procuring the best products possible, being the most robust CDS. Three CDS were relatively strong in both countries, of which *Enjoyment*, the second strongest CDS, denoted the importance of a pleasurable experience in physical stores, which is in line with previous studies that concluded that patronage of physical stores often serves as a form of leisure and pleasure (Elmashhara & Soares 2019: 96; Retief et al. 2018: 1). Another moderately strong CDS in B&M stores, Heuristics, affirmed consumers' reliance on surrogate indicators during decision-making. At the same time, the CDS *Impulsiveness/carelessness* confirmed that enticing sensory cues and design elements in physical stores might encourage unplanned purchases. Although the relative strength/pertinence of the different CDSs seemed similar for both countries, ANOVA revealed that all the CDSs were significantly more pertinent among RSA than FRG consumers ($p < 0.0001$).

OLCDS AND THEIR RELEVANCE FOR THE TWO COUNTRIES

Similar to the outcomes for B&M shopping where the factor outcomes concurred for the two countries, Table 3 reveals a similar four-factor solution for consumers' OLCDS for South Africa and Germany. The internal consistency (Cronbach's α >0.7) was satisfactory for all the factors, with acceptable variance in the data (Overall RSA: Cr α = 0.85; % Variance: 56.71%; Overall FRG: Cr α =0.79; % Variance explained: 56.56%).

The newly extracted OLCDS factor labels reflected the implied meaning of their item content: Factor 1, *Enjoyment*, merged three items from the original *Recreational and hedonistic consciousness* CDS with one item from the original *Novelty-fashion consciousness* CDS. The item "I tend to be impulsive when shopping around" cross-loaded on two factors for FRG, and it seemed logical to rather retain it as part of the OLCDS *Confusion/carelessness*, as configured for the RSA output. Factor 2, labelled as the OLCDS *Confusion/carelessness*, merged the original CDS *Confusion by over choice*, with three items from the original *Impulsiveness/carelessness* scale. Factor 3, the OLCDS *Heuristics*, merged four items from the original CDS *Brand consciousness*, and *Price equals quality*, including an item from the *Perfectionist* CDS. Factor 4, the OLCDS *Perfectionism*, retained three items from the original CDS. Two items with poor factor loadings (<0.40) were deleted, namely: "I do not spend much time on shopping", and "Shopping around exploring the content of different online sites wastes my time".

TABLE 3
STRUCTURE MATRICS FOR OLCDS FACTORS FOR BOTH COUNTRIES

Item	RSA: N = 1342				Germany: N = 1543			
When shopping online …	**F1: Enjoym**	**F2: Conf/ Careless**	**F3: Heuris**	**F4: Perf**	**F1: Enjoym**	**F2: Conf/ Careless**	**F3: Heuris**	**F4: Perf**
To me, online shopping is an enjoyable activity	0.835				0.817			
Online shopping is a pleasant activity for me	0.866				0.855			
I enjoy online shopping just for the fun of it	0.758				0.833			
It's fun and exciting to buy new products online	0.840				0.848			
The more I learn about specific products, the harder it seems to choose the best		0.433				0.462		
I often make careless purchases that I later wish I had not		0.523				0.515		
I tend to be confused by all the information about products		0.667				0.667		
I tend to be impulsive when shopping around		0.495				0.494		
Sometimes it is hard to choose where (which online sites) to shop		0.572				0.622		
I should plan my online shopping more carefully than I do		0.669				0.624		
There are so many brands to choose from that I often feel confused		0.783				0.708		
To me, the higher the price of the product, the better the quality			0.681				0.658	
The more expensive brands are usually my choice			0.758				0.737	
I prefer buying the best-selling brands			0.709				0.703	
I prefer well-known brands			0.643				0.705	
I regard the most advertised brands as very good choices			0.630				0.441	
I usually try to buy the best overall quality				0.785				0.837
Getting very good quality products is very important to me				0.779				0.779
I make a special effort to choose the very best quality products				0.724				0.818
Cronbach's alpha	0.87	0.74	0.77	0.76	0.88	0.72	0.72	0.80
Mean	3.17	2.79	2.94	3.94	3.16	2.56	2.80	3.52
SD	0.94	0.68	0.75	0.72	0.97	0.66	0.69	0.83
Explained Variance %	16.31	14.66	14.34	11.38	18.48	13.12	12.96	12.00

Enjoym = Enjoyment; Conf/ Carless = Confusion/ Carelessness; Heuris = Heuristics, Perf = Perfectionism;
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 5 iterations.

Investigating the respective factor means as an indication of the relevance of the four OLCDS revealed that in both countries, Perfectionism was the strongest and most pertinent OLCDS. *Perfectionism* was followed, in descending order, by three OLCDS that were all moderately strong and therefore rather influential during online shopping. They are, in descending order, the OLCDS *Enjoyment* and *Heuristics*, concurring with the findings for B&M shopping, and *Confusion/carelessness*. The latter deserves attention in future research concerning the reputation of OL shopping because the pertinence and relative strength of the OLCDS *Confusion/carelessness* concurred for the two countries despite differences in consumers' OL experience. Therefore:

Hypothesis H1.2, proposing that consumers' OLCDS in South Africa, an emerging economy, differ from consumers' prevailing OLCDS in FRG, a typical developed economy, is not supported.

Subsequently, H1, which proposed differences in the prevailing CDS for B&M and OL shopping across the two countries, is not supported.

However, H2 that proposed differences in the prevailing B&M CDS and the OLCDS for consumers within a selected geographic location is supported based on evidence that differences exist in RSA consumers' prevailing CDS for B&M shopping compared to their OLCDS (H2.1). The same applies to FRG consumers across the two shopping contexts (H2.2).

DEMOGRAPHIC DIFFERENCES IN CONSUMERS' CDS ACROSS THE TWO COUNTRIES

Gender differences

Table 4 provides the outcomes of a gender comparison of the relevant CDS for B&M and OL shopping in both countries, derived from t-tests.

TABLE 4
GENDER COMPARISON OF THE RELEVANT CDS FOR BOTH COUNTRIES PER SHOPPING MODE

B&M CDS	Factor means: RSA (N = 1342)			Factor means: FRG (N = 1493)		
	Males (n =591)	Females (n=754)	p-value	Males n=609	Females n=886	p-value
Perfectionism	3.99	3.91	p>0.05	3.64	3.44	p=0.000
Enjoyment	3.10	3.53	p<0.0001	2.75	3.38	p=0.000
Heuristics	2.89	2.91	p>0.05	2.85	2.70	p=0.000
Confusion by over choice	2.86	2.91	p>0.05	2.54	2.66	p=0.000
Impulsiveness/ carelessness	2.53	2.82	p=0.0001	2.26	3.38	p=0.000
OLCDS	**Factor means: RSA (N = 1342)**			**Factor means: FRG (N = 1493)**		
	Males (n =591)	**Females (n=752)**	**p-value**	**Males n=608**	**Females n=885**	**p-value**
Perfectionism	3.97	3.92	p = 0.226	3.66	3.42	p = 0.000
Enjoyment	3.11	3.21	p = 0.052	2.99	3.27	p = 0.000
Heuristics	2.94	2.94	p = 0.972	2.89	2.74	p = 0.000
Confusion/impulsiveness	2.72	2.84	p = 0.002	2.43	2.65	p = 0.000

Shaded figures indicate significant differences (p<0.05)

Gender differences for consumers' B&M CDS

In the **RSA sample** (N = 1345), three CDS were equally relevant among males and females, namely *Perfectionism*, the most pertinent CDS, as well as *Heuristics* and *Confusion by over choice* that were both moderately strong. Males' and females' reliance on surrogate cues to guide their buying decisions hence seemed similar, concurring with previous research (Hanzaee & Aghasibeig 2008: 535; Mokhlis & Salleh 2009: 535; Sangodoyin & Makgosa 2014: 51). The remaining two CDS, namely, *Enjoyment* and *Impulsiveness/carelessness,* were significantly more robust ($p<0.05$) among females. This finding suggests that RSA females have a notably stronger propensity towards unplanned and possibly irresponsible purchase behaviour, fueled by the pleasure they derive from shopping in physical stores. Walsh et al. (2001: 128) also reported that females enjoyed shopping in B&M stores significantly more.

In the **FRG sample** (N = 1493), and contrary to the RSA findings, significant gender differences were evident for all five B&M CDS. Two CDS, namely *Perfectionism* and *Heuristics* were significantly more prevalent among German males. The CDS *Perfectionism*, the most pertinent CDS, was significantly more typical of German men ($p<0.05$). A significantly higher prevalence of the CDS *Heuristics* among German men in physical stores suggests they were notably more reliant on surrogate indicators such as familiar brand names and price to achieve the desired purchase outcomes. Three CDS were significantly more prevalent among German females in B&M stores. Two emotional and affective CDS in kind, namely *Enjoyment* and *Impulsiveness/carelessness*, concurred with the RSA findings and previous research (Walsh et al. 2001: 128). Therefore, in both countries, females derived significantly higher levels of pleasure from in-store shopping despite significantly higher levels of *Impulsiveness/carelessness*. German females also seemed significantly more prone to implement a *Confusion by over choice* CDS, which could have aggravated their significantly stronger inclination towards *Impulsiveness/carelessness.*

H3.1.1, which proposes significant gender differences concerning consumers' application of the relevant CDS in B&M shopping contexts, is supported for both countries.

Gender differences in consumers' OLCDS

Within the **RSA sample**, three of the OLCDS were equally relevant among males and females, namely *Perfectionism*, *Enjoyment*, and *Heuristics*. The only significant gender difference emerged for the OLCDS *Confusion/carelessness,* significantly rifer among RSA females.

Within the **FRG sample** for OL shopping, as was the case for B&M shopping, significant gender differences emerged for all OLCDS. The significantly stronger prevalence of the OLCDS, *Perfectionism*, among men, suggests that they were significantly more pedantic when considering product quality and performance indicators when shopping online. German men also seemed significantly more reliant on surrogate indicators such as price, brand name, or the reputation and image of the suppliers to achieve the desired purchase outcomes. Two OLCDS were significantly more prevalent among German females, namely *Confusion/carelessness* and *Enjoyment*, indicating vulnerability among German female online shoppers that need further exploration. While German men seemed discerning when shopping online, their female counterparts enjoyed online shopping significantly more, despite being significantly more confused and impulsive, which is not conducive to conclude informed, responsible OL decision-making.

H3.2.1 that proposes significant gender differences concerning consumers' application of the relevant OLCDS is therefore supported for both countries.

In summary, gender differences within the two countries concerning consumers' application of the five B&M CDS and the relevant four OLCDS are indisputable.

Age differences

The pertinence of the consumers' B&M CDS across the different age groups is presented in Table 5 for each country. It should be noted that the age distribution was not even for the two counties, with a stronger representation of young respondents in Germany. Efforts to recruit additional older respondents electronically within the time limitation were unsuccessful.

TABLE 5
AGE COMPARISON OF THE RELEVANT CDS FOR BOTH COUNTRIES PER SHOPPING MODE

B&M CDS	Factor means (M*): RSA (N=1341)					Factor means (M*): FRG (N=1493)				
	<30yrs n=382	30-39yrs n=282	40-59yrs n=465	>59 yrs n=212	p= value	<30yrs n=985	30-39yrs n=189	40-59yrs n=298	>59yrs n=72	p-value
Perfectionism	3.98	3.97	3.94	3.90	p>0.05	3.49	3.62	3.52	3.44	p>0.05
Enjoyment	3.48	3.27	3.34	3.17	p<0.05	3.23	2.93	2.99	2.89	p=0.000
Heuristics	3.13	2.99	2.76	2.67	p<0.05	2.77	2.71	2.72	2.85	p>0.05
Confusion by over choice	2.85	2.92	2.85	2.95	p>0.05	2.63	2.59	2.50	2.83	p=0.000
Impulsiveness/ carelessness	2.89	2.73	2.62	2.46	p<0.05	2.53	2.49	2.17	2.29	p<0.03
OLCDS	**Factor means: RSA (N=1341)**					**Factor means: FRG (N=1543)**				
	<30yrs n=382	30-39yrs n=282	40-59yrs n=465	>59 yrs n=212	p= value	<30yrs n=984	30-39yrs n=189	40-59yrs n=299	>59yrs n=71	p-value
Perfectionism	3.98	4.00	3.93	3.80	p=0.001	3.51	3.65	3.54	3.20	p=0.001
Enjoyment	3.43	3.33	3.06	2.72	p=0.000	3.41	3.03	2.62	2.25	p=0.000
Heuristics	3.12	3.02	2.83	2.74	p=0.012	2.83	2.83	2.74	2.62	p=0.032
Confusion/ impulsiveness	2.88	2.78	2.75	2.71	p=0.000	2.64	2.51	2.38	2.28	p=0.000

Shaded figures signify significantly stronger application of the specific CDS; *Mmax = 5

Age differences for consumers' B&M CDS

In the **South African (RSA) sample**, two CDS seemed equally relevant (p>0.05) across all age groups, namely *Perfectionism* and *Confusion by over choice.* Experience gained over time subsequently does not reduce confusion in sophisticated modern physical stores notably, an issue that deserves further attention in future research. The remaining three CDS, namely *Enjoyment*, *Heuristics*, and *Impulsiveness/carelessness,* were all significantly more rampant among younger consumers. The CDS *Enjoyment* and *Heuristics* declined significantly in prevalence (p<0.05) from the youngest to the oldest age category, suggesting that B&M shopping is significantly less enjoyable among older consumers. Older consumers are more experienced and probably less reliant on surrogate indicators to guide their purchases decisions. Notwithstanding significant age differences, the CDS *Enjoyment* was still a relatively strong CDS among all RSA shoppers in physical stores.

In the **German (FRG) sample**, and despite an over-representation of young consumers in the German sample that might have skewed the results towards younger age cohorts, two CDS were equally relevant (p>0.05) across all age groups, namely: *Perfectionism*, and the moderately strong CDS, *Heuristics*. The latter indicates all age groups' reliance on surrogate indicators to achieve their quest for perfection. Similar to the RSA sample, two CDS, namely *Enjoyment* and *Impulsiveness/carelessness,* were significantly more typical of younger German shoppers. In both countries, impulsive, careless shopping behaviour was considerably less rife among older, more experienced consumers. A noteworthy difference from the RSA context is that the CDS *Confusion by over choice* was significantly more pertinent among the most mature German age cohort while identified as a universal problem among South Africans, irrespective of age.

Based on the findings, H3.1.2 proposing significant age differences for the relevant B&M CDS is supported for both countries.

Age differences for consumers' OLCDS

All four OLCDS were significantly more prevalent ($p<0.05$) among younger consumers within the **RSA sample**. The OLCDS *Perfectionism* was significantly more pertinent ($p = 0.0000$) among consumers younger than 60 years. *Enjoyment*, associated with delight, significantly decreased in relevance ($p = 0.000$) from one age group to the following older age category, suggesting that OL shopping is significantly more enjoyable among younger consumers. A similar tendency was noted for the OLCDS *Heuristics* that significantly decreased relevance ($p<0.05$) from one age category to the following older age category. Therefore, RSA consumers' reliance on surrogate indicators such as the reputation of brands, the image of service providers, and price as a quality indicator declines as consumers mature and gain more experience. *Confusion/carelessness* was significantly stronger ($p = 0.012$) among the youngest age cohort. This finding could be attributed to product-related confusion rather than inexperience with technology, as younger people are generally more tech-savvy (Duh & Struwig 2015: 99).

Within the **FRG sample,** and concurring with findings for the RSA sample, significant age differences ($p<0.05$) emerged for all the OLCDS. All the OLCDS were significantly stronger among the younger age groups, indicating *Perfectionism* as the most prevalent OLCDS among all, although significantly more pertinent among younger online shoppers ($p = 0.000$). Despite an over-representation of young consumers in this subset of the sample, findings concurred with the RSA subset, namely that the OLCDS *Enjoyment* significantly declined in relevance ($p<0.05$) for every consecutive age group. Consumer socialisation literature indicates that consumers become more confident over time and acquire knowledge and experience that facilitate their consumer decision-making skills, explaining why the relevance of the OLCDS *Heuristics* significantly declined ($p<0.05$) among consumers younger than 40 years. Therefore, younger consumers, generally less experienced, seem to rely considerably on surrogate indicators to support their OL purchase decisions, which concurred with the RSA findings. The OLCDS *Confusion/carelessness* was significantly more prevalent ($p<0.05$) among consumers younger than 40 years compared to older online shoppers, again concurring with the RSA findings.

H3.2.2 proposing significant age differences for the relevant OLCDS within a particular country is therefore supported for both countries.

Level of education differences

A comparison of the level of education differences in consumers' CDS for the two countries is presented in Table 6, followed by the discussion. It was inevitable that the stronger representation of younger respondents in the German sample would affect the education level distribution accordingly, with more respondents in the lower education level category. The higher level of education categories was adequate for analysis.

TABLE 6
LEVEL OF EDUCATION COMPARISON OF THE RELEVANT CDS FOR BOTH COUNTRIES PER SHOPPING MODE

B&M CDS	Factor means: RSA (N=1344)				Factor means: FRG (N=1495)			
	<Gr 12 (Abitur) n=331	B degr/dipl n=601	Post gr n=402	p=value	<Gr 12 (Abitur) n=1108	B degr/ dipl n=244	Post gr n=143	p-value
Perfectionism	3.86	3.96	4.03	p=0.000	3.46	3.70	3.70	p=0.000
Enjoyment	3.42	3.37	3.24	p<0.05	3.16	3.14	2.86	p=0.000
Heuristics	2.99	2.88	2.86	p=0.000	2.76	2.72	2.80	p=0.583
Confusion by over choice	3.02	2.88	2.86	p=0.000	2.64	2.52	2.54	p=0.017
Impulsiveness/ carelessness	2.91	2.71	2.49	p=0.001	2.45	2.48	2.30	p=0.70
OLCDS	Factor means: RSA (N=1341)				Factor means: FRG (N=1543)			
	<Gr 12 (Abitur): n=330	B degr/ dipl n=600	Post gr n=401	p= value	<Gr 12 (Abitur): n=1108	B degr/ dipl n=244	Post gr n=143	p-value
Perfectionism	3.79	3.96	4.04	p=0.000	3.47	3.70	3.59	p=0.000
Enjoyment	3.03	3.20	3.25	p=0.004	3.16	3.29	2.85	p=0.000
Heuristics	2.99	2.92	2.94	p=0.389	2.58	2.58	2.37	p=0.959
Confusion/ impulsiveness	2.88	2.79	2.69	p=0.000	2.45	2.48	2.30	p=0.001

Shaded figures signify significantly stronger application of the specific CDS; *M_{max} = 5

Level of education differences in consumers' B&M shopping styles

Significant differences in the **RSA sample** were indisputable for all the B&M CDS across the different education levels. *Perfectionism* was significantly more prevalent among those who had furthered their education beyond secondary schooling, also being the only B&M CDS that was significantly more prevalent among higher educated consumers. The other four CDS that may all be emotionally laden regarding their influence on consumers' shopping behaviour were significantly more relevant among lower educated consumers. The CDS *Enjoyment*, decreased significantly in relevance as consumers' education level increased. The CDS *Heuristics* was significantly more prevalent among the lowest educated consumers, possibly due to lower educated consumers' increased vulnerability in terms of their cognitive ability to conduct rational purchase decisions. Further aggravating the lowest educated consumers' vulnerability is the significance of the CDS *Impulsiveness/carelessness* among the lower educated.

In the **FRG sample** (N = 1495), *Perfectionism* was significantly more prevalent among higher educated consumers, notwithstanding a more extensive presence of lower-educated consumers in the sample. The CDS, *Enjoyment*, was significantly more rife among lower educated consumers suggesting - as for RSA shoppers - that B&M shopping is enjoyed significantly more by young consumers. The remaining three B&M CDS, namely *Heuristics*, *Confusion by overchoice*, and *Impulsiveness/carelessness*, were equally relevant among all education levels in Germany.

H3.1.3 proposing significant education level differences in consumers' application of the relevant B&M CDS is subsequently supported for both countries.

Level of education differences in consumers' online shopping styles

For the **RSA sample**, only the OLCDS, *Heuristics*, seemed mutually relevant ($p>0.05$) across all education levels, indicating that consumers' reliance on surrogate indicators to guide their online shopping was not related to their education level. Significant differences ($p<0.05$) among the education levels for the application of all of the remaining OLCDS, indicated that two OLCDS, namely *Perfectionism* and *Enjoyment*, were significantly more characteristic of consumers with post-secondary education. The OLCDS *Confusion/carelessness* was significantly more pertinent among lower educated consumers, indicating the value of education to reduce confusion.

Within the **FRG sample,** significant differences were apparent for three OLCDS. Similar to the RSA context, the OLCDS *Perfectionism* was significantly more characteristic of consumers with higher education levels. The OLCDS *Heuristics* was mutually relevant among all education levels, indicating that education level did not influence consumers' use of surrogate indicators to guide their online purchase decisions. Contrary to the RSA sample, the OLCDS *Enjoyment* was significantly less prevalent ($p<0.05$) among the highest educated online shoppers. As for the RSA sample, the OLCDS *Confusion/carelessness* was significantly less prevalent among the highest educated online shoppers.

H3.2.3 proposing significant education level differences in consumers' application of the relevant OLCD is hence supported for both countries.

THEORETICAL IMPLICATIONS

For more than three decades, the CSI of Sproles and Kendall (1986: 267) served most researchers' benchmark concerning consumers' decision styles, noting problematic issues about the small student sample, doubtful reliability statistics, and the scale's applicability in different contexts (geographic, as well as shopping context). These issues have provided an opportunity to revisit this fundamental phenomenon. This research makes four crucial theoretical contributions. For the first time, empirical evidence is provided of CDS for B&M shopping and OL shopping that concurs across developed and developing market contexts. Contrary to previous studies, the reliability statistics for all the identified CDS factors for both modes of shopping and geographic contexts were good (Cronbach's α >0.07). Reported differences in how retail has developed and changed over time in the two contexts have not culminated in vast differences in how consumers behave in the marketplace. Instead, indications are that consumers' shopping styles in developed and developing countries are more congruent, suggesting that evidence of a "global consumer" has begun to take shape. Therefore, retailers should instead align their product offerings for a meticulous consumer based on the prevalence of "Perfectionism" as the predominant CDS in both shopping contexts, for B&M and OL shopping, irrespective of the consumer's location. Also insightful is that demographic differences in respondents' CDS are not vastly different. Mostly, younger respondents enjoy shopping more, while the more vulnerable older and lower educated respondents seem more inclined to be confused and even careless when conducting their purchases, which signals a need to make shopping contexts more user-friendly. Thirdly, a more straightforward approach to our understanding of CDS is presented, with five B&M CDS and four OLCDS, compared to eight or more CDS presented in previous research. A more straightforward configuration of consumers' CDS, where the individual CDS can be conceptualised with fewer overlaps, could reduce bias in the interpretation of research outcomes and the implementation of research findings. A fourth insightful contribution is the finding that the prevailing CDS for B&M shopping (*Perfectionism, Heuristics, Enjoyment, Confusion by overchoice, Impulsiveness/carelessness*) and online shopping (*Perfectionism, Heuristics, Enjoyment, Confusion/carelessness*) suggests rational decision-making (*Perfectionism*) as the most prevalent CDS for B&M and OL shopping for both geographic contexts. Another similarity concerning the CDS whether shopping in a physical store or online, relates to uncertainty issues (*Heuristics*), indicating that respondents are not always confident enough to make informed purchase decisions, hence relying on surrogate indicators such as brand name and price. The integrated CDS *Heuristics* is a meaningful configuration of several other CDS mentioned in previous studies, labelled *Price sensitivity, Branding*, et cetera, indicating consumers' lack of confidence to evaluate tangible quality criteria. Also evident is that irrespective of the shopping mode or the

geographic context, emotional/hedonic decisions are integral to how consumers deal with shopping. *Enjoyment*, a positive, emotionally laden CDS could be comforting for retailers, indicating that consumers enjoy patronising the stores. This should be optimised to enhance consumers' shopping experiences further. Negative, emotionally laden B&M CDS, particularly *Confusion by overchoice, Impulsiveness/carelessness*, and *Confusion/carelessness*, an OLCDS, imply uncertainty or lack of experience that is not conducive to informed, responsible consumer decision-making. These negative, emotionally laden CDS deserve retailers' attention as uncertainty may lead to switching behaviour causing negative repercussions. The proposed measuring instruments are presented in Tables 7 and 8.

TABLE 7
PROPOSED MEASURING INSTRUMENT FOR CONSUMERS' CDS IN B&M STORES

The following items should be presented shuffled. Responses should be based on a five-point "Agreement" rating scale, anchored by 1 = Strongly Disagree and 5 = Strongly Agree.
When shopping in B&M stores …
Perfectionism
1. I usually try to buy the best overall quality
2. Getting very good quality products is very important to me
3. I make a special effort to choose the very best quality products
Enjoyment
1. Online shopping is an enjoyable activity
2. Online shopping is a pleasant activity for me
3. I do online shopping for the fun of it
4. It's fun and exciting to buy new products online
Confusion
1. The more I learn about specific products, the harder it seems to choose the best
2. I tend to be confused by all the information about products
3. It is hard to choose where (which online sites) to shop
4. There are so many brands to choose from that I become confused
Heuristics
1. I regard higher-priced products as of a better quality
2. I choose more expensive brands
3. I prefer buying the best-selling brands
4. I prefer well-known brands
5. I regard the most advertised brands as very good choices
Impulsiveness/Carelessness
1. I often make careless purchases that I later wish I had not
2. I tend to be impulsive when shopping around in B&M stores
3. I should plan my shopping at B&M stores more carefully than I do

TABLE 8
PROPOSED MEASURING INSTRUMENT TO EXPLORE CONSUMERS' OLCDS

The following items should be presented shuffled. Responses should be based on a five-point "Agreement" rating scale, anchored by 1 = Strongly Disagree and 5 = Strongly Agree.
When shopping online …
Perfectionism
1. I usually try to buy the best overall quality
2. Getting very good quality products is very important to me
3. I make a special effort to choose the very best quality products
Enjoyment
1. Online shopping is an enjoyable activity
2. Online shopping is a pleasant activity for me
3. I do online shopping for the fun of it
4. It's fun and exciting to buy new products online
Confusion/carelessness
1. The more I learn about specific products, the harder it seems to choose the best
2. I often make careless purchases that I later wish I had not
3. I tend to be confused by all the information about products
4. I tend to be impulsive when shopping around
5. It is hard to choose where (which online sites) to shop
6. I should plan my online shopping more carefully than I do
7. There are so many brands to choose from that I become confused
Heuristics
1. I regard higher-priced products as of a better quality
2. I choose more expensive brands
3. I prefer buying the best-selling brands
4. I prefer well-known brands
5. I regard the most advertised brands as very good choices

IMPLICATIONS FOR CONSUMERS AND RETAILERS

Clarification of consumers' CDS in the marketplace, whether shopping in physical stores or online, is crucial to comprehend consumers' behaviour and market needs. This research shows that respondents' shopping styles are strongly driven by *Perfectionism*, a CDS that prioritises quality, whether shopping in a physical store or online, across all demographic groups. This finding presents a clear direction concerning retailers' product offerings, i.e., precisely what they offer and how they promote their merchandise and after-sales service. Concurrence of respondents' CDS across the two countries for both shopping modes suggests more similarities than what has been noted in previous studies, with evidence that retailers may align themselves towards a more global approach in serving consumers. However, differentiation is highly likely for the type of products on offer, which was not the focus of this study. The prevalence of the CDS *Heuristics*, indicating consumers' reliance on, and trust in, specific surrogate indicators to achieve the desired purchase outcomes, whether price, brand name, or country of origin, should guide retailers' promotion of merchandise. For example, retailers should emphasise popular brand names and price differentiation in certain product categories. Using surrogate quality indicators is mostly a shortcut used by consumers to conclude a purchase decision where the array of products may be confusing and overwhelming. The latter was confirmed through the prevalence of the CDS, *Confusion by overchoice, Impulsiveness/carelessness* for B&M shopping, and *Confusion/carelessness*, an OLCDS. Therefore, the CDS *Heuristics* may also be a coping mechanism to deal with uncertainty and frustration in the marketplace. Evidence that *Enjoyment* is a rather pertinent CDS for both shopping

modes suggests that retailers should go beyond service offerings that are merely functional, as shopping is not necessarily only a matter of duty. Previous research by Retief et al. (2018: 1) explained that consumers have high expectations of shopping environments, and when all elements are equal, consumers will opt for more pleasurable environments. The prevalence of negatively laden emotional CDS, depicting confusion and carelessness, presents challenges for retailers and customers. Maybe physical stores have become too sophisticated or too big, which could be addressed by attending to store design and providing in-store support to enhance consumers' experiences. With online shopping, retailers should guard against overly sophisticated websites that are difficult to navigate. Particularly noteworthy is that confusion-related shopping behaviour in physical stores was significantly rifer among South Africans and more problematic among females, while this was true for the more vulnerable older consumers in Germany. As many consumers may find it challenging to cope, retailers must reconsider store and web design and customer support to satisfy customers' needs.

LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

The researchers were compelled to use convenience sampling to overcome logistical challenges with data collection in the two countries. Therefore, the samples were not representative of the respective countries' populations. To overcome this shortcoming, relatively large samples were recruited. Although the results can, unfortunately, not be generalised, the outcomes encourage further research on consumers' CDS for B&M and OL shopping in other countries, recommending the recruitment of more representative samples across different contexts to validate the findings. The over-representation of younger consumers in the German sample was unfortunate, and future studies should attempt to recruit a more even sample for similar comparisons. At face value, the over-representation of young respondents in the German sample did not negatively impact the findings when looking at the age comparisons between the two countries. However, a future study where the age distribution is more balanced should be pursued to affirm demographic differences and reasons for particular consumer segments' apparent increased confusion, carelessness, and impulsiveness when shopping. Challenges encountered by consumers could be explored to augment physical store environments with probable worthwhile outcomes for consumer store patronage and store loyalty. For example, confusion in B&M contexts may indicate that shopping environments have become overwhelming for some. Probably most encouraging is the finding that consumers have become more global in their decision styles and that retailers' initiatives need not necessarily differ for the respective countries.

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Customer Engagement through Love and Trust: Building Brand Equity in the Retail Industry

Sana Javed*
Kinnaird College for Women,
Lahore, Pakistan
Javed.sana0324@gmail.com

***Corresponding author**

Dr. Usamah Iyyaz Billah
Kinnaird College for Women,
Lahore, Pakistan

usamahbillah@yahoo.com

ABSTRACT

This research study examines retailer brand equity on the basis of customer brand engagement with the mediating effect of brand love and brand trust. The main objective of this study is to find how customer's engagement, interaction and trust lead to an increased Retailers Brand Equity.

The study has been conducted using a consumer lens whereby it also gives recommendations as to how a brand can control and utilize its customer brand engagement to develop superior customer intimacy and build long term brand equity. This research also exhibits how brand trust acts as a mediator to build strong relationships between the retailer and customer. One of the major aims of this study is to enrich the literature regarding the study variables and developing a clearer picture regarding their relationship with one another. Specifically, the path through the mediating role of Brand Love is a comparatively novel one, as previous researches mainly rely on brand intimacy and loyalty.

The data was collected through questionnaires from 300 respondents, consisting of consumers of leading retail chains. Data analysis was done using Process Hayes double mediation model 4 in SPSS. The study makes a theoretical contribution by applying the attachment theory to a new avenue of behavioural research. It will help understand how the interaction between brands/retailers and their customers contribute towards their long term bonding and mutual trust. Brands can use the findings of this research to better understand the art of creating valuable relationships with their customers.

Keywords: Retailer Brand Equity; Brand Love; Brand Trust; Customer engagement; Attachment theory

INTRODUCTION

In today's world, retailers are one of the most extensively used brands however research in the field of retailer brand equity is still limited. Either the current literature is too abstract or is too basic to understand the impact of various variables on the retailer brand equity (Pappu & Quester, 2006; Anselmsson et al., 2017).

Mostly studies analyze the impact of retailer brand equity's dimensions on Customer satisfaction and customer Loyalty while some deal with the conceptualization, measurement and scale validation of retailer brand equity. Some studies mainly focuse on the improvement in retailer brand equity over the years. There are fewer studies conducted to study the antecedents of retailer brand equity (Sürücü et al., 2019). Retailer brand equity not only affects retail performance and retail management but it also positively influences consumer behavior, that is why investigating retailer brand equity is very valuable (Moliner-Velázquez et al., 2019; Troiville et al., 2019). Strategic research in retailing field needs to update frequently to enable retailers to deal with the competing environment and come up with

the up to date methods and differentiating strategies to deal with the increasing demand. The significance of studying retailer brand equity can be observed from the fact that retailing is a significant economic activity. (Anselmsson et al., 2017) argues that existing literature is deficient from the aspect that rather than exploring consumers' actions, feelings and actions it focuses on the outcomes of the retailer brand equity dimensions on loyalty or considering building brand a two-step process, of its dimensions leading to customer loyalty.

Even the variable, brand love has gained least attention of researchers in the Marketing field. Previous studies have barely focused on the antecedent and consequences of Brand love. The need is to study the antecedents of retailer brand equity, along with the mediating role of Brand love. In response to the above stated limitations in the literature, this work investigates the impact of customer brand engagement on retailer brand equity, along with the moderating impact of trust, and further examines the mediating role of brand love. Both of these variables are barely related to retailer brand equity in the literature. The aim of this work is to examine the retailer brand equity and to build a retailer specific measurement model. Hence, it tanalyzes the antecedents of retailer brand equity through recognizing retailers as 'proper brands'.

In summary. this research article aims to expand on the existing studies on retailer brand equity on the basis of three variables: customer brand engagement, Brand trust and Brand love. These are challenging concepts which need to be addressed.

THEORETICAL FOUNDATION AND HYPOTHESIS DEVELOPMENT

RETAILER BRAND EQUITY

In recent years, the emerging concept of retailer brand equity has gained the center of attention in Marketing literature. "Retailer equity", "store equity", "customer based brand equity", "customer based store equity", "store value" are some different terms used for retailer brand equity in the literature. The concept retailer brand equity has been derived from the the concept of 'brand equity'. While brand equity focuses on the product and services, retailer brand equity focuses on improving the equity linked to its brand, to gain desired consequences. There is an ongoing debate in retailing literature about retailer brand equity and brand equity; brand equity focuses on the product whereas, retailer brand equity focuses on added value by the retailer to the product. Yoo & Donthu (2001) mention that retailer equity is conceptually similar to brand equity.

Definition of retailer brand equity in the literature is: "Incremental utility or value added to a retailer by its brand name" (Wu & Tian, 2008). It is defined from a customer perspective as "a set of brand assets and liabilities linked to a brand, its name and symbol, that add to or subtract from the value provided by a product or service" (Aaker, 1991). Literature agrees that retailer brand equity is multidimensional, different authors' conflict with the number of dimensions of retailer brand equity. While loyalty and awareness are the dimensions of retailer brand equity (Gil et al., 2013), awareness, brand image and quality are the three dimensions of retailer brand equity (Sürücü et al., 2019). Other researches spot similar dimensions; Brand awareness, Brand love, perceived quality (Algharabat et al., 2019). It is revealed from most of the studies that image and awareness are the most important general dimensions of retailer brand equity.

ATTACHMENT THEORY

The theory used to explain the framework is Attachment theory (Bowlby, 1969, 1979). Attachment theory depicts the tendency of individuals to form strong bonds with objects and suggests that the nature of an individual's attachment with an object influences the individual's interaction with that object (Bowlby, 1969, 1979). Since long, Marketing researchers have applied the principal of attachment theory in the Marketing and branding field to explore and highlight the development, maintenance and end result of customers' attachment with the brands. Applying the tenets of attachment theory, marketing scholars have investigated the formation, maintenance, and consequences of consumers' attachment with the brands (e.g., Thomson et al., 2005; Park et al., 2010).

Two main factors studied in this article about Attachment theory are: emotional bond and trust formation. Firstly, customers' engagement with a brand, influences the attachment of the customer with its brand. In fact, authors has found that customers expect brands to acknowledge and respond to their attachment preference and that brands that understand, identify, and respond to customers' attachment desire are more victorious in customer accession and retention than others (Mende et al., 2013). Moreover, Fedorikhin et al. (2008) describe attachment as an emotional connection between an individual and an object, which influences emotional, cognitive, and behavioral responses toward that object. Strong brand attachment relationships are seen when consumers positively engage themselves with a brand. Secondly, when brands respond quickly and consistently, customers understand that they can depend on the brand, which is essential in formation of attachment, hence trust is developed.

Customer Brand Engagement

Customer brand engagement is defined as "Consumer's positively valence cognitive, emotional and behavioral activity during or related to focal consumer–brand interactions" (Hollebeek et al., 2014). In simple words, customer brand engagement is a creation of emotional and meaningful connection between company and customers. Other terms used for customer brand engagement are "brand engagement", "customer engagement behavior", "online engagement", "brand community engagement", "consumer brand engagement", "brand engagement in self-concept", "Consumer engagement" or "engagement". A study conducted by (Gwin, 2009) investigated the effect of relationship marketing in B-to-C context by first talking on how Brand relationship quality and trust effect retailer brand equity. It tested the dimensions of Brand Relationship Quality (Fournier 1994, 1998), and according to past studies, higher levels of these dimensions cause higher quality relations between the brand and its consumers which leads to trust.

Swaminathan et al., (2007) carried out a research in which they examined the role of brand country-of-origin connection and self-concept connection in a unifying conceptual framework that allowed the examination of how and when these customer brand engagement dimensions are more salient or relevant in influencing the evaluations of brands. Veloutsou (2015) study attempted to examine the role of trust, engagement and satisfaction of brand and consumer relationship, in the formation of brand equity. This lays foundation to our first hypothesis:

Hypothesis 1: There is a positive relationship between customer brand engagement and retailer brand equity.

Brand Love

Brand love is defined as "brand love is an emotional and passionate relationship between a consumer and a brand. It is 'experienced by some, but not all satisfied consumers" (Carroll & Ahuvia, 2006). In simple words, it is the long-lasting, deep affection of the customer for a particular brand. This concept is significant because it leads to positive outcomes on the customer-brand relationship. There are still fewer studies on antecedents of Brand love; which causes a love relationship between a brand and customers. A study reveals that brand characteristics, and brand quality leads to Brand love. The basic outcome of Brand love are: Brand love, customer satisfaction and brand equity (Batra et al., 2012; Albert & Merunka, 2013). Brand love includes positive feelings, evaluation, and positive behaviors towards a brand. In short, Brand love is a response of some satisfied consumers. Brand love is a new emerging construct in branding literature (Slaton et al., 2020; Roy et al., 2012).

Due to the lack of research in this field, the construct lacks in terms of conceptualization and measurement scales. In literature, other terms used for Brand love are: 'positive evaluation', 'love for the brand', 'brand attachment' and 'passion'. Customers experience Brand love due to their positive past experiences with the brand; this feeling surpass the 'attachment' level. Various outcome of brand love discussed in literature are: WOM, Brand love, customer satisfaction and Brand equity (Carroll & Ahuvia, 2006). Literature focusing the predictors of Brand love are very few (Hwang & Kandampully, 2012).

Vernuccio et al., (2015) stated that “At the core of all strong brand relationships was a rich affective grounding reminiscent of concepts of love in the interpersonal domain”. It is stated in previous studies that love and passion are the core components of building long term brand relationships;

Wang et al. (2019) carried out an extensive research according to which, the ideal self-sub-brand congruence improved two antecedents of love; brand passion and brand intimacy. This review leads us to our second and third hypothesis.

Hypothesis 2: There is a positive relationship between Customer Brand Engagement and Brand Love.

Hypothesis 3: There is a positive relationship between Brand Love and Retailer brand equity.

Brand Trust

According to its definition, Brand trust is a confidence and willing to rely on the brand (Morgan & Hunt, 1994). Brand trust is built through positive past experiences with the brand. Over the time, brands gain trust of their customers through the positive interaction and engagement.

The trust summarizes positive interaction with the company. The quality of the relationship is made up of satisfaction, trust and commitment, in terms of the consumer (Sahin et al., 2012). The positive feeling of the company by customers is actually the trust formed. The brand enjoys positive consequences, after gaining the trust of the customers. Customer satisfaction and loyalty are the end results of this variable. Rather (2019) carried out a research based on the perspectives of relationship marketing and the social exchange theory, which explored the effects of consumer engagement on consumer loyalty, trust, satisfaction and commitment, pertaining to the hospitality industry. This study aimed at investigating consumer engagement with other marketing constructs that are considered as higher-order, in the case of countries like India, that are non-Western. Findings highlighted the importance of consumer engagement especially when it comes to the building of relationships with consumers (Rather & Sharma, 2017).

In today’s world, consumers search for and trust the contents of information online. Past studies have also revealed the influence of social media on word of mouth, i.e., WOM (Stojanovic et al., 2018; Ismail, 2017). Wisnalmawati (2019) concluded that consumer behaviour must be understood by online stores as consumers will carry out positive WOM only when online brands have a good name and reputation and are well-known on social media. Trust is an evaluation that the customer usually formed after consuming the product. The main ingredient to form beneficial relationship is to maintain the trust of the potentials (Delgado-Ballester & Munuera-Alemán, 2005). This leads to our fifth and sixth hypothesis:

Hypothesis 5: There is a positive relationship between Customer Brand Engagement and Brand Trust.

Hypothesis 6:There is a positive relationship between Brand Trust and Retailer brand equity.

Mediating Role of Brand Love

Previous research has revealed that Brand love enhances the relation between consumers and the brand. It is revealed that Brand love significantly influences the customer response of the brand. Recent studies reveal that it depends on how the customers engage with the brand, if the customers are having positive past experiences then it will positively influence brand loyalty. A recent study tested a model where the mediating role of brand loyalty relationship between brand love and positive WOM has been studied. The study highlighted how brand experience leads to brand love and further, Brand love leads to positive word-of-mouth. The study supported the hypothesis; and suggests that marketers should focus more on customer retention rather than customer acquisition (Bıçakcıoğlu et al., 2016). Previous studies investigate the relation of Brand love on retailer brand equity and it is found that both

have positive relationship and Brand love significantly and positively influence retailer brand equity. The Brand love is the main antecedent of retailer brand equity (Machado et al., 2019). Hence, we assume that Brand love positively influence retailer brand equity.

Zhou et al., (2020) investigate the influence of sports celebrities' brand on global brand equity and consumer's brand love. The findings revealed that trust acts as a mediator in a relationship between expertise and brand love. Whereas, product quality has a partial mediating effect on a relationship. The results show that the accurate use of sports celebrities' leads to formation of global brand equity and accelerates consumers' brand love. Machado et al., (2019) conducted a study, examining the relation between brand gender and retailer brand equity, whereas mediating role of brand love and Customer brand engagement was examined. As Brand love is a component of brand equity and one of the consequence of Brand love we assume that Brand love positively influence retailer brand equity (Carroll & Ahuvia, 2006; Loureiro et al., 2012; Machado et al., 2019). Hence, we hypothesize:

Hypothesis 4: The Brand Love mediates the relationship between the Customer Brand Engagement and the Retailer brand equity.

Mediating Role of Brand Trust

Rotter (1967) defines trust as 'the expectancy held by an individual or a group that the word, promise, verbal or written statement of another individual or group can be relied upon'. From a marketing perspective, trust can be regarded as an individual's belief, confidence or expectation regarding another individual's honesty, stemming from his/her expertise, trustworthiness, and intentionality about a change (Moorman et al., 1993). According to the definition of the trust in literature, when the service provider honestly offers a good product, consumers' trust is gained by seller. After that, the trust and confidence level (of customer) for the seller raises with every transaction made between both parties. Thus, trust is one of the main ingredients to form brand equity. Trust has two main affective elements: honesty and goodness. Trust is just like a snowballing process in measuring the consumption patterns of the customer. Consumer Trust is gained when the customer experience the benefits after purchasing goods or services (Laroche et al., 2012).

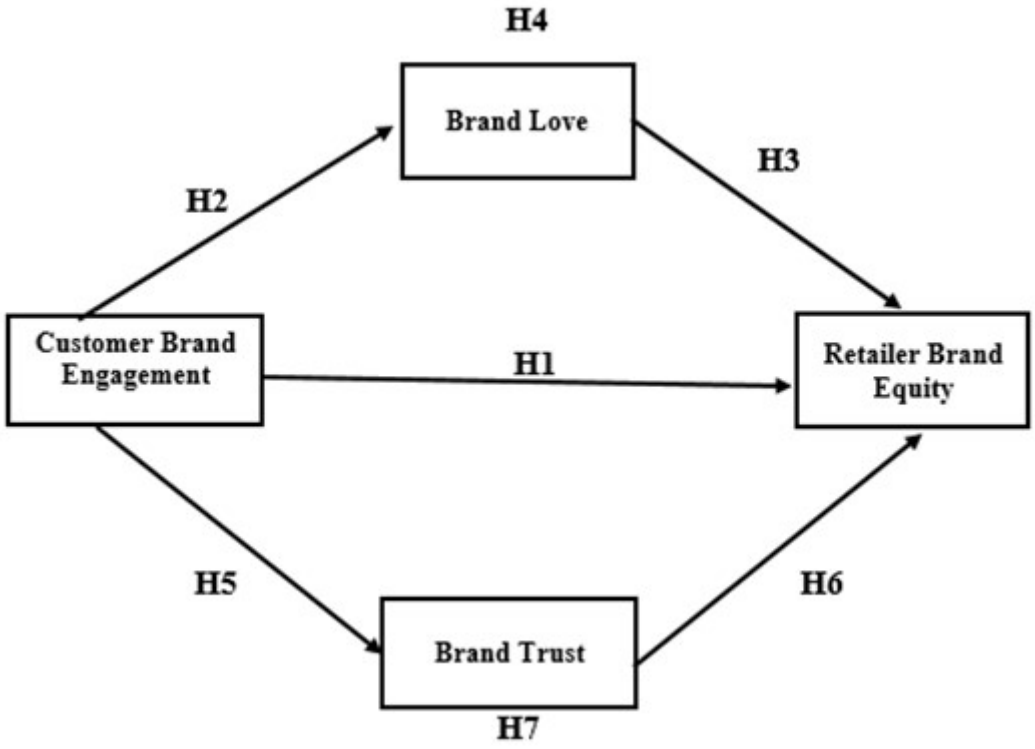
Trust has been studied in Marketing, science and other literature for many years. For the formation of social and Marketing relationships, trust is a vital ingredient. Trust has been defined as the confidence that relationship partners have in the reliability and integrity of each other (Morgan and Hunt 1994). Similarly, authors state trust as a faith that partners have in the credibility and assurance of each other.

Thus, we assume that the customers who perceive higher trust are more likely to enhance their brand engagement, loyalty and as a result retailer brand equity promotes. We therefore hypothesize:

Hypothesis 7: Trust mediates the relationship between Customer Brand Engagement and Retailer brand equity.

In light of the above literature review, the following theoretical framework is devised:

FIGURE 1:
THEORETICAL FRAMEWORK



RESEARCH DESIGN & METHODOLOGY

Quantitative approach was employed in this research due to the use of empirical approach for the testing of the study's hypothesis model. In order to collect data from the consumers, survey questionnaires were employed, with items adopted from various credible researches. Responses were recorded anonymously to ensure the confidentiality of respondents. Half of the questionnaires were distributed by hand and half were filled online using google forms. Cross-sectional data was collected for this study; which means that it was collected in a single one moment in time. A sample of 300 respondents, consisting of consumers of leading retail chains were selected for the present research. The sample of our study were the retail consumers of more than 18 years, comprising of both male and female respondents. Female respondents were 52% as number of female consumers in the retail stores was larger as compared to males. The sample size was determined by principles set by the item response theory (Nunnally, 1978). The study setting was natural, conducted in a non-contrived setting of consumers to avoid any bias or manipulation.

Following is an overview of the sources of items:

TABLE 1:
ITEM SOURCES

Variables	Number of items	Scale	Source
Retailer brand equity	4	5 point Likert scale	Yoo & Donthu, 2001
Customer brand engagement	5	5 point Likert scale	Dwivedi, 2015
Brand love	6	5 point Likert scale	Carroll & Ahuvia, 2006
Brand trust	5	5 point Likert scale	Morgan & Hunt, 1994;
Total number of items	20		

SPSS was used to analyze the data. To examine the effect of in dependent variable) (customer brand engagement) on dependent variable (retailer brand equity) and mediating role of trust and Brand love: correlational analysis, reliability tests, Pearson correlations, multiple regression was performed.

RESULTS

RELIABILITY ANALYSIS

Reliability analysis was carried out on the collected data, to compute and judge the internal consistency of variables. Table 2 depicts the reliability data:

TABLE 2:
RELIABILITY OF DATA

Variable	Items	Alpha
Customer brand engagement	5	.90
Brand love	6	.92
Brand trust	5	.69
Retailer Brand Equity	4	.82

Interpretation:

The table above portrays that all four variables; Consumer Brand Engagement, Brand Love, Brand Trust and Retailer brand equity have Chronbach's Alpha values above 0.69, hence, all variables are reliable.

Correlation Analysis

The Correlation Matrix (table 3) is given as follows:

TABLE 3:
CORRELATION MATRIX

	Variable	1	2	3	4
1	Customer Brand Engagament	1			
2	Brand Love	.770**	1		
3	BrandTrust	.617**	.593**	1	
4	Retailer Brand Equity	.784**	.787**	.594**	1
	Notes: * P < 0.05; ** P<0.01				

**Correlation is significant at the 0.01 level (2-tailed).

Interpretation:

The results of the correlation analysis are indicating the presence of a strong positive correlation between Customer brand engagement and Brand love (r=0.770, p<0.05) which indicates Brand Love will increase when Customer Brand Engagement increases. The correlation between Customer Brand Engagement and Brand Trust is moderate positive (r=0.617, p<0.05), which indicates Brand Trust will increase when Customer Brand Engagement increases. There is a strong positive correlation between Customer Brand Engagement and Retailer brand equity (r=0.784, p<0.05), which shows Retailer Brand Engagement will increase when Customer Brand Engagement increases. The correlation

between Brand Love and Brand Trust is moderate and positive (r=0.593, p<0.05), which indicates when Brand love increases then Brand Trust will also increase. The correlation between Brand Love and Retailer brand equity is strong and positive (r=0.787, p<0.05) which shows that when Brand Love increases, then Retailer brand equity also increases. The correlation between Brand Trust and Retailer brand equity is moderate and positive (r=0.594, p<0.05) which shows that when Brand Trust increases then Retailer brand equity also increases.

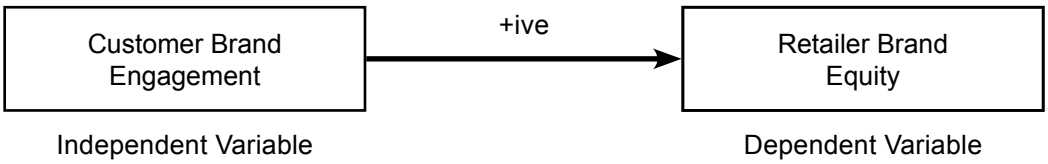
Regression Analysis of Hypotheses Statements

In line with the proposed hypothesis of the study, Regression analysis is carried out. Model 4 of Process (Preacher & Hayes, 2005) has been utilized as there is double mediation in this study. The bootstrap level has been kept at 1000 and the confidence interval is 90%.

Following are the results:

Direct effect of X on Y (Hypothesis 1)

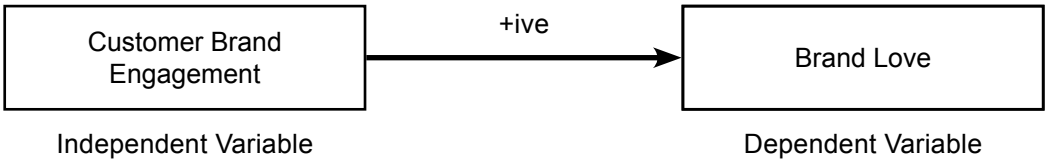
P-value is 0<0.05 shows there is a significant relation between both variables. The results show an interaction value of ULCI (0.503) and LLCI (0.298), and since both values are positive, which shows there is a positive relation between both variables. Furthermore, the coefficient value (0.40) indicates that, if there is one percent increase in Customer Brand Equity then there is 40% increase in Retailer brand equity, keeping all the other variables constant.



Hypothesis 2

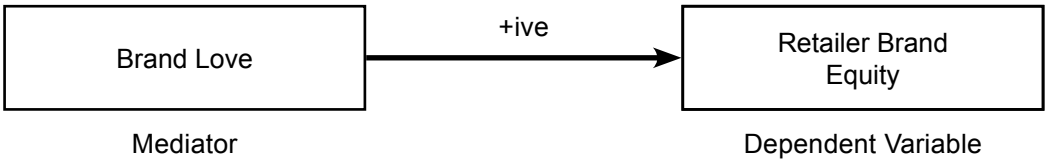
P-value is 0<0.05) indicate there is a significant relation between both variables. 'R' is the correlation coefficient, which shows the correlation between variables which is 0.77, which indicates there is a strong correlation between Customer Brand Engagement and Brand Love. The value of f (F=331.033) shows that the model is good fitted.

Hypothesis 2 (Customer Brand Engagement is positively related to Brand Love) is supported, as the values of ULCI (0.906) and LLCI (.729) are positive. Hence, the positive values indicates there is positive relation between the variables. Moreover, the coefficient value is 0.818, which shows if there is one percent increase in customer brand engagement then there is 81.8% increase in Brand love, keeping all the other variable constant.



Hypothesis 3

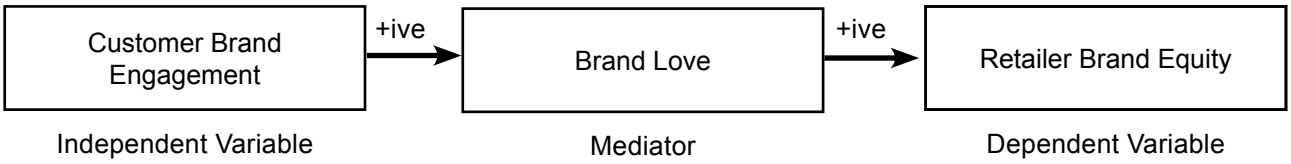
Hypothesis 3 (Brand Love is positively related to Retailer brand equity) is supported, (P-value is 0< 0.05) shows there is a significant relationship between Brand Love and Retailer brand equity and the results showing an interaction value of ULCI (0.106) and LLCI (.529). Hence, the positive values indicates there is positive relation between both variables. Moreover, the coefficient value= 0.718, which shows if there is one percent increase in Brand love then there is 71.8% increase in retailer brand equity, keeping all the other variables constant.



Indirect effect of X on Y (Hypothesis 4)

The values of Boot UCLI (0.417) and Boot LLCI (0.225) indicate that the indirect influence of customer Brand Engagement (X) on Retailer brand equity (Y) through the mediation of Brand Love is positive as both values are positive. The P-value is 0<0.05 which shows that the variables have significant relation with each other. The value of R shows that the correlation between Retailer brand equity, customer brand engagement and Brand love) is 83.5%. The value of R square is 0.698, which shows that there is 69.8% variation in Retailer brand equity due to interaction with customer brand engagement and Brand love. The Beta value of customer brand engagement (0.4) and Brand love (0.387) shows the variation in retailer brand equity due to one unit increase in customer brand engagement and Brand love. It is shown from the results that the f-test has a positive result (262.211). However, the p-value is less than alpha (0.000 < 0.05). Thus, it can be concluded that the *model is a good fit*.

This result supports and proves the 4th hypothesis of the study, according to which, Brand Love mediates the relationship between Customer Brand Engagement and Retailer brand equity.



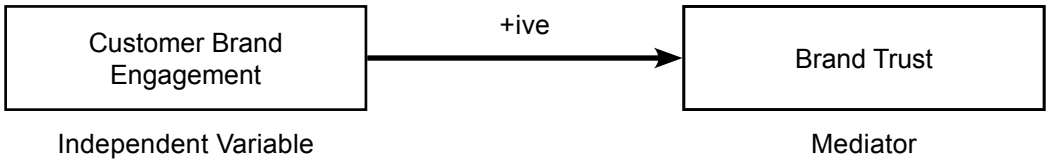
Direct effect of customer brand engagement on retailer brand equity (Hypothesis 1)

The P-value is 0<0.05 shows there is a significant relation between variables. The results show an interaction value of ULCI (0.709) and LLCI (0.525), and since both values are positive, the positive relation exists between them. Furthermore, the coefficient value is 0.617, which shows if there is one percent increase in customer brand engagement then there is 61.7% increase in retailer brand equity, keeping all the other independent variable constant.

Hypothesis 5

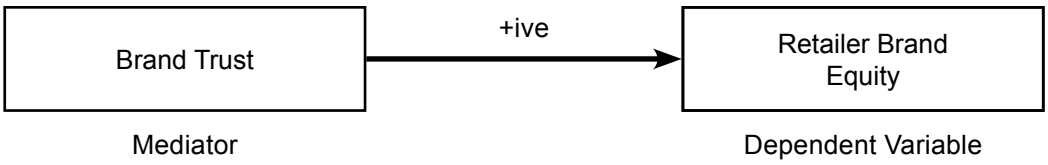
The p-value is (0) is less than alpha (0.05), which shows that both variables have significant relation. ‘R’ is the correlation coefficient, which shows the correlation between the variables. Here, ‘R’ is 61.7% which shows there is moderate, positive correlation between Customer Brand Engagement and Brand Trust. The value of R square is 38.1%. The coefficient value is 0.487, which shows if there is one percent increase in customer brand engagement then there is 48.7% increase in Brand trust, keeping all the other variable constant. The value of f (F=140.122) shows that the model is good fitted.

Hypothesis 5 (Customer Brand Engagement is positively related to Brand Trust) is supported, with results showing an interaction value of ULCI (0.568) and LLCI (0.406). Hence, the positive values support the hypothesis.



Hypothesis 6

P-value is 0<0.05 shows a significant relationship between Brand Trust and Retailer brand equity. The results show an interaction value of ULCI (1.9) and LLCI (1.3), and since both values are positive, the hypothesis is supported. Furthermore, the coefficient value is 0.617 which shows if there is one percent increase in BT then there is 61.7% increase in retailer brand equity, keeping all the other variable constant.



Hypothesis 7

The values of Boot UCLI (.044) and Boot LLCI (0.159) indicate the indirect influence of Customer Brand Engagement (X) on Retailer brand equity (Y) through the mediation of Brand Trust is positive and significant as both values are positive. 'R' shows the correlation between the dependent variable and the independent variables. Here 'R' is 0.797 which shows the correlation between retailer brand equity, customer brand engagement and BT is strong and positive. The value of R square is 0.635%, which shows that there is 63.5% variation in Retailer brand equity due to interaction with customer brand engagement and Brand trust. It is shown from the results that the f-test has a positive result (197.228). However, the p-value is less than alpha (0.000 < 0.05). Thus, it can be concluded that the *model is a good fit*. The P-value is 0<0.05, which shows there is a significant relation between variables.

This result supports and proves the 7th hypothesis of the study, according to which, Brand Trust mediates the relationship between Customer Brand Engagement and Retailer brand equity.

Summary of Hypothesis Results

A summary of supported hypothesis is given in the table below:

TABLE 4:
HYPOTHESIS RESULTS

	Hypothesis Statement	Results
H1	There is a positive relationship between Customer Brand Engagement and Retailer Brand Equity	Supported
H2	There is a positive relationship between Customer Brand Engagement and Brand Love	Supported
H3	There is a positive relationship between Brand Love and Retailer Brand Equity	Supported
H4	The Brand Love mediates the relationship between the Customer Brand Engagement and the Retailer Brand Equity	Supported
H5	There is a positive relationship between Customer Brand Engagement and Brand Trust	Supported
H6	There is a positive relationship between Brand Trust and Retailer Brand Equity	Supported
H7	Trust mediates the relationship between Customer Brand Engagement and the Retailer Brand Equity	Supported

DISCUSSION

The first and foremost purpose of this research is to test the framework that has been proposed by this study. This framework has been developed with the help of previously existing literature, developed by researchers that help in demonstrating possible links between the study's variables; Customer Brand Engagement, Brand Love, Brand Trust and Retailer brand equity. In this research study, the bond between Customer Brand Engagement was studied with two mediators; Brand Love and Brand Trust. Then, the relationship of the two mediators with Retailer brand equity was investigated between the dependent and independent variables. In order to empirically examine and analyze these relationships, survey questionnaires were employed to gather data from respondents, consisting of consumers of the brand. The results of the analysis turned out to be supportive of the claims made by this study.

The first hypothesis of the study "There is a significant relationship between Consumer Brand Engagement and Retailer brand equity" was supported by the data analysis. The regression analysis conducted on the data established a significant and positive relationship between the two variables. The correlation between the two variables was deduced to be strong positive, which proves that when Customer Brand Engagement increases between brands and consumers, Retailer brand equity between them will increase as well. The customers interact with the brand through different channels, like; social media, store outlets and other digital and non-digital platforms. Through the social media Consumer Engagement, brands are not only able to interact with their consumers, but it also increases the strength and quality of the relationship they have with their consumers. Both Customer Brand Engagement and Retailer brand equity were proved to be reliable variables through reliability analysis. Former research has proved that engagement between customers and brands establishes intimate bonds between them which prove to induce lasting relational exchanges between the two parties (Prahalad & Ramaswamy, 2004).

The second hypothesis of the study "There is a significant relationship between Consumer Brand Engagement and Brand Love" was supported by the data analysis. The regression analysis conducted on the collected data established a significant and positive relationship between the two variables. The correlation between the two variables was deduced to be strong positive, which proves that when Customer Brand Engagement increases, Brand Love will also increase. This means that when brands encourage engagement with its consumers, it will also increase Brand Love between them and their consumers. Now a days, engagement on social media sites, brand love is enabled, where consumers can have a direct communication with the brands and get the sense of closely knowing the brand (Stever & Lawson, 2013).

The third hypothesis of the study "There is a significant relationship between Brand Love and Reatiler Brand Equity" was supported by the data analysis. The regression analysis conducted on the collected data established a significant and positive relationship between the two variables. The correlation between the two variables was deduced to be strong positive, which proves that when Brand Love increases, Retailer brand equity will also increase (Stever & Lawson, 2013).

The fourth hypothesis of the study "Brand Love mediates the relationship between the Customer Brand Engagement and the Retailer brand equity." was supported by the data analysis. The regression analysis conducted on the collected data established Brand Love to play a significant and positive role of mediation between Consumer Brand Engagement and Retailer brand equity. All three variables proved to be reliable through reliability analysis. It shows that Brand Love between brands and consumers does explain the relationship between Consumer Brand Engagement and Retailer brand equity generated by consumers. Engagement on social media between the brand and its customers leads to quality relationships between them. This changes the traditional roles of brands and customers, where customers also add value due to content generation and become passionate advocates for the brand and have the ability to have an influence on other individuals' purchase decisions. (Sashi, 2012).

The fifth hypothesis of the study "There is a significant relationship between Customer Brand Engagement and Brand Trust" was supported by the data analysis. The regression analysis conducted on the data established a positive and significant relationship between the two variables. The correlation between the two variables was deduced to be moderate positive, which proves that when positive Customer Brand Engagement between consumers and brands increases, the Brand Trust generated by consumers increases as well. Brand Trust has been found, through empirical findings, to be able to make consumers reluctant to switch brands, increase their intentions to repurchase, make them share their information with the brands and carry out WOM behaviors (Giovanis, 2016).

The sixth hypothesis of the study "There is a significant relationship between Brand Trust aand Reatiler Brand Equity" was supported by the data analysis. The regression analysis conducted on the data established a positive and significant relationship between the two variables. The correlation between the two variables was deduced to be moderate positive, which proves that when positive Brand Trust for brands increases, the Retailer brand equity is generated by consumers increases as well. Brand Trust has been found, through empirical findings, to be able to make consumers reluctant to switch brands, increase their intentions to repurchase, make them share their information with the brands and carry out WOM behaviors (Giovanis, 2016).

The seventh hypothesis of the study "Trust mediates the relationship between Customer Brand Engagement and the retailer brand equity" was supported by the data analysis. The regression analysis conducted on the collected data established Brand Trust to play a significant and positive role of mediation between Customer Brand Engagement and Retailer brand equity. It shows that Brand Trust does explain the relationship between Customer Brand Engagement between brands and consumers and equity generated by them. Attachment and commitment, that is caused by intimacy can be crucial and extremely beneficial for the brand in countless ways, also generating brand loyalty and making the customers advocates for the brand (Turri et al., 2013).

IMPLICATIONS

THEORETICAL IMPLICATIONS

The present study will firstly contribute towards important insights of researchers regarding the variables and their relationships being studied. It will also make contributions towards existing literature of the study variables. The research has tried to investigate and give thorough explanations to ensure an effective understanding is developed.

The current study proved the mediating roles played by Brand Love and Brand Trust, between Consumer Brand Engagement and Retailer brand equity. While there were some important studies that have studied Brand Love mediation roles with Customer Brand engagement as the dependent variable (Keiningham et al., 2018). On the other hand, Brand Trust was rarely connected with Brand equity and mostly, other variables like Loyalty were used more

popularly to study Brand equity. Brands that are completely different from a consumer will not be one the consumer engages with. Bonds are also always developed on some form of similarity and as the similarities increase, so does the strength of the bond. Feelings like Intimacy or Loyalty are also developed with brands that are similar to one's own identity.

PRACTICAL IMPLICATIONS

This study provides useful insights to the retail store managers, to retain customers by encouraging customer engagement. Managers needs to find new ways to create positive and comfortable integration with the customers, by creating experiences that aids in building strong and beneficial bonds between the customers and retail store. Managers can do so, by customizing the store features, based on the emotional preferences of the customers, which ultimately helps in creating connections with the customers. Various engagement strategies should be implemented to assure that customers are actively communicating with the retail store. These strategies are successful to interact young adults and millennials.

The current research will help managers of brands to recognize how these relationship mechanisms work. The findings from this study will help them transform their marketing and marketing related strategies so as to achieve the attraction of their target consumers and have interactions with them, so as to develop a strong and elevated Brand Engagement with them, along with feelings of Intimacy. These two, if developed efficiently, will then lead to the path of the initiation and generation of Brand Equity about the products or services of the brand and even the brand itself. This will also act as a value generation from the consumers of the products or services, as Brand Equity is known as one of the most effective ways of getting other people to retain customers. At the first level, managers should have a recognition of the fact that Retailer's Brand Equity is a construct that is multidimensional in nature, which has broad channels of communication, strengths etc. (Sutter, 2015; Jankowski, 2013). Grauer (2014) has argued that if consumers are kept extremely satisfied, this will act as an encouragement for them to spread word-of-mouth. Managers have this sort of thinking generally instilled in them and hence focus on customer satisfaction.

The current study is also somewhat based on similar phenomena, as if the consumer engagement process is not satisfactory for consumers, no bonds of feelings of intimacy will be formed in them for the brand and hence, Brand Equity. Where mostly customer satisfaction is used to measure consumer perceptions of their encounter with the brand (Aksoy, 2013), the current study has made use of Brand Trust and Brand Love as gauges of consumers' perceptions, which not only enhances their current knowledge and understanding on these variables, but also gives them new sources of measurement. The present research asserts this notion by showing the importance of sparking Intimacy and higher Brand Trust to encourage consumers to produce Brand Equity about the brand. Failure to do so can either lead to no Word-of-mouth or a negative one. According to Gustafsson et al., 2005) demonstration of reciprocity and involvement with a company can nurture affective commitment.

LIMITATIONS

The current study has a cross-sectional time frame, which means that the data was collected at a single moment in time. Along with the chances of common method bias being present, the chances of the responses being changed over time is also possible.

The data was collected during covid-19 pandemic, hence results may vary in more normalized conditions.

FUTURE DIRECTIONS

Huang et al. (2017) found that the customers feel shy to engage in a crowded retail store, thus they tend to engage through social media with the retail brand. This is also very interesting and can be a new subject for the new researchers. Future research can examine how shyness in a retail store, especially during peak shopping hours, influence customer engagement. Furthermore, future studies should investigate various different variables impact

on retail equity i.e., store unattractiveness, word of mouth, store attachment, store affect and store location. Future studies can also investigate the various outcomes of customer engagement i.e., shopper behavior, customer attitude.

Since Retailer brand equity is diverse concept, future research could study it in more depth and investigate other and more novel variables, like characteristics of consumers, that can act as mediators between these two, like

Future studies couple also employ longitudinal studies to carry out their research in a more evaluative way.

CONCLUSION

This research was aimed at giving conclusive knowledge regarding the dynamics around how Customer Brand Engagement with brands affects Retailer brand equity produced by consumers, through the mediation of Brand Love and Brand Trust, attachment theory was studied and incorporated to study the given framework. The data collected from consumers of the brand, through survey questionnaires, helped in showing and explaining the roles that the variables played.

The study explained how Brand Love and Brand Trust play mediating roles between Customer Brand Engagement (Independent variable) and Retailer Bard equity (Dependent variable). It explained how, Customer Brand Engagement, if increased by retailer brands, will cause an increase in the Brand love and Brand Trust that consumers have, which in turn will increase Retailers brand equity that consumers generate about the retailer brand. When consumers interact with a retailer regularly, they will develop bonds with the brand a long with development of feelings of intimacy that they feel towards the retailer brand. The higher the quality and strength of bond and feelings of intimacy in the eyes of the consumers, the more he/she is likely to become advocates for the retailer by producing and carrying out Word-of-mouth and equity regarding the retailer brand itself or its products. A consumer is very unlikely to go around giving Word-of-mouth about a brand it has never interacted with much. When there hasn't been adequate engagement between the consumer and a retailer brand, there will be an absence of bond or any type of feelings towards the retailer brand. The sense of having a bond with a brand and feelings of intimacy is what acts as motivation and stimulus for consumers to carry out equity for the brand.

This current study has been able to clearly define and explain the variables and their relationships with each other and how the independent variable and the mediators effect the dependent variable. Numerous prior studies have been used to explain these relationships, with many prior findings supporting the current study's proposed hypothesis. The current study not only widened the research on these relationships, but it also enhanced the research by adding in Brand love, which is a variable that has stayed under the shadows of Brand Intimacy and had not received much attention from the researchers. This lead to the existence of novelty to some extent. The study demonstrated how increasing Customer brand Engagement can cause an increase in Brand Love and Brand trust that consumers have, which in turn increases the production of retailer equity by consumers about that particular retailer or its products and services. Hence the current study recognizes that to cause or increase retailer equity about them, brands are supposed to increase their Brand love and Brand trust through higher Customer Engagement.

Thus results supported the two main factors of Attachment theory: emotional bond and trust formation, and the impact of these two factors of store attachment on store equity. Thus the findings suggests that retailers can accelerate the retailers equity through delivering positive customer emotional experiences (Business Insider, 2017). The study concludes that the emotional bond of the customers with the brand is a strong predictor of shopper's behavior. Moreover, research found that brand engagement aids in the formation of customer satisfaction, trust and customer loyalty (Belaid & Behi, 2011).

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The influence of working capital components and policies on the profitability of South African clothing retailers

Mr Gugulethu Potwana
College of Business & Economics
University of Johannesburg
GPotwana@gmail.com

Mrs Marise Mouton *
College of Business & Economics
University of Johannesburg
mmmouton@uj.ac.za
https://orcid.org/ 0000-0002-0582-715X
*Corresponding author

Prof Ilse Botha
Professor: School of Accounting
College of Business & Economics
University of Johannesburg
ilseb@uj.ac.za

ABSTRACT

The management of working capital is a key critical consideration that all entities need to make given its strong influence on firm profitability. The working capital decision finds further importance given that it ultimately contributes to firm value and shareholder wealth maximisation. Using both a descriptive and inferential approach the study investigates the interaction between profitability of the working capital components, and the policy structures of the five JSE listed South African clothing retailers, over a seventeen-year period (i.e. 2003 – 2019). When looking at the working capital management (WCM) components, the study finds a significantly negative relationship between firm profitability with inventory turnover, payables repayment and the cash conversion cycle. However, a significantly positive association is found between outstanding receivables collection and profitability. Thus, in an attempt to increase profitability, the clothing entities in the South African market should target an increase in inventory turnover and an extended payables management-based strategy, while in tandem, effectively managing the investment in accounts receivable to allow for increased sales and profits. The study finds, in respect to WCM policies, a negative and strong association between aggressive working capital policy and profitability. An aggressive working capital financing policy will have a negative impact on profits, eroding firm value. Conversely a positive and strong association is found between a conservative WCM policy and profitability growth. South African clothing entities are incentivised to increase their investment in current assets in aiming to achieve more profitability..

Keywords: South African clothing retailers, working capital management, cash conversion cycle, efficient inventory management, working capital policy, liquidity, profitability-liquidity trade off.

1. INTRODUCTION

Working capital represents the difference between an entity's current assets and current liabilities. Thus, at its core, working capital management can simply be defined as the manner in which an entity manages its current assets in relation to its current liabilities (Raheman & Nasr, 2007). Ross, Westerfield and Jordan (2008) relate working capital management as an integral part of the operational financing considerations that an entity or corporation needs to determine, outside the realms of capital structure and capital budgeting. This study investigated the working capital management practices of South African clothing retailers and the onward impact this has had on their profitability. The assessment of this relationship is particularly important as it brings together three important aspects in corporate finance – the interaction between profitability, liquidity as well as working capital.

Non-current assets are useful for the increase of production within an entity whereas the day-to-day operationalisation and working of those fixed assets into tangible goods for sale for a business depend on the current assets (Gill, Biger & Mathur, 2010). Thus, the efficient management of said short term assets, and the financing of those assets, usually through short term liquidity, is a key determinant for profitability. This liquidity management is of paramount importance as the mismanagement and disorganisation of an entity's current assets in relation to its current liabilities may render the entity as being unable to meet its short-term debt obligations (Uyar, 2009). The interdependency between these underlying working capital components is captured in the varying working capital management policies which companies usually employ. As working capital management primarily deals with a balancing act between an entity's short-term assets and liabilities, this is then translated into policies dealing with working capital management, broadly divided into either an investment policy or a financing policy.

Consequently, the study probed two key objectives relating to working capital management. The first objective assessed the management of the underlying working capital component structuring by South African clothing retailers and the effect this has had on their profitability. The second objective was to then understand how WCM policies, which are resultant from underlying WCM component structuring, influence profitably of South African clothing retailers.

The main aim of any entity is to maximise shareholder wealth through profitability. In an industry such as retail trade where working capital management forms a crucial part of the entity's operational capacity and ultimately profitability, this management of working capital, how the underlying components are structured into varying policies and their interaction with profitability needs to be assessed (Louw, 2015).

This study and its findings are particularly significant when the magnitude and importance of the South African retail trade sectors is considered. Retail trade plays a significant part in the overall GDP of a developing economy (Boshoff, 2020). Clothing retail entities contribute over 7% to the entire economy of South Africa and are thus pivotal to the economy's success (StatsSA, 2019). As the economy of South Africa continues to decline, it is important that key players in the economy remain strong in order to sustain economic growth. These retail clothing entities are thus crucial in that, should they become insolvent, they could potentially destabilise developing economies. Given this contention, understanding the key underpinnings for an industry such as the clothing retail sector is crucial. It is thus surprising that there currently exist no studies which empirically investigate how profitable clothing retailers structure their working capital in South Africa. This study attempts to address this knowledge gap and weakness by focusing on this important sub-sector.

2. LITERATURE REVIEW

Working capital management and its role is associated with the planning and controlling of current assets and current liabilities in the short-term such that the entity may be able to satisfy its short-term obligations whilst also avoiding excessive investment in short term assets (Ejelly, 2004). Working capital management seeks to address this and ensure value creation for shareholders (Afza & Nazir, 2007). The interdependency between current assets and current liabilities is particularly crucial as it determines funding available to support the daily operational activity of an entity which in turn has an impact on profitability and shareholder value. Secondly, working capital management also plays a significant function in helping to understand the trade-off which exists between liquidity as well as profitability. Decisions which are likely to increase profitability are likely to have an impact and involve increased risk; whereas risk reducing measures usually result in the erosion of profits. Lastly, working capital is critical in providing flexible funding and financing options for a company (Deloof, 2003). Efficient liquidity management enables an entity to access cheaper internal funding than having to venture out into external markets.

Working capital management has been discussed in the light of several lenses within literature with the main focus on research being on the following aspects: liquidity ratios, operating and cash conversion cycles as well as theories and policies of working capital management.

Typically, liquidity ratios conduct a comparison of an entity's current assets, which include cash and other short-term relatively liquid assets, against their current liabilities such as payments due to suppliers and operating and financial expenses due immediately (Saleem & Rehman, 2011). Such measures allow entities to be able to determine

their ability (or inability) at a specific point in time to meet short term debt obligations. The shortfall, however, of liquidity ratios is that they are static in nature and may thus, at times, provide misleading conclusions when it comes to the evaluation of an entity's liquidity position (Richards & Laughlin, 1980). Finnerty (1993) and Deloof (2003) particularly criticise the static viewpoint of liquidity management due to its inability to be used on matters or opinions of a 'going-concern' nature and cash flow projections. The flaws contained within the static nature of assessing liquidity has thus given rise to more appropriate and dynamic viewpoints of working capital measures such as the cash conversion cycle which gives a more realistic nature of the varying and changing nature of working capital (Ejelly, 2004).

Charitou, Elfani and Lois (2010) describe the cash gap or cash conversion cycle as the period between the purchase of raw materials or delivery of services with the collection of the cash from the sale of those goods or services offered. The cash conversion cycle thus considers the three main elements of the net working capital cycle: namely, trade receivables, trade payables as well as inventory (Louw, 2015). The management of these three interrelated components determines the efficiency of a company's working capital. Thus, the efficient management of a company's working capital or cash conversion cycle resides in the thorough understanding and overseeing of the three underlying components of inventory, accounts receivable as well as accounts payable. Ultimately, the balancing and management of the aforementioned three components of working capital management; inventory, debtors' receivables and trade payables translate into a policy or strategy of working capital that a company elects to impose. These policies will inform how current assets and liabilities are used and what they consist of. Moreover, how their composition relative to each other affects the risk versus return characteristics of the company is also illuminated.

In working capital literature there are three main and distinctly highlighted policies relating to the management of working capital: namely, the working capital management investment policy (WCIP) approach, the working capital management financing policy (WCFP) approach as well as the self-liquidating approach (Nazir & Afza, 2009). As is consistent with most topics in finance, the policy choice between the working capital investment policy, working capital financing policy or the self-liquidating approach decision presents trade-off decisions which are centred on the overarching elements of risk versus return. The trade-off presented is in deciding among three policies: aggressive working capital policies, which emphasise achieving a higher risk-associated return; moderate working capital policies, which try to maintain an apt balance between the two; and conservative policies which primarily focus on the minimisation of risk rather than the pure maximisation of profit (Brigham & Ehrhardt, 2004:12; Erasmus, 2010).

A working capital policy which a company elects to implement is based on several and varying factors which include the growth rate of said company, risk appetite of the company's management, the industry outlook as well overall economic forecasts (Anand & Gupta, 2002). Working capital management policies have an important impact on shareholder wealth through their influence on companies' expected future returns as well the risk associated with said returns. Thus, these policies and their effective implementation are imperative to the survival and growth of every entity.

The essence of working capital management relies on an entity finding an optimal balance between its dual and salient goals of liquidity and profitability (Smith, 1980). Duru, Ekwe and Eje (2014) further purport that the competing nature of these salient goals is as a result of the trade-off between risk and return for an entity as profit maximization is a severe threat to liquidity whereas a myopic focus on liquidity adversely impacts profitable returns.

The issue of liquidity births itself from the fact that there exists no such thing such as perfect capital markets where funds are always readily and freely accessible (Nasruddin, 2006). The marketplace for capital in reality is one which is complex and renders the need for entities to hold sufficient levels of liquidity. Profitability on the other hand is focused on the maximisation of shareholder wealth. It requires that an entity's funds are rather utilised for productive means to yield higher returns, instead of being idly reserved for liquidity purposes (Akoto, Awunyo-Vitor & Angmor, 2013).

These salient goals of profitability and liquidity are competing in most of the decisions an entity makes. Entities, in reality, do not reside on either ends of this spectrum but rather opt for a balance between profitability and liquidity which will satisfy their risk return appetite. That is, companies strive to employ an optimal balance which suffices their liquidity needs whilst also helping them to achieve desired levels of profitability (Arnold 2008:548). Essentially, the

interaction between working capital management practices, in particular, efficient liquidity management, is in ensuring that a firm establishes an optimal balance between excessive liquidity whilst, on the other hand, managing against insufficient liquid reserves being held.

2.1 PREVIOUS STUDIES ON DEVELOPED ECONOMIES

In literature on working capital for developing economies, Deloof's 2003 study on 1 009 Belgian-listed firms seeks to understand the relationship between corporate profitability and working capital management. The research has proven to be particularly important. Interestingly, the study elects to use gross operating income rather than other commonly used measures such as return on assets, and thereto, argues that it gives a more accurate indication of profitability irrespective of the make-up of an entity's assets. Deloof (2003) finds that there exists a significant and negative association between the cash conversion cycle of Belgian entities and their profitability. Deloof (2003) explains that a reduced cycle leads to increased profits for these entities. Specifically, Deloof (2003) finds significant negative relationships between gross operating profit and inventory days on hand, accounts receivable days and account payable days. Thus, by maintaining a minimum number of days for these components, shareholder value can be maximized.

Expounding on the Deloof (2003) study, as well as Lazaridis and Tryfonidis' (2006) work, Gill et al., (2010) investigate the relationship between working capital management components of 88 American firms listed on the New York Stock Exchange (NYSE) over a three-year period so as to ascertain similar conclusions for the United States context. Using correlation analysis and non-experimental research design the study finds positive associations between profitability and the cash conversion cycle. With respect to the underlying working capital components, Gill et al., (2010) only finds a significant relationship between profitably and accounts receivable days, one which is positive. The paper elucidates that efficient working capital practice entails keeping accounts receivables at an optimal level which will in turn positively influence profits and maximise shareholder value.

Given the global financial crisis and economic downturns of 2007/8, Enqvist, Graham and Nikkinen (2014) focused their study on trying to assess the impact of working capital on the profitability of an entity in different business cycles. Over an eighteen-year period, the study looked at a sample of Finnish-listed entities to draw conclusions on how different cycles impact this cyclical interrelation among working capital and profitability. Enqvist et al., (2014) concludes that during economic downturns, and in receding economic conditions, the relationship between working capital and profitability becomes more significant, implying that efficient management of working capital is especially important in periods of recession rather than economic boom.

To give a cross-country perspective, Banos-Caballero, García-Teruel and Martínez-Solano (2019) assessed a sample of firms from 30 varying countries, over an 18-year period, to establish an association between net operating working capital and firm value across different countries. The researchers include countries which are vastly different from one another but also include control variables such as economic and financial development, GDP, as well as investment and law enforcement measures. Using the valuation model proposed by Fama and French (1998), Banos-Caballero et al., (2019) institutes cross-sectional regressions of firm value on earnings, investment, and financing variables of the varying entities as their methodological approach. The paper concludes that operational net working capital value differs across countries and its influence on firm value also differs depending on the country.

2.2 PREVIOUS STUDIES ON DEVELOPING ECONOMIES

In 2007, researchers Afza and Nazir studied this topic and relationship with a particular focus on working capital management policies and their influence on profitability within a developing economy context. Using data analysis and cross-sectional regression techniques to study this relationship, the paper investigates 204 entities listed on the Karachi Stock Exchange over a seven-year time frame. Their study found that strong and significant evidence exists of a negative correlation between aggressive working capital policies and the profitability. Companies in developing economies are incentivised to implement conservative or investment policies in trying to improve profitability (Nazir & Afza, 2009).

Jakpar, Tinggi, Siang, Johari, Myint and Sadique (2017) looked at the relationship between profitability and working capital management elements as indexed by the cash conversion cycle by studying a sample of 164 manufacturing firms listed on the Bursa Main Board. Through the adoption of Pearson correlation and discriminatory panel regression techniques the researchers find a positive and statistically significant relationship between inventory days on hand, accounts receivable collection days, firm size and profitability. Jakpar et al., (2017) however note that, contrary to previous studies, they concluded on a statistically insignificant inverse relationship between the cash conversion cycle of an entity with its profitability implying that for Malaysian manufacturing firms, the cash conversion cycle does not influence profitability.

2.3 STUDIES ON AFRICAN ECONOMIES

Focusing on a sample of 319 listed and delisted industrial South African firms, Erasmus (2010) assesses this association between profitability and working capital management through both the orthodox and unorthodox lenses of liquidity and debt ratios as well as the net trade cycle. Over a 19-year cycle, the research concludes that there exists a negative and statistically significant relationship between return on assets as a measure for profitability and the measures of working capital management, elected as the net trade cycle, debt and the liquidity ratio. The study, as evidenced by South African industrial firms, advocates for low liquidity and reduced investment in net trade assets (i.e. an aggressive working capital policy stance) in order to improve profitability.

Falope and Ajilore (2009) is the most cited and potentially most pivotal study in terms of working capital management within an African context. Employing panel data techniques and pooled regression methods to investigate fifty listed Nigerian firms over a 10-year period, the study concludes on a negative and statistically significant relationship between net operating profit and the individual components of the cash conversion cycle. Furthermore, the authors conclude that shareholder value can be created through efficient methods of managing working capital, including reducing the time taken to collect receivables and limiting investment in inventory to a minimum.

Louw (2015) is the piece of literature which affords this study its foundations and driving principles. Her research primarily focused on assessing the overall management of working capital by listed retail firms in South Africa. The research focuses on the 18 retailing firms listed on the Johannesburg Securities Exchange over a nine-year period of 2004 – 2012, concluding that for South African retailers, reducing the average days of inventory on hand produces the most statistical significance in reducing the cash conversion cycle and subsequently increasing profitability. The study further substantiates this by arguing that for retail firms this makes sense given the importance of inventory management in that industry. Furthermore, Louw (2015) finds that a decrease in the account's receivables collection days as well as increasing the number of account payable days does not have a statistically significant relationship with growth in profitability for South African retailers, contrary to findings in other industries and sectors within developing economies.

3. METHODOLOGY

For the purposes of this study, the research method elected is a quantitative research design which is based on an inferential approach. The inferential approach is appropriate for this study given that it focuses on establishing associations and relationships amongst variables being studied. Moreover, the research's methodology follows a deductive reasoning approach. That is, it purports to develop inferences based on existing theory. Given that this study purports to understand and to assess the assumed relationship between profitability with working capital and its underlying components and policies in a South African retail clothing industry context, this research design and methodology is logically appropriate.

South African retailing firms are heavily influenced by, and dependent on, working capital elements, both from a customer demand as well as an entity supply perspective. The LSM structure of the South African retail customer base details large debt levels which would increase the expected receivables for retail entities in the country (Mhlaba & Phiri, 2019). On the other hand, limited cash flow available to these retailers induces a need for them to support their activities through the financing of their short term liabilities. This is all in tandem with the need for clothing retailers

to maintain appropriate inventory levels as insufficient investment in inventory would lead to stock shortages, while excessive investment renders an entity's stock obsolete in addition to the extensive holding costs. This interrelation among working capital elements has been examined extensively in varying contexts but never within the focus of South African retailers, thus providing novel areas of knowledge.

The appropriateness of the deductive reasoning methodology elected for this study is appropriate based on this theoretical interplay. The researchers seek to understand how the listed South African clothing retailers manage their working capital and the ultimate influence of this said management relative to the assertions relating to WCM theory concluded in other industries and economies

With respect to its research methods, the study uses purposive sampling to draw interpretations on the overall clothing sub-sector in South Africa. The five Johannesburg Securities Exchange (JSE)-listed clothing retailers chosen as subjects for the study represent over 40% of the total value of the sector and are accordingly appropriate to be used as a purposive sample. Furthermore, the study's sample of entities has been selected using consistent criteria and characteristics giving further legitimacy to the judgemental sampling research techniques employed.

These five firms are studied and analysed over a seventeen-year period spanning 2003-2019. This time frame represents a period of varying economic conditions and business cycles both from both global and South African perspectives and will helped the study lay claim to robust conclusions.

The focus of the study is a primary assessment of past working capital management components and practices and their influences on entity historic performance to make inferences and generalisations on future performance for similar entities. The data thus used in this study are of a secondary nature. The data are contained within the audited and IFRS regulated financial statements of the entities used as the subjects of the study. These statements ensure that the information is standardised, consistently accurate and complete.

The variables used in this study are influenced by previous research undertaken about the relationship between working capital management and profitability. The described dependent, independent and control variables have been used to investigate this association within the context of clothing retail entities in South Africa and are summarised in Table 1.

TABLE 1:
SUMMARY OF VARIABLES USED IN STUDY

Variable	Calculation	Role in Regression
Operating Profit Margin (OPM)	OPM = Operating Profit / Revenue	Dependent Variable
Return on Operational Assets (ROA)	ROA = Operating Profit / (Total Assets – Financial Assets)	Dependent Variable
Inventory Days on Hand (IDH)	IDH = (Inventory / Cost of Goods Sold) x 365 days	Independent Variable
Accounts Receivable Days (ARD)	ARD = (Accounts Receivable / Revenue) x 365 days	Independent Variable
Accounts Payable Days (APD)	APD = (Accounts Payable / Cost of Goods Sold) x 365 days	Independent Variable
Cash Conversion Cycle (CCC)	CCC = IDH + ARD – APD	Independent Variable
Working Capital Financing Policy (WCFP)	WCFP = (Current Liabilities / Total Assets – Financial Assets)	Independent Variable
Working Capital Investment Policy (WCIP)	WCIP = (Current Assets / Total Assets – Financial Assets)	Independent Variable
Firm Size (FS)	FS = Log (Sales)	Control Variables
Financial Leverage (FL)	FL = Total Liabilities / Total Assets	Control Variable

3.1 RESEARCH QUESTIONS

The study has six research questions based on the two main outcomes it aims to understand. The first study objective is to understand the impact of working capital management components of South African clothing retailers on their profitability. From this first objective, the study has then developed four critical questions to help unpack these potential relationships between profitability and WCM components:

1. What is the impact of Inventory Days on Hand on the profitability for South African clothing retailers?
2. What is the impact of Accounts Receivable Days on the profitability for South African clothing retailers?
3. What is the impact of Accounts Payable Days on the profitability for South African clothing retailers?
4. What is the impact of the Cash Conversion Cycle on the profitability for South African clothing retailers?

The second study objective is to understand how the interaction of these underlying components, which form into policies of working capital management, have impacted the profitability of South African clothing retailers. To investigate this, the following questions are probed:

5. What is the effect of an aggressive WCM policy implementation on profitability within a South African clothing retail context?
6. What is the effect of a conservative WCM policy implementation on profitability within a South African clothing retail context?

3.2 RESEARCH METHODS

From the raw data set of both the study's independent and dependent variables, descriptive statistics will be calculated to provide an understanding of the basic features of the data set. To establish any correlation between the variables, a Pearson correlation coefficient calculation will be conducted. This will identify the strength and direction of any dependencies amongst the selected variables.

Given that the data employed in the study are longitudinal in nature, containing cross-sectional observations of varying entities observed chronologically over time, panel data regression and analysis techniques were deemed as the most appropriate inferential statistical technique to infer the relationship between WCM management practices of South African clothing retailers and their profitability. Specifically, balanced panel models, similar to those developed by Sharma and Kumar (2011) and Louw (2015) in their respective studies, and adopted for the purposes of this research, are employed.

In evaluating the impact of WCM components and policies of firm i at time t of South African clothing retailers' profitability between 2003 and 2019, the following balanced panel regression model structure is employed:

$$(\text{Profitability Dependent Variable})_{it} = \beta_0 + \beta_1(\text{WCM Component / Policy Independent Variable})(_{it}) + \beta_2(FS_{it)} + \beta_3(F_{Lit)} + \gamma_i + \lambda_t + \varepsilon_{it}$$

Where:

γ_i	:	Firm specific effects assumed constant for firm i over t
λ_t	:	Time specific effects assumed constant over time for given t over i
ε_{it}	:	Random error term for firm i at time t

The above regression structure produces twelve balanced panel regression models used in the study to probe the research questions to enable assertions and conclusions for the clothing retail industry in South Africa. The details of these regression equations are explicitly stated in the appendix at the end of the study. The following section elaborates on the results of the employment of these techniques on the data set.

4. RESEARCH RESULTS AND ANALYSIS

The descriptive statistics as detailed in Table 2 drew attention to the basic elements in the underlying or raw data sets of the variables employed in the study. The profitability metrics used in the study show a significant amount of variability as both the ROA and OPM measures have shown large coefficient of variations coupled with excess kurtosis and skewness. This demonstrates that various entities, although in the same industry, have operated differently and it had a varying impact on the profits which they realised. In managing working capital, the WCM components reveal similarities amongst the entities in terms of repayment towards creditors. However, how the asset lever of WCM is managed shows significant differences. The accounts receivables days and inventory days-measures reveal a wide-ranging distribution and show that given core differing elements such as market offering, segmentation and targeting outcomes of each clothing entity, these elements are managed in a varying manner. Lastly, the descriptive statistics reflect consistency in the manner in which policies, relating to working capital, have been employed across the clothing retailing entities in South Africa.

TABLE 2:
DESCRIPTIVE STATISTICS

	PROFITABILITY		WCM COMPONENTS				WCM POLICY		CONTROL VARIABLES	
	OPM	ROA	IDH	ARD	APD	CCC	WCIP	WCFP	FS	FL
Mean	0,139	0,235	83,288	68,615	76,413	75,489	0,669	0,254	4,400	0,392
Median	0,107	0,229	69,942	40,952	76,549	65,317	0,716	0,242	4,222	0,402
Maximum	0,299	0,458	185,784	185,947	118,073	206,513	0,843	0,602	5,832	0,737
Minimum	-0,043	-0,067	28,951	6,789	24,501	-17,021	0,199	0,099	3,363	0,135
Std. Dev.	0,081	0,118	35,334	54,138	20,390	58,854	0,153	0,100	0,711	0,171
Skewness	0,121	-0,254	0,911	0,315	-0,212	0,270	-1,409	0,731	0,849	0,190
Kurtosis	2,083	2,442	3,546	1,485	2,536	2,162	4,649	3,320	2,463	1,845
Observations (n)	85	85	85	85	85	85	85	85	85	85

Sources: Sharedata; Eviews10 output

As shown in the correlation matrix, detailed in Table 3, the ROA profitability measure reflects positive correlations with all the other independent variables besides the IDH measure with which it has a moderate negatively significant correlation with. The negative but significant correlation with IDH can be reduced to the fact the shorter inventory cycles usually implies lower inventory investment and holding costs with higher sales and profitability which ultimately results in a greater ROA measure. For the South African retailing entities contained in our study, there exists a strongly significant and negative relationship between ROA and firm size reflected by a correlation coefficient of -0.73. The larger a firm is in the South African context, the likelier it is that its return on assets will be lower.

The analysis further reveals a very strong, statistically significant and positive association between OPM and the ARD measure of 0.8. The strong correlation could be attributed to the effect which relaxed credit policies can have on increasing sales and profitability. The relationship between OPM and the WCFP measure is highly insignificant owing to the fact that OPM is a purely income measure, reflected on the income statement. Thus, balance sheet elements as measured by the WCFP would likely not have a direct and linear impact with OPM, particularly because financing costs induced by more debt would not affect operating expenditure.

Inventory turnover reveals a strong positive and significant correlation with the cash conversion cycle, showing a Pearson correlation value of 0.65. A lengthening of the inventory turnover will lead to the cash cycle being lengthened as well. The ARD measure also shows a statistically significant strong correlation with the cash conversion cycle of 0.82. A strong dependency between the length of debtor collections and the cash cycles is present within the South African clothing industry. Furthermore, ARD also reflects a strong positive correlation with APD, so a delay in the collection of receipts will lead to in the delay in the ability of these entities to repay their creditors. Interestingly, ARD shows a strongly significant negative relationship with firm size of -0.61. The larger the clothing retail entity in the South African context, the shorter it will take them to collect outstanding receipts. Smaller entities do not have the capacity to enforce strict credit collection policies that the larger firms have. There also exists a strong and negative

correlation between accounts payable days and firm size equalling -0.58. Smaller firms will tend to take longer to repay their creditors as opposed to their larger counterparts. Smaller firms are likelier not to have the cash flow capability of their larger counterparts so as to be able to settle outstanding invoices as soon as is possible.

The WCM investment policy is moderately and negatively correlated with firm leverage showing a Pearson correlation coefficient of -0.47. More conservative policy measures indicate lower debt levels for entities. WCFP is strongly and positively correlated with firm leverage, revealing a correlation coefficient of 0.70. Aggressive WCM policy involves taking larger debt positions in order to finance operational activity, justifying the directionality and strength of this relationship. The significant correlation coefficient of -0.46 between WCFP and firm size elucidates that the larger a firm is in the South African retailing context, the smaller the financing position it will likely take when financing their operations. Larger entities tend to have cash reserves, which is the cheapest financing option and will opt to utilise those sources before opting for leverage.

The descriptive and correlation analysis of the study provided a vital starting point for the remainder of the study as it has enabled an insight into the basic features and relationships present among the variables. The next step was to employ inferential panel regression techniques to help answer the causality aspect of these relationships.

TABLE 3:
PEARSON CORRELATION ANALYSIS

		PROFITABILITY		WCM COMPONENTS				WCM POLICY		CONTROL VARIABLES	
		OPM	ROA	IDH	ARD	APD	CCC	WCIP	WCFP	FS	FL
PROFITABILITY	OPM	1.000									
	ROA	0.769***	1.000								
WCM COMPONENTS	IDH	-0.010***	-0.379***	1.000							
	ARD	0.807***	0.403***	0.183*	1.000						
	APD	0.561***	0.281***	0.365***	0.592***	1.000					
	CCC	0.542***	0.0453***	0.642***	0.825***	0.417***	1.000				
WCM POLICY	WCIP	0.416***	0.389***	-0.084	0.440***	0.021	0.347***	1.000			
	WCFP	-0.041	0.268***	-0.310***	-0.133	0.143	-0.358***	-0.001	1.000		
CONTROL VARIABLES	FS	-0.713***	-0.729***	0.232**	-0.621***	-0.578***	-0.232**	-0.336***	-0.456***	1.000	
	FL	-0.075	0.030	-0.084	-0.104	0.267**	-0.238**	-0.475***	0.704***	-0.333***	1.000
	GDP	0.097	0.121	-0.275**	0.140	-0.022	-0.028	0.333***	0.164	-0.235**	0.010

***significance at 10%, 5% & 1% levels; **significance at 10%, 5%; *significance at 10% level
Sources: Sharedata; EViews10 output

4.1 PANEL REGRESSION ANALYSIS

Research Question 1: What is the relationship between profitability and inventory days on hand for South African clothing retailers?

TABLE 4:
REGRESSION EQUATIONS 1 AND 2 RESULTS

VARIABLE		OPM			ROA	
		1			2	
		β	VIF		β	VIF
IDH		-0.306 ***	1.411		-0.673 ***	1.398
FS		0.021	1.010		0.038 *	1.071
FL		-0.148 ***	1.111		-0.272 *	1.096
C		0.187 ***			0.327	

***significance at 10%, 5% & 1% levels; **significance at 10%, 5%; *significance at 10% level
Source: EViews10 output

Based on the regression results of the first model in Table 4 above, there exists a negative relationship between inventory days on hand and profitably, significant at both the 5% and 1% level. This elucidates an inverse relationship between profitability and inventory turnover in the South African clothing retail market. The longer it takes a South African clothing entity to sell inventory, the more its profitability declines. The coefficient underpinning this relationship equals -0.31 and indicates that over a 365-day period, a lengthening in the time taken to turnover inventory can decrease operating profit margins by up to 31% in competing entities. Using the return on operational assets as a dependent variable proxy for profitability to investigate its association with inventory days on hand yields the same conclusion of a negative relationship between profitability and inventory turnover for South African clothing retailers. Moreover, this negative relationship between ROA and IDH shows a strong association between the two variables given a coefficient of -0.673 over a year. This indicates that a 1-day increase in the turnover of inventory would adversely impact the return on operational assets by around 0.2%. A clothing retailer would be able to improve profitability by close to 2% if they quickened inventory turnover by ten or so days.

Research Question 2: What is the relationship between profitability and accounts receivable days for South African clothing retailers?

TABLE 5:
REGRESSION EQUATIONS 3 AND 4 RESULTS

VARIABLE		OPM			ROA	
		3			4	
		β	VIF		β	VIF
ARD		0.151 **	1.032		-0.032	0.908
FS		-0.010	0.962		0.0180	2.479
FL		-0.233 ***	1.004		-0.499 ***	1.089
C		0.247 ***				
F-Statistic		45.708 ***			10.190 **	
Adjusted R-Squared		0.806			0.716	

***significance at 10%, 5% & 1% levels; **significance at 10%, 5%; *significance at 10% level
Source EViews10 output

The third regression model as denoted in Table 5 details that there is a significant and positive relationship between accounts receivable days and operating profit margin. This positive relationship elucidates the fact that having relaxed credit policies induces customers to purchase more, driving sales and ultimately profitability. This association also speaks to the LSM demographic in the South African market. South African consumers are limited in terms of their disposable income and thus items such as clothing would not feature in their top buying priority items. Thus, to boost sales, clothing retailers are required to offer credit as this would be a more affordable mechanism for the customers to afford clothes. Furthermore, this also speaks to the fact that these retailers should allow for more relaxed credit collection policies to cater for their customer base to be able to repay their debts. Although leading to longer ARD periods, this incentivises higher sales and ultimately greater profitability. However, as evidenced by the fourth regression model, it may be concluded that within the South African retail clothing context the relationship between ARD and ROA is highly insignificant. Consequently, within a South African clothing retailer perspective, ARD should be managed by entities with a short-term income perspective rather than a longer-term balance sheet management outlook.

Research Question 3: What is the relationship between profitability and accounts payable days for South African clothing retailers?

TABLE 6:
REGRESSION EQUATIONS 5 AND 6 RESULTS

VARIABLE		OPM			ROA	
		5			6	
		β	VIF		β	VIF
APD		0.057 *	0.941		-0.085	1.013
FS		-0.025	0.883		0.011	2.593
FL		-0.266 ***	1.066		-0.478 **	1.139
C		0.341 ***			0.392	
F-Statistic		43.386 ***			10.206 ***	
Adjusted R-Squared		0.798			0.794	

***significance at 10%, 5% & 1% levels; **significance at 10%, 5%; *significance at 10% level
Source EViews10 output

The results as indicated by regression model five reveal a positive association between the APD and the OPM measure which is significant at the 10% significance level for the South African clothing retail context. The relationship elucidates that a lengthening of the time taken to repay creditors will have a slight but positive impact on profitability. The regression model shows a coefficient value of 0.057 delineating that over a year, a deferment of repayment of outstanding invoices, all else being equal, can positively influence profits by over 5%. A lengthened cycle also lowers expenditure due to the repayment of invoices being deferred, factors all which ultimately increase profitability. However, although the relationship is significant, the association is relatively weak which speaks to the notion that, in an African context, supplier relationships are valued. Eroding these for liquidity gains is not incentivised as the profitability upside is small but the downside risks an entity opens themselves up to, with these actions, is significant. A balance sheet profitability return with accounts payables days' perspective is provided by the sixth regression model delineated above. Although there is an association between the two factors in the South African clothing retail market, it is insignificant and consequently accounts payable days are not a critical factor for consideration when these entities are looking to improve their longer-term operational asset return.

Research Question 4: What is the relationship between profitability and cash conversion cycle for South African clothing retailers?

TABLE 7:
REGRESSION EQUATIONS 7 AND 8 RESULTS

VARIABLE		OPM			ROA	
		7			8	
		β	VIF		β	VIF
CCC		-0.0378 **	0.88		-0.119 *	0.880
FS		-0.024	0.889		0.0234	0.504
FL		-0.258 ***	0.996		-0.498 ***	0.572
C		-0.353 ***			0.352	
F-Statistic		43.473 ***			10.416 ***	
Adjusted R-Squared		0.798			0.797	

***significance at 10%, 5% & 1% levels; **significance at 10%, 5%; *significance at 10% level
Source EViews10 output

The results detailed in Table 7 indicate a statistically significant negative relationship between profitability as proxied by the OPM with the cash conversion cycle. Simply, a lengthening of the cash conversion cycle has significantly been shown to negatively affect profitability of South African clothing retailers. The coefficient of -0.038 is significant at 90% and 95% levels of confidence. This negative association between the CCC and the OPM can further be unpacked with respect to the significant relationships found between the underlying WCM components and OPM. The study has found that there exists significant and negative relationship between OPM and inventory turnover, as well as a significant and positive association between OPM and the invoice payment period. Thus, in purporting to reduce the cash cycle and improve profitability, the clothing entities in the South African market should target an increase in inventory and delayed payables repayment management based strategy, while in tandem, effectively managing the investment in accounts receivable to allow for increased sales and profits. From a balance sheet return perspective, at the 10% statistical level of confidence, it can be concluded that there exists a negative relationship between the ROA profitability measure and the CCC, with the coefficient delineating this relationship equalling -0.119. A clothing retailer in South Africa which reduces its cash cycle, as an example, by 10 days can realise profitability gains of over 0.5%. For the purports of improving ROA, the study found that only inventory days on hand yield a statistically significant relationship as a regressor within the return on operational assets profitability metric. Thus, in shortening the cash cycle, South African clothing retailers would be advised to have quicker inventory periods which would ultimately increase profitability.

Research Question 5: What is the relationship between profitability and WCIP for South African clothing retailers?

TABLE 8:
REGRESSION EQUATIONS 9 AND 10 RESULTS

VARIABLE		OPM			ROA	
		9			10	
		β	VIF		β	VIF
WCIP		0.065 *	1,16		0,074	1.138
FS		-0.001	1,025		-0,032	1.018
FL		-0.222 ***	1,073		-0.433 ***	1.079
C		0.225 **			0.489 **	
F-Statistic		44.873 ***			27.543 ***	
Adjusted R-Squared		0.803			0.715	

***significance at 10%, 5% & 1% levels; **significance at 10%, 5%; *significance at 10% level
Source EViews10 output

The results shown in Table 8 reflect a significant and strong positive association between the WCIP and profitability as measured through operating profit margin. With over 90% confidence it can be concluded that an increase in the amount invested in working capital by South African clothing retailers will lead to an increase in profitability. The coefficient of 0.065 elucidates a strong relationship between these two variables, indicating that all else being equal, a 1% increase in the amount invested in current assets by South African clothing retailers will induce 6.5% uplift on profitability. Given the relationships elucidated in the WCM components section, this investment in current assets would be advised for accounts receivable. Inventory has shown a significantly negative relationship with profitability, therefore added investment in inventory would adversely impact profits. However, ARD was found to have a significant and positive impact on profitability. Thus, in increasing investment to realise profitability uplift, entities should increase investment in their receivables. An increase in receivables would be mandated both from a relaxed credit granting and credit collection approach which incentivises customers to purchase more goods, increasing sales and ultimately profitability. Longer credit terms also afford the entity the opportunity of earning additional income, given the interest lodged on these types of transactions.

Research Question 6: What is the relationship between profitability and WCFP for South African clothing retailers?

TABLE 9:
REGRESSION EQUATIONS 11 AND 12 RESULTS

VARIABLE		OPM			ROA		
		11			12		
		β	VIF		β		VIF
WCFP		-0.128 *	0.986		0.021		0.969
FS		0.037 *	0.949		-0.045		0.953
FL		-0.232 ***	1.016		-0.475	***	1.032
C		0.427 ***			0.618	***	
F-Statistic		45.261 ***			27.075	***	
Adjusted R-Squared		0.804			0.711		

***significance at 10%, 5% & 1% levels; **significance at 10%, 5%; *significance at 10% level
Source EViews10 output

The results of the regression equations as evidenced in Table 9 reflect a negatively significant relationship between profitability, measured as OPM and the WCFP. Within the South African clothing retailing industry, using a more aggressive working capital policy approach would have a negative impact on profitability. The coefficient of -0.128 indicates a very strong relationship among the variables as a 1% increase, all else equal, in a company's current liabilities position would have a 12.8% adverse impact on profitability. The increased position an entity assumes from a current liability perspective induces several implicit and explicit financial costs which will negatively impact its profitability. The minimal gains entities might garner in lengthening the time taken to repay creditors will be offset by the implicit costs of foregone discounts. Moreover, a larger short-term debt position exposes the entity to higher finance repayment costs, decreasing profitability. The gains an entity would have assumed through the additional liquidity injection are offset by the additional financial expenses they would assume.

5. CONCLUSIONS AND RECOMMENDATIONS

In summary, the study has found that efficient management of working capital by South African clothing retailers in an effort to positively impact profits should be handled in five main complementary approaches.

First, efficient inventory management practices need to be of primary purpose for these entities as this is a key working capital component for profitability growth in the South African clothing retail context. Entities need to ensure that they sell and replenish inventory as quickly as possible in order to increase profitability. To incentivise sales, the second key finding is that retailers need to allow for more relaxed credit granting and collection terms to their customers. This incentivises customers and grants them the ability to afford and purchase more clothes, growing the sales and profitability of these entities. Extensive credit granting and collection policies also give companies the added implicit benefit of interest income generated from the credit sales, another factor which has a positive influence on profitability. Third, the cash conversion cycle which is a culmination of these three elements shows a negative association with profitability thus purporting that in an attempt to increase profitability, the clothing entity's in the South African market should target an increase in inventory turnover and extended payables management based strategy, while in tandem, effectively managing the investment in accounts receivable to allow for increased sales and profits.

Fourth, considering this required additional investment in receivables to help the entity generate more sales, it is uncovered within the study that a more conservative, working capital investment approach is the incentivised approach for South African clothing retailers to increase profitability. Profitability of the entities operating in this industry can grow by as much as 6.5% with an additional one percent investment in current assets. Lastly, consistent with the

positive impact that a conservative or investment policy has on profitability, there is a strong negative association between a financing or aggressive working capital policy approach with profitability. Clothing retailers who have a large portion of their working capital financed will negatively impact their profitability.

Although not of primary interest for the purports of this research, there are also paramount lessons to be drawn from the relationships between profitability and the control variables. The insignificant relationship established between firm size and profitability indicated that the South African clothing retail industry is an oligopoly in nature and thus market dynamics do not allow for any singular firm to try influence its profitability through growing or increasing its size. Importantly though, the analysis reveals a significant and negative relationship between profitability and firm leverage. Within a South African retailing context, entities are advised to hold less leveraged positions as higher incidences of debt induces higher financing costs, possibilities of default and profitability erosion. This may also be related to the negative association found between an aggressive and leveraged WCFP with profitability.

5.1 LIMITATIONS OF STUDY

Although the study has been conducted in an encompassing and robust manner, sufficiently addressing the relationship between profitability and the WCM components and policies for South African clothing retail entities, there are however some limitations which have been observed.

Firstly, it is noted that a limited, and purposive, sample was employed in coming to the conclusions and inferences established about the South African clothing industry. For consistency of sampling, only the five clothing entities listed on the JSE during the period of the study were sampled and investigated. The first limitation relates to the fact that entities which were previously listed and subsequently delisted would not form part of the study. Moreover, the smaller unlisted entities, which provide their own working capital structural perspectives were also excluded from the study, a further limitation.

Secondly, the study has focused solely on the clothing retail sub-sector. This decision is important given that this study purported to grow the body of knowledge of working capital towards a more a specialised and focused view. The study reveals insights for the clothing retail sector within a developing economy context, a view which has never been provided previously. This does, however, expose the study to the limitation that the scope could have been broadened to encompass other retailing entities as well as other businesses which operate in other industries.

Lastly, the study has elected to study the components and policies of working capital in a linear regressive manner. Each underlying WCM component and policy element was considered from an isolated manner to determine its interaction with profitability. The limitation is in that the conclusions of this study are arrived at from a ceteris paribus perspective, holding all else constant. Thus, any possible interactions between the varying independent variables which could influence profitability are not specifically considered.

5.2 RECOMMENDATIONS FOR FUTURE STUDY

The theme of efficient inventory management is carried throughout this research and as a standalone WCM component is shown to have the most significant impact on profitability. Therefore, it would be advisable that future research hones in and further delves specifically into the impact of the various aspects of inventory and their impact on profitability for entities in retail and other industries.

Furthermore, it has been revealed throughout this research that relationships, both from a customer demand side and supplier supply side perspective, are important. From a customer demand side impact, it is shown that having credit policies that speak to a developing economy income perspective and relational context is crucial. Thus, further research should consider this insight and further probe how income levels and the importance of appreciating customer relationships within a market influences working capital management practices and ultimately profitability. On the supply side, although retailers in a South African environment have the leeway to slightly delay their repayment to creditors, this would not be advised in the longer term. Financing working capital at the expense of short-term supplier creditors will have a detrimental effect on entity profitability, largely due to ruined relationships affecting

operations and profits. Consequently, end–to-end supply chain management plays a crucial role in working capital management and its influence on profitability. Further research should be conducted on the effect of supply chain management as an efficient working capital management tool to broaden insights for the clothing sub-sector, retail industry and other industries.

Lastly, in addressing the limitation relating to the limited sample size and specific focuses of this research, forthcoming studies should broaden their scopes. Future studies should do this by widening their investigation of working capital management practices to other sectors and industries within the South African market. This work has already been commenced by Erasmus (2010), Louw (2015) and Kasozi (2017) who, in their studies, have assessed working capital and its impact on the profitability of various entities listed on the JSE. However, there remains much more work to be done. At an industry sub-sector level, the gap in the body of knowledge is much vaster and requires future researchers to probe these relationships at those hierarchical levels as well. The work contained in this study will prove to be pivotal in providing a starting point for these more specific sub-sector investigations in future.

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APPENDIX A

DETAILED REGRESSION EQUATIONS

Q1: The relationship between Profitability and Inventory Days on Hand

$$OPM_{it} = \beta_0 + \beta_1(IDH_{it}) + \beta_2(FS_{it}) + \beta_3(FL_{it}) + \gamma i + \lambda t + \varepsilon_{it} \quad \textbf{[1]}$$

$$ROA_{it} = \beta_0 + \beta_1(IDH_{it}) + \beta_2(FS_{it}) + \beta_3(FL_{it}) + \gamma i + \lambda t + \varepsilon_{it} \quad \textbf{[2]}$$

Q2: The relationship between Profitability and Accounts Receivable Days

$$OPM_{it} = \beta_0 + \beta_1(ARD_{it}) + \beta_2(FS_{it}) + \beta_3(FL_{it}) + \gamma i + \lambda t + \varepsilon_{it} \quad \textbf{[3]}$$

$$ROA_{it} = \beta_0 + \beta_1(ARD_{it}) + \beta_2(FS_{it}) + \beta_3(FL_{it}) + \gamma i + \lambda t + \varepsilon_{it} \quad \textbf{[4]}$$

Q3: The relationship between Profitability and Accounts Payable Days

$$OPM_{it} = \beta_0 + \beta_1(APD_{it}) + \beta_2(FS_{it}) + \beta_3(FL_{it}) + \gamma_i + \lambda_t + \varepsilon_{it} \quad \textbf{[5]}$$

$$ROA_{it} = \beta_0 + \beta_1(APD_{it}) + \beta_2(FS_{it}) + \beta_3(FL_{it}) + \gamma_i + \lambda_t + \varepsilon_{it} \quad \textbf{[6]}$$

Q4: The relationship between Profitability and the Cash Conversion Cycle

$$OPM_{it} = \beta_0 + \beta_1(CCC_{it}) + \beta_2(FS_{it}) + \beta_3(FL_{it}) + \gamma_i + \lambda_t + \varepsilon_{it} \quad \textbf{[7]}$$

$$ROA_{it} = \beta_0 + \beta_1(CCC_{it}) + \beta_2(FS_{it}) + \beta_3(FL_{it}) + \gamma_i + \lambda_t + \varepsilon_{it} \quad \textbf{[8]}$$

Q5: The relationship between Profitability and Aggressive WCM Policy

$$OPM_{it} = \beta_0 + \beta_1(WCFP_{it}) + \beta_2(FS_{it}) + \beta_3(FL_{it}) + \gamma_i + \lambda_t + \varepsilon_{it} \quad \textbf{[9]}$$

$$ROA_{it} = \beta_0 + \beta_1(WCFP_{it} + \beta_2(FS_{it}) + \beta_3(FL_{it}) + \gamma_i + \lambda_t + \varepsilon_{it} \quad \textbf{[10]}$$

Q6: The relationship between Profitability and Conservative WCM Policy

$$OPM_{it} = \beta_0 + \beta_1(WCIP_{it}) + \beta_2(FS_{it}) + \beta_3(FL_{it}) + \gamma_i + \lambda_t + \varepsilon_{it} \quad \textbf{[11]}$$

$$ROA_{it} = \beta 0 + \beta_1(WCIP_{it}) + \beta_2(FS_{it}) + \beta_3(FL_{it}) + \gamma_i + \lambda_t + \varepsilon_{it} \quad \textbf{[12]}$$

The above expressions denote balanced panel regressions employed to assess the relationship between profitability and the WCM components and policy within the South African clothing retail context. In the equations, *i* denotes the *i*th firm with *t* delineating a specific year *t*. The variables in the regressions are expressed as follows:

$\mathbf{OPM}_{it}$	:	Operating Profit Margin of firm *i* at time *t*
$\mathbf{ROA}_{it}$	:	Return on Operational Assets of firm *i* at time *t*
$\mathbf{IDH}_{it}$	:	Inventory Days on Hand of firm *i* at time *t*
$\mathbf{ARD}_{it}$	:	Accounts Receivable Days of firm *i* at time *t*
APDit	:	Accounts Payable Days of firm *i* at time *t*
$\mathbf{CCC}_{it}$	:	Cash Conversion Cycle of firm *i* at time *t*
$\mathbf{WCIP}_{it}$	:	Working Capital Investment Policy of firm *i* at time *t*
$\mathbf{WCFP}_{it}$	:	Working Capital Financing Policy of firm *i* at time *t*
FSit	:	Firm Size of firm *i* at time *t*
$\mathbf{FL}_{it}$	:	Firm Leverage of firm *i* at time *t*
$\boldsymbol{\beta}_0$	:	Intercept coefficient
$\boldsymbol{\gamma}_i$	:	Firm specific effects assumed constant for firm *i* over *t*
λ_t	:	Time specific effects assumed constant over time for given *t* over *i*
$\boldsymbol{\varepsilon}_{it}$	:	Random error term for firm i at time *t*

The digital transformation of food and grocery retailing under the covid-19 pandemic: a case of major South African retailers

Dr EAN Dakora
Department of Management Sciences
Sol Plaatje University
edward.dakora@spu.ac.za

*Corresponding author

Prof P Rambe
Department of Business Support Studies
Central University of Technology
South Africa

prambe@cut.ac.za

ABSTRACT

This article explores the adoption of digital technologies and innovation by South African food and grocery retailers during the Covid-19 pandemic to engage their customers and how this unprecedented level of innovation could lead to a paradigm shift in the sector. In the wake of the Covid-19 pandemic in 2020, South Africa experienced one of the harshest national lockdowns, with only businesses that sell food and essential services allowed to operate. Food and grocery retailers were among those allowed to trade. These organisations had to introduce new ways of operating by adopting technology and innovation to increase sales while keeping their customers and employees safe. Their initiatives contributed to a record increase in online sales of more than 50% in the country for 2020. This study reviews the 2020 annual reports of the major South food and grocery retailers to determine the kind of digital technologies adopted and their general innovative approaches in response to the pandemic to determine the future trajectory of the sector post-Covid-19. The findings show that South Africa has a pandemic-led disruption of the food and grocery retail sector. The findings further demonstrate an impressive adoption and implementation of digital technologies including mobile applications, click, and collect by retailers, pointing towards a digital transformation of the sector. The investment in digital technologies and innovation will enable them to transition and compete effectively in the new world of post-Covid-19 retailing while providing better shopping options for their customers.

Keywords: Food and grocery retailing, Covid-19, digital technology, Innovation, Online Shopping

INTRODUCTION AND BACKGROUND

The Covid-19 pandemic has forced retailers of all kinds to consider going digital in one way or another to stay afloat and service their customers while adhering to the Covid-19 protocols, including social distancing, sanitisation, and enforcing the wearing of masks. South Africa has been noted to have implemented strict national lockdown measures in response to the pandemic. In South Africa, the uptake in online retail activity or e-retailing has been slow, especially in the food and grocery retail sector. However, the Covid-19 pandemic and the lockdowns from March 2020 appear to have forced food grocery retailers to be innovative and embrace digital technologies, catapulting the sector into a digital revolution. The result of these initiatives by South African retailers is a spike in online retail growth of 66% in 2020 (World Wide Worx, 2021).

The international Covid-19 protocols and the South African lockdown regulations required of retailers to rethink and rearrange their operations to keep customers safe and satisfied at the same time. They have also reorganised their marketing, supply chain, and logistics in unprecedented ways to make this possible. Food and grocery retailers globally have moved swiftly to embrace digital technologies to facilitate their transactions leading a total digital revolution of the sector (Tortora et al., 2021).

However, in-store operations presented other challenges related to the control of panic buying, crowd management, out-of-stock situations, and staff safety at the beginning of the lockdown in March 2020. All of this compounded the quagmire that beset retailers as they strived to operate during the global pandemic. As more and more customers resorted to buying their essential items online, the retail industry globally has experienced a tremendous increase in online and digitally enabled food and grocery retailing activities since the start of the Covid-19 pandemic (Goddard, 2020; Siawsolit & Gaukler, 2021). We have Amazon (an on-line retailer) moving up to second place in the world's top retailers list in 2020 (Deloitte, 2020).

As reported by World Wide Works (WWW) (2021), online retail sales have more than doubled in South Africa between 2018 and 2020, with a growth of 66% in 2020, accounting for a revenue of R30.2 billion, compared to R14.1 billion in 2018. This Covid-19-led growth in online retail growth is unprecedented, especially in a country where uptake in online retailing has been very slow. The food and grocery retailing sector would have contributed significantly to this growth, as it was the ones allowed to operate for most of 2020. This growth is expected to continue, as the pandemic is still causing havoc and the lockdown restrictions are still in place.

The growth of online retail has been particularly slow in the South African food and grocery retail space until the digital boom that came with the Covid-19 pandemic, which saw online retail activities exceeding 50% of growth in 2020 alone (World Wide Worx, 2021). Few South African supper market chains including Pick n Pay and Woolworths have operated e-commerce sites over the last decade in a limited way. However, this has changed, with most food and grocery retailers turning to the use of digital technologies to serve their customers during the hard lockdown in South Africa. Pure online or platform retailers have also intensified their efforts and increased their ability to attract and serve more customers. They include Takealot.com, Jumia, and Loot.com.

The slow pace of the online food and grocery retail growth in South Africa pre-Covid-19 can be attributed to three main factors: 1) South Africa is home to approximately 2 000 shopping malls with plans to develop more, and ranks number eight in the world for having the most shopping centres (SACSC, 2017); 2) data costs in South Africa have been among the highest in the world (South Africa. Competion Commission, 2019); and 3) retailers with online stores did not reinvest profits made from online sales in advancing their online operations to provide superior services (World Wide Worx, 2019).

The three factors mentioned were affected during the Covid-19 pandemic and the hard lockdown in 2020. Access to shopping malls was restricted, as only supermarkets and chemists were allowed to operate and sell only essential products. At the same time, data costs were drastically reduced by major telecommunication operators, with both MTN and Vodacom reducing their mobile data costs by 50% in April 2020 (RIA, 2020). These efforts not only helped people work and study from home, but also bought online. Additionally, a preponderant increase in the demand for home deliveries forced food and grocery retailers to invest in innovative online stores, digital technologies, and services to meet this demand.

In this paper, we explore the nature of food and grocery retail innovation and digital transformation in South Africa forced by the Covid-19 pandemic and the extent to which this new retail digitisation could shape the future of the sector. We do this by addressing the following: 1) we discuss technology and innovation in retail, as well as the adoption of digital technologies and innovation in food and grocery retailing globally; 2) we provide a theoretical framework to explain the diffusion of technology and innovation in retail; 3) we describe the methodology for this exploratory review; 4) we review the 2020 annual reports and websites of the top five South African food and grocery retailers to provide evidence of the kind of digital technologies and innovations employed to engage their customers during the pandemic; 5) we discuss key insights based on emerging themes from the retail reports; and 6) we identify future research areas relevant to the South African environment.

TECHNOLOGY AND INNOVATION IN RETAILING

In defining retail technologies, we adapt the one by Roggeveen and Sethuraman (2020) and define retail technologies to include mobile apps, devices, tools, techniques, and models that have some bearing on engineering and are linked to the retail operation. This definition is relevant to the study reported here, because it is well with

innovation and not only technology. Innovation concerns new products or services and new ways of doing things better. The Oslo Manual (2018) defines innovation as a new or improved product or process, or both, that differ significantly from the previous products or processes and are used by customers (product) or the organisation itself (process). Digital technologies such as smartphones, mobile apps, websites, robotics, artificial intelligence, big data analytics, cloud computing, machine learning, and the Internet of things are changing the way retail organisations operate and interface with their customers (cf. Deloitte, 2017).

The use of technology and innovation in retail affects both the demand and supply sides, through connecting with suppliers and managing the supply chain, engaging with customers and demonstrating opportunities for them to research, purchase and make payments, and choose delivery options (Shankar et al., 2021). This article focuses on the adoption and use of customer interfacing digital technologies by the top five food and grocery retailers in South Africa to drive their online retail activities during the pandemic. The high growth in online retailing under the Covid-19 pandemic is propelled by online retail activities by large brick-and-mortar retailers who have adopted technologies to improve their service offerings and improvements in their home delivery and pick-up services.

ADOPTION OF DIGITAL TECHNOLOGIES AND INNOVATIONS IN FOOD AND GROCERY RETAILING

Before the pandemic, there was already a steady growth in retail innovations through the use of artificial intelligence (AI), the Internet of things (IoT), and Robotics to manage data and to ensure efficiencies (Wingfield, 2021). The adoption of technologies saw an upward trend and market growth in food and grocery retail globally (Grand View Research, 2020). Yet, Shankar et al. (2021) argue that innovations in retail, including in-store robots and delivery drones had a limited presence in retail before the Covid-19 pandemic. Food and grocery retailers have been slow in increasing online activities due to particular difficulties in the sector, ranging from handling a large variety of products, logistical challenges and temperature control, customer expectations and preferences, and low-profit margins (Vaz de Magalhaes, 2021). Another area of concern has been customers' trust in the food and grocery retailers' efficiency (Grand View Research, 2020), and capability to deliver, when it comes to online food and grocery shopping.

However, the food and grocery retail sector globally has seen an uptake in digital technologies recently, which has been accelerated by the pandemic. Hood et al. (2020) and Vaz de Magalhaes (2021) investigate online grocery shopping behaviours and factors that influence customer decisions. They found logistics and delivery systems, and socioeconomic issues to be part of the factors influencing customer decisions. In another study on online grocery shopping, Brand, Schwanen, and Anable (2020) have identified behavioural segments of customers, including Intensive Urbanites and Online Omnivores, and resisting and responsible shoppers, based on psychological, demographic, and socioeconomic characteristics. The advent of Covid-19 interacted with regular decisions and preferences of food and grocery retailers and their customers as online shopping picked up speed (cf. Goddard, 2020).

In addition to the relevance of sociodemographic factors in driving online grocery shopping, Hood et al. (2020) have observed a shifting trend from home delivery to click-and-collect in Great Bratain, and argue that localised infrastructure would be necessary to support the dynamic nature of grocery e-commerce. Click-and-collect is the situation where the customer sends in the order drives to collect later, an option likely to deal with trust issues and an added social distancing measure. In their study of click-and-collect for perishable products, Siawsolit and Gaukler (2021) report that two-day orders can increase profit, reduce inventory and spoilage, and maintain availability levels.

However, offsetting operating cost within an Omni-channel environment largely depends on the average cart value, the proportion of short life items, handling time, and order pick rate (Siawsolit & Gaukler, 2021). This finding reaffirms the complex nature of food and grocery retail operations and could make it difficult for additional channels to be integrated profitably (Vaz de Magalhaes, 2021). However, going forward, we may see hybrid retail formats (Shankar et al., 2021) and multichannel or Omni-channel operations (Chopra, 2016) as customer demands for such options gain momentum.

The idea of localisation of infrastructure in terms of technology and innovation adoption is important because contextual differences in socioeconomic and geopolitical conditions might present unique opportunities and

challenges. Chopra's (2016) study of Omni-channel retailing highlights the complementary benefits that can accrue from the hybrid structure of physical and online channels, where the physical channel can also serve as a showroom and pickup location for the online channels. Chopra further suggests that this hybrid structure can be particularly effective in emerging markets where new online players can partner with existing local retailers to benefit both parties and the consumer.

Table 1 presents a summary of recent literature in technology and innovation in food and grocery retailing. Grewal et al. (2019) detail futuristic in-store technologies their impact on sales. Similarly, Erdmann and Ponzoa (2021) studied digital inbound marketing in grocery e-commerce and highlight the need to appreciate format differences as well as different country contexts. Our paper brings the unique South Africa food and grocery retail context and presents how the major retailers have reacted to the Covid-19 pandemic through the adoption of digital technologies and innovation, and implications for the retail system.

Other South African studies focused on the impact of Covid-19 on the retail industry include Cant's (2020) assessment of employee engagement by retail organisations during the pandemic and how it contributes to performance. A review of public health management (Opute et al., 2020) from the point of view to highlight implications of the pandemic in South Africa and Nigeria. All these studies report on various ways in which the pandemic hasFurthermore, South African retailers' adoption of new communication channels (including mobile applications) in engaging with their key stakeholders was analysed by Ecim et al. (2020) to explain the communication strategies and platforms used by retailers to provide support to their stakeholders during the pandemic. Similarly, Steynberg et al. (2020) explore the critical role of high-education institutions in capacitating the retail industry as it moves into a new normal of Omn-channel, blended formats, and heightened adoption of technology and innovation. Our study expands on these studies, but pays specific attention to the food and grocery retail sector for evidence of digitisation and how that might impact the future characterised by Steynberg et al. (2020).

THEORETICAL FRAMEWORK

Digitisation in retailing has been expressed in many ways against the backdrop of technology advancement and leads to dramatic changes in retail format, operation models, and news ways engaging with both customers and suppliers (Pantano & Vannucci, 2019). Rogers's (1983) diffusion innovations theory helps us understand how organisations adopt and use new technologies and innovations. Rogers posits that the diffusion of innovation is the process by which innovation is communicated through certain channels over time among the participants of a social system. This process often leads to a social change, altering the structure and function of a social system (Rogers, 2003), and influences by actors within the system. These actors include nodes, social networks, and partners.

The diffusion theory also explains the how, why and at what rate the innovations are adopted in a given setting (Rogers, 1995; 2003). The rate of adoption is interesting, because it departs diffusion from the singular act of adoption and highlights the speed and spread of the adoption over time among the categories of adopters for a possible critical mass. According to Rogers (1995; 2003), there are categories of innovation adopters identified as innovators, early adopters, early majority, late majority, and laggards, implying a process. Therefore, diffusion includes a process of communicating the technology or innovation among its users over time (Rogers, 1995; 2003).

The innovation diffusion theory has been used in many ways to explain technology and innovation adoptions in business organisations, including retail. Pantano et al. (2017), in scoping the innovation landscape retailing, report a possible shift in the sector towards innovation-oriented strategies in order to offer innovative consumer solutions. Moreover, technology and innovation diffusion in retailing is largely dependent on the adoption rate of key stakeholders, including customers, employees, suppliers, and competitors (cf. Shankar et al., 2021).

With the focus of this study on food and grocery retailer adoptions, the factors driving adoption are important due to the sudden rise in online retailing. Pantano's (2014) three drivers of innovation adoption in retail: (1) demand for innovation,, (2) availability of innovation and (3) uncertainty in adopting innovations) are useful in helping to understand the rise of online retailing in South Africa during the Covid-19 pandemic.

TABLE 1
SUMMARY OF RECENT LITERATURE ON TECHNOLOGY AND INNOVATION USE IN FOOD AND GROCERY RETAILING

Reference	Area of focus	Key message
Siawsolit and Gaukler (2021)	Click-and-collect for perishable products.	The results indicate that two-day orders can increase profit, reduce inventory and spoilage while maintaining the overall availability level. Average cart value, the proportion of short life items, handling time, and order pick rate are strong determinants of the extent that two-day orders can offset Omni-channel fulfillment cost.
Vaz de Magalhaes (2021)	Online grocery shopping	Highlight the usefulness of understanding consumer behaviour concerning e-grocery. Explains factors affection logistics requirement and the final decision for online grocery shopping. Insights on attributes that influence the effectiveness of e-grocery, and their consequences on business logistics, especially during pandemics.
Goddard (2020)	Impact of COVID-19	Preliminary assessment of the impact of Covid-19 on food retail and foodservice in Canada. Online food retailing increased about 30% when the pandemic began.
Brand, Schwanen and Anable (2020)	Online Grocery Shopping behaviour segments	Identified segments include: Intensive Urbanites and Online Omnivores, and resisting and responsible shoppers. Distinguishing features include convenience, perceived benefits, costs, and risks, technology affect, time pressures and fit into daily schedules as well as social and environmental dimensions of personal norms and beliefs.
Chopra (2016)	Omni-channel retailing	Omni-channel can benefit customers through a complementary hybrid structure of offline and online channels. The physical channel can also serve as a showroom and pickup location for the online channel This hybrid structure can be particularly effective in emerging markets where new online players can partner with existing local retailers to benefit both parties and the consumer
Hood, Urguhart, Newing and Heppenstall (2020)	Consumer behaviour and preferences for e-commerce in the grocery retail industry in Great Britain (GB)	Sociodemographics are an important driver of groceries e-commerce usage and channel choice Localised infrastructure to support grocery e-commerce is important A shift from home delivery to click-and-collect with the cost of delivery faced by the customer
Erdmann and Ponzoa (2021)	Digital inbound marketing in grocery e-commerce	E-commerce is optimizing Digital Inbound Marketing Retail format differences apply Country differences apply

Grewal, Noble, Roggeveen and Nordfalt (2019)	In-store technology	A conceptual framework for understanding new and futuristic in-store technology - infusions A matrix of innovative and futuristic technologies based on convenience level and consumer social presence can explain the effects of in-store technology on sales. Moderating factors: consumer traits, product/service dimensions, mental models, and social networks.
Marcucci et al. (2021)	Bricks and Clicks. Focus on grocery market in Norway	Using stated preferences to estimate market shares for e-grocery in Norway. It investigates the role of various purchase characteristics including the product price, service cost, lead-time, time window, travel time, and product range for choosing between bricks and clicks purchase channels. Results suggest that the most important characteristics for consumers are related to price, in particular, product price.
Cavallo, Sacchi and Carfora (2020)	Food consumption behaviours under Covid-19 in Italy	This paper provides an overview of the recent changes in consumption patterns that occurred as a result of the Covid-19 lockdown in Italy. It further assesses how evolutions in behaviour are intertwined with the evolution of the main food supply chains Out-of-home consumption was replaced by home meal preparation and home delivery Laggard e-commerce consumers were pushed to bridge the digital divide E-commerce platforms and instant Messaging mediated this process. Small retailers and producers benefited from this process of digital transformation
Roggeveen and Sethuraman (2020)	Retail technologies in 2020 and beyond	Provides classification and commentaries on 40 retail technologies and how they are shaping the world of retailing during the Covid-19 pandemic and beyond. Future research questions were identified including the impact of Covid-19, measuring returns on technology, collaboration, and vertical integration, organising for technology, and data privacy among others.

Moreover, Shankar et al. (2021) expand the drivers of retailer adoption of technology to include: advancement in core technology, consumer demand due to lifestyle changes, competitor innovation or adoption, safety and security, and regulation. Other studies in retail have made use of the innovation diffusion theory to explain the adoption of technology and innovation. Pantanoa and Vannucci (2019) use the innovation diffusion theory to explain the adoption of digital technology by different categories of retailers in the UK. Similarly, Kwon et al. (2021) provide an account of external pressure exerted by Covid-19 on the adoption of social medial technology by small retailers.

METHODOLOGY

The explorative nature of this review requires a qualitative research approach in examining the use of digital technologies and innovation by South African food and grocery retailers in response to the Covid-19 pandemic. The study adopted an explorative approach because the factors driving the high growth online retailing in the grocery and food retail sector under the Covid-19 pandemic are still emerging, not yet clearly defined. This is done through a review the 2020 annual reports of the top five South African food and grocery retailers, and news reports of current changes to their operations to meet the demand for online shopping and home deliveries. These retailers include Shoprite, Spar, Pick n Pay, Massmart, and Woolworths, and their annual reports are publicly available. These retailers not only dominate the South African landscape; they all also feature in Deloitte's global 250 retailer list (Deloitte, 2020) indicating the size, scale, and sophistication of their operations. This makes them reasonable targets for this study, aiming to get some understanding of the extent to which digital technologies and innovation have been used by the food and grocery retail in South African in response to the Covid-19 pandemic and how this might change the sector. The annual reports studied are summarised in Table 2.

TABLE 2
SUMMARY OF REPORTS REVIEWED

Retailer	Report
Shoprite Holdings	Integrated Annual Report, September 2020
Woolworths Holdings	Good Business Journey Report, Decenber 2020
Pick n Pay	Integrated Annual Report, Febrary 2021
Massmart (Powered by Walmart)	Integrated Annual Report, December 2020
The Spar Group Ltd	Integrated Annual Report, December 2020

The analysis is carried out within the unique context of the local retail industry. The analyses of the reports focused on their use of digital technologies, improvements to their websites for e-commerce, and innovation process and adjustment meat to their traditional operations necessitated by the Covid-19 pandemic, as well as the initial outcomes of their innovations and plan of action for the future (if any). The details of these issues are summarised and presented in Table 3 to highlight the evolving pandemic-led digital transformation of the food and grocery retail sector in South Africa.

TABLE 3
EVIDENCE FROM GROCERY AND SUPERMARKET RETAILERS

Grocery and supermarket Retail	Covid-19-led response and Digital transformation initiative
Shoprite Group	- Checkers Sixty60 Shopping App - The roll-out of Sixty60 was brought forward to assist with the growing customer demand for home deliveries. - Shoprite's virtual grocery voucher - New digital shopping channel: Sixty60 ordering and delivery app launched in 2020. - Adoption of innovative methods of payment providing more secure, immediate, and safe transaction options: introduced QR code payments. - Investment in and development of IT infrastructure: integrated all channels, brands, and products into one seamless data process. - Use of data analytics: optimised marketing spend with a targeted online and more personalised marketing approach. - Launch of digital customer-facing channels and rewards platform. - Shoprite digital business unit launched (ShopriteX) - Checkers Rush launched (a cashless and checkout-free store concept) - Launched new-look online-shopping Site for House & Home - Launched new-look online-shopping Site for OK brand
Woolworths Food	- Strategy to become a digital organisation - Woollies People App (for employees) and Woollies shopping App - Training via digital channels, and developing new digital skills - Increased online shopping capacity - Rolled Click-and-collect services, with the promise that customers will never have to leave their car. Instead, staff will deliver orders straight to the boot, at specially designated parking bays. - Enhanced online delivery capacity with additional delivery slots, and dark stores created to cope with increased demand for online shopping and home deliveries - Collaboration with platform retailers, like One cart. - Our range of physical stores, e-commerce delivery, and digital services form a strong foundation for the Omni-channel shopping experience that is fast becoming the retail norm. - Use future-fit channels for marketing and online shopping has reduced marketing waste.

Pick n Pay Stores	- ASAP Mobile App launched - Expanded digital shopping platform to meet accelerated online demand –The purchase of on-demand app Bottles and the launch of online clothing sales - Sustained investment in digital innovation - Online customers tripled; 700% growth in on-demand online service expected - Encourage customers to e-mail or WhatsApp their orders for safe collection or delivery - Rolled out Click-and-Collect services across more stores - Increased our online capacity and reach with our Bottles on-demand delivery app - Ongoing investment and innovation in an integrated online retail platform and digital infrastructure - A fully digital partnership with TymeBank - Develop further as a forward-looking omnichannel retailer. - South Africa has historically been viewed as slow in waking up to the potential of online grocery sales. - The past year has brought the future closer and has shown very clearly that the grocery retailer of the coming decade must be an omnichannel retailer - Pick n Pay is as strong in the digital world as it is in its physical footprint. - Pick n Pay extended its Click-n-Collect offer, and repositioned its one-hour liquor delivery partnership with Bottles into an on-demand essential grocery service. - Pick n Pay has led online grocery retail in South Africa for more than a decade - Pick n Pay will also integrate its various shopping channels into a new website
The Spar Group	- Relaunched the SPAR website to support stores with their online offering. - We launched SPAR Drive, a click-and-collect initiative with shopping delivered to customers' cars. - We also introduced Coolomat, an initiative that allows customers to receive their shopping at a chilled automatic redemption machine in the parking lot. - Spar embarks on a worldwide digital transformation strategy in partnership with Naveo Commerce, an end-to-end e-commerce system provider. - Spar's digital transformation project is aimed at helping it meet evolving consumer expectations and needs as part of the brand's - Better Together strategy. - Spar is possibly unique in offering an online grocery offer under a single brand in 30 countries worldwide. - Partnership with Naveo allows us to significantly build on our capability by transforming our e-commerce proposition with over 13,500 stores worldwide.

Massmart / Walmart	- Digital transformation work in progress - Massmart digital learning platform was successfully launched in November 2020 - Digitalisation is encompassed in its Omni-channel and e-commerce strategy - Partner with companies who could help us meet customer demand. - Partners such as One Cart, Uber Eats, and our internal delivery company, WumDrop, - Opportunity for us to improve our ability to get products to our customers when they want them, with every aspect of the transaction executed perfectly. - We still have much work to do in using digitalisation to enhance our e-commerce customer relationships, financial services relationships and our customer service. - Rolled out digital food safety audits for our Rest of Africa stores that were not accessible due to Covid-19 travel restrictions. - Significantly ramped up our e-commerce offering as part of our efforts to keep our customers safe during Covid-19. - Our online sales grew by 58.6% year-on-year and our Gross Merchandising Value (GMV) topped R1 billion for the first time in our history - Massmart's e-commerce sites had the second-highest share of retail website traffic in South African during 2020. - The sudden increase in volumes during the lockdown at times challenged our ability to deliver against our service commitments - During the lockdown period initially, our e-commerce sites couldn't handle the volume of online shoppers. - We responded rapidly strengthening our foundational competencies and enhancing our last-mile delivery capability - Our new Vodapay Super App partnership with Vodacom is an exciting step forward accelerating our online presence

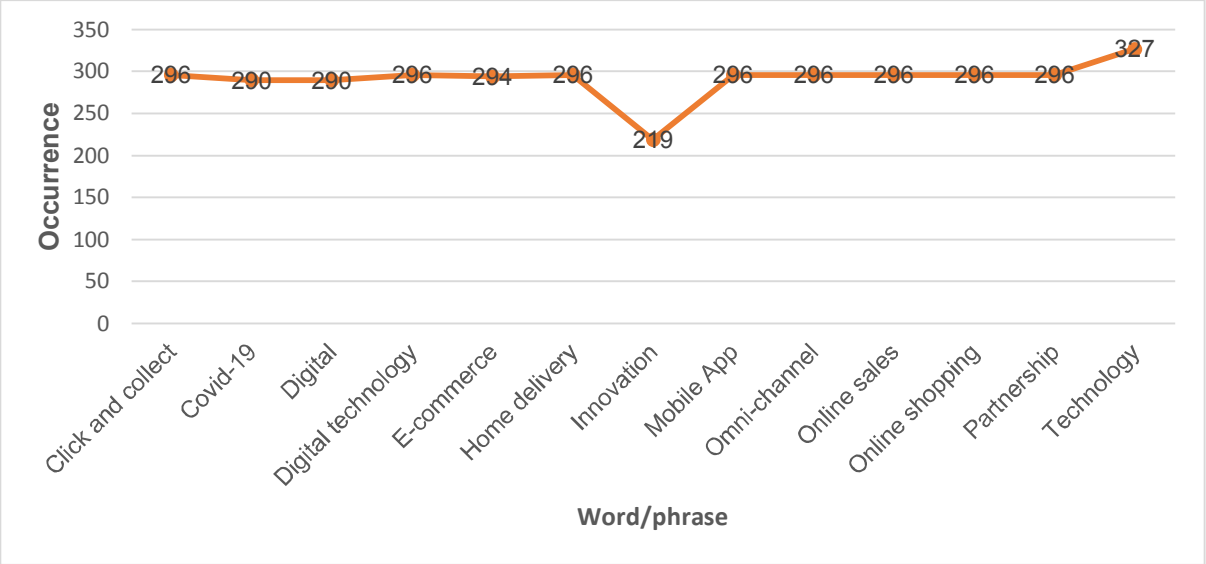
Source: Authors' summary, compiled from Company annual reports and websites (Shoprite Holdings Limited, 2020; Woolworths Holdings Limited, 2020; The Spar Group Limited, 2020; Pick n Pay, 2021; Massmart, 2020)

SUMMARY OF RESULTS

Since the beginning of the Covid-19 global pandemic, grocery and supermarket retailers quickly adapted digital technologies, developed and implemented in-house applications to manage the increase in online shopping demand. Table 3 presents a summary of the innovations, initiatives, and technologies utilised by the top five major players in the South Africa grocery and supermarket retail sector.

Evidence from Table 3 points to the fact that all the food and grocery retailers reviewed have and or considering digital technologies to enhance online sales and stay competitive. In Figure 1, we present keywords and phrases based on the count of their occurrence across the five retail reports. This is indicative of how much attention the retailers are paying to the impact of Covid-19 and the use of digital technology and innovation in response. More details on the use of these keywords phrases are highlighted in Table 3. Common themes emerging from the review of their annual reports include expanded e-commerce websites, use of digital technologies, App development and or use, recognition and preparation for an Omni-channel future, opportunities for click-and-collect, collaborations with platforms and delivery companies, and the establishment of digital business units or new formats. These emerging and issues and themes are discussed next.

FIGURE 1
KEYWORD/PHRASE COUNT ACROSS THE FIVE RETAILER REPORTS



Source: Authors' Compilation

KEY INSIGHT AND DISCUSSION

This section provides synthesis and discussion drawing from the evidence presented in Table 3, Table 4, and the literature. It is structured based on themes established from the evidence in Table 3 including: expansion of e-commerce and online sales, investment in infrastructure, strategic partnership and collaboration, and the digital transfortion of the food retail sector. Quotations are also drawn from Table 3 to support claims.

The retailers' adoption occurred at different levels in line with Rogers's (2003) categories of innovation adopters. While they are all embracing digital technologies as presented in Table 3 and Table 4, Spar and Massmart appear to be innovators when it comes to technologies like Mobile Apps because they are have not adopted this technology (cf Rogers, 1995, 2003) . In the same vein, the rest of the retailers [Shoprite, Woolworths and Pick n Pay] are early adopters in this regard, having already launched their own mobile Apps. Moreover, all the retailers were running fullsteam click-and-collect programmes, pushing them to reach an early majority stage of adoption with this innovation.

The rate of the adoption of technology and innovation was driven by the Covid-19 pandemic, which influenced lifestyle changes among customers, demand for technology, and competitors' innovativeness, as outlined by Shankar et at. (2021). The speed at which the adoption of technology and innovation is occurring among the retailers brings changes in the structure and functioning of the food and grocery retail market in South Africa, reflecting the kind of social change contemplated in the diffusion of innovations theory (Rogers, 2003). It also further highlights the desperation that came with the Covid-19 pandemic as a driver of adoption and the rate of adoption might lead to a late majority stage of adoption sooner, as the "new normal" in retailing persists.

EXPANSION OF E-COMMERCE AND ONLINE SALES

Driven by the pandemic, all the five retailers have considered e-commerce options as a good alternative to reaching their customers while keeping them safe. This has occurred in varying degrees across the five retailers. Although the Spar group has provided e-commerce services elsewhere in Europe, they have not provided that option to their South African consumers during the pandemic in 2020, placing it in the innovator category as per the diffusion theory. This might change with Spar's move to provide more e-commerce options globally in "*partnership with Naveo Commerce, an end-to-end e-commerce system provider*" [Spar Group]. Spar's late consideration of e-commerce options appears to be in response to competitive pressure emerging from especially Shoprite, Pick n Pay, and Woolworths, as Massmart has a more general merchandise orientation.

The rest of the retailers (Pick n Pay, Shoprite, Massmart/Walmart and Woolworths), some of whom have had experience and e-commerce infrastructure prior to the Covid-19 pandemic, have intensified their online offering aided by their adoption of digital technologies. With high growth in online sales 2020, these retailers are poised to invest move in their e-commerce and digital retail infrastructure. For example, Pick n Pay forecasted a 700% growth in online sales in 2020, while Massmart grew online sales by 58.6% year on year [Pick n Pay]. Another general observation during the review of the retailers' reports was the innovative initiatives taken by a majority of these retailers to enhance their operations and contribute to the online sales recorded. These include opportunities for customers to e-mail their orders and collect them later, use WhatsApp messaging to place their food and grocery orders, and collect later via drive-through. The alternative delivery modes provided are in line with what Hood et al. (2020) refer to as localised infrastructure to support the particular context.

INVESTMENT IN INFRASTRUCTURE

The demand for click-and-collect and home deliveries from food and grocery shoppers, as recorded globally (Goddard, 2020), have also forced the South African retailers in this sector to invest in more digital infrastructure in order to cope with this demand locally. As Massmart reports, "*Massmart's e-commerce sites had the second-highest share of retail website traffic in South African during 2020",* and *"the sudden increase in volumes during the lockdown challenged our ability to deliver against our service commitments at times*", as "*during the lockdown period initially our e-commerce sites couldn't handle the volume of online shoppers*". [Massmart] The sudden rise in demand in online purchase has indeed posed a challenge to food and grocery retailers, especially those who had not previously prioritised electronic and digital channels in their operations. As observed by Accenture (2019), in the South African context, most retailers in the category had online presents only as a me-too strategy and did not reinvest the gains from online sales to grow the platforms. It also points to how comfortable these major retailers were pre-Covid-19 in respect of their sales and profit from the physical stores.

The sudden Covid-19 shock, therefore, presented a forced opportunity to upgrade their systems in innovative ways. All five retailers had to increase their online capability by immediately upgrading their websites, and rolling out click-and-collect opportunities. Spar relaunched its website and introduced Spar drive for click-and-collect options, Massmart indicates that "*we significantly ramped up our e-commerce offering as part of our efforts to keep our customers safe during Covid-19, and enhancing our last mile deliver capability*". [Massmart]. Pick n Pay talks about an "*ongoing investment and innovation in an integrated online retail platform and digital infrastructure*" [Pick n Pay], while Shoprite and Woolworths report on new and futuristic channels; "*customer-facing channels*" [Shoprite].

Further to this, Shoprite, Pick n Pay and Woolworths have all developed their mobile Apps as part of their digital transformation process and for a more digital shopping engagement with their customers. In hinting at its strategy to become a digital organisation, Woolworths introduced two mobile Apps; the Woollies People App (for employees) and Woollies shopping App for engaging with customers. Pick n Pay's ASAP App and Bottles on-demand App are both making customers' lives easier, while the Checkers brand of Shoprite ensures that customers get their food grocery deliveries within 60 minutes through its sixty60 mobile App. All these are Covid-19-led innovations that are set to revolutionise the South African food and grocery retail environment. Interestingly, Shoprite, the largest food retailer in Africa, is showing market leadership by establishing a digital business unit (ShopriteX) and launching a new retail format through its Checkers brand called Checkers Rush. Checkers rush is a cashless and checkout-free store concept similar to Amazon Go. This is an indication of the new retail revolution in South Africa, and the scramble for digitally savvy customers in the middle and the upper classes.

STRATEGIC PARTNERSHIPS AND COLLABORATIONS

Interestingly, there appears to be several partnerships and collaboration arrangements emerging from the reports across the board. These collaborative arrangements mostly occur around technology, innovation, and home delivery of products or the last mile. While Shoprite reports collaborations within its supply chain network to bring improved efficiencies and lower prices to customers, its new business unit (ShopriteX) is said to be the collaboration hub and engine to drive innovation by bringing data analytics, digital technologies, and talent together to shape the path for its digital transformation. Shoprite appears to be positioning itself to respond to the logistical and operational challenges of the online offering, and how they influence price and customer behaviour (Siawsolit & Gaukler, 2021; Vaz de Magalhaes, 2021).

The rest of the reports highlight partnerships and collaborations with players in customer-facing technologies. For example, Spar "*embarks on worldwide digital transformation strategy in partnership with Naveo Commerce, an end-to-end e-commerce system provider*", an effort which will allow them to provide "*an online grocery offering under a single brand in 30 countries worldwide*". This initiative will have some competitive benefits for Spar's operations in South Africa as one of the later comers to the online business. Similarly, Massmart is leveraging its partnership with One Cart (a local grocery delivery platform that allows shoppers to shop from multiple stores), Uber Eats (food delivery service provider), and its own internal delivery company, WumDrop to meet the rising home delivery demand. Another partnership arrangement forged by Massmart is with Vodapay Super App, which allows for customers to pay for their orders in a conveniently way. The availability of these partners and technology providers corresponds with Rogers's (2003) assertion of how innovation is diffused through nodes, social networks, and communication channels, which act as enablers.

Such collaborations may be necessary for the South African food and grocery retail sector to widen the reach of customers by both parties (Chopra, 2016). Chopra's idea of hybrid structures could particularly assist SMEs to navigate this digital retail revolution. Moreover, these partnerships and collaborations could result in retail disintermediation in the future (cf. Shankar et al., 2021). A situation where producers will use platform retailers to bypass the major retailers like the ones studied here and market directly to the customers. Yet, this scenario could be a game-changer in an industry dominated by big players.

DIGITAL TRANSFORMATION OF THE FOOD RETAIL SECTOR

All the retailers report on their move towards digital transformation and the new future of food and grocery retailing in South Africa propelled by the Covid-19 pandemic. In the same breath, Omni-channel operations powered by digital technologies are envisaged to be the post-pandemic reality in their sector. This is an interesting turn of events for the champions of the South African retail industry, which did not take online food and grocery seriously before the pandemic (cf. Accenture, 2019).

As Pick n Pay reports, "*South Africa has historically been viewed as slow in waking up to the potential of online grocery sales; the past year has brought the future closer, and has shown very clearly that the grocery retailer of the coming decade must be an Omni-channel retailer*."

In the same vein, "*Spar's digital transformation project is aimed at helping it meet evolving consumer expectations and needs*", just as in the case of Massmart, "*Digital transformation work in progress" and "digitisation is encompassed in our Omni-channel and e-commerce strategy*".

Woolworths believes that its "*range of physical stores, e-commerce delivery, and digital services form a strong foundation for the Omni-channel shopping experience that is fast becoming the retail norm*" [Woollworths].

It is therefore not surprising to see new formats like the Checkers Rush of the Shoprite group emerging to take advantage of the new digital food and grocery retail revolution in South Africa.

Table 4 presents a summary of the digital technologies in use by the retailers concerned. Table 4 draws from the evidence presented in Table 3, and summarises the technology and innovation used or dopted by the retailers studied.

TABLE 4
SUMMARY OF THE DIGITAL TECHNOLOGIES AND INNOVATION

Organisation	Technology and Innovation
Shoprite	Mobile App, QR code payment, Virtual shopping voucher, data analytics, Website, AI, Click-and-collect. digital business unit and campus, unmanned concept store.
Woolworths	Mobile App, click-and-collect, Dark stores. e-commerce Website, home deliveries, reduced marketing waste, special loading zones for click-and-collect drive through digital skills development.
Pick n Pay	Mobile App, Social media, E-commerce Website, home delivery, click and click, e-mail shopping, partnership with TymeBank, bottles on-demand delivery App.
Massmart	E-commerce Website, click-and-collect, home delivery, digital food safety audits, use of Vada pay, Uber eats, One cart, WumDrop.
Spar	E-commerce Website, click-and-collect, Coolomat, partnership with Naveo Commerce

Source: Compiled by Authors

LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

The adoption of customer-facing technologies and innovation in food and grocery retailing has been slow globally and more so in South African due to the complex nature of grocery operations. The demand for online food and grocery purchases and home deliveries driven by the Covid-19 pandemic has changed this narrative. While this article looks at how food and grocery retailers are responding to this situation and their use of digital technologies to meet their customers' needs and stay competitive, it is not exhaustive, as the situation is constantly evolving. The following research questions can be investigated further:

- How would the increased digitisation of food and grocery retailing affect food prices and the urban poor in South Africa as cheaper prices may move online?
- How would digital transformation impact retail properties (malls) in South Africa as the need for more dark stores and warehousing increases to support home deliveries?
- What are the implications of retail click-and-collect pick-up points and increased home deliveries services on urban planning and retailer development in South Africa?
- How does the digital retail transformation impact skills development of retail professional development in a country where such skills may be in short supply?
- How can retailers use their online sales platform and digital tools to minimise marketing waste and/or food waste in the food and grocery retail value chain?

CONCLUSION

The food and grocery retail sector has been slow in its preparedness to offer online shopping opportunities to their customers globally due to logistical and operational difficulties in handling fresh produce to meet customer expectations. In South Africa, major food and grocery retailers have enjoyed market dominance under generous retail spaces in the form of shopping malls and centres, where they often present as anchor stores, and the pressure to offer online options was little. The Covid-19 pandemic has disrupted this modus operandi with an urgent need to provide online shopping opportunities and home deliveries in ways that can project both staff and customers.

The response to this has seen a significant increase in retail sales, setting the country on a new trajectory towards a food and grocery retail digital transformation. We show in this review of the online activities and use of digital technologies and innovative processes in the sector that the future food and grocery retailing in South African will be a hybrid fusion of offline and online retailing facilitated by digital technologies.

Finally, while big players (Shoprite, Pick n Pay, Woolworths, Spar, and Massmart) may still dominate in the online space, leveraging their existing dynamic capabilities, the growth of pure-play and platform retailers may compete adequately. In the same vein, SMEs and independent producers can implement the use of digital tools and technologies to access and present alternative options to customers. All these scenarios require further research as outlined earlier and can present benefits to the South African food and grocery sector.

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Has COVID-19 changed interaction in brick-and-mortar stores? A study on self-checkouts

Javier Lorente-Martínez *
EAE Business School, Madrid, Spain.
javier.lorente@ediacara.es
https://orcid.org/ 0000-0002-1853-6941
*Corresponding author

Ana Laguía
Universidad Nacional de Educación a Distancia (UNED), Madrid, Spain.
aglaguia@psi.uned.es
https://orcid.org/0000-0002-4634-3127

Julio Navío-Marco
Universidad Nacional de Educación a Distancia (UNED), Madrid, Spain
jnavio@cee.uned.es
https://orcid.org/0000-0001-5163-9777

Beatriz Rodrigo-Moya
Universidad Nacional de Educación a Distancia (UNED), Madrid, Spain.
brodrigo@cee.uned.es
https://orcid.org/0000-0003-1619-5714

ABSTRACT

The COVID-19 pandemic means a major disruption in brick-and-mortar stores. Customer-Facing InStore Technologies (CFIST) perception may be modified as new requirements and concerns arise when interacting in the physical space. Through surveys conducted before and after the COVID-19 lockdown, this study brings relevant findings about the impact of the pandemic in the retailer perception of a specific CFIST technology, Self-Checkout systems (SCO). We used a simplified adoption framework including a new construct, *Safety to Use*, to analyse the impact of health concerns in CFIST. Results show that both *Perceived Enjoyment* and *Safety to Use* are relevant predictors of the *Attitude towards SCOs*, and that *Retailer Perception* is strongly influenced by the *Attitude towards SCOs*. This study is one of the first to study the impact of COVID-19 in retail technology. Results can help to improve the deployment of this technology after the pandemic and may be extended to other CFIST technologies, setting new avenues of research for technology adoption scholars.

Keywords: Self-Checkout, COVID-19, Self-Service Technology, Brick-and-Mortar

INTRODUCTION

The retail sector has been suffering an important transformation in the last few years, mainly due to the disruption generated by e-commerce (Lal and Chavan 2019; Hagberg *et al.* 2016). Although retailers have embraced the omnichannel business, implementing e-commerce or click and collect services, there is still an important part of the business generated in the physical space (Clement, 2019; Sheth, 2021). Customers expect improved experiences in the brick-and-mortar stores, that help them to buy quicker and with a higher satisfaction and control (Spanke, 2020; Wilson, 2013). Customer Facing In-Store Technologies (CFIST) (Betzing *et al.*, 2018; Shankar *et al.*, 2020) play a major role in the evolution of the experience for two main reasons. First, customers are increasingly improving their technological skills in all aspects of their life and are used to interact with the environment digitally, expecting retailers to follow them (Baier and Rese, 2020). Parasuraman (2000) states that any kind of customer experience, satisfaction,

or loyalty, is mediated by the impact of technology. Second, CFIST bring benefits to retailers as they improve the information of the customer interactions, optimize supplies related processes, and integrate their online and offline channels through digitalization (Grewal *et al.*, 2020; Hänninen *et al.*, 2021).

Unfortunately COVID-19 has worsened the situation, generating a major disruption of the physical retail environment (Pantano *et al.*, 2020). Stores were fully closed in several countries. Once reopened, stores have faced important modifications of the customer experience. Health related measures, like social distancing, temperature screening, or single person entry, to name a few, impacted heavily in the shopping experience (Purcărea, 2020; Surendra and Lakshmi, 2020). As some of the consumers perceptions and beliefs will stay in the long term, once the pandemic is controlled (Roggeveen and Sethuraman, 2020a), it is relevant to review the impact of COVID-19 in the way that customers perceive and adopt CFIST technologies.

The objective of this work is to answer the following questions: Are there differences of perception about Self-Checkout (SCO) technology before and after the COVID-19 lockdown? Will health and safety become relevant to predict CFIST adoption? Our research will analyse SCO technology in grocery stores. Among the different retail subsectors, grocery is following a slower pace of e-commerce adoption than others (Bauerova, 2019; Dannenberg *et al.*, 2020; Statista, 2022), due to the perception of customers that some products as meat or vegetables need to be seen and chosen by themselves (Zorzini 2018; Kühn *et al.* 2020), making CFIST more relevant. Among the different technologies, scholars consider SCO a relevant solution in this environment (Lee and Yang, 2013; Rivera *et al.*, 2021).

This work delves into the customer's perception of SCO technology in grocery stores before and after the pandemic. Through a survey conducted in March 2020 and repeated in June 2020 (before and after the lockdown), we analyse the differences in attitude towards use and retailer patronage, including the criteria of health risk for the post-pandemic survey. To the best of our knowledge, this is the first work to include health risk as an attribute in technology adoption model, so our results bring unique findings for both SCO adoption and the impact of health risk in technology usage, opening several avenues of research for the post pandemic retail experience.

The rest of the document is structured as follows: In the next section we set the theoretical grounds of our research, analysing the existing literature of SCO and the situation that COVID-19 has created in retail. We then develop in the third section the conceptual model that we use for the empirical analysis in the fourth section. We discuss our results in the following section, and finish our paper with relevant conclusions, recommendations, and new avenues of research.

2. THEORETICAL BACKGROUND

2.1 OVERVIEW OF SELF-CHECKOUT TECHNOLOGIES

A Self-Checkout (SCO) may be defined as a system that "enables customers to place their merchandise on the counter and scan the items on their own, at the end of their shopping trip and after waiting in a checkout line" (Djelassi *et al.* 2018, p. 41). The first SCO was installed in 1992 in Price Chopper Supermarkets (Inman and Nikolova, 2017). SCOs are generally considered as a Self Service Technologies (SST), but such category is heterogeneous from adoption perspective due to its breadth, as it includes also mobile apps, ATMs or e-services (Kaushik and Rahman, 2015; Meuter *et al.*, 2000). For the purpose of our work, we follow the extant literature that includes SCOs as a CFIST technology (Balaji *et al.*, 2018; Grewal *et al.*, 2020; Kim *et al.*, 2017; Roggeveen and Sethuraman, 2020b; Roy *et al.*, 2017; Vojvodić, 2019; Willems *et al.*, 2017) as CFIST have their specificities from a customer adoption perspective (Lee 2015; James 2014; Djelassi *et al*, 2018; Inman and Nikolova 2017).

The installation of SCOs has steadily increased in the last decade and keeps its pace (Grand View Research, 2022; James, 2014; Thomas-Francois and Somogyi, 2022). SCOs offer to retailers several benefits, as improved efficiency, decreased costs, or increase productivity (Kazancoglu and Kursunluoglu, 2018; Lee and Lyu, 2016). It has also a positive impact in customer experience and a growing percentage of customers prefer to use them (Kats, 2020;

O'Shea, 2019; Statista, 2019). From an experience perspective, SCOs are a key element in the overall customer experience that leads to satisfaction and loyalty to brands (Chiguware, 2022; Verhoef *et al.*, 2009) and gives more control to consumers (Demoulin and Djelassi, 2016). The usage of SCO speeds up checkout and reduce waiting time in queuing (Kokkinou and Cranage, 2013; Vannucci and Pantano, 2019), but it changes also the feeling of the time spent as it turns a passive activity (queuing) into an active activity (scanning and packing) (Marzocchi and Zammit, 2006). Only specific profiles of customers are reluctant to their use, as they expect human interaction instead of a machine interaction (Chen *et al.*, 2021; Jackson *et al.*, 2014). SCOs are an appropriate option to evaluate technology adoption, as they are broadly deployed and therefore a majority of people has used them. Furthermore, all SCOs have very similar characteristics, reducing perception bias (Lee *et al.* 2013).

2.2 ADOPTION OF SELF-CHECKOUT TECHNOLOGIES

Although there is extant literature about SST adoption (Kallweit *et al.*, 2014; Liang *et al.*, 2021a; Rinta-Kahila *et al.*, 2021) and CFIST adoption (Inman and Nikolova, 2017; Betzing *et al.,* 2018; Lorente-Martínez *et al.,* 2020), only few of the studies focus specifically on grocery SCO systems and the impact they have in customer's perception of the service, and this field is considered understudied by scholars (Fernandes and Pedroso, 2017; Inman and Nikolova, 2017), although it is raising interest in the last years. The literature available highlights four main findings that affect SCO adoption. First, the quality of the SCO implementation is key to customer satisfaction and customer loyalty (Demirci Orel and Kara 2014; Lee *et al.* 2009; Collier and Kimes 2013; Fernandes and Pedroso 2017). Second, personality and personal traits impact in the perception and adoption of SCOs (Lee and Leonas, 2021; Lee and Lyu, 2016; Liang *et al.*, 2021b). Third, past usage and experience is a better predictor of SCO use than actual intention (Demoulin and Djelassi, 2016; Lee, 2015; Simões *et al.*, 2022). Fourth, the perceived control, as a facilitating condition, boost the intention to use them (Fernandes and Pedroso, 2017; Le *et al.*, 2022). Other studies address the attitude towards co-producing a service as a predictor of positive attitude to use the service (Eastlick *et al.*, 2012; Thomas-Francois and Somogyi, 2022), the favourable ethical acceptance of SCOs (Fullerton *et al.* 2017), the social acceptance of its usage (Kinard *et al.* 2009) or the perceived enjoyment (Demoulin and Djelassi, 2016; Lee and Leonas, 2021) . Situational factors like order size, wait-time tolerance or the presence of other customers or employees have been also found as having a strong influence in SCOs decisions (Collier *et al.*, 2015; Yi and Kim, 2017). Only two studies addressed perceived risk related with SCOs adoption, but did not found any relationship (Jeon *et al.*, 2020; Kazancoglu and Kursunluoglu, 2018). Furthermore, the questions asked to assess risk were related with the malfunction of the system rather than health or safety dimensions.

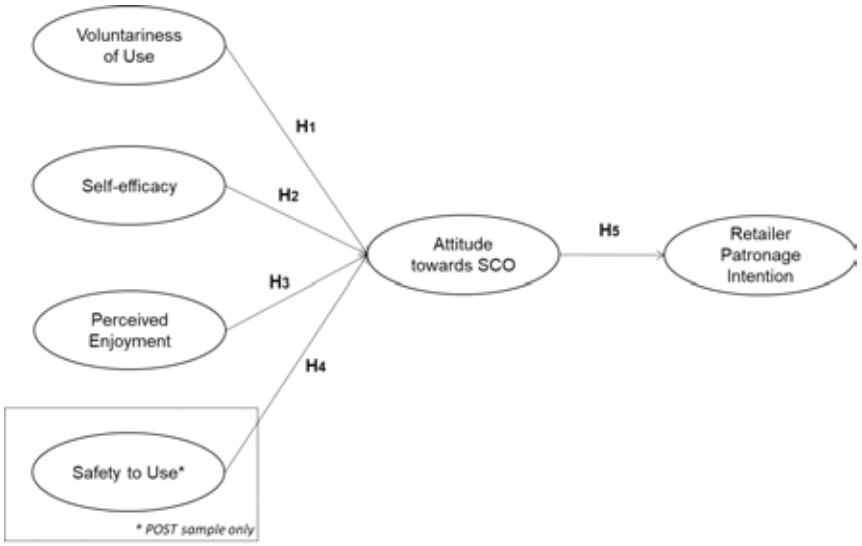
2.3 IMPACT OF COVID-19 IN CUSTOMER EXPERIENCE

The full impact of COVID-19 in the society is still to be estimated as the pandemic continues, but the reality is already devastating (Nicola *et al.*, 2020). Consumer's psychology has been dramatically impacted (Dvorak *et al.*, 2021; Kirk and Rifkin, 2020) and it is difficult to anticipate what perceptions will last in the long term. In disruptive events, the first behavioural changes are connected to safety (Donthu and Gustafsson, 2020; Roggeveen and Sethuraman, 2020a). Grocery stores implemented several measures to protect health that impacted in customer experience, like social distancing, sanitizer usage, temperature screening, announcements, time limits, or contactless payments (Martin-Neuninger and Ruby, 2020; Surendra and Lakshmi, 2020). Contactless interactions are becoming more relevant in the customer experience, not due to their convenience but to their safety; social distancing will accelerate online retailing but also non-human interactions in the physical space (Chang, 2021; Kirk and Rifkin, 2020). Brick-and-mortar grocery stores will still play a relevant role in the future (Babin *et al.*, 2021; Dannenberg *et al.*, 2020; Grashuis *et al.*, 2020) and therefore we can anticipate the relevance of self-service solutions like SCOs to avoid contact.

3. CONCEPTUAL MODEL

The main goal of our research is to see how CFIST technology adoption may be impacted by COVID-19 and how the emergent concern about safety can impact in customer's perception. Taking survey data from ongoing research prior to the pandemic, we simplified the research framework and conducted a second survey once the lockdown was finished, including health risk related questions. Such framework, that can be seen in Figure 1, was then analysed before and after the COVID-19 lockdown (March and June 2020). We have not based our simplified framework in a specific model but in specific constructs frequently present in the literature and relevant for our research question. According to Fernandes and Pedroso (2017), there is no evidence of a widely accepted model for SST adoption. Although TAM (Davis, 1989) is broadly used to explain technology adoption (Kallweit *et al.* 2014), it cannot explain completely SCO adoption (Curran and Meuter, 2005), as SCO technology aggregates self-service adoption characteristics (Kelly *et al.*, 2010). Another work suggests that perceived usefulness, a relevant component of TAM, is not relevant for SST technologies (Dabholkar and Bagozzi, 2002).

FIGURE 1:
PRE AND POST RESEARCH MODELS



3.1 VOLUNTARINESS OF USE

Customers must perceive the value gain of using SCOs (Hilton *et al.*, 2013). They will decide to use them if they obtain clear benefits beyond the interests of the retailer (Fernandes and Pedroso, 2017). The perception of SCOs and self-service in general is heavily influenced by customer personality (Jackson *et al.* 2014; Lee *et al.* 2010; Lee and Lyu 2016). As personality traits cannot be controlled by retailers, forcing customers to use SCOs may reduce patronage and increase technology anxiety (Lee, 2015). *Voluntariness of use* is a moderating variable of the UTAUT model (Venkatesh *et al.*, 2003), and may is defined as whether or not a customer may choose to use the technology (Rawstorne *et al.*, 2000). It becomes relevant in a post COVID-19 scenario, as the pandemic has modified the capacity of stores, increased waiting times, and forced contactless transactions, reducing customer choices at checkout (Surendra and Lakshmi, 2020). According to this, we state:

H1: *Voluntariness of Use* **has a positive impact in** *Attitude towards SCO***.**

3.2 SELF-EFFICACY

Self-efficacy is well grounded in technology adoption theories (Bandura, 1978) and is related to the confidence of having the skills to use the technology and appears positively related with satisfaction in the literature (Demoulin and Djelassi 2016; Wang *et al.* 2013). A similar description appears in the literature for perceived control (Fernandes

and Pedroso, 2017), showing also a positive relationship with attitude and repeated patronage (Wang 2012). Another related concept, technology anxiety, defined as the fear to use technology, appears as a strong reverse predictor of SCOs usage (Meuter *et al.*, 2003; Oyedele and Simpson, 2007). Self-efficacy and the lack of technology anxiety improve perceived control (James, 2014) that leads also to satisfaction (Marzocchi and Zammit, 2006), supporting the relationship among them. Self-efficacy becomes then a relevant comparison element between the PRE and POST COVID-19 scenarios. Therefore, we state that:

H2: *Self-efficacy* **has a positive impact in** *Attitude towards SCO.*

3.3 PERCEIVED ENJOYMENT

Perceived Enjoyment is the perception of a customer that the usage of a technology is enjoyable, and is related with the hedonistic reasons to use the technology (Wang, 2012). Several studies relate positively perceived enjoyment with SST adoption: It increases satisfaction and delight (Collier and Barnes, 2015; Fernandes and Pedroso, 2017; Marzocchi and Zammit, 2006), reduces anxiety (Wang, 2012), increases service quality perception (Demirci Orel and Kara, 2014), and is a better predictor of SST adoption than usefulness (Jones *et al.*, 2006), making it a valuable construct for the analysis of PRE and POST COVID-19 scenarios. Therefore, we propose the following:

H3: *Perceived Enjoyment* **has a positive impact in** *Attitude towards SCO***.**

3.4 SAFETY TO USE

We define *Safety to Use* as the perception of individuals that their health is safe when using the technology. Although there is no precedent of usage of this construct for technology adoption, the concept is well grounded by previous research. COVID-19 has forced several safety measures and new consumers perceptions (Surendra and Lakshmi, 2020; Zwanka and Buff, 2020), and customers will most likely put safety first in their new behaviours (Donthu and Gustafsson, 2020; Hahm *et al.*, 2019). Furthermore, previous studies did include perceived risk as relevant construct for technology adoption, defined as the perception of potential negative consequences when adopting a specific technology (Roy *et al.*, 2017). Although perceived risks related with SCO have been more of social and performance nature, (Dabholkar *et al.*, 2003; Kazancoglu and Kursunluoglu, 2018; Meuter *et al.*, 2005), and have being found as non-relevant for SCOs (Eastlick *et al.*, 2012), we expect customers to evaluate any future interaction in the physical space considering the potential risks for their health due to contagion. Therefore, we state that:

H4: *Safety to Use* **has a positive impact in** *Attitude towards SCO.*

3.5 ATTITUDE TOWARDS SCOS AND RETAILER PATRONAGE INTENTIONS

There is extant literature relating attitude with technology adoption. Attitude is a very common antecedent of intention in adoption models as TAM (Davis, 1989), and can be regarded as a full mediator of intention in CFIST technologies (Kim *et al.* 2017; Lee *et al.* 2006; Kim and Forsythe 2007). Literature shows a positive impact of SCOs adoption in retailer patronage intentions and vice versa. Inman and Nikolova (2017) suggested that the behavioural intention to use CFIST technologies are mediated by the perception of the retailer. According to Lee (2015), customers prefer to shop in retailers where the option to use SCO is available, and this creates an halo effect, creating a positive attitude towards SCOs. Patrons are more satisfied with the store when they use SCOs (Djelassi *et al.*, 2018). Customers perceive SCOs as an element of the overall experience and therefore they associate positive usage of SCOs with retailer patronage (Fernandes and Pedroso, 2017). According to this, we state the following:

H5: *Attitude towards SCO* **has a positive impact in** *Retailer Patronage Intention***.**

4. METHODOLOGY

4.1 INSTRUMENT

An ad hoc online survey was developed using the Qualtrics survey platform to empirically test the conceptual model, as there was no standardised instrument for the scope of the research. Online survey is the most frequent methodology used in technology adoption literature (Choudrie and Dwivedi, 2005). Some of the advantages of conducting it online are wider geographical reach, reduced costs and quicker response times (Lee and Yang 2013). The survey consisted of 17 items, including questions about age, gender, and previous experience. An explanation of the SCOs including a picture was presented prior to the questions. Scales were adapted from existing literature, modifying the wording to adapt it to the context. The list of items and their origin can be found in Table 1.

TABLE 1:
INSTRUMENT

Variable	Item		Source (adapted)
Voluntariness of Use	VOL_1	I can decide to use the Self-Checkout or not in the places where I buy	Venkatesh *et al.* (2003)
Self-Efficacy	SEE_1	I believe that using Self-Checkout is a task I can perform well	Lee&Lyu (2016)
Perceived	PEE_1	Shopping using Self-Checkouts is more interesting	Demirci Orel&Kara (2014)
Enjoyment	PEE_2	I enjoy using Self-Checkouts	Fernandes&Pedroso (2017)
	PEE_3	It is fun to check out the items yourself	Fernandes&Pedroso (2017)
Safety to Use	SAF_1	Self-Checkouts are not risky as they reduce the physical contact	Kazancoglu *et al.* (2018)
	SAF_2	Self-Checkouts are not risky as they allow social distancing	Kazancoglu *et al.* (2018)
	SAF_3	Overall, using Self-Checkouts is not risky	Meuter *et al.* (2005)
Attitude	ATT_1	As a customer, Self-Checkout are Ineffective - Effective	Lee&Lyu (2016)
towards SCO	ATT_2	As a customer, Self-Checkout are Impractical - Practical	Lee&Lyu (2016)
	ATT_3	As a customer, Self-Checkout are Not helpful - Helpful	Lee&Lyu (2016)
Retailer	RPI_1	I prefer groceries that have Self-Checkouts	Lee (2015)
Patronage	RPI_2	I will shop again in stores with Self-Checkouts	Lee (2015)
Intention	RPI_3	I would recommend a store with Self-Checkouts to a friend	Lee (2015)

A five-point Likert scale, from “Totally agree” to “Totally disagree” was used, except for characterization questions (age, gender, and previous experience) and *Attitude towards SCO* (semantic differential, e.g., positive / negative). To make results more easily understandable, we reversed all scores such as low values represent disagreement and high values represent agreement with each statement. Items were presented in a random order to each respondent to avoid bias. A pilot study was conducted. The preliminary version of the PRE questionnaire was tested on 30 consumers that were requested to give extra feedback about the clarity, length or meaning of the items, that led to wording modifications. Due to the differences of *Safety to Use* (new variable in the POST questionnaire) with previous literature, an extra validation was done in two steps. First, 10 individuals were requested to suggest modifications to existing literature questions. Then, the questions were presented to other 10 individuals asking them to suggest the purpose of such questions, confirming that the items represented safety related topics.

Regarding common method bias, we took different measures, both procedural and statistical, to minimize risks. As mentioned above, we first conducted a two-step pilot study to make sure that items were clear in order to avoid ambiguous items and, therefore, participants’ reliance on systematic response tendencies such as a midpoint response style. Second, the questionnaire was anonymous to reduce social desirability. Third, items were randomly presented to participants. Fourth, we ascertained that Variance Inflation Factors (VIF) were lower than 3.3 as the occurrence of greater values is considered in PLS-SEM an indication of pathological collinearity and potential contamination of the model by common method bias (Kock, 2015). Regarding validity, we calculated for all the variables the Average Variance Extracted (AVE) values (Table 5). The AVE value for each variable represents the amount of variance that is captured by the construct in relation to the amount of variance due to measurement error (Fornell and Larcker, 1981). All AVE values are above the recommended threshold of 0.50, showing that the variance captured by the construct is larger than the variance due to measurement error, which is an indicator of good convergent validity. In order to assess the constructs’ discriminant validity we applied the Fornell and Larcker’s (1981) criterion, this is, $\sqrt{AVE}$ values for each variable in the model are greater than the correlations with the other study variables. These measures exhibit discriminant validity. Construct validity of the measures allows us to rule out substantial method effects. Last, reliability coefficients (Cronbach’s alphas and composite reliability) range between 0.69 and 0.93 (see Table 5), close to or over the recommended value (0.70).

4.2 SAMPLE AND PROCEDURE

Field work was conducted in two moments: March 2020, before COVID-19 lockdown in Spain (PRE sample), and May-June 2020, once the lockdown finished (POST sample). PRE field work did not include the *Safety to Use* variable, as at that moment there was no forecast of the reach of the pandemic; this variable (three items) was included for the POST field work. In both cases, the snowballing procedure was used, as it is considered effective in the literature specifically for self-service technologies (Considine and Cormican, 2017). Social networks were also used to distribute the survey.

The demographic composition of PRE and POST samples is presented in Table 2.

TABLE 2:
DEMOGRAPHIC COMPOSITION OF PRE AND POST SAMPLES.

PRE sample				POST sample			
	Variables		%		Variables		%
TOTAL	n_{PRE}	416		TOTAL	n_{POST}	286	
	Gender	Male	52.9		Gender	Male	49.0
		Female	47.1			Female	51.0
	Age	18 – 25	3.4		Age	18 – 25	1.4
		26 – 35	7.9			26 – 35	5.6
		36 – 45	18.8			36 – 45	22.4
		46 – 55	52.6			46 – 55	55.2
		56 – 65	11.8			56 – 65	11.5
		> 65	5.5			> 65	3.8
No SCO previous experience	n_{PRE0}	11	2.6	No SCO previous experience	n_{POST0}	16	5.6
	Gender	Male	81.8		Gender	Male	37.5
		Female	18.2			Female	62.5
	Age	18 – 25	0		Age	18 – 25	0
		26 – 35	0			26 – 35	0
		36 – 45	18.2			36 – 45	0.3
		46 – 55	27.3			46 – 55	43.8
		56 – 65	9.1			56 – 65	25.0
		> 65	45.5			> 65	31.2
SCO previous experience	n_1	405	97.4	SCO previous experience	n_2	270	94.4
	Gender	Male	52.1		Gender	Male	49.6
		Female	47.9			Female	50.4
	Age	18 - 25	3.5		Age	18 - 25	1.5
		26 - 35	8.1			26 - 35	5.9
		36 - 45	18.8			36 - 45	23.7
		46 - 45	53.3			46 - 55	55.9
		56 - 65	11.9			56 - 65	10.7
		> 65	4.4			> 65	2.2

The PRE sample consisted of 416 participants (52.9% male, 47.1% female). Data were collected between March 5th and March 14th, 2020, before the enactment of the lockdown in Spain. As high as 97.4% (n_1 = 405 participants) had used SCOs before. Although we found some differences between users and non-users in their responses, the number of non-user's responses was too small to reach conclusions. Comparison between male and female participants only resulted in significant difference in one item "I will shop again in stores with Self-Checkouts" (RPI_2; male, n = 220: M = 3.12, SD = 1.16; female, n = 196: M = 2.85, SD = 1.11; t = 2.43). Regarding age groups, we found differences only in four items: "I believe that using Self-Checkout is a task on which I can perform well" (SEE_1; $F(5, 410) = 3.72$, p = .003), "Shopping using Self-Checkouts is more interesting" (PEE_1; $F(5, 410) = 3.39$, p = .005), "I enjoy using Self-Checkouts" (PEE_2; $F(5, 410) = 3.54$, p = .004), and "As a customer, Self-Checkout are Not helpful - Helpful" (ATT_3; $F(5, 410) = 2.34$, p = .041). In general, participants over 65, and in some cases aged 55-65, showed slightly lower scores than younger participants.

The POST sample consisted of 286 participants (51% female, 49% male). Data were collected between May 5th and June 22nd, 2020, once lockdown was lifted in Spain. 94.4% (n_2 = 270 participants) had used SCOs at least once, in line with the PRE sample. Comparison between genders only resulted in significant differences in two items: "I enjoy using Self-Checkouts" (PEE_2; male, n = 140: M = 3.16, SD = 1.23; female, n = 146: M = 3.48, SD = 1.26; t = -2.14), and "I will shop again in stores with Self-Checkouts" (RPI_2; male: M = 3.04, SD = 1.19; female: M = 2.74, SD = 1.18; t = 2.17). Finally, no differences were found regarding age groups.

In subsequent analyses, we focused on the data of those participants who had previous experience in SCOs (n_1 = 405 and n_2 = 270). The number of participants is similar to other SCOs studies (Demoulin and Djelassi, 2016; Fernandes and Pedroso, 2017).

4.3 DATA ANALYSIS

Descriptive statistics (mean values, standard deviations, mean comparisons) were calculated using SPSS software (Statical Package for Social Science). Data were further analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM), which is useful in case complex mediation models are analysed with a large number of indicators and relationships (Hair *et al.*, 2017). SmartPLS v3.0 software was used (Ringle *et al.* 2015).

5. RESULTS

First, we compared data gathered in the PRE and POST samples at item level (Table 3), only using data from participants who had previously used SCOs (n_1 = 405 and n_2 = 270). Participants showed statistically higher agreement to the following statements in the PRE sample: "I can decide to use the Self-Checkout or not in the places where I buy" (VOL_1) and "As a customer, Self-Checkout are Ineffective - Effective" (ATT_1).

Next, the mean scores and correlations between the variables were analysed. Table 4 shows participants scored moderately high on *Attitude towards SCO*, both in the PRE sample (PRE: M = 3.78, SD = 1.13) and in the POST sample (POST: M = 3.68, SD = 1.14), and moderately on *Retailer Patronage Intention* (PRE: M = 3.33, SD = 1.05; POST: M = 3.25, SD = 1.09). All the correlations between the study variables were significant and positive.

TABLE 3:
ITEM COMPARISON BETWEEN PRE AND POST SAMPLES.

		PRE (T1)		POST (T2)			
		M	*SD*	*M*	*SD*	*t*	*p*
Voluntariness of Use	VOL_1	4.04	1.12	3.80	1.33	2.449	.015
Self-Efficacy	SEE_1	4.63	0.73	4.66	0.70	-0.570	.569
Perceived Enjoyment	PEE_1	3.12	1.23	2.98	1.19	1.523	.128
	PEE_2	3.36	1.34	3.36	1.23	0.000	1.00
	PEE_3	3.76	1.29	3.69	1.29	0.731	.465
Safety to Use	SAF_1	-	-	4.23	1.03		
	SAF_2	-	-	3.15	1.20		
	SAF_3	-	-	3.70	1.24		
Attitude towards SCO	ATT_1	4.11	1.13	3.92	1.23	2.087	.037
	ATT_2	3.86	1.24	3.79	1.19	0.745	.457
	ATT_3	3.38	1.41	3.35	1.41	0.246	.806
Retailer Patronage Intention	RPI_1	3.54	1.24	3.42	1.23	1.219	.223
	RPI_2	2.99	1.15	2.91	1.20	0.793	.428
	RPI_3	3.45	1.23	3.40	1.26	0.481	.631

Note. n_1 = 405 and n_2 = 270.

TABLE 4:

DESCRIPTIVE STATISTICS AND CORRELATIONS BETWEEN STUDY AND CONTROL VARIABLES BY TIME OF PARTICIPATION (PRE / POST).

	PRE (n_1 = 405) M (SD)	POST (n_2 = 270) M (SD)	1	2	3	4	5	6	7
1. Voluntariness of Use	4.04 (1.12)	3.80 (1.33)	-	.20**	.16**	.20**	.15*	.20**	-.02
2. Self-Efficacy	4.63 (0.73)	4.66 (0.70)	.20***	-	.27***	.35***	.28***	.23***	-.07
3. Perceived Enjoyment	3.41 (1.14)	3.34 (1.05)	.24***	.32***	-	.71***	.75***	.76***	.06
4. Safety to Use	-	3.70 (0.91)	-	-	-	-	.69***	.76***	-.11
5. Attitude towards SCO	3.78 (1.13)	3.68 (1.14)	.31***	.32***	.80***	-	-	.78***	-.04
6. Retailer Patronage Intention	3.33 (1.05)	3.25 (1.09)	.29***	.27***	.73***	-	.76***	-	-.09
7. Gender (1=male, 2=female)	1.48 (0.50)	1.50 (0.51)	.07	-.07	.05	-	.02	-.08	-

Note. Means in bold denote significant differences between PRE and POST participants at $p < .05$. Zero-order correlations below the diagonal correspond to PRE participants; zero-order correlations above the diagonal correspond to POST participants. *$p < .05$. **$p < .01$. ***$p < .001$.

In evaluating and reporting the results to test our hypotheses, we accomplished a two-step analysis following the guidelines on partial least squares structural modelling (PLS-SEM) proposed by Hair *et al.* (2017). First, the measurement models were assessed (including validity and reliability). Second, we evaluated the structural model (this is, to what extent *Voluntariness of Use*, *Self-Efficacy*, and *Perceived Enjoyment* allowed predicting *Attitude towards SCO* to adopt technology and this, in turn, *Retailer Patronage Intention*). We used the bootstrapping procedure and selected 5,000 samples (no missing data; *Safety to Use* was only measured in the POST survey).

For both the PRE and the POST samples, the relationship between each indicator and its corresponding construct was significant ($p < .001$; except for *Voluntariness of Use* and *Self-Efficacy*, comprised by a single item respectively). All of the indicators' outer loadings were above the critical value of .70 (Table 5). Average Mean Extracted (AVE) values achieved the recommended threshold, .50 and composite reliability values were over .60 (Bagozzi and Yi, 1988). Overall, these results support internal consistency and convergent validity of the study variables.

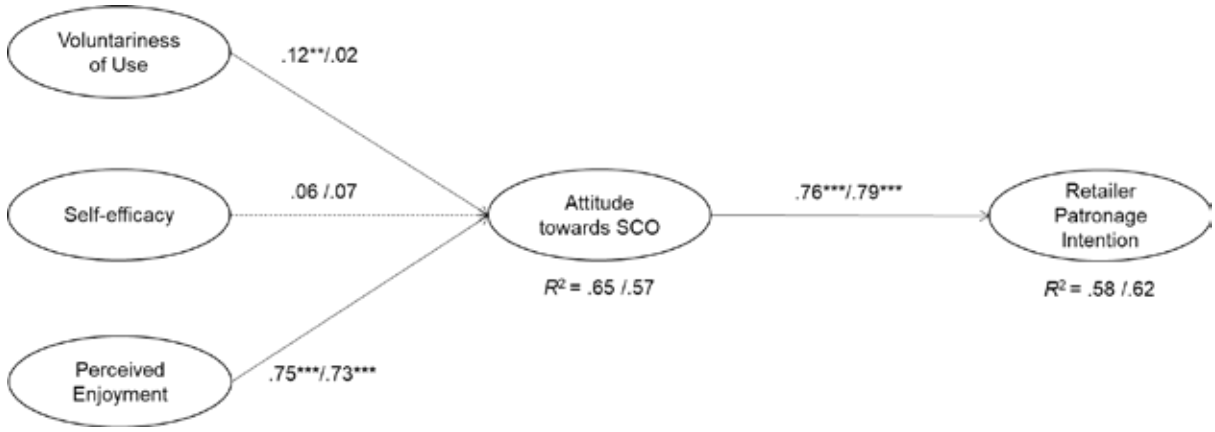
TABLE 5:
MEASUREMENT MODELS: RELIABILITY AND CONVERGENT VALIDITY FOR PRE AND POST SAMPLES.

		PRE ($n_1 = 405$)				POST ($n_2 = 270$)			
Latent variable	Item	λ	ρ_c	α	AVE	λ	ρ_c	α	AVE
Voluntariness of Use	VOL_1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Self-Efficacy	SEE_1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Perceived Enjoyment			.91	.86	.78		.88	.80	.72
	PEE_1	.88				.85			
	PEE_2	.90				.84			
	PEE_3	.87				.85			
Attitude towards SCO			.92	.88	.80		.93	.88	.80
	ATT_1	.89				.90			
	ATT_2	.92				.90			
	ATT_3	.86				.89			
Retailer Patronage Intention			.91	.84	.76		.92	.86	.78
	RPI_1	.90				.89			
	RPI_2	.82				.84			
	RPI_3	.89				.92			
Safety to Use		-					.83	.69	.62
	SAF_1	-				.68			
	SAF_2	-				.83			
	SAF_3	-				.83			

Note. λ = outer loading. ρc = composite reliability. α = Cronbach's alpha. AVE = Average Mean Extracted.

Figure 2 depicts the relationships between the different variables considered for both the PRE and the POST samples. Before comparing both groups (PLS-SEM multigroup analysis), measurement invariance was tested. The MICOM (measurement invariance of composite models) procedure (Hair *et al.*, 2018) consists of three steps. First, configural invariance was successfully established as measurement models, structural model, and algorithm settings are identical for both groups. Second, compositional invariance assessment showed permutation *p*-values were larger than .05, so compositional invariance was established for all the variables. Third, measurement invariance was examined. No significant differences were found in the composite mean values and composite variances of variables across the two samples, except for *Voluntariness of Use.* Therefore, we conclude that the PRE and POST composite mean values and variances were equal regarding *Self-Efficacy, Perceived Enjoyment, Attitude towards SCO*, and *Retailer Patronage Intention*, but differed in the case of *Voluntariness of Use*. Consequently, full measurement invariance was not established.

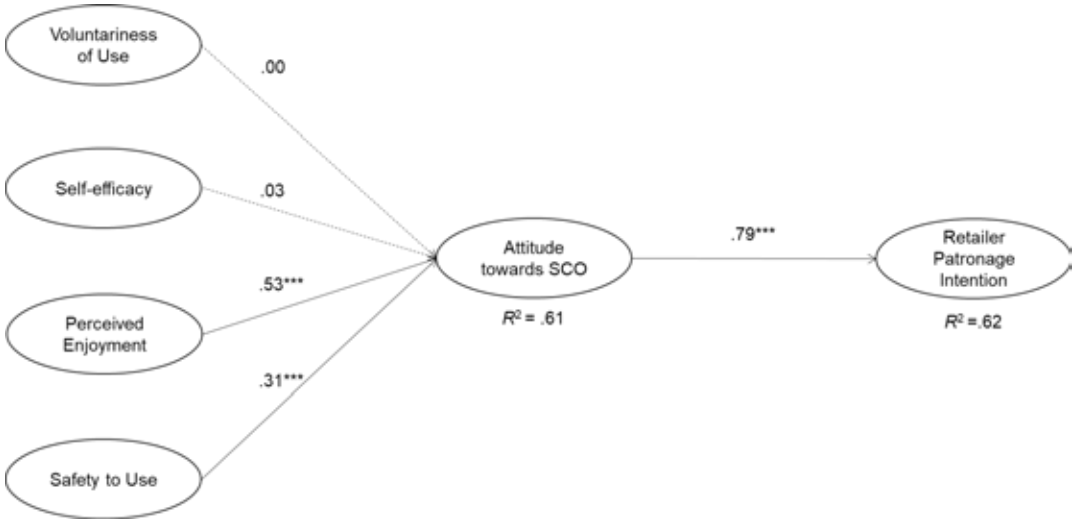
FIGURE 2:
PRE (LEFT VALUES) AND POST (RIGHT VALUES) STRUCTURAL MODELS.



Note. Dotted lines: Non-significant paths. ***p* < .01. ****p* < .001.

Finally, we retested the model including *Safety to Use* (only considering the POST sample, Figure 3). Internal consistency and convergent validity of the constructs were adequate (specifically for *Safety to Use*: λ_{SAF_1} = .68, λ_{SAF_2} = .83, λ_{SAF_3} = .83; composite reliability = .83; Cronbach's alfa = .69; Average Mean Extracted = .62). The addition of this new variable slightly improved the variance explained of *Attitude towards SCO* to 61.2%, and no changes were found in the explained variance of *Retailer Patronage Intention* (61.9%). Although the most relevant variable continued to be *Perceived Enjoyment*, it reduced its strength (β decreased from .73 to .53). *Safety to Use* appeared as the second relevant variable, while *Voluntariness of Use* and *Self-Efficacy* remained non-significant.

FIGURE 3:
POST STRUCTURAL MODEL INCLUDING SAFETY TO USE.



Note. Dotted lines: Non-significant paths. ***p < .001.

6. DISCUSSION

The field research of the present work consists of two samples taken with a difference of three months. Such period is too short to register significant differences in technology adoption unless a disruptive event happens, such as COVID-19. Indeed, in the interval between surveys, the pandemic reached its peak and participants endured a lockdown of fifty days in their homes. Our research shows similar results for PRE and POST samples, except for the construct *Voluntariness of Use*, which was slightly significant in the PRE model but not in the POST model after lockdown. As shown in Table 3, both samples show a statistical difference in the answer to the question "I can decide to use the Self-Checkout or not in the places where I buy", probably related with the change to local grocery stores during the pandemic, as consumers strongly reduced their movements and malls were partially closed. In such convenience stores there is a smaller penetration of SCOs and therefore customers responded based on the lack of systems where they were buying. The lack of relevance of *Voluntariness of Use* may be explained by the instrument used to test the model. In previous studies voluntariness was measured by on site surveys and therefore the respondent had just used the SCO (Demirci Orel and Kara, 2014; Demoulin and Djelassi, 2016; Fernandes and Pedroso, 2017). In our case, as respondents answered the online survey based on their previous experiences, results allow to intuit that they mixed different experiences, with and without voluntariness, to answer the questionnaire.

Results show a significant, strong, and positive link between *Perceived Enjoyment* and *Attitude towards SCO* in both samples, showing the importance of *Perceived Enjoyment* as antecedent of *Attitude towards SCO*. This finding is consistent with previous works that relate enjoyment with SCOs adoption in different ways. Demoulin and Djelassi (2016) found that enjoyment is not only an antecedent of perceived ease of use in an extended TAM3 model, but also a direct predictor of technology usage. Enjoyment is the strongest effect on service quality, and service quality on intentions, in Dabholkar's work (1996). Emotive reaction plays a major role in consumer reaction, and this role is enhanced by the introduction of risk perception in the adoption. Besides the support that this finding has in existing literature, our results go one step beyond as they show that, contrary to our hypothesis, *Self-Efficacy* is irrelevant in our model, allowing us to state the predominance of enjoyment over control, supporting the notion mentioned above of emotion over cognition as driver of consumer behaviour. SCOs users participate in the creation of the service (Pantano *et al.* 2018; Eastlick *et al.* 2012), reduce their queuing time (Collier *et al.*, 2015) and improve their social reputation (Kinard *et al.*, 2009), increasing their level of satisfaction and creating a feeling of entertainment. Although this feeling cannot be reached if there is a lack of service quality or complex processes (Lee *et al.*, 2009), our simplified model shows a prevalence that has important managerial and theoretical implications.

As the main objectives of our study, *Safety to Use* was introduced in the POST survey and resulted in a relevant variable in the model with also a positive and strong link to *Attitude towards SCO* (POST: β = .31, $p < .001$). This result shows the influence of the pandemic in the results and is from our perspective the biggest contribution of this study to technology adoption theory. The analysis of the POST model with and without *Safety to Use* shows the impact on *Perceived Enjoyment*, that stays as the most relevant antecedent of *Attitude towards SCO* but reduces its influence (from β = .73, $p < .001$ to β = .53, $p < .001$), showing that the need to shop safely is a requirement to have a positive perception of the SCO technology.

Finally, both the PRE and POST samples show the importance of *Attitude towards SCO* as predictor of *Retailer Patronage Intention* (PRE: β = .76, $p < .001$; POST: β = .79, $p < .001$). This finding is consistent with previous works. Lee (2015) analysed the perception of the quality of an SST service and concluded that patronage intentions had similar antecedents that actual usage intentions, showing that a positive retailer perception impacts in the perception of the technology and vice versa. More importantly, Djelassi *et al.* (2018) found that the satisfaction with SCOs was a strong mediator on store satisfaction and therefore in *Retailer Patronage Intention*. Our study is different in that the survey has not been administered on site, nor related with a specific brand, increasing the value of the generic relationship between the *Attitude towards SCO* and a positive *Retailer Patronage Intention*.

7. CONCLUSIONS

The objective of our study was to analyse the impact of COVID-19 on the attitude of customers towards the adoption of CFIST technologies, specifically SCO systems. Although some studies have addressed the usage of in.store technologies after the pandemic (Camplone and Villani, 2021; Díaz-Martín *et al.*, 2021; Shankar *et al.*, 2020), health risk perception has not been studied as a adoption model attribute and therefore our findings entail an additional contribution to post COVID-19 research.

The similarities of results between the two samples, PRE and POST, indicates the stability and appropriateness of the proposed model. Furthermore, the simplicity of our model has allowed us to highlight important conclusions about enjoyment, safety, attitude, and retailer patronage intention related with SCO usage. The answer to our research question ("Are there differences of perception about technology before and after the COVID-19 lockdown?") is positive: *Safety to Use* becomes relevant while reducing the importance of *Voluntariness of Use* and *Perceived Enjoyment*.

Our paper has important technology and managerial implications, as the robustness of the findings allow to define action plans based on the constituents of our model. The SCO systems and their physical set up in the stores must consider the emotional appeal. SCOs must be built in a way that makes them enjoyable, with a pleasant user interface and simple flows carefully designed, probably including interactions with customers smartphones, delivering appropriate information of what is happening and transmitting empathy to customers when something goes wrong. New interfaces should be tested. For example, consumers could see through augmented reality the goods included in their basket and the SCO could detect them and accelerate the checkout. SCO could also implement a gesture based system that could reduce the physical contact and make the interaction more natural.

Our main contribution is the relevant and unique finding of this study about the impact that criteria related with health protection are having and will have on technology adoption. The coming of the pandemic, far from ruining our running study as initially planned, has offered us the option to compare data and obtain compelling findings. *Safety to Use* shows a very relevant impact in *Attitude towards SCO*, which means that customer have included in their mindset the perception of the value of a technology to protect their health. Manufacturers and retailers must go beyond implementing safety measures; such measures must be communicated to customers that have to perceive security. Otherwise, even if there is an objective protection, customers will not feel safe, and their perception will restrain them to adopt the technology. This finding concurs with Maslow's hierarchy of needs: following physiological needs, the need for safety is the most important to be in place before other considerations. In the case of SCOs, several options can be implemented: Contactless technology, self-cleaning surfaces, distance between machines, and frequent cleaning of all surfaces, to name a few. But such options require to be complemented by communication and visible proofs of what is claimed. Waiting time reduction has been a positive element of the usage of SCOs in

the past (Djelassi *et al.*, 2018; Liang *et al.*, 2021a) (Collier *et al.*, 2015; Djelassi *et al.*, 2018; Marzocchi and Zammit, 2006), but has become also relevant for safety, as waiting mean queues and queues mean crowds. Retailers wanting to increase SCOs usage should link the efficiency with the security in order to have customers tend to SCOs.

The strong relevance of *Attitude towards SCO* in *Retailer Patronage Intention* has also important implications for the management in the evolution of SCOs. Beyond the benefits of efficiency and cost reduction that SCOs bring in the short and long term, retailers must value the impact in the perception of the overall experience. The optimisation of any SCO deployment will bring several benefits, creating a virtuous circle of efficiency, service quality and customer experience. SCO can be a competitive advantage from all points of view. Retailers must install SCO whenever the volume of the business justifies the investment, carefully planning the layout, communication, and choice of technology.

Our study also adds up to the existing CFIST literature. We expect this category to settle with one name or the other, as different researchers are using different names (Betzing *et al.* 2018; Grewal *et al.* 2020; Roy *et al.* 2017; Lorente-Martínez *et al.* 2020). CFIST technologies are a cornerstone of brick-and-mortar stores survival, and we expect a paramount role of them in the business and technology research.

Even though this study presents relevant findings and contributes to the body of knowledge, it is not free of limitations. First, the model used had few constructs, looking to reduce the size of the survey and therefore increase the number of valid responses. A more complete model would probably extract further conclusions. Second, *Safety to Use* construct was not included in the PRE sample, as at this time there was no expectation of the coming crisis and therefore no expected relevance of such construct. Third, PRE and POST samples have not been undertaken from the same respondents, due to the anonymous nature of the survey. With the same respondents for both moments the data would have an additional value. Fourth, there is a potential technology bias in the online survey, that is probably the reason of such a big percentage of previous usage of SCOs in the sample. The fact of responding through digital means reduce the diversity of respondents. An onsite survey to random population of a grocery store would reduce this bias, although it would likely introduce others (geographical, day of the week, or time of the day). Fifth, the study should be repeated in a longer term, as the two measurements had only a difference of three months. Although the perception changed in this period, it is needed to see if consumers have kept the feeling over time.

For scholars, this study opens several avenues of research. We foresee three major lines of work. First, further theoretical models that include *Safety to Use* as construct can be applied to SCOs adoption, in order to see the comparative importance of this new construct. Second, the model can be taken to other CFIST technologies, whether they are SST technologies or other kind of customer facing technologies. Third, more detailed research on *Safety to Use* as a construct may lead to split it into different elements to delve into customers health-related concerns when interacting with technology in retailers.

We hope that this study helps to understand the shift in perception that the pandemic has generated in consumers and contributes to look for solutions that help retailers to stay in the game despite the crisis that we will endure in the next years.

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Affective commitment, trust, perceived value and service quality as predictors of customer engagement in the South African open medical aid industry

Dr. CC Williams *
North-West University.
carinda.williams@nwu.ac.za

Prof N Mckay
North-West University
nedia.mackay@nwu.ac.za

*Corresponding author

ABSTRACT

The South African open medical aid industry is undergoing various challenges and is experiencing increased pressure to improve its service offerings. This is because customers of open medical aid providers are becoming progressively more educated about the various healthcare products and services available. As a result, customers are better equipped to make informed decisions concerning the available open medical aid options, which may lead to switching from their current open medical aid to a competitor when their needs are not met by the current medical aid product and service offerings. Consequently, open medical aid providers must retain and improve customer engagement by building strong relationships with their customers. Therefore, this study aims to determine if affective commitment, trust, perceived value and service quality predict customer engagement within the context of the open medical aid industry of South Africa. The study considered existing literature and a quantitative descriptive design. Non-probability convenience sampling was used to draw the sample through self-administered questionnaires, which resulted in a total of 307 questionnaires collected for data analysis. A standard multiple regression analysis was also conducted. Results indicated that affective commitment, customer trust, perceived value, and service quality could be predictors of customer engagement.

Keywords: Customer engagement, customer affective commitment, customer trust, customer perceived value, service quality, open medical aid provider

INTRODUCTION

The open medical aid industry of South Africa is categorised as a type of health subsidy arrangement designed to collect funds from customers to provide access to reliable healthcare services. This industry is impacted by increasing prices (Rangasamy, 2021:607), new and changing regulations, increased competition, amalgamations, solvency procedures, risk management, compliance requirements (PwC, 2017) and changes in consumer behaviour. Customers are becoming increasingly informed about the services and offers of medical aid providers, as well as the medical aid options available to them (SA Medical Aids, 2018). In South Africa, customers tend to view medical service encounters negatively, which is visible in the overall low satisfaction experienced as a result of intricate rules, exclusions, co-payments and high monthly rates (Consulta, 2019).

Consequently, open medical aid providers are in a position where they need to maintain and develop strong relationships with their members and focus on providing quality medical aid coverage services that meet the expectations of members and decrease the chances of members moving to competing medical aid providers (SA Medical Aids, 2018). Furthermore, open medical aid providers can benefit from improving their customers' engagement by focusing on increasing their members' affective commitment, trust, perceived value and service quality.

RESEARCH PROBLEM, PURPOSE AND OBJECTIVES

The South African open medical aid industry has been experiencing rapid changes since 2017 due to new regulations introduced by the National Treasury (PwC, 2017). According to Makgoo (2017), these new regulations include limitations on what customers can claim regarding their gap cover and hospital cash-back. The non-healthcare costs applicable to open medical aid providers are comparatively high regarding marketing and acquisition, as open medical aid providers mostly use brokers to attract new members (McLeod & Ramjee, 2007:56). Furthermore, there is overwhelming evidence that healthcare quality in South Africa is compromised by several challenges (Maphumulo & Bhengu, 2019:1). Therefore, it is vital to building strong relationships to retain members (Bouavang, 2014).

Therefore, the objective of this study is to determine whether customer affective commitment, customer trust, customer perceived value and service quality predict customer engagement within the open medical aid industry of South Africa.

From the above discussion, the following hypotheses were formulated for this study, and the model is indicated in Figure 1:

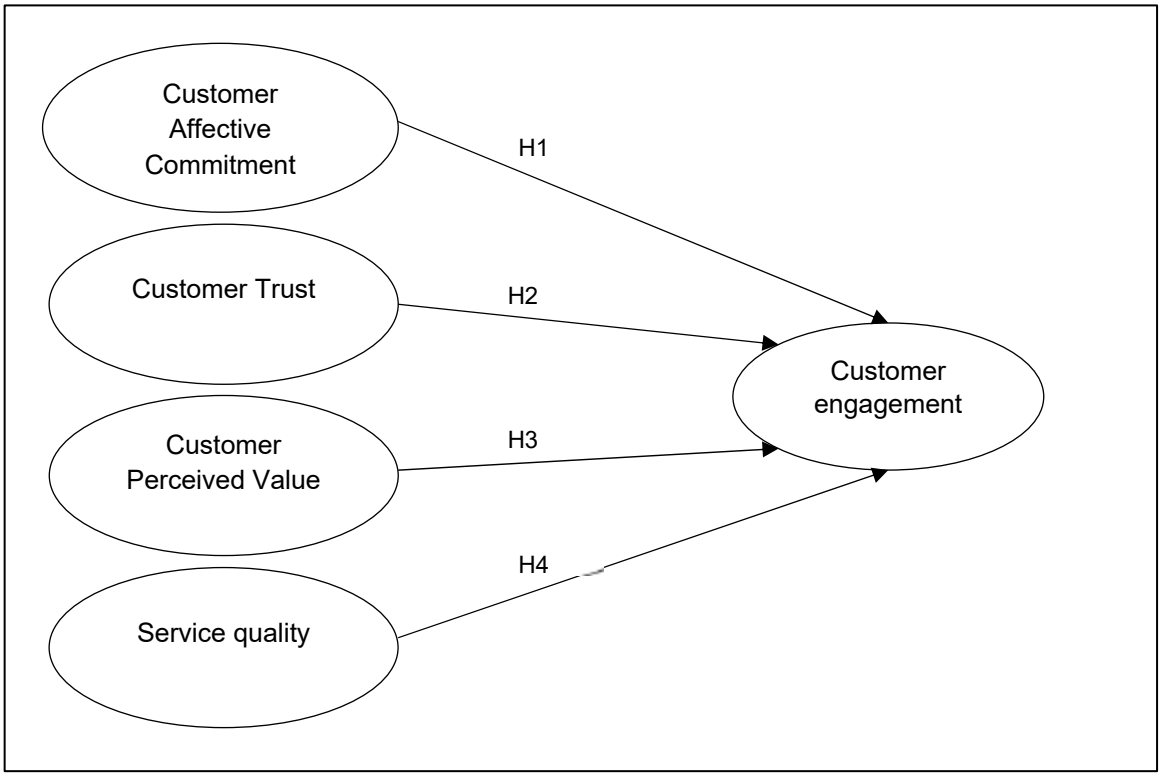
H_1: Affective commitment has a positive and significant effect on customer engagement.

H_2: Customer trust has a positive and significant effect on customer engagement.

H_3: Customer perceived value has a positive and significant effect on customer engagement.

H_4: Service quality has a positive and significant effect on customer engagement.

FIGURE 1:
THE INFLUENCE OF CUSTOMER AFFECTIVE COMMITMENT, CUSTOMER TRUST, CUSTOMER PERCEIVED VALUE AND SERVICE QUALITY ON CUSTOMER ENGAGEMENT



BACKGROUND TO THE STUDY

When it comes to health and finance, it is understandable that customers might experience frustration when medical aid providers fail to deliver on their promises or when customers often receive poor services (NIUSR, 2014). The core reason why customers acquire a medical aid is to get financial support concerning possible medical expenditures. Customers are continuously searching for quality products and services, which means that the pressures to improve and develop their service offerings by medical aid providers are increasing (Kaplan & Ranchod, 2015:114). It is widely recognised that building long-lasting, strong relationships with customers can be beneficial because it can lead to an increase in profitability as customers are increasingly satisfied and loyal, and as a result, it is essential for medical aid providers to aim to establish and preserve member relationships (Lombard, 2011:3488).

South Africa's medical aid industry has been branded as one of the lowest in overall satisfaction (Hunter, 2017). The SAcsi (South African Customer Satisfaction Index) results also discovered that most South Africans are not satisfied with their current medical aid provider (Medical Plan Advice, 2017). Grievances are commonly divided into two broad categories: benefit grievances (20%) and service grievances (80%). Customers mostly view medical service experiences negatively as they associate this with anxiety, discomfort, risk and occasional awkwardness (Bisschoff & Clapton, 2014:45).

In the open medical aid environment, one of the most challenging grievances to resolve is benefit-related grievances, as customers may not necessarily be entirely informed of all the benefits or shortfalls and medical aid rules. Benefit-related grievances consist of complaints concerning the daily cover, medication, and extensive medical costs, while service-related grievances result mainly from differences in the perception and experiences relating to perceived quality, value and service expectations.

It is clear that the survival of open medical aid providers is essential to the economy and the thousands of South Africans who need this service; however, there are difficulties and dissatisfaction within the industry that requires attention, especially concerning the services provided. Open medical aid providers can increase their survival and success rate by establishing increased engaged customers by increasing the customers' affective commitment, trust, perceived value and service quality received.

LITERATURE REVIEW

This section provides a short literature review of customer engagement, customer affective commitment and customer trust.

CUSTOMER ENGAGEMENT

Over the last decade, the concept of customer engagement has emerged as a popular theme for academics (Brodie *et al*., 2011:252; Thakur, 2016:152). Several scholars have defined customer engagement; however, it is well recognised that customer engagement is a psychological process that goes beyond merely being aware of a product or brand, or purchasing a product or service, or even just being satisfied or retained by the business (Williams & Mackay, 2020:42). Customer engagement goes further than this, and is considered to develop on a cognitive, emotional and behavioural level that is regarded as interactive and co-creative with the offerings and activities of the business (Sashi, 2012:258).

In simpler terms, customer engagement centres around providing customers with the best quality experience that the business can offer (Roche, 2015; Sashi, 2012:258). Businesses that provide excellent customer experience and support focus on customer engagement and not only the next sales pitch (Pansari & Kumar, 2016:296). Several predictors of customer engagement exist, including customer interaction, customer commitment, customer satisfaction, customer trust, customer involvement, brand attachment and commitment, perceived value and service quality (Sashi, 2012:260; Van Doorn *et al*., 2010:256). For the purpose of this study, the predictor of customer affective commitment and customer trust was further considered as a possible predictor of customer engagement within the context of open medical aid providers.

CUSTOMER AFFECTIVE COMMITMENT.

The customer's involvement, identification and emotional attachment towards a business are regarded as the customer's affective commitment (Istikhoroh & Sukamdani, 2017:118). The affective commitment experienced also refers to a desire-based connection between the customer and the business, which means that the customer will remain loyal towards a business because they genuinely want to (Bansal *et al.,* 2004:236). Consequently affective commitment signifies the benefit of having a relationship with the business and signifies a desire-based connection that results in the customer's willingness to continue supporting the business (Istikhoroh & Sukamdani, 2017:118).

CUSTOMER TRUST

At the foundation of any strong, meaningful relationship, the primary ingredient is trust (Sarwar *et al*., 2012:28). As a result, the trust that a customer has in a business or the trust in the capability of the business' products or services to meet the customer's needs highlights the significance thereof, as trust influences customers' decision to pursue or to terminate their relationship (Nguyen *et al*., 2013:96).

PERCEIVED VALUE

Perceived value is widely recognised as the overall assessment that the customer makes with regard to the effectiveness of the business' products and services (Zeithaml, 1988:14). Consequently, perceived value can be explained from a number of different perspectives, including from a financial, quality or social psychology perspective (Demirgüneş, 2015:212). As a result, the actual experience that the customer has with a product or service in comparison to what the customers hoped to expect determines whether they have received the value or not (Lin, 2003:28).

SERVICE QUALITY

Service quality is defined as an attitude that was formed by the evaluation of the business' capability to meet product and service expectations with the performance of the products or services that leads to satisfied customers (Hoffman & Bateson, 2017:399; Parasuraman *et al*., 1985:42). Furthermore, service quality has an influence on whether a customer will remain loyal to a business or switch to a competitor's business (Zeithaml *et al*., 1996:33).

RELATIONSHIPS BETWEEN THE CONSTRUCTS OF THE STUDY

Affective commitment and customer engagement

The concept of customer engagement is appropriate to customer affective commitment as it shapes enduring customer relationships (Naumann & Bowden, 2015:59). Furthermore, customer affective commitment has several different benefits, including that the customers are willing to invest, engage with the business and remain loyal to the business' products and services (Bowden, 2009:579). Therefore, customer affective commitment positively and significantly influences

Customer trust and customer engagement

Trust is undoubtedly recognised as the basis of enduring relationships and increases a business' sales, customer recommendations, and positive word-of-mouth (Furman, 2017). According to Pansari and Kumar (2016:300), customer engagement occurs most often after a relationship was established with customers, and that was founded on trust and commitment. Trust can also be viewed as an antecedent to and a consequence of customer engagement (Sanders, 2012:2).

Perceived value and customer engagement

The customer's willingness to continue engaging with a business is influenced by perceived value (Floyd *et al*., 2009:186; Kim *et al*., 2013:364). In the research done by Hollebeek (2011:557), a significant positive effect was also determined between customer perceived value and customer engagement.

Service quality and customer engagement

Service quality predicts customer engagement positively (Rossmann *et al*., 2016:543-544). Furthermore, it is widely recognised that consumers consider service quality as a considering factor when building long-term relationships with businesses, and that is why businesses aim to build enduring relationships with their customers and motivate customers to become engaged by providing better quality services (Poovalingam & Veerasamy, 2007:94).

RESEARCH METHODOLOGY

A quantitative research design was used for this study in the form of self-administered questionnaires. The population comprised of customers who were the main members of one of the five major South African open medical aid providers (i.e. Bonitas Medical Fund, Discovery Health, Fedhealth, Medshield and Momentum Health) for two years or longer in selected cities located in the North West Province. These cities have been selected according to their population size, as Potchefstroom, Klerksdorp and Rustenburg are some of the largest cities in the North West Province (Municipalities of South Africa, 2018). After ethical clearance was granted, the respondents were selected on a convenience basis where potential respondents were approached by the researcher, and a total of 307 usable questionnaires were collected for statistical analysis. A five-point unlabelled Likert-type scale was used to measure the key constructs of the study, with 1 representing strongly disagree and 5 strongly agree. The items were adapted or adopted from scales obtained through the work of Hellier *et al*. (2003:1798), Mosavi and Ghaedi (2012:10094), Parasuraman *et al*. (1988:38-40), Verhoef *et al*. (2002:209) and Williams (2017:227). This is illustrated in Table 1.

TABLE 1:
CONSTRUCTS AND MEASURED VARIABLES

Construct	Items	Source
Customer Affective Commitment	I consider myself a loyal customer of my medical aid provider. I want to remain a customer of my current medical aid provider, because I feel strongly attached to it. I want to remain a customer of my current medical aid provider, because I feel a strong sense of belonging towards it.	Verhoef *et al.* (2002:209)
Customer Trust	My medical aid provider offers me a feeling of trust. My medical aid provider provides a trustworthy impression. I have trust in my medical aid provider's service. My medical aid provider can be relied upon to keep promises. My medical aid provider is trustworthy. I have complete confidence in my medical aid provider.	Mosavi and Ghaedi (2012:10094)
Customer perceived value	The price of my medical aid provider is low compared to other medical aid providers. The flexibility of my medical aid provider's product and service offerings is sufficient to meet my needs. My medical aid provider offers additional financial benefits and assistance. I can readily understand the exclusions in the policy documents I received from my medical aid provider. I regard the policy premium I pay to my medical aid provider as acceptable. I consider the policy I have with my medical aid provider to be a good purchase.	Hellier *et al.* (2003:1798)
Service quality (Reliability)	When my medical aid provider promises to do something by a certain time, it does so. When I have a problem, my medical aid provider shows a sincere interest in solving it. My medical aid provider performs its services right the first time. My medical aid provider offers its services at the time it promises to do so. My medical aid provider keeps error-free records. I consider the policy I have with my medical aid provider to be a good purchase.	Parasuraman *et al.* (1988:38-40)
Service quality (Responsiveness)	The employees of my medical aid provider tell me exactly when services will be performed. The employees of my medical aid provider delivers prompt services. The employees of my medical aid provider are always willing to help me. The employees of my medical aid provider are never too busy to respond to my requests.	Parasuraman *et al.* (1988:38-40)
Service quality (Assurance)	My medical aid provider's employees instil confidence in its customers. I feel safe in my transactions with my medical aid provider. The employees of my medical aid provider are consistently courteous towards me. The employees of my medical aid provider have the necessary knowledge to answer my questions.	Parasuraman *et al.* (1988:38-40)
Service quality (Empathy)	My medical aid provider offers me individual attention. My medical aid provider has convenient consulting hours. The employees of my medical aid provider offers me personal attention. My medical aid provider has my best interests at heart. The employees of my medical aid provider understand my specific needs.	Parasuraman *et al.* (1988:38-40)

Customer Engagement	My medical aid provider makes me feel like I belong. The employees of my medical aid provider makes me feel at home. I am proud to be a customer of my medical aid provider. My medical aid provider's employees inspire me. I care about my medical aid provider's product and service offerings. I mostly have positive service interactions with my medical aid provider. My medical aid provider keeps its promises. My medical aid provider is reliable. My medical aid provider makes me feel like I belong. I feel energised when interacting with my medical aid provider. I am completely involved when interacting with my medical aid provider. I am willing to put effort into interacting with my medical aid provider. I frequently make use of my medical aid provider's products and/or services. I frequently participate in the activities of my medical aid provider (such as fund raisers, competitions, etc.)0.807	Williams (2017:227)

STATISTICAL ANALYSIS

The data was analysed using SPSS version 28 and the SAS statistical program. Cronbach's alpha was calculated to determine the reliability of the data. The descriptive statistics were calculated using frequencies, means, percentages, standard deviations, factor analysis and independent sample t-tests. Furthermore, hypothesis testing was completed to investigate whether customer affective commitment and customer trust predict customer engagement in the South African open medical aid industry.

FINDINGS OF THE RESEARCH

DEMOGRAPHIC PROFILE OF RESPONDENTS

The majority of the respondents were Afrikaans speaking (66.78%), females (50.16%), between the ages 30 and 39 years (30.94%), with matric/grade 12 completed (27.69%) and employed full-time (69.71%).

VALIDITY AND RELIABILITY

Items for customer affective commitment, customer trust, customer perceived value, service quality and customer engagement were adapted from existing, valid scales from previous researchers. Additionally, the researchers assessed the validity of the scales within the context of this study. The validity of the scales was also determined by means of an EFA (maximum likelihood model) to extract the factors, and Varimax was used to rotate the factor solutions (Pallant, 2016:186). The results indicated that one factor was extracted for each of the four constructs included in the study. Therefore, the scales measuring customer affective commitment, customer trust and customer engagement were considered valid.

The reliability of the measurement scales used in this study was determined by means of the Cronbach's alpha value of customer affective commitment, customer trust, customer perceived value, service quality and customer engagement. The Cronbach's alpha value for customer affective commitment was 0.916, customer trust was 0.966, customer perceived value was 0.927, service quality was 0.958, and customer engagement was 0.957. According to Mazzocchi (2011:10) and Pallant (2016:6), a minimum recommended value of 0.70 indicates internal consistency reliability. Therefore, customer affective commitment, customer trust, customer perceived value, service quality and customer engagement were considered to be reliable.

DESCRIPTIVE RESULTS

The standard deviations (SD) and mean scores of customer affective commitment, customer trust, customer perceived value, service quality and customer engagement are presented in Table 2.

TABLE 2:
DESCRIPTIVE RESULTS

Construct	SD	Mean
Customer Affective Commitment	1.013	3.40
Customer Trust	0.904	3.53
Customer perceived value	0.919	3.00
Service quality	0.839	3.33
Customer Engagement	0.807	3.25

The level of respondents' agreement with the items included in each of the main constructs was measured on a five-point unlabelled Likert scale (where 1 is strongly disagree and 5 is strongly agree). The highest mean was realised for trust (mean = 3.53), followed by affective commitment (mean = 3.40), service quality (mean = 3.33), customer perceived, customer engagement (mean = 3.24), and customer perceived value (mean = 3.00), respectively. These mean scores are all on 3, the average level of agreement, which indicates that there is definitely a need for open medical aid providers to provide better customer affective commitment, customer trust, customer perceived value, service quality, and customer engagement.

HYPOTHESIS TESTING

Assessing the assumptions: Standard multiple regression analysis

Before conducting a SEM, it is essential to meet several assumptions with respect to the data, including the size of the sample, the collinearity, the distribution of the data, the linearity outliers, and the homoscedasticity (Pallant, 2016:151-152). It can be reported based on these assumptions that the sample size was considered large enough to conduct a SEM based on the number of independent variables, and the multicollinearity between the constructs did not identify any outliers; therefore, a standard multiple regression analysis could be conducted.

The Pearson coefficient correlation was further completed, and significant linear relationships between the independent variables (customer affective commitment, customer trust, customer perceived value and service quality) and the dependent variable (customer engagement) were uncovered, with p-values <0.05, and the correlations, ranging from 0.756 to 0.870, are strong. Table 3 presents a model summary in which an R^2 of 0.820 is evident. This indicates that 82% of the variability in customer engagement can be allocated to the four predictors.

TABLE 3:
MODEL SUMMARY

Model	R	R2	Adjusted R2	F change	Sig. F change
1	0.906 [a]	0.820	0.817	270.254	0.000

a Predictors: (Constant), affective commitment, trust, perceived value and service quality

Consequently, it is apparent from Table 3 that the model is significant (p< 0.0005), and includes all four independent variables (Customer affective commitment, customer trust, customer perceived value and service quality). Furthermore, the results from the ANOVA testing the framework are considered to be valid (as presented in Table 4), which indicates that the p-value for the constant is less than 0.05.

TABLE 4:
NOVA MODEL SUMMARY

Model		Sum of Squares	df	Mean square	F- value	p-value
1	Regression	161.733	5	32.347	270.254	0.000*
	Residual	35.428	296	0.120		
	Total	197.161	301			

a Predictors: (Constant), Affective commitment, Trust, Perceived value and Service quality

Evaluating the independent variables

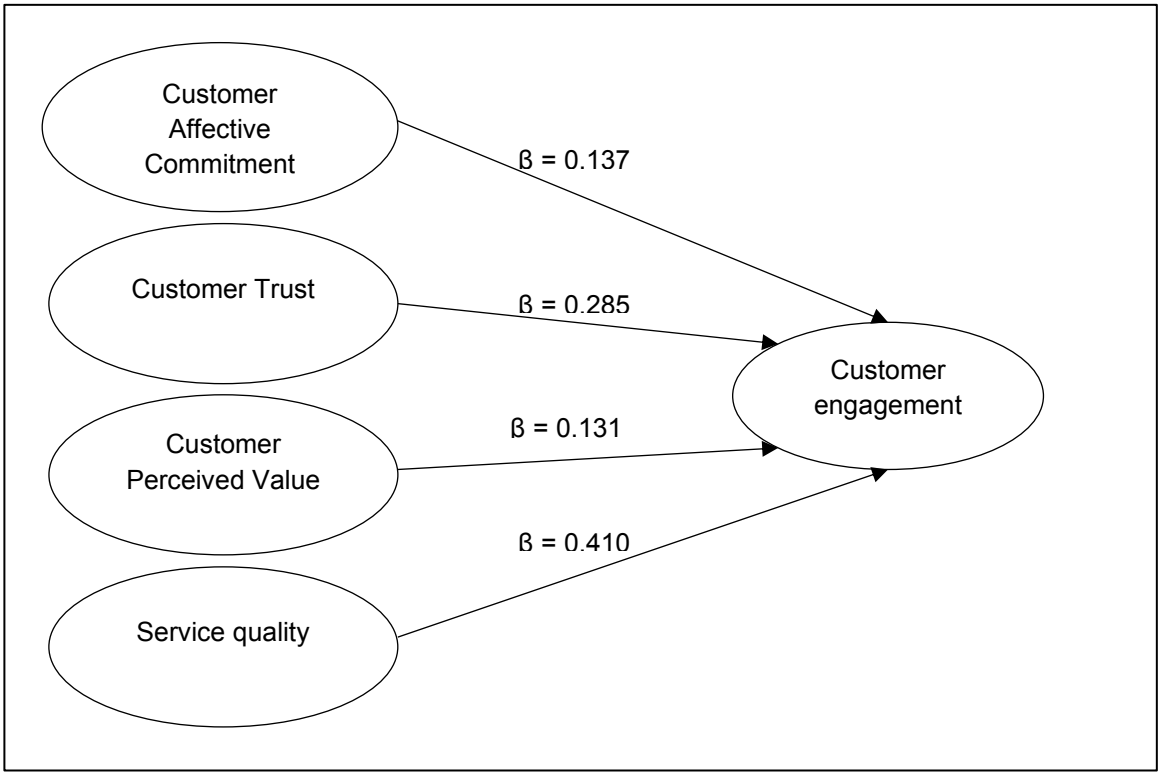
TABLE 5:
DIRECT EFFECTS OF HYPOTHESES TESTING

Hypotheses		Std.β	S.E.	p-value	Effect	Result
H_1	Affective commitment has a significant positive effect on customer engagement	0.137	0.033	0.001*	Significant	**Approve**
H_2	Customer trust has a significant positive effect on customer engagement.	0.285	0.049	0.000*	Significant	**Approve**
H_3	Customer perceived value has a significant positive effect on customer engagement.	0.131	0.036	0.002*	Significant	**Approve**
H_4	Service quality has a significant positive effect on customer engagement.	0.410	0.053	0.000*	Significant	**Approve**

The regression results in Table 5 revealed that customer affective commitment (β = 0.137; S.E. = 0.033; p-value = 0.001; accepting H1), customer trust (β = 0.285; S.E. = 0.049; p-value = 0.000; accepting H2), customer perceived value (β = 0.131; S.E. = 0.036; p-value = 0.002; accepting H_3) and service quality had a positive significant impact on customer engagement (β = 0.410; S.E. = 0.053; p-value = 0.000; accepting H4), and had a positive significant influence on customer engagement.

Figure 2 presents that customer affective commitment, customer trust, customer perceived value and service quality have a positive and significant influence on customer engagement in the South African open medical aid industry.

FIGURE 2:
THE INFLUENCE OF CUSTOMER AFFECTIVE COMMITMENT, CUSTOMER TRUST, CUSTOMER PERCEIVED VALUE AND SERVICE QUALITY ON CUSTOMER ENGAGEMENT IN THE OPEN MEDICAL AID INDUSTRY.



From Figure 2, it is evident that an improvement in customer affective commitment, customer trust, customer perceived value and service quality has a positive and significant effect on customer engagement in the South African open medical aid industry.

DISCUSSION AND IMPLICATIONS

A standard multiple regression analysis was conducted to determine the effects of customer affective commitment, customer trust, customer perceived value and service quality on customer engagement. From the results, it was clear that customer affective commitment, customer trust, customer perceived value and service quality can be viewed as important predictors of customer engagement within the open medical aid industry. Results further indicated that service quality is the most important predictor of customer engagement, and it is therefore important to open medical aid providers to provide the best quality services to their customers. This can be done by employing customer research and interviews to pinpoint the gaps in service offerings, the present service failures, the customer service experiences and perceptions in order to improve their service offering. The second most important predictor of customer engagement is customer affective commitment, which implies that open medical aid providers should aim to increase the customers' willingness to remain loyal towards to open medical aid and increase the current customers' sense of belonging towards the open medical aid provider. The following significant predictor of customer engagement is customer trust. When an open medical aid provider wants to increase their customer engagement, they can most certainly aim to increase customers' feelings and belief of trust in the open medical aid providers' services, personnel and processes. Furthermore, the open medical aid provider needs to focus on establishing a feeling of confidence in their customers concerning their capability and performance. Open medical aid providers can also increase trust by being open and transparent with their processes and cover and reducing the fine print to increase customers' trust.

The last predictor of customer engagement is customer perceived value. Open medical aid providers need to increase customers' perceived value to increase their customer engagement. This can be established by setting your price less than competing open medical aid providers or making sure that customers view their premium as acceptable, supplying product and service offerings that are flexible and that meet the needs of the customer, offering

additional financial benefits and assistance to customers, making sure that the customer understands the exclusions in the policy documents that they receive, and convincing customers through marketing communications that the decision to be a customer of the open medical aid provider is a good purchase.

LIMITATIONS AND FUTURE RESEARCH

The theoretical and empirical limitations include a limited number of high-quality literature studies on the open medical aid industry of South African; the study did not focus on all three sub-dimensions of commitment as recognised by scholars, and the results and findings are not a representation of the opinions of all open medical aid customers in South Africa.

In future, the study can be conducted in a more representative sample of South African medical aid customers.

CONCLUSION

Within the open medical aid industry in South Africa, customer affective commitment, customer trust, customer perceived value and service quality were found to predict customer engagement significantly. The study also provides insight into the aspects that open medical aid providers need to consider in order to increase their customer engagement.

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The influence of lifestyle dimensions on the perceived value and purchase intention of cellular devices in South Africa

Dr Roland Goldberg*
North -West University
Roland.Goldberg@nwu.ac.za
https://orcid.org/0000-0002-2438-194X
*Corresponding author

Dr Hester Spies
North -West University
Hester.Spies@nwu.ac.za
https://orcid.org/0000-0003-0710-2256

ABSTRACT

Following the stimulus-organism-response (S-O-R) framework, this study examines the influence of lifestyle dimensions on the perceived value and purchase intention of cellular devices in South Africa. To collect the data, a descriptive research design was implemented and self-administered questionnaires were fielded among cellular device customers. A total of 600 questionnaires were returned and a structural equation modelling approach was used to test the hypotheses. The results confirm that consumer lifestyle dimensions of entertainment, club membership and media significantly influence perceived value. The lifestyle dimensions of shopping and fashion consciousness, however, have no significant influence on perceived value. Moreover, the indirect effect of perceived value in the relationships between all the lifestyle dimensions and purchase intention was found to be significant. Consequently, within a South African cellular device context, it can be concluded that consumers' lifestyle dimensions significantly influence both perceived value and purchase intention.

Keywords: Lifestyle dimensions, perceived value, purchase intention, cellular devices, SOR framework.

1. INTRODUCTION

The penetration of cellular devices into the South African market is substantial as over 36.45 million consumers subscribed to cellular device networks by the end of 2021, giving a 61% penetration rate, which continues to grow and outperform the continent's average (Statista, 2022). Whilst numerous factors play a role, ICASA (2021) considers the COVID-19 pandemic as the principle contributor to the growth. According to ICASA (2021) and GSMA (2021), cellular devices have become a critical enabler of connectivity, facilitating the continuity of our regular lives and connecting consumers more than ever before.

As governments requested populations to stay at home, more consumers have turned to their cellular devices as a lifeline and tool to substitute their in-person activities. Consumers, therefore, increasingly relied on their cellular devices to work, learn, shop and access life-enhancing services (Eksteen & Humbani, 2021). Marketing researchers and managers alike, believe that as economies recover and restrictions ease, some of the habits may continue in the "new normal" which marks a change in how consumers and businesses behave as they move towards a more digital-centric lifestyle (GSMA, 2021; Wiścicka-Fernando, 2021). The rise and growth of this digital-centric lifestyle has, however, elicited competition among cellular retail outlets as a variety of different cellular devices have started entering the South African market, making them accessible and affordable to consumers, enabling them to easily switch between brands (GSMA, 2021; MYBROADBAND, 2022). Understanding how consumers behave in purchasing their cellular devices, therefore, becomes mandatory for cellular retail outlets seeking to gain a competitive advantage (Wiścicka-Fernando, 2021).

A review of the related literature reveals that perceived value may influence consumers' intention to purchase a product (Confente, Scarpi & Russo, 2020; Konuk, 2018; Wang, Lin, Wang, Shih & Wang, 2018). Confente *et al*. (2020) explain that consumers are more likely to purchase a product that they perceive to have a higher value than competing products. Although perceived value is positively associated with purchase intention (Abou Ali, Ali & Mostapha, 2021), other scholars argue that both purchase intention and perceived value is enhanced by consumers' lifestyle (Al-Dmour, Dawood, Al-Dmour & Masa'deh, 2020; Salem & Alanadoly, 2022). A consumer's lifestyle indicates his or her way of living which is reflected by his or her preferred activities, interests and opinions (Kotler & Armstrong, 2018). The lifestyle adopted by consumers will not only affect their needs, desires and behaviours, but also their buying behaviour (Solomon, 2020).

As a result, it has become essential for marketing researchers and managers to not only understand what consumer's lifestyle entails, but also to identify how it relates to key constructs like perceived value and purchase intention (Al-Dmour *et al.*, 2020). Although there are several studies pertaining to the lifestyle concept, most of them focuses on lifestyle as a single latent variable without considering it as a multidimensional concept consisting of concrete and abstract factors that necessitate further investigation. Understanding each dimension as a construct in its own right could enhance researchers' and marketers' understanding of the concept, particularly within a cellular device context. To achieve this objective, this study adopted the activities, interests and opinions (AIO) approach which aims to analyse the dimensions of consumer lifestyle. The AIO approach has been utilised by various well-known researchers in measuring consumers' lifestyles within a cellular context and comprises of entertainment, club membership, shopping, fashion consciousness and media (Solomon, 2020). For the purpose of this study, each of these dimensions will act as factors which could influence both perceived value and purchase intention.

Hence, it seems a comprehensive, systematic model is required to understand how consumer lifestyle dimensions may affect perceived value and purchase intention of cellular devices. The current body of literature relating to buying cellular devices is, however, lacking such a model. This study suggests utilising the stimulus-organism-response (S-O-R) framework as it offers a comprehensive explanation of the cognitive and affective states of consumers and their behaviour in a cellular retail environment (Mehrabian & Russell, 1974). Therefore, drawing on the S-O-R framework, this study aims to investigate how consumers' lifestyle dimensions influence their perceived value and purchase intention when buying cellular devices.

This study offers several theoretical and managerial contributions. First, this study contributes towards the S-O-R framework by testing the influence of consumers' lifestyle dimensions on perceived value and purchase intention. Second, this will be the first study to determine the influence of lifestyle dimensions on perceived value and purchase intentions within a cellular device context. Third, whilst this study's factors have been measured before, these factors have never been modelled together to assess the extent to which they are interrelated and collectively contribute to consumers purchase intention. Investigating the relationships of the relevant constructs may add to the developing body of research of consumer lifestyle and its importance to the stream of research on perceived value and purchase intention. Lastly, from a practical perspective, this is the first study within a South African cellular device context to investigate consumer lifestyle dimensions and its influence on both perceived value and purchase intention. This research could therefore assist South African cellular retail outlets who aim to differentiate themselves from their competitors by means of implementing effective consumer lifestyle strategies to ensure higher perceived value and purchase intention.

2. LITERATURE REVIEW

2.1 THE S-O-R FRAMEWORK

The S-O-R framework was developed by Mehrabian & Russell (1974) as an extension to the original stimulus-response theory proposed by Pavlov (1927). The framework maintains that external factors (stimulus) exert influence on a consumer's internal assessment state (organism), which in turn elicits positive or negative behaviours (response)

(Mehrabian & Russell, 1974). Thus, the relationship between the responsive behaviour and the initial stimulation is mediated by the cognitive and affective responses of the organism exposed to the stimuli (Chattaraman, Rudd & Lennon, 2009; Donovan & Rossiter, 1982). The S-O-R framework has been applied in various marketing studies to determine the effect of environmental elements on consumer behaviour (Chen & Yao, 2008; Donovan & Rossiter, 1982; Huang, 2012; Jang & Namkung, 2009; Kim & Lennon, 2013; Lian, 2021).

The stimulus component of the S-O-R framework posits that physical cues, environmental elements, marketing components and other factors exert an influence on how a consumer makes a purchase decision (Goi, Kalidas & Zeeshan, 2014; Yazdanparast & Tran, 2021). In addition, personal factors like demographic variables, lifecycle stage, financial circumstances and lifestyle also have a significant effect on behaviour and consumer's perceived value (Amirtha & Sivakumar, 2021; Rani, 2014; Yarimoglu, 2017). Therefore, the S-O-R framework serves as the theoretical basis of this study by determining the effect of specific lifestyle dimensions (stimulus) and perceived value (organism) on the purchase intention (response) of consumers when purchasing cellular devices.

2.2 LIFESTYLE

Lifestyle refers to a consumer's way of living, expressed by means of their preferred activities, interests and opinions (Kotler & Armstrong, 2018). *Activities* include those undertakings of a consumer in terms of shopping, work and entertainment (Qazzafi, 2020). According to Anantachart (2013), *interests* refer to a consumer's preferences in terms of career, family, recreation, community, food and fashion. Consumer *opinions* can be described as consumers' feelings about various matters such as products, brands, personal matters, social issues and economics (Töpfer & Bug, 2015). A specific lifestyle is comprised of unique needs and desires (Acikdilli, Ziemnowicz & Bahhouth, 2018). Solomon (2020) purports that the analysis of a consumer's lifestyle will provide greater insight as to how they spend their time and money.

The activities, interests and opinions (AIO) approach was first introduced by Wells & Tigert (1971) to analyse consumer lifestyle. Various well-known researchers such as Dutta-Bergman (2006), Hur, Kim & Park (2010), Kumar & Sarkar (2008), Plummer (1974) and Swinyard & Smith (2003) have since used this approach to analyse consumer lifestyle. The AIO approach involves providing consumers with a battery of statements that focusses on specific lifestyle dimensions within the AIO framework. The levels of agreement or disagreements is measured on a 10 point Likert scale (Solomon, 2020). For the purpose of this study, the following lifestyle dimensions were analysed by using the AIO approach:

2.2.1 Entertainment

Entertainment can be defined as any activity that can provide a source of pleasure to a passive audience (Bates & Ferri, 2010). Hoffman & Novak (1996) affirm that a consumer's mood can be improved when interacting with digital systems that provide entertainment and enjoyment, which could lead to improved brand loyalty (Liu, Sinkovics, Pezderka & Haghirian, 2012) and purchase intention (Scharl, Dickinger & Murphy, 2005). Cellular device content that fulfil a consumer's need for entertainment is a significant predictor of attitude (Gao & Zang, 2016) and value (Ducoffe, 1995). Previous studies indicate the positive relationship between entertainment and perceived value (Gao & Zang, 2016; Lin & Bautista, 2018; Okazaki, 2004). The following hypothesis is therefore proposed:

H1: Entertainment has a positive effect on consumers' perceived value of a cellular device.

2.2.2 Club membership

According to Schiffman & Wisenblit (2019), a membership group or membership club can be defined as a group to which a consumer either already belongs to or qualifies to obtain membership of. Club membership programmes usually involve offering consumers rewards that are based on their product or service purchases. Some of these

rewards include offering free products and services to consumers after a prescribed amount of purchases has been made (Levy, Weitz & Grewal, 2019). As the use of cellular devices are widespread across all age groups, clubs are using cellular devices to facilitate interactions among club members. By using novel online systems and smartphone technologies, the delivery and consumption of club services are improved and superior levels of personalisation can be offered to club members. As a result, the overall consumer experience is enhanced and could add value for club members (Morosan & DeFranco, 2014). The following hypothesis is therefore proposed:

H2: Club membership has a positive effect on consumers' perceived value of a cellular device.

2.2.3 Shopping

One area within the cellular industry that is continually gaining interest among consumers is cellular shopping or mobile shopping (m-shopping). This could be attributed to the growing popularity and availability of cellular devices such as smartphones. M-shopping can be defined as monetary transactions that are completed online by means of an Internet enabled cellular device or computer in order to purchase a product or service (Wong, Lee, Lim, Chua & Tan, 2012). The availability of an m-shopping function on a cellular device allows consumers to browse and shop for products and services anywhere at any time, even when travelling. A study conducted by Pantano & Priporas (2016) indicated that consumers derive increased value from m-shopping by saving them time and money, offering secure online transactions, quality delivery services and by supporting their lifestyle in general. The following hypothesis is therefore proposed:

H3: Shopping has a positive effect on consumers' perceived value of a cellular device.

2.2.4 Fashion consciousness

Fashion can be described as a visible product based on consumers' specific needs, interests, identity and values and has a temporary cyclical nature, adopted by consumers for a specific period of time (Bhardwaj & Fairhurst, 2009; Eluwawalage, 2016). A consumer's interest in fashion can be considered an important factor that influences decision-making in a retail setting (Ko, Kim, Taylor, Kim & Kang, 2007; Zhou, Arnold, Perreira & Yu, 2010). Gao, Krogstie, Chen & Zhou (2014) state that consumers who are conscious about fashion are usually concerned with pursuing a very stylish, socially acceptable and trendy lifestyle. A study conducted on the use of cellular devices by younger consumers indicate that the majority make use of their cellular phones to keep up to date with the latest fashion trends (Amankwaa, Esson & Gough, 2020). According to Lee, Lim, Jolly & Lee (2009), a cellular phone can be considered as a fashion item in itself for some consumers. As such, the level of fashion consciousness has a significant impact on cellular phone consumers' perceived value (Al-Dmour *et al.*, 2020; Salem & Alanadoly, 2022:80). The following hypothesis is therefore proposed:

H4: Fashion consciousness has a positive effect on consumers' perceived value of a cellular device.

2.2.5 Media

Over the past few years, the use of newer and more innovative media platforms has increased concurrent with the growing demand of consumers for high-quality online media content (Youn & Lee, 2019). Levy *et al.* (2019) purport that the most notable improvement is the use of social media platforms that largely comprise of consumer-generated media (CGM). CGM can be defined as content created by consumers on a voluntary basis, accessible online or by means of mobile communication devices like smartphones (Schiffman & Kanuk, 2014; Toriumi, Yamamoto & Okada,

2020). Marketers use media on mobile devices to attract consumers' attention; engage with prospective consumers; assist consumers with searching for product information; prompt consumers to make a purchase; and to share preferred media content or experiences with their peers (Jan, Abouzaid, Nadeem & Hossain, 2020; Tseng & Wei; 2020). Kang (2018) affirms that the incorporation and accessibility of social media platforms on mobile communication devices contribute to an improved consumer experience. A study conducted by Youn & Lee (2019) indicate that cellular devices that offer media services or applications have a positive effect on consumers' perceived value. The following hypothesis is therefore proposed:

H5: Media has a positive effect on consumers' perceived value of a cellular device.

2.3 PURCHASE INTENTION

Organisations are investing a significant amount of resources to gain a holistic understanding of how consumers make consumption decisions, specifically focussing on those factors that have an influence on consumers' purchase intention (Yeo, Tan, Lim, Leong & Leong, 2020). With the development of technologically advanced products comprised of multiple attributes that could appeal to consumer's specific needs, it is important to determine which of these attributes have a dominating effect on a consumer's intention to purchase (Filho, Simoes & De Muylder, 2020). Intention refers to a consumer's subjective readiness to engage in a particular behaviour (Fishbein & Ajzen, 1975), whereas purchase intention explicitly denotes a consumer's readiness to purchase a product (Martins, Costa, Oliveira, Goncalves & Branco, 2019). Purchase intention is encouraged by marketing campaigns (Bigne-Alcaniz, Curras-Perez, Ruiz-Mafe & Sanz-Blas, 2012) and thus it is in the best interest of an organisation to determine the factors that affect purchase intention so that marketing strategies can be customised in order to strengthen the purchase intention of targeted consumers or to steer consumers' buying behaviour (Ajzen, 2012:11). One of the more prominent factors that affect purchase intention is perceived value (Ryu, Lee & Kim, 2012).

2.4 PERCEIVED VALUE

Zeithaml (1988) defines perceived value as a consumer's overall analysis of a product's usefulness, focussing mainly on the benefits sought and the resources invested in the process of acquiring and consuming the product. Boksberger & Melsen (2011) and Seymour (2012), argue that this definition is too simplistic due to its monetary focus and therefore does not prevail the full meaning of the term.

A slightly different view by Morgan & Govender (2016) describes perceived value as a trade-off between perceived benefits on the one hand, and monetary and non-monetary sacrifices on the other hand. It is important to bear in mind that value is perceptual and always relates to a consumer's subjective evaluation of a product or service.

In their study, Sweeney & Soutar (2001) created the PERVAL scale to assess consumers' perceptions of the value of a durable product at brand level. The measure was developed to determine what consumption values drive consumer purchase attitude and behaviour. The key value dimensions of Sweeney & Soutar (2001) are summed up as price value, functional value, emotional value and social value (Peng, Zhang, Wang & Liang, 2019). *Price value* refers to the perceived economic return on investment accrued by a consumer when purchasing the product – is the product perceived to be worth the financial cost incurred by the consumer? (Ye, Kang, Luo & Ma, 2018). Kim, Gupta & Koh (2011) explain that *functional value* can be derived from the anticipated performance and perceived characteristics of the product including its quality, durability and reliability. The perceived value resultant from experiencing a novel product or having fun with a product is referred to as *emotional value* – the ability of a product or service to encourage feelings or affective states from a consumer (Asshidin, Abidin & Borhan, 2016; Kim *et al*., 2011). *Social value* can be described as the perceived ability of a product to enhance the social standing of a consumer and to strengthen a consumer's self-image and social prosperity (Kim *et al.*, 2011).

Perceived value is a reliable predictor of consumers' purchase intention (Ryu *et al.*, 2012). Previous research studies indicate that a positive perception towards the value of a product or service improves the likelihood of both purchase and repurchase intention (Confente *et al.*, 2020; Konuk, 2018; Lim, Yong & Suryadi, 2014; Wang *et al.*, 2018:261). Consumers are therefore more likely to purchase a product that they perceive to have a higher value than competing products. Thus, the following hypothesis is proposed:

H6: Perceived value has a positive effect on consumers' purchase intention of a cellular device.

2.5 THE MEDIATING EFFECT OF PERCEIVED VALUE

The proposed relationships discussed in the previous sections shed further light on the possibility of perceived value to serve as a potential mediating variable between the lifestyle dimensions and repurchase intentions. Various research studies have utilised perceived value as a mediator in either the relationship between lifestyle and purchase intentions (Akkaya, 2021) or between specific lifestyle dimensions and purchase intentions (Moslehpour, Dadvari, Nugroho & Do, 2021; Salem & Alanadoly, 2022). Hence, it is proposed that:

H7: Entertainment has a positive effect on consumers' perceived value of a cellular device, as mediated by perceived value.

H8: Club membership has a positive effect on consumers' perceived value of a cellular device, as mediated by perceived value.

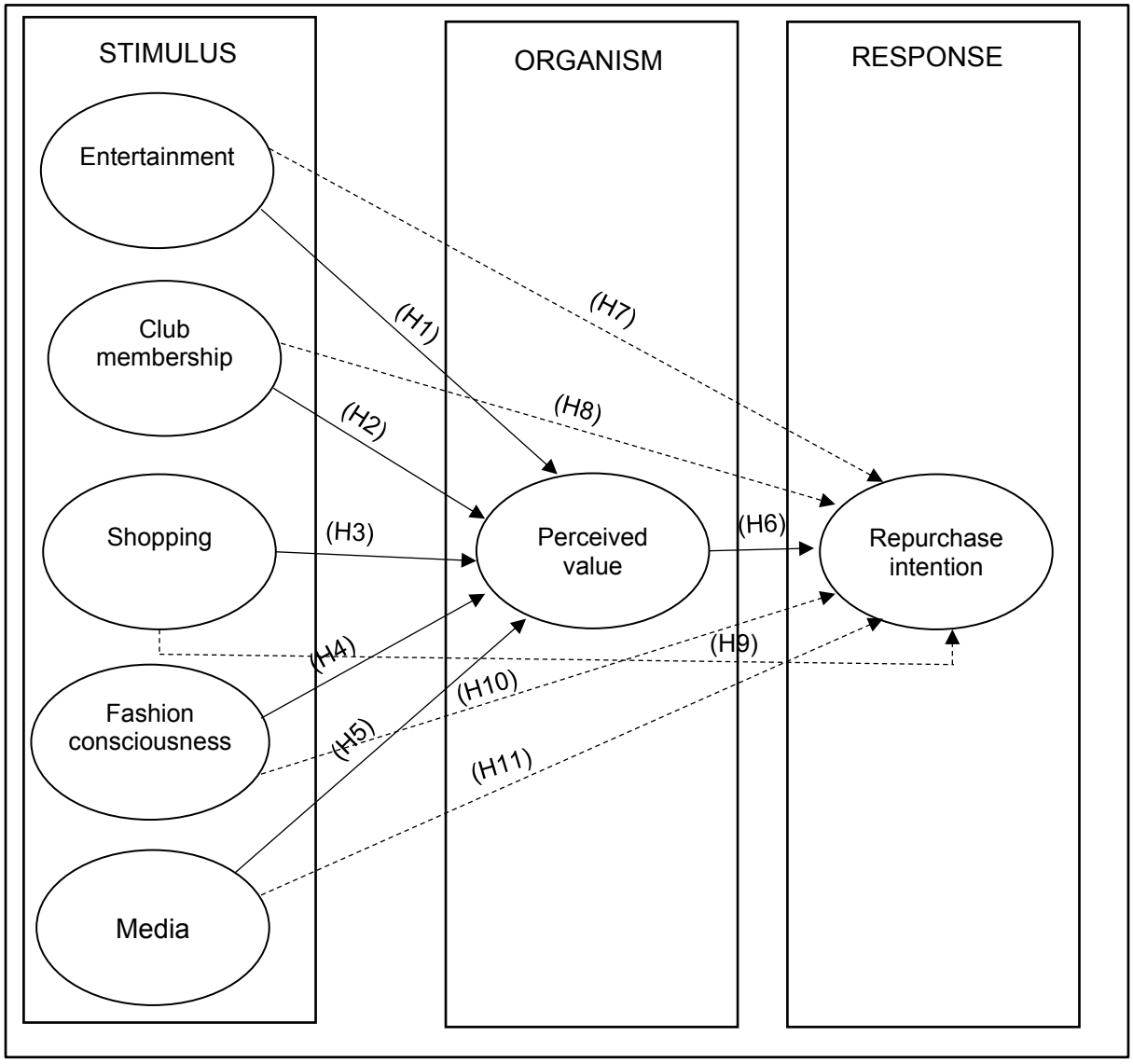
H9: Shopping has a positive effect on consumers' perceived value of a cellular device, as mediated by perceived value.

H10: Fashion consciousness has a positive effect on consumers' perceived value of a cellular device, as mediated by perceived value.

H11: Media has a positive effect on consumers' perceived value of a cellular device, as mediated by perceived value.

Figure 1 demonstrates the hypothesised relationships between the relevant constructs under investigation as proposed from the above literature discussion.

FIGURE 1:
CONCEPTUAL MODEL



3. METHODOLOGY

3.1 RESEARCH DESIGN, POPULATION AND SAMPLING

This study used a quantitative approach with a descriptive research design. Babin and Zikmund (2016) affirm that descriptive research designs are utilised when a deeper description and reflection of information is sought by mean of asking questions. A descriptive research design is most suitable to generate information about a specific group's characteristics, to analyse consumer behaviour, and to make specific predictions (Brown & Suter, 2014). Thus, by using a descriptive research design in this study, a meaningful interpretation of consumers' lifestyles, perceived values and purchase intentions could be described. To support the descriptive research design, this study utilised a quantitative research approach in the form of self-administered surveys to collect primary data from respondents. According to Nardi (2016), a survey is less costly to reach larger samples and is ideal for asking respondents about sensitive or personal topics like attitudes, interests and opinions. As this study aimed to determine the lifestyle of respondents, which include their attitudes, interests and opinions (Kotler & Armstrong, 2018), the survey method was found to be most suitable.

A non-probability convenience sampling technique was used in this study to draw a sample of 600 respondents from the population. Convenience sampling was used due to time and cost constraints. The study population comprised of South Africans aged 18 years and older who own a cellular device.

3.2 QUESTIONNAIRE AND DATA COLLECTION

A standardised self-administered questionnaire comprised of five sections was developed for this study. The first section of the questionnaire provided the respondent with an introduction to the study, as well as three screening questions to ensure that the respondent is above the age of 18, owns a cellular device and resides in South Africa. The second section of the questionnaire measured respondents' lifestyle dimensions in terms of entertainment, club membership, shopping, fashion consciousness and media. The third section measured respondents' perceived value in terms of price value, functional value, emotional value and social value. The fourth section measured respondents' purchase intention. The fifth section of the questionnaire focused on respondents' demographic details including age, level of education, level of income and gender.

In total, 31 scale items were adopted from previous studies to measure the five different lifestyle dimensions of respondents. More specifically, for the measurement of lifestyle three entertainment scale items were adopted from Ling and Pedersen (2006); four media usage scale items from Kilian, Hennigs & Langner (2012); ten fashion-consciousness scale items and seven shopping scale items from Anantachart (2013), Kucukemiroglu, Harcar & Spillan (2007), and Narang (2010); and seven club membership scale items from Fancourt & Steptoe (2018:380). The scale items used to measure perceived value were adopted from Sweeney & Soutar (2001) and Wang (2010). Purchase intention was measured by scale items adopted from Chang & Chen (2008) and Pavlou (2003). All the measures were both valid and reliable as Cronbach's alpha values ranged from 0.8 to 0.9. A seven-point Likert scale was used to measure the scale items, where 1 was *strongly disagree* and 7 was *strongly agree.*

4. RESULTS

4.1 SAMPLE PROFILE

Slightly more females (46.8%) participated in the study than males (45.4%). Respondents' ages varied between 18-29 years (35.3%), 30-39 years (31.3%), 40-49 years (18.9%), 50-59 years (10.5%), and 60 years and older (4%). Regarding the highest academic qualification, almost half (43.4%) of the respondents completed Grade 12 / Matric.

4.2 RELIABILITY

To assess the internal consistency reliability of attachment, the Cronbach's alpha coefficients were calculated for entertainment, club membership, shopping, fashion consciousness, media, perceived value and repurchase intention. According to Hair, Sarstedt, Hopkins & Kuppelwieser (2014) Cronbach's alpha coefficient values of 0.70 can be considered reliable. From Table 1, it is apparent that the Cronbach's alpha coefficient values for all the measurement scales were greater than 0.70, indicating acceptable reliability.

TABLE 1:
CRONBACH'S ALPHA COEFFICIENTS

Construct	Cronbach's alpha coefficients
Entertainment	0.92
Club membership	0.86
Shopping	0.90
Fashion consciousness	0.94
Media	0.91
Perceived value	0.94
Purchase intention	0.96

4.3 ASSESSING THE MEASUREMENT MODEL AND CONFIRMING CONSTRUCT VALIDITY

The estimation of the researcher model indicated that the specified model was a good fit as both the CFI (0.99) and the TLI (0.96) exceeded the recommended cut-off points of 0.90. The RMSEA also supported the good model fit with a value of 0.06, which is less than the cut-off point of 0.10. All the factor loadings of the items for the stated variables were statistically significant with small accompanying standard errors demonstrating accuracy in the estimation process of the modelling. Owing to the good model fit and the positive significant loadings of all the items on the variables, convergent validity could also be confirmed.

4.4 CORRELATION MATRIX

To measure the strength of the linear relationship between the latent variables, a correlation analysis was conducted, as indicated in the correlation matrix in Table 2.

TABLE 2:
CORRELATION MATRIX OF THE LATENT VARIABLES

Variables	1	2	3	4	5	6	7
Entertainment	–						
Club membership	0.35*	–					
Shopping	0.35*	0.50**	–				
Fashion consciousness	0.36*	0.54**	0.59**	–			
Media	0.54**	0.40*	0.30*	0.43*	–		
Perceived value	0.60**	0.41*	0.40*	0.44*	0.67**	–	
Purchase intention	0.33*	0.33*	0.30*	0.34*	0.39*	0.62**	–

*Medium effect size ($0.30 \leq r < 0.50$)
**Large effect size ($r \geq 0.50$)

From Table 2 it can be seen that all of the variables were statistically significantly correlated with one another as both medium and large correlations were found between all the variables used in the analysis. Specifically, entertainment was correlated with club membership (r = 0.35, medium effect), shopping (r = 0.35, medium effect), fashion consciousness (r = 0.36, medium effect), media (r = 0.54, large effect), perceived value (r = 0.60, large effect) and repurchase intention (r = 0.33, medium effect). Club membership was correlated with shopping (r = 0.50, large effect), fashion consciousness (r = 0.54, large effect), media (r = 0.40, medium effect), perceived value (r = 0.41, medium effect) and repurchase intention (r = 0.33, medium effect). Shopping was significantly correlated with fashion consciousness (r = 0.59, large effect), media (r = 0.30, medium effect), perceived value (r = 0.40, medium effect) and repurchase intention (r = 0.30, medium effect) and fashion consciousness was correlated with media (r = 0.43, medium effect), perceived value (r = 0.44, medium effect) and repurchase intention (r = 0.34, medium effect). Lastly, media was correlated with perceived value (r = 0.67, large effect) and repurchase intention (r = 0.39, medium effect) and perceived value was correlated with repurchase intention (r = 0.62, large effect). Seeing as all of the above mentioned correlational relationships were below 0.85, discriminant validity of the latent variables could also be confirmed.

4.3 ASSESSING THE STRUCTURAL MODEL

Following the correlation assessment, structural paths were added to the measurement model. The results from the structural regressions to accept or reject the specified research hypotheses is presented in Table 3.

TABLE 3:
STRUCTURAL PATHS OF THE LATENT VARIABLES

H	Path	β	SE	p-value	Result
H_1	Entertainment → Perceived value	0.24	0.026	0.001	Hypothesis supported
H_2	Club membership → Perceived value	0.06	0.028	0.038	Hypothesis supported
H_3	Shopping → Perceived value	0.05	0.029	0.122	Hypothesis rejected
H_4	Fashion consciousness → Perceived value	0.06	0.031	0.055	Hypothesis rejected
H_5	Media → Perceived value	0.30	0.028	0.001	Hypothesis supported
H_6	Perceived value → Purchase intention	0.86	0.049	0.001	Hypothesis supported

β: beta coefficient; SE: standard error; p-value: two-tailed statistical significance

As Table 3 shows, perceived value was statistically significantly influenced by entertainment (β = 0.24; SE = 0.026; p = 0.001; supporting H1), club membership (β = 0.06; SE = 0.028; p = 0.038; supporting H2) and media (β = 0.30; SE = 0.028; p = 0.001; supporting H5), but not shopping (β = 0.05; SE = 0.029; p = 0.122; rejecting H3) and fashion consciousness (β = 0.06; SE = 0.031; p = 0.055; rejecting H4). Moreover, supporting hypothesis 6, perceived value had a statistically significant structural relationship with repurchase intention as an outcome (β = 0.86; SE = 0.049; p = 0.001; supporting H6).

Taking the significant relationships between the variables into consideration, the indirect effects of the model were also tested and presented in Table 4.

TABLE 4:
INDIRECT EFFECT WITH CONFIDENCE INTERVALS AT THE 95% CONFIDENCE LEVEL

Mediating hypothesis	Relationship	Estimate	SE	Confidence interval (95%)		p-value	Result
				Lower	Upper		
H_7	Perceived value mediates the relationship between entertainment and purchase intention.	0.21	0.027	0.161	0.268	0.001	Hypothesis supported
H_8	Perceived value mediates the relationship between club membership and purchase intention.	0.05	0.027	0.001	0.107	0.049	Hypothesis supported
H_9	Perceived value mediates the relationship between shopping and purchase intention.	0.04	0.026	-0.014	0.088	0.138	Hypothesis rejected
H_{10}	Perceived value mediates the relationship between fashion consciousness and purchase intention.	0.05	0.030	-0.006	0.110	0.079	Hypothesis rejected
H_{11}	Perceived value mediates the relationship between media and purchase intention.	0.26	0.034	0.194	0.326	0.003	Hypothesis supported

From Table 4 it can be deduced that perceived value had an indirect effect in the relationship between entertainment and repurchase intention (estimate = 0.21; SE = 0.027; p = 0.001; 95% CI [0.161, 0.268]), club membership and repurchase intention (estimate = 0.05; SE = 0.027; p = 0.049; 95% CI [0.001, 0.107]) and media and repurchase intention (estimate = 0.26; SE = 0.034; p = 0.003; 95% CI [0.194, 0.326]), Therefore, hypotheses 7,8 and 11 can be accepted. Hypotheses 9 and 10, were however rejected as perceived value had no meaningful effect on the relationship between shopping and repurchase intention (estimate = 0.04; SE = 0.026; p = 0.138; 95% CI [-0.014, 0.088]) and fashion consciousness and repurchase intention (estimate = 0.05; SE = 0.030; p = 0.079; 95% CI [-0.006, 0.110]).

5. DISCUSSION

5.1 THEORETICAL

This study introduced an integrated S-O-R framework by combining several dimensions of lifestyle (entertainment, club membership, shopping, fashion consciousness and media) with the latent structures of perceived value and purchase intentions. This S-O-R framework contributes to the conversation on consumer behaviour when purchasing cellular devices in several ways. Firstly, the validity of the S-O-R framework can be confirmed as it is viewed as a useful tool to understand how cellular retail outlets can foster consumer purchase intention by means of analysing their lifestyle dimensions and perceived value. Various researchers regard the S-O-R framework quite versatile as it can be used to examine multifaceted aspects of different stimuli, organisms, and response behaviour. This study also reaffirms that consumers lifestyle comprises of multi-dimensional constructs that require further investigation, especially in the context of the South African cellular device industry.

The result of this study confirms the work of earlier scholars who established that entertainment (Gao & Zang, 2016; Lin & Bautista, 2018), club membership (Morosan & DeFranco, 2014) and media (Youn & Lee, 2019) as lifestyle dimensions significantly influence perceived value. Consumers will, therefore, perceive to receive more value when they are entertained by interacting with digital systems, receive rewards through club membership programmes or use newer and more innovative media platforms. The results, however, also revealed that the lifestyle dimensions of shopping and fashion consciousness do not significantly influence perceived value, which contradicts the views

of Al-Dmour *et al*. (2020) and Pantano and Priporas (2016), who confirmed the positive relationships between these constructs. This result, therefore, reveals that consumers tend to perceive to obtain no value from being conscious about their fashion or completing monetary transactions on their cellular devices. Furthermore, the research findings also confirm that perceived value statistically significantly influences purchase intention. This result is consistent with arguments of Confente *et al*. (2020) and Konuk (2018) who state that a positive perception towards the value of a product or service improves the likelihood of both purchase and repurchase intentions.

Lastly, the indirect effects of perceived value in the relationship between lifestyle dimensions and purchase intentions were also tested and revealed that perceived value plays a noteworthy mediating role in strengthening the connection between entertainment and repurchase intention, club membership and repurchase intention and media and repurchase intention. Perceived value, however, had no meaningful effect on the relationship between shopping and repurchase intention and fashion consciousness and repurchase intention. This result can be viewed as unique in that previous studies have not examined these indirect relationships which could provide a better explanation of the relationships between the above-mentioned constructs. In other words, while it is important for organisations to establish their consumers' lifestyle dimensions when developing purchase intention strategies, they should consider that perceived value plays a key role in the relationship between entertainment and repurchase intention, club membership and repurchase intention and media and repurchase intention, but not between shopping and repurchase intention and fashion consciousness and repurchase intention.

These results offer meaning to theory, as existing research has not provided a comprehensive explanation of the role and relevance of lifestyle dimensions and perceived value, while simultaneously being measured for their contribution to consumer purchase intentions. Hence, the results of this study provide new insight into the interrelationships between lifestyle dimensions and perceived value in contributing to consumer purchase intentions, which makes an original contribution to the body of knowledge in understanding consumers purchasing intentions of buying cellular devices.

5.2 MANAGERIAL

The purpose of this study was to determine whether lifestyle dimensions can be valuable to cellular retail outlets in determining consumers' perceived value and purchase intentions. The results confirm that consumer lifestyle dimensions do play an important role in determining their perceived value and purchase intentions in the cellular device industry. Accordingly, from a managerial perspective it is evident that cellular retail outlets should facilitate consumer perceived value and purchase intentions strategies by concentrating on certain lifestyle dimensions. Specifically, cellular retail outlets are advised to analyse their consumers' lifestyle dimensions in an attempt to increase their perceived value and purchase intentions.

This can be achieved by providing digital systems or mobile content that fulfil a consumer's need for entertainment. Regarding club membership, cellular retail outlets should provide discounts and rewards for their club members in the form of free products and services. These club members should also receive improved club services and superior levels of personalisation through using novel online systems and smartphone technologies. With the lifestyle dimension media, it is important for cellular retail outlets to make use of newer and more innovative media platforms (social media) with high-quality online media content. It is through this media platforms that cellular retail outlets will be able to attract consumers' attention; engage with prospective consumers; assist consumers with searching for product information; prompt consumers to make a purchase; and to share preferred media content or experiences with their peers.

Lastly, seeing as the results also revealed that perceived value influenced purchase intentions, it is suggested that cellular retail outlets provide price value, functional value, emotional value and social value in order to reap the benefits of consumers buying their cellular products. Cellular retail outlets might achieve this goal by rethinking their prices strategies, increase product quality, durability and reliability, elicit emotions and social stance among consumers through their products and services.

6. LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

One of the more prominent limitations of this study is its single-country context. In order to attain more robust and comprehensive findings, future studies could conduct a comparative study across a multitude of different countries to ascertain whether the results of this study are unique to South Africans. Another limitation of the study is that only five lifestyle dimensions were considered. Future research could incorporate additional dimensions by incorporating scale items pertaining to consumers' activities, interests and opinions. This study was conducted at a specific point in time. Future studies could conduct a longitudinal analysis in order to gain a more holistic understanding of the effect of lifestyle on the perceived value and purchase intention of consumers.

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A conceptual framework for understanding how the green city philosophy translate into sustainable behaviour and performance: The case of retail businesses in Cape Town

Dr Virimai Victor Mugobo
Department of Retail Business Management
Cape Peninsula University of Technology
mugobov@cput.ac.za
*Corresponding author

Dr Herbert Ntuli
Department of Retail Business Management
Cape Peninsula University of Technology
ntulih@cput.ac.za

ABSTRACT

The concept of a “green city” is increasingly gaining momentum across the globe being driven by western values and ideologies. The green city philosophy does not only require investments in green infrastructure, but also adoption of sustainable behaviour based on societal norms and values. Researchers and policymakers believe that declaring a city green might incentivise the retail industry to adopt sustainable behaviour which in turn result in higher performance at both firm and industry level. However, there are still challenges in terms of operationalizing the “green city” concept and achieving its benefits in most developing countries in Africa. In particular, the link between sustainable behaviour and performance is not well understood as the relationship is governed by latent and contextual factors in addition to complex interactions among system variables in the economy. The evidence that is available is mainly coming from the developed world while few a studies have been done in developing countries. Furthermore, there has been a challenge in adopting and implementing policies promoting the green city philosophy in developing countries which made it difficult to translate the rhetoric of policy into practice. We develop a conceptual framework based on the green city philosophy and use it to examine the conditions under which sustainable behaviour might lead to increased performance of retail outlets in the context of an African city such as Cape Town

Keywords: green city philosophy, practice, sustainable behaviour, performance, retail outlets, Cape Town

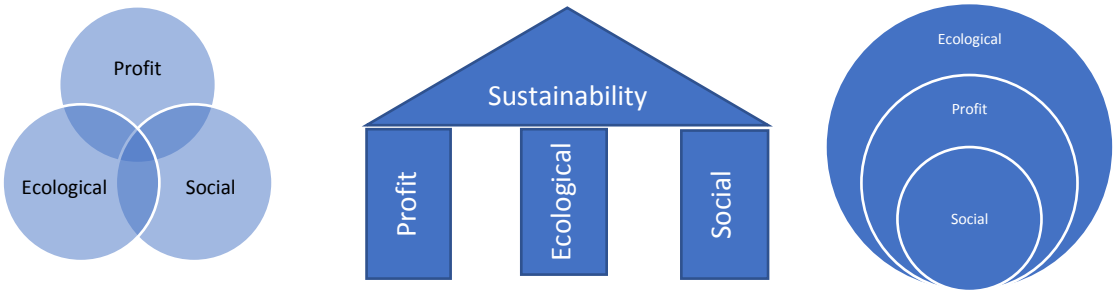
1. INTRODUCTION

The philosophy of a ‘green city’ has been around for several decades being driven by the need to make production and consumption sustainable by harmonising or aligning development goals with nature (Bibri, 2021). The concept of a green city is linked to other concepts in the literature such as ‘green economy’ (Loiseau et al., 2016; Merino-Saum et al., 2020), ‘smart city’ (Bibri, 2021), ‘green marketing’ (Mishra and Sharma, 2010), ‘green consumers’ (Diamantopoulos et al., 2003; Carrete et al., 2012) and ‘sustainable cities’ (Haughton and Hunter 2004). Although these concepts differ in scale and area of application, what they have in common is the need to balance development and nature. Narrowly defined, the green city philosophy entails investing in green infrastructure such as city parks, botanical gardens and street trees, and adoption of energy saving and emission-reduction technologies that harmoniously integrate urban development and environmental concerns (Kuratchenko et al. 2021). At a much broader level the concept of a green city also speaks to the adoption of sustainable behaviour by both firms and consumers that is consistent with nature preservation and conservation of biodiversity (Phipps et al., 2013; Jedliński, 2014). To achieve a sustainable green city, both investing in green infrastructure and adoption of sustainable behaviour should be used as complementary tools rather than as substitutes (Montalto et al.2013).

The philosophy of green cities borrows from the idea of sustainable development which has its roots in the concept of sustainability. Sustainability is best understood in terms of three elements which must be achieved simultaneously rather than in isolation, namely, social pillar, economic pillar and ecological pillar of sustainability (Singh et al. 2019). Figure 1 below provides a diagrammatic depiction of the three sustainability pillars based on different configurations from the literature. Without the attainment of any of these pillars, sustainability is compromised (Purvis et al., 2019). What this means for a green city is that the attainment of economic prosperity through the profit maximisation behaviour of the firm should not compromise both social integrity and ecological health of an urban social-ecological system.

Sustainable development therefore implies that economic development needs to be carried out in such a way that it does not interfere with the ability of urban ecosystem to provide goods and services that improve human welfare today, tomorrow and forever (Holden et al., 2014). Based on these concepts, there are different strands of literature whose objective is to understand how development can be harmonised with environmental goals whether we are considering the whole economy, sector or city level (see Schmidheiny and Timberlake, 1992; Lindfield and Steinberg, 2012; Dabija et al., 2018; Kutty et al., 2020). This study focuses on the idea of green cities and examine how this philosophy translate into sustainable behaviour and business performance in the context of a development country such as South Africa.

FIGURE 1
THEORETICAL CONCEPTUALISATION OF SUSTAINABILITY



a) Intercecting circles b) Pillars c) Embeded circles

Source: Authors' own source

Based on the notion of sustainability, different conceptual frameworks have been proposed for green infrastructure (Pakzad and Osmond, 2015), sustainable behaviour (Nguyen et al., 2019) and sustainable cities (Bibri, 2021). Our understanding of sustainable behaviour is based on models from first world countries and these models need to be adapted to suit the context of developing countries. From the literature, the ideas of green infrastructure and adoption of sustainable behaviour are viewed separately as distinct concepts for simplicity, yet in reality they should be analysed as part of a bigger picture aiding to our understanding of a complex world. The knowledge, therefore, is incomplete without understanding adoptions of sustainable behaviour in green cities as a complementary tool for supporting green infrastructure particularly in in the context of developing countries. Such a framework might be used to guide future research studies by identifying variables that explain sustainable behaviour and its links with the business performance should be defined in terms of social, economic, and ecological viability.

Theory and empirical accounts suggest that declaring a city green, certification of green production technologies and consumerism does not only generate adequate incentives for firms such as retail shops and restaurants to behave in a sustainable manner, but also helps then to improve the businesses' performance in line with their profit maximisation objective (Junior et al., 2015). Evidence from first world countries reveal that such programmes and interventions have led to the adoption of sustainable behaviour and increased business performance. In an endeavour to go green, firms have adopted green technologies (Kong et al., 2016) and behaviours such as waste reduction and participation in recycling programmes (Young et al., 2017). One of the driving forces behind the adoption of green production technologies and sustainable behaviour in first world countries is related to consumerism where consumer demand for goods and services is influenced by the firm's production choices that do not cause harm to the environment in addition to other factors (Malyan and Duhan, 2018).

Similar to consumerism, other forms of collective action are also used by consumers in first world countries to force the retail industry to comply with rules and regulations. This behaviour of consumers has led retail shops to adopt concepts such as green marketing and policies which make it mandatory for producers to provide information about the production process or seek certification of their production technologies. Under such circumstances, the choice of a production technology and the goods that are sold in retail shops affect the firms profits and reputation.

Although there is noticeable investment in green infrastructure in most cities in South Africa compared to other African countries, this has not been matched by the adoption of sustainable behaviour from production, distribution, and consumption of retail products (Cohen, 2011).

As with most countries across the continent, operationalisation of the green city philosophy in South Africa in terms of incentivising business firms to adopt sustainable behaviour has been very slow due several factors. First, the policy environment might not be conducive for firm such as retail businesses and restaurants to adopt sustainable behaviour (Beitzen-Heineke et al., 2021). Second, partial or lack of policy implementation could be another factor responsible for hindering the movement from theory to practice in the countries. Third, contextual, political, and socio-economic factors such as the high levels of illiteracy unemployment, lack of knowledge, infrastructural deficiencies, poverty, and inequality could be some of the most important factors given that a greater percentage of the population in developing countries is poor. Poverty forces consumers from poor countries to choose cheap products based on prices only rather than considering other dimensions such as the production process.

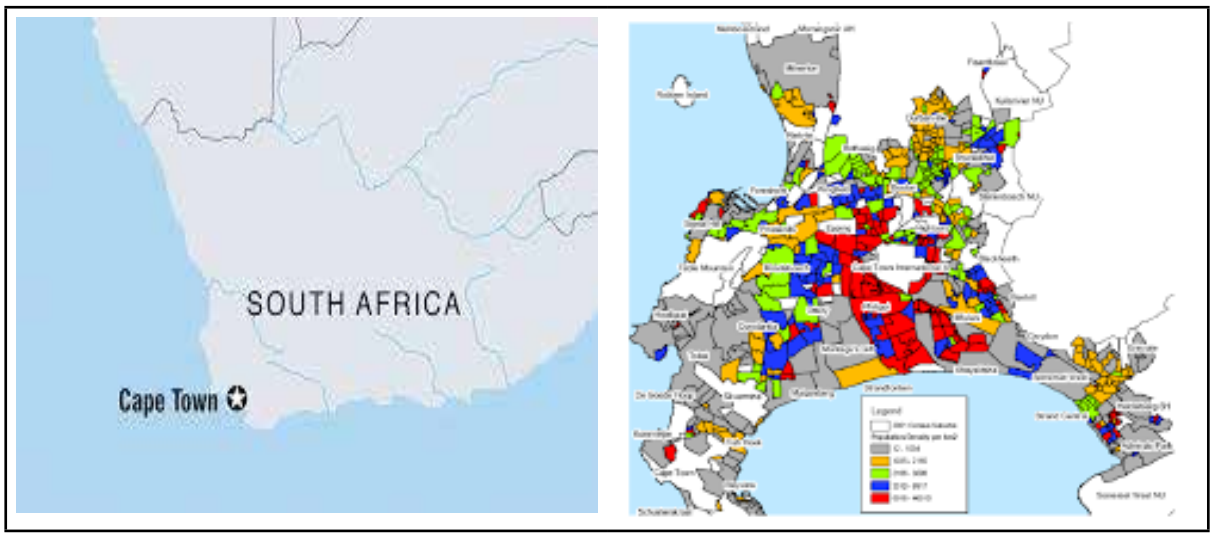
In the case of Cape Town, collective action is constrained by a mixture of people from different backgrounds thereby exacerbating the problem. Under these conditions, consumerism is bound to fail, and firms take advantage of the situation (Hardner and Rice, 2002). In the absence of strong consumerism and weak legal environment, there are no further restrictions on behaviour of firms except for market forces (Mansvelt, 2011).

In this study, we develop a conceptual framework hinged on the philosophy of a green city and use this to explain the link between sustainable behaviour of retail businesses and restaurants and business performance using Cape Town as a case study. The main objective of this study is to examine the conditions under which sustainable behaviour might lead to increased business performance. We ask: i) How can sustainable behaviour lead to improved performance in developing countries? ii) How can policy incentivise retail businesses to behave in a sustainable manner?

2. SETTING THE CONTEXT

Cape Town is a multiracial society with consumers from diverse backgrounds, culture that pans across different countries and continents (McEwan et al., 2015). Figure 1 below shows the map of the city of Cape Town. According to the results of the most recent census conducted by Statistics South Africa (2011), the majority of the population of Cape Town are coloureds (42%), followed by black Africans (39%), whites 16% and finally a small proportion of Asian communities (2%). The economy of the city is primarily based on tourism and wine farming which is also complemented by a vibrant retail industry of supermarkets and restaurants (Bruwer, 2003). Most supermarkets combine both grocery and fast foods section to cater for the ever-growing market. An increase in number of women recruited on the job market coupled with an increase in the number of consumers who prefer to eat fast foods signals an increase in the demand for consumer goods and services and growth in the retail sector (Steyn et al., 2011).

FIGURE 2:
MAP OF THE CITY OF CAPE TOWN



Source: Google Maps

It is indisputable that economic growth and urbanisation have contributed significantly to environmental pollution and degradation of ecosystems as firms and households seek to maximise their objectives. Like most cities in South Africa, the city of Cape Town has also experienced a significant growth of the informal settlements which has also contributed to waste generation in the informal sector (Weimann and Oni, 2019). The occurrence of the informal sector, poverty and inequality contributes to the complexity in implementing the green city philosophy in Africa. Even though the informal sector contributes a fair share towards environmental pollution, it is difficult to instill discipline and sustainable behaviour in poor communities due to lawlessness and lack of infrastructure. Policymakers face trade-offs in terms of choices between policies that favour environment sustainability and rehabilitation and policies that contribute to poverty reduction (Deininger, 2003).

The retail business sector generates a significant amount of solid waste (e.g., plastics, glass, paper, cardboard) and organic waste (e.g., vegetables, meat, cooking oil and grey water). Most of the waste will eventually end up at the landfills, on the streets, blocking drainage systems or polluting the oceans, while a small proportion is recycled or re-used (Verster and Bouwman, 2020). There is call for the retail business sector to adopt sustainable behaviour to reduce the amount of pollution generated. Different strategies are available, and these include waste minimisation or reduction, reuse, recycling and recovery.

3. THEORETICAL FRAMEWORK

Both development and the environment are goods with public good characteristics whose costs and benefits extend beyond individual experiences (Engel et al., 2008). Ordinarily, the environment is funded through the fiscus while development is privately funded since the net benefits of the later are much higher than the former (Figge and Tobias, 2012). We can think of the adoption of sustainable behaviour as contributing to a public good whose benefits and costs could be monetary or non-monetary.

In this case the public good is a healthy environment that can provide the ecosystem with goods and services. Some of the benefits of adopting sustainable behaviour are not experienced at firm level, but could be experienced industry wide or economy wide, while the costs are incurred at the firm level. Therefore, the adoption of sustainable behaviour has positive externalities on other firms and consumers since the benefits of a cleaner environment accrue to the society as whole. As a public good, adoption of sustainable behaviour is bound to fail as the behaviour could be characterized by free riding where firms do not contribute hoping that other firms will contribute. Without appropriate incentives, firms might not adopt sustainable behaviour even if there are benefits accruing to the broader society.

Firms adopt sustainable behaviour by weighing costs and benefits of engaging in such activities in addition to the knowledge they possess. Assuming perfect information, the theory of rationality assumes that firms make decisions to adopt an action if the benefits are greater than the costs. This is an idea situation which does not happen in reality. In practice, firms face information constrains when they make decisions which result in suboptimal outcomes which is the basis of the theory of bounded rationality (Conlisk, 1998; Todd and Gigerenzer, 2003). In the short-run, the adoption of sustainable behaviour might come at a cost to the firm which also erodes its profits, while in the long-run a firm might be able to adjust and make some profits (Camerer, 1998).

FIGURE 3:
VARIABLES GOVERNING THE FIRMS BEHAVIOUR

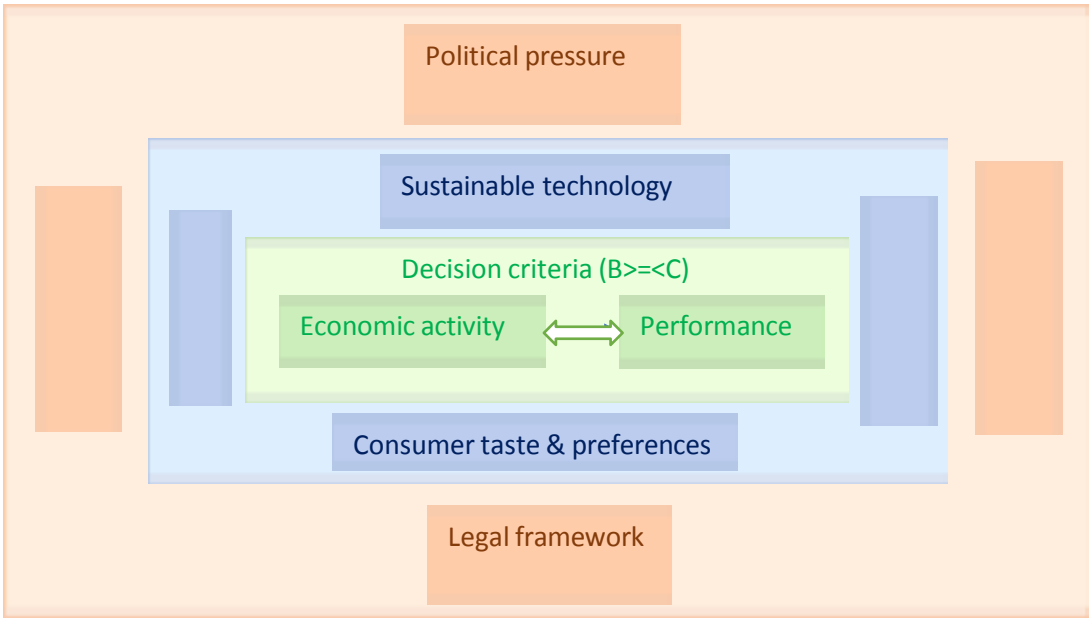
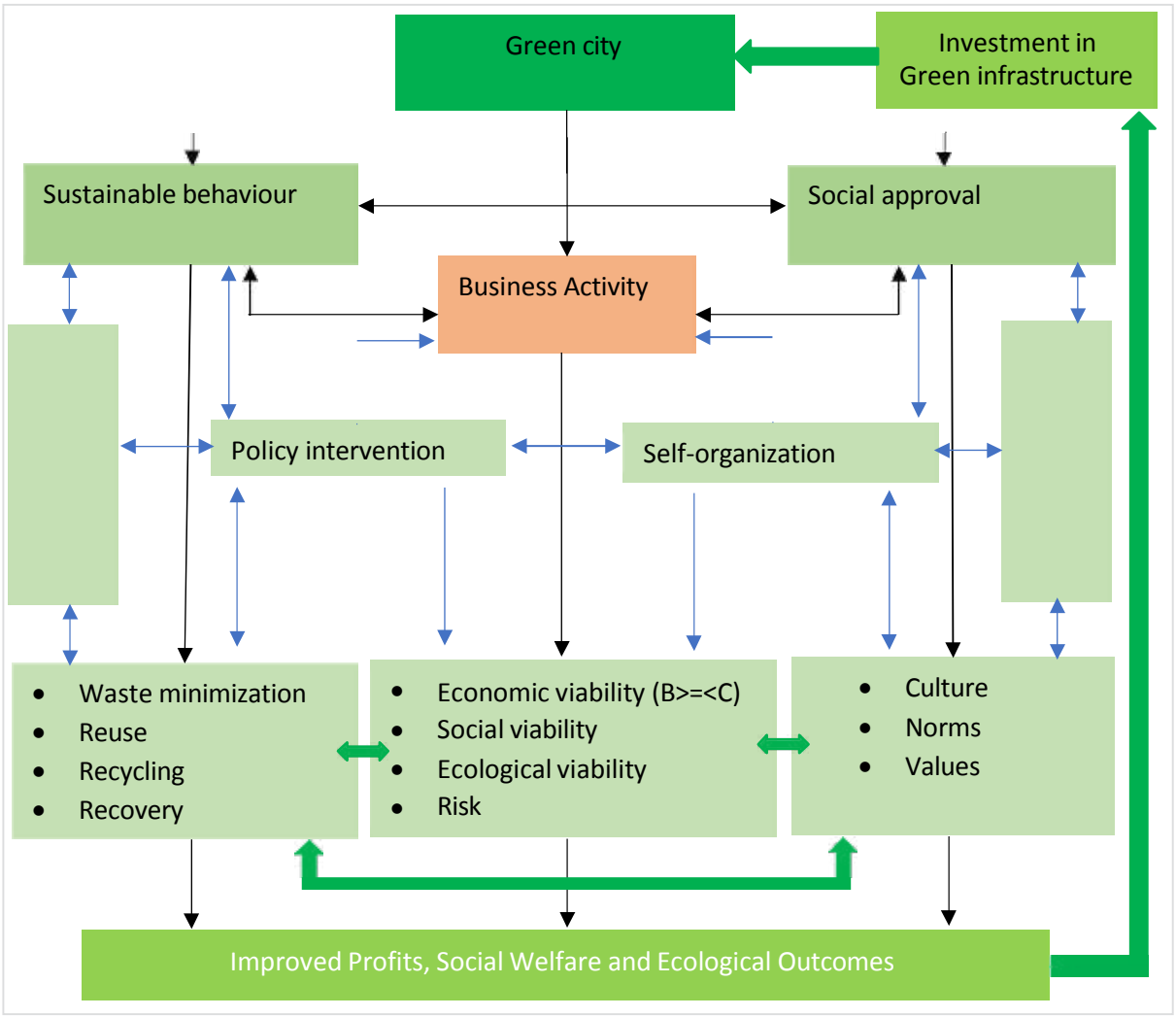


Figure 3 above shows the variables that affect the firm's performance, behaviour and decision criteria based on the cost-benefit analysis framework and idea borrowed from Ostrom's framework for analysing complex social-ecological systems (Ostrom 2007; Ostrom et al., 2007). Theoretically, we can think of these variables as being grouped into three layers where the outer layer is defined as contextual factors such as political, social, institutional, policy and legal environment, while the second-tier variables consist of market forces such as the price signal, changes in consumer taste and preferences, available technology whether it is clean or dirty (including green infrastructure) and the costs of doing business including fixed costs, variables costs and transaction costs. In the inner layer, the firm is governed by its own size (size of the economic activity), investment, social capital or business, network, and economies of scale. Based on the variables in the second and third tier, the firm decides to engage on an economic activity by weighing its costs and benefits which in turn translate into business performance in terms of social, economic and ecological viability.

4. A CONCEPTUAL FRAMEWORK LINKING SUSTAINABLE BEHAVIOUR AND BUSINESS PERFORMANCE

The conceptual framework presented in Figure 3 below helps to shed light on the conditions under which a green city and its infrastructure is supported by adoption of sustainable behaviour while at the same time improving business performance. Unlike in developing countries, one of the major forces shaping a firm's business conduct such as adoption of sustainable practices in first world countries is consumerism and collective action by consumers or other firms in the industry (Hardner and Rice, 2002).

FIGURE 4:
CONCEPTUAL FRAMEWORK OF THE GREEN CITY PHILOSOPHY



Source: Authors' own diagram

Without these additional forces, a robust policy and legal environment is required to provide the necessary incentives or constrains to unsustainable behaviour. Different policy instruments can be used to achieve the desired goals, but the efficacy of each policy depends on context. Policies can be used to incentivise sustainable behaviour (carrot) such as tax breaks and subsidies on technologies. Alternatively, policymakers can use stiff penalties (stick) to force firms to internalise externalities by adopting sustainable behaviours. Of course, this comes at a cost to the government in the form of monitoring and enforcement which imposes a budget constraint on the state. Most countries do not have enough capacity to monitor and enforce environmental laws and regulations given a limited budget and competing needs such as economic growth, infrastructure development, poverty reduction and health concerns. A combination of both carrot and stick instruments may produce superior results that both instruments working in isolation, but this also depend on the context. Therefore, a deep understanding of the context becomes imperative before adopting an instrument for use in different country.

In developing this conceptual framework, we assumed that the behaviour of retail businesses is constrained by variables that directly enter their profit maximisation or objective function, the policy and legal environment and those variables that indirectly affect its behaviour. Borrowing from the sustainability concept, a green city is achievable based on three elements. The first element pertains to adoptions of sustainable behaviour which will in turn lead to the sustainability ecological pillar. The second element addresses the business activities or economic behaviour of the firm which must be balanced to achieve both ecological and social pillars. Finally, the social pillar is achieved when both the economic activities of the firm and adoption of sustainable practices are socially-approved.

The mechanisms through which the adoption of sustainable behaviour and social approval of the firm's activities are achieved is via policy instruments and collective action behaviour either of the firms or community. Firms can come together for a common good to preserve the environment even without external force provided that a conducive environment for firms to adopt sustainable behaviour exist. Alternatively, consumers through their buying behaviour and pressure groups such as consumer organisation and environmental NGOs, can force firms to adopt sustainable behaviour. We assume that collective action can result in both formal and informal institutions that are meant to protect culture, societal norms and values. Both policy instruments and collective action can force firms to adopt waste management strategies such as waste minimisation or reduction, reuse, recycling, and recovery. Furthermore, adoption of these strategies come at a cost and this reduces the firm's profits.

The ability of consumers in developing countries to self-organise is constrained by contextual factors such as poverty, inequality coupled with very high levels of unemployment and illiteracy (Ntuli and Muchapondwa, 2018). Even without self-organising, consumers can communicate their preference for green products or technologies through demand. However, this is not possible in the developing world where the majority of the consumers live below the poverty line and their choices are based on affordability rather than product characteristics such as health and environmental impacts. According to the environmental Kuznets hypothesis, consumers tend to care more about the environment as their income and welfare increases (Dinda, 2004). As a result, firms take advantage of the context since they have market power over the consumer (Akenji, 2014). Under such circumstances, there is need for policy instruments that are capable of incentivising firms to adopt sustainable behaviour and poor consumer to either self-organize or make better product choices to force firms to go green.

5. ANALYSIS AND DISCUSSION

Public and private investment in green infrastructure is not adequate without the adoption of sustainable behaviour to support it (Montalto et al., 2013; Meng and Hsu, 2019). The potential of green infrastructure to yield the desired goals of restoring ecosystem integrity or functionality is compromised if the business community does not behave in a sustainable manner. Firms such retail businesses and restaurants, can adopt sustainable behaviour such as waste reduction at the source, reuse, recycling, and recovery in order to minimise environmental pollution. These strategies have been used extensively in first world countries, while in developing countries where the challenge of environmental pollution is on the increase, due to a combination of urbanisation and lack of infrastructure, little has been done so far (Marshall and Farahbakhsh, 2013).

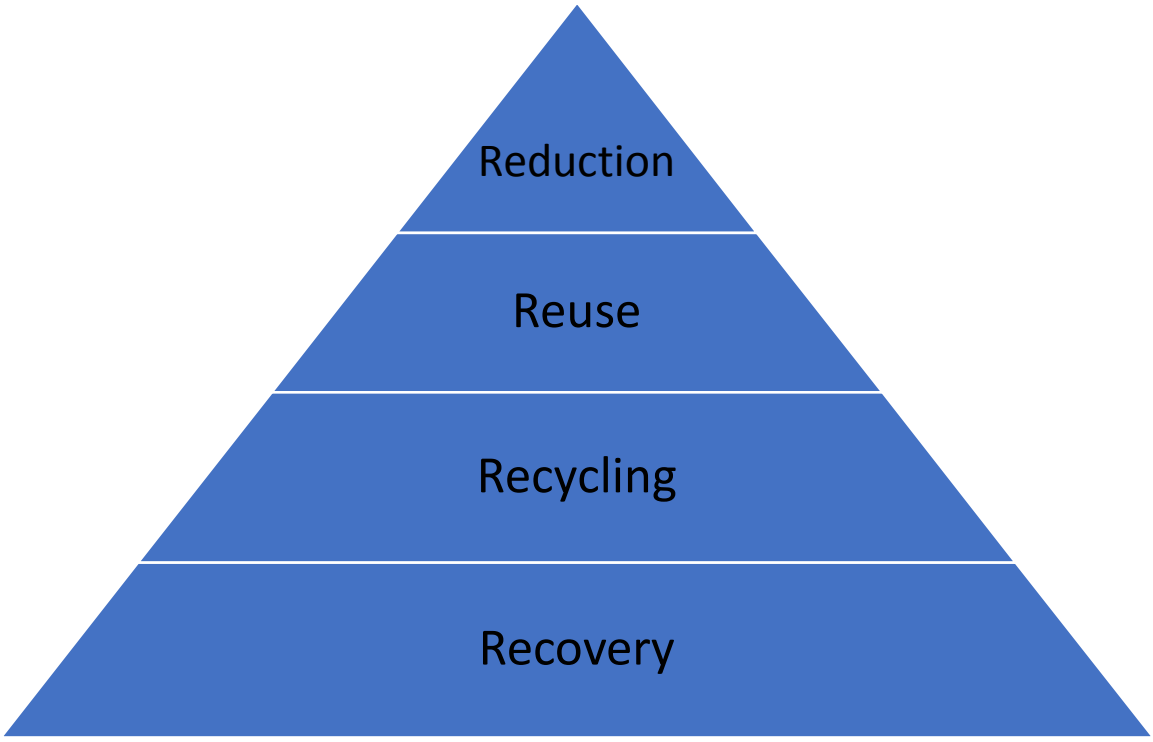
Environmental pollution places a limit on the capacity of the ecosystem to sequester the waste generated in a circular economy (Fiksel et al., 2021). However, some of pollutants such as plastics are non-biodegradable, while others such as dangerous chemicals pause a serious health hazard to the environment and people. The link between sustainable behaviour and firm performance is not straight forward since there are so many variables in the system that are interlinked (interacting) with potential and positive and negative feedback. Different tools and frameworks such as systems thinking, scenario analysis and social-ecological systems approach have been developed and used to analyse complex dynamics of social ecological systems.

5.1 WASTE MANAGEMENT STRATEGIES

Figure 5 below shows the waste management strategies that have been adopted widely in many cities across the globe. There is no single method or panacea in waste management since different products come out of different production chains. For some waste products, it makes sense to use a waste reduction strategy while for others a recycling or recovery strategy may be more appropriate. Therefore, one method can work efficiently for one type of waste while another work perfectly for another type. Although this is the standard way of thinking about waste management, Figure 5 below does not tell us about the amount of waste being extracted from the system. Both waste reduction and re-use may not require energy and are less costly while recycling and waste recovery could be energy intensive and more costly depending on the type of waste being processed.

Waste reduction can be practiced at the source by retail outlets and restaurants by adopting measure that reduce waste such as demand management and forecasting, i.e., estimations of daily sales and quantities purchased in restaurants (Marshall and Farahbakhsh, 2013). Grocery shops have been accused of promoting plastic pollution since they offer single-use or non-durable plastic bags to consumers sometimes for free and even without the consumer asking for it (Filimonau and Gherbin, 2017). Retailers can reduce the quantity of plastic bags distributed to consumers either by hiding them or not offering single-use plastic bags, but instead offer multi-use or alternative packaging that is more durable and can be use several times before being disposed. Waste reduction can also save the company and consumer some money by reducing costs (Wagner, 2017). This strategy is very practical and has been used in restaurants all over the world including developing countries since the benefits are huge to the firm.

FIGURE 5:
WASTE MANAGEMENT STRATEGIES



Source: Authors' own diagram

The strategy of reusing waste is also very common even in developing countries and is generally regarded as cost effective (Girotto et al., 2015). Not all polluting material can be reused and thus this strategy has limited use (Filimonau and Gherbin, 2017). Waste from one sector can be used as an input in the production process of goods and services in another sector. For example, cooking oil from restaurants can be used to make jet fuel in the aviation industry.

Organic waste from restaurants can also be converted into organic fertilizer through composting or used for feeding pets which can generate extra revenue if there is a market for such by-products. Japan is one of the best-case studies in the world where household and retail outlets actively participate and benefit from the waste value chain that is well serviced by the private sector (Chaudhary and Vrat, 2018). Household sell organic and electronic waste to private companies and get income and biogas for heating apartments during the winter season (Nnorom and Osibanjo, 2008). Because of these benefits, households and retailers have adequate incentives to adopt sustainable behaviour such as waste sorting at source which makes it cheaper and more efficient for processing (ibid).

Recycling is perhaps one of the most popular waste management strategy that has been used successfully in the developed world (Chaudhary and Vrat, 2018). This strategy is based on the fact that some of material that can pollute the environment such as glass, paper, cardboard box, electronic and plastic made of polysynthetic fibre can be

recycled into either a similar or a different product (Nnorom and Osibanjo, 2008). For example, glass can be recycled back to glass while cardboard box may be recycled into tissue paper. Sometimes a deposit payment can be attached to recyclable waste which generates incentives along the supply chain, including encouraging the final consumer to behave in a sustainable manner.

Depending on the amount of money charged, a deposit incentive can either induce sustainable behaviour or fail to incentivise the actors in the supply chain (Calcott and Walls, 2005). Sometime the behaviour of an actor might not necessarily be tied to the incentives induced by the deposit payment but other factors such as environmental concerns (Kahhat et al., 2008). For instance, there is little evidence that the deposit payment placed on empty beverage bottles of R1 is informed by research or through a consultative process with all important stakeholders including consumers. As a result, most consumers prefer to dump empty beverage bottles in the municipal bins together with other household waste products since the deposit incentive is too small (Nahman, 2010). The waste recycling industry in South Africa is dependent on poor vendors who play an intermediary role in the value chain by recovering recyclable waste products from street bins and reselling them as a livelihood strategy (Nahman and Godfrey, 2010). Further research is needed in this area to inform the optimal pricing strategy for deposit incentives on recyclable waste products.

Resource recovery using waste as an input material to create valuable products as new outputs (Kahhat et al., 2008). The aim is to reduce the amount of waste generated, thereby reducing the need for landfill space, and optimising the values created from waste (ibid). Zhou et al., (2020) defines waste recovery as any operation the principal result of which is the waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy.

Examples of waste recovery practices include stripping Christmas lights, computer cords and other such electrical components for the wires contained within. Other examples include extracting precious metals and other valuable materials from cell phones and electronics. Other than recovering waste products that can be reused for other purposes, this method of recovery works better for valuable waste products such as chemicals where electrolysis is used to recover some elements or metals such as iron ore, aluminium and copper where the smelting process is used to separate the metal from impurities. Like all other strategies, recovery does not work for all waste products and sometimes expertise or specialised equipment is required which translate into huge investments (Chaudhary and Vrat, 2018). The recovery process is economically feasible if the benefits are greater than the costs.

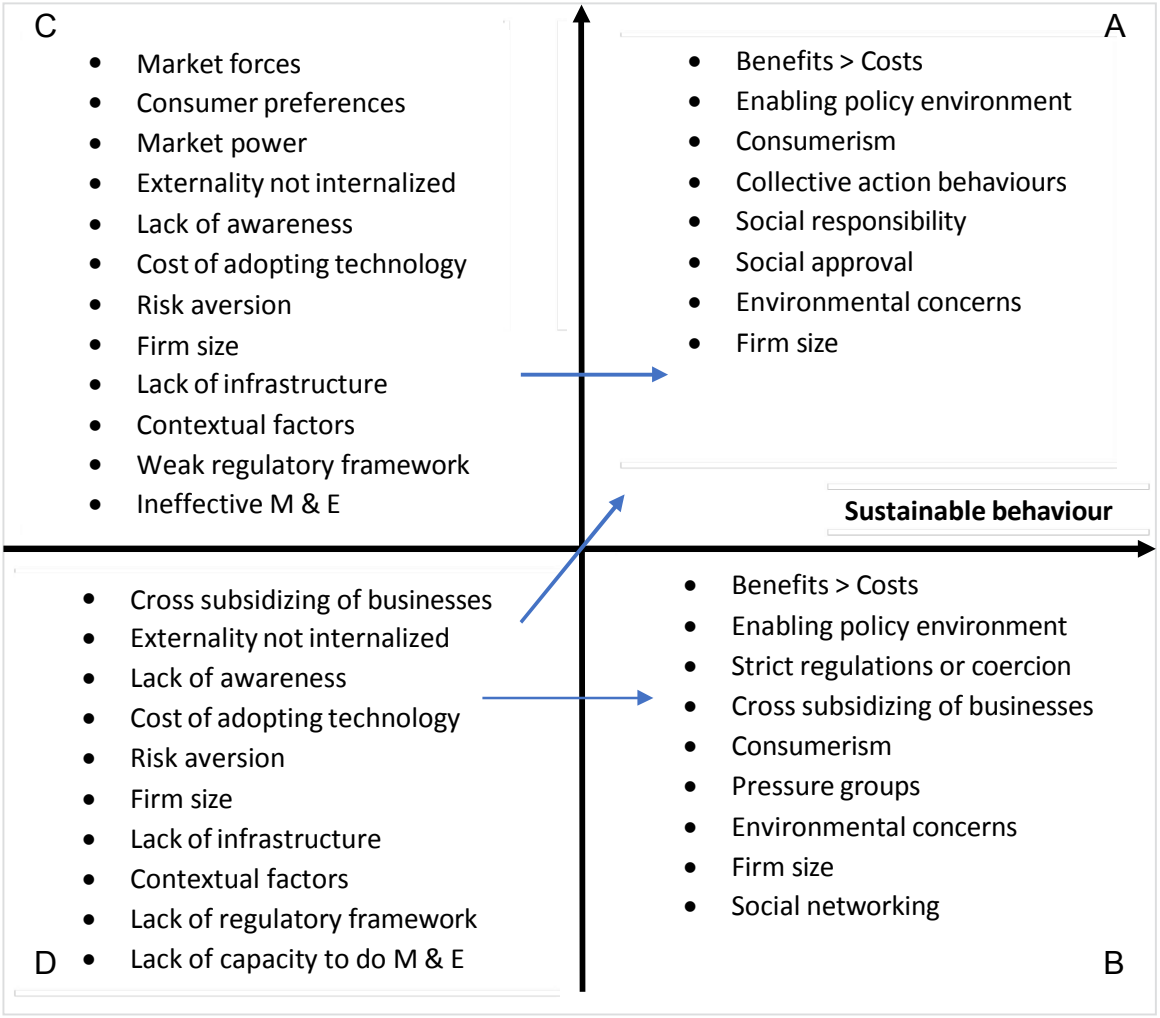
Empirical evidence reveal that the adoption of waste management strategies has not been widespread in South Africa and the city of Cape Town is not an exception to this (Nahman and Godfrey, 2010). The private sector lacks appropriate incentives to encourage participation in the waste value chain. There is a great opportunity for the retail industry to spearhead technology adoption since they generate a huge amount of waste that can generate value to the economy if a vibrant market is created (Mugobo and Ntuli 2021). The waste sector has potential to generate 1 billion rand annually and to create thousands of jobs if the sector can be transformed in such a way that private actors are able to capture value from the activity (Nahman and Godfrey, 2010). We discuss the conditions under which firms will adopt sustainable behaviour in the next section.

5.2 ANALYSIS OF SUSTAINABLE BEHAVIOUR AND BUSINESS PERFORMANCE

This study uses the conceptual framework developed earlier in section 4 to identify variables and analyse the relationship between adoption of sustainable behaviour as a complementary tool to support green infrastructure investment and performance. Figure 6 below shows the analytical framework where the x-axis represents adoption of sustainable behaviour while the y-axis stands for performance measured in terms of social, economic, and ecological viability.

The arrows represent movement from a less preferred position to a more preferred one. Quadrant A is the most ideal case where adoption of sustainable behaviour directly translates into increased performance provided the benefits of doing so are greater than the costs. The conditions in the quadrant must be supported by an enabling environment, consumerism, and other forms collective behaviours. Most of the time, consumer movements and pressure groups such as environmental NGOs force retailers to show good environmental citizenry by adopting sustainable practices (Hardner and Rice 2002). To a larger extent, consumer organisations in South Africa are still focusing on protecting consumers from unfair business practices rather than fighting environmental causes (Nahman, 2010).

FIGURE 6:
RELATIONSHIP BETWEEN SUSTAINABLE BEHAVIOUR AND FIRM PERFORMANCE



ource: Authors' own diagram

In some cases, the running of businesses such as a retail undertakings and restaurants might require social approval (licencing) or certification. Social licencing is an informal mechanism which occurs when the community gives the green light to a business to operate if that business meets certain standards required by the community otherwise community members will withdraw their demand of products from that business in protest for bad behaviour (Russell and Russell, 2010). Social approval can come from consumers or from the business community where other businesses act as constraints to the behaviour of other firms (Wilburn and Wilburn, 2011; Dare et al., 2014). Through collective action and discussion, the community can act as a powerful constraint on the activity of a business (Mugobo and Ntuli, 2021). In Cape Town, the idea of social licencing is not effective since the majority of the consumers are poor, and this affects their ability to self-organise.

Unlike social licencing, certification is a more formal way of making sure that businesses adhere to industry standards. A third party, usually an independent organisation, is responsible for certifying business activities that are consistent with sustainability so that these companies can gain access to certain markets (Poponi et al., 2019). Adoption of sustainable behaviour also stems from environmental concerns of the firm and other attributes such as altruism (caring for others) and bequeath motive (the need to leave a healthy and clean environment for our feature children).

In quadrant B, we have retail businesses and restaurants that have adopted sustainable behaviour, maybe because the benefits of adopting such behaviour outweigh the costs of doing so, but are not performing well socially, economically, and ecologically. An enabling environment is still needed to sustain the firm under these conditions. For some technologies, the adoption of sustainable behaviour does not yield meaningful results at firm level but at industry level which necessitates the need for coercive force (Kong et al., 2016). Sound consumerism, collective action and increasing tension between retailers and pressure groups might force firms to adopt sustainable behaviour because their performance might not be sound ecologically or socially. If firms are not performing well economically, but they have partially or completely adopted sustainable behaviour, then there might be need for developing appropriate policy instruments to incentivize the businesses to behave sustainably, e.g., the provision of tax break on firms that adopt sustainable behaviour or the removal of import duty for firms that import clean technology.

Large firms are able to adopt sustainable behaviour even if the benefits of doing so are outweighed by the costs because of economies of scale which allows these businesses to subsidise other non-profitable activities (Kong et al., 2016). A firm might be forced to adopt sustainable behaviour if it is part of a social network whose objective is to protect the reputation of the network (Haughton and Hunter, 2004). As part of its social capital, retail businesses are forced to sell products that are healthy and produced in an environmentally friendly way in order to maintain relationships since suppliers might not want to associate with businesses that are labelled as environmental unfriendly. Thus, firms might be forced to adopt sustainable behaviour along the value chain even if the network is made up of few influential firms with concern for the environmental.

Firms in quadrant C are characterised by high performance and unsustainable behaviour. This space is a more realistic representation of retail businesses in Cape Town. Market forces, consumer preferences lack of awareness of environmental challenges, risk aversion, firm size and cost of adoption shape the behaviour of firms in this space. The main objective of the firms operating in this space is to maximise profits at the expense of the environment. All this is happening is the presence of a weak regulatory framework, ineffective monitoring and enforcement, high levels of poverty and inequality, poor infrastructural development particularly in some parts of the city. Although larger firms, particularly chain stores and franchises are more likely to adopt sustainable behaviour than small firms, this might not be the case in developing countries since the incentive to maintain a good reputation on the market might not be linked to the firm's ability to prove good environmental husbandry (Marshall and Farahbakhsh, 2013). Self-organisation, consumerism and the role of pressure groups in cultivating sustainable behaviour.

Quadrant D has the least desirable conditions characterised by poor performance and unsustainable behaviour. If the retail businesses operating in this space are not performing well economically, then the usual shut down conditions apply. In the short run, a firm should continue to operate if the price equals or exceeds average variable costs, while in the long-run exiting the industry – should only be undertaken if revenues are unable to cover total costs (Jehle and Reny, 2011). Due to cross subsidisation units, a retail business might keep on operating even if it is hardly making profits. Another potential scenario is when the firm is making some profits economically, but the business activity might not be viable from a social and ecological point of view. Firms in this quadrant also fail to adopt sustainable behaviour due to adoption cost, firm size, lack of awareness, risk aversion, lack of a regulatory framework, lack of state capacity to conduct monitoring and enforcement and other contextual factors. Strict monitoring and enforcement mechanisms are required to force adoption of sustainable behaviour.

6. CONCLUSION AND POLICY PROPOSALS

This paper sought to establish a link between sustainable behaviour as a complement to green infrastructure and firm performance. We developed a conceptual framework and used this framework to identify variables used in the analysis. We observe that achieving both high performance and adoption of sustainable behaviour requires the creation of an enabling environment, consumerism, effort from pressure groups and other forms of collective action behaviours involving both consumers and businesses. Firms are also likely to behave in an unsustainable manner if market forces and consumer preferences dictates the behaviour of firms in such a way that it favours the objective of profit maximisation at the expense of environmental concerns. The same conditions are also achieved when businesses have market power, external costs are not internalised, lack awareness of environmental challenge or their consequences, there are high costs of adoption, high level risk aversion, high inequality and they operate in an environment of poor infrastructure, a weak regulatory environment and ineffective monitoring and enforcement.

In a natural state, self-organisation might eventually occur without external coercion as certain variables in the economy change such as an increase in household income and reduction in unemployment, poverty, and inequality. These are structural variables of the economic system which takes a very long time if not centuries to adjust or move towards the desired level through policy interventions. However, consumerism and self-organisation might not occur with appropriate policy incentives. In the very short-run, awareness campaign, training and strengthening institutions to improve monitoring and enforcement mechanisms is required to force firms to adopt sustainable behaviour. For medium -long term solutions, we propose policy incentives such as tax break and removal of duty on all imports of clean technologies associated with adoption of sustainable behaviour. In the long-run, the creation of an enabling environment might also stimulate the emergency of endogenous and robust institutions such as consumer organisations or other forms of formal and informal collective action involving both consumers and the business sector.

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