



Service innovation and consumer welfare in the on-demand grocery retail market in South Africa

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ABSTRACT

To meet the need of time-constrained consumers in South Africa, last-mile logistics organisations and grocery retailers have implemented a grocery-on-demand solution, where consumers can order a basket of goods to be delivered to their home from within an hour to a day. This study locates the grocery-on-demand offering within innovation definitions and investigates the non-monetary value created by the actor network enacting the offering.

In this study, a mixed-method approach was taken to understand the value created and enjoyed by firms and consumers. The understanding of value creation by firms is investigated through expert interviews and media analysis of the topic of grocery on demand, while consumer value-in-experience is investigated and estimated through a consumer survey.

Six experts across retail and strategy consulting were interviewed, 30 articles were analysed and a sample of 420 consumers responded to the survey.

The research findings are that firms are able to attain value through consumer-facing service innovations without charging high rates for the service. This is attained by enjoying the effects of improving their relationship with consumers. The research suggests that consumers enjoy more value through engaging this service innovation than they forfeit in payment, through time savings, increased well-being and improved relationships with the firms.

This report contributes to models that business leaders and innovation managers can use to analyse potential value attainable through service innovation.

Key Words

service innovation, value-in-experience, grocery on demand, retail, business-to-consumer market, mixed-methods analysis

DECLARATION

I, _____, declare that this dissertation is my own unaided work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree Master of Management in the field of Innovation Studies at the Wits Business School at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other University.

Signature:

On this day of20

Name

DEDICATION

To all the African women who have inspired me, and to the inspiring women who will follow.

ACKNOWLEDGEMENTS

Thank you, Maletsatsi and Mokitlane, Neo and Mohlolo and Keletso, for raising me; to my teachers for pushing me; and to my friends for walking this journey with me and sustaining me.

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CHAPTER ONE: INTRODUCTION

1.1 Purpose of the Study

The purpose of this study is to explore value created and captured by grocery retailers through the implementation of a service innovation; specifically, the grocery-on-demand innovation, which allows consumers to use mobile applications to order and track their groceries, and to have the groceries delivered to a set address within 60 minutes or within the same day. These applications also have the capability to allow users to reconcile and keep track of previous grocery purchases.

This study pursues three objectives, namely:

1. To test how well the grocery-on-demand model fits into the definition of service innovation.
2. To identify and quantify the value created, captured, and enjoyed by the retailers and the consumers.
3. To compare the economic value gained by the retailers with the economic and well-being gains of the consumers.

The study will address these three objectives by:

1. Exploring the work of previous researchers through literature on service innovation, its history and current understanding.
2. Defining the value network developed in the delivery of the service innovation and quantifying the economic value captured by these firms.
3. Surveying consumers and users of these applications to identify their perceived value gains or well-being gains.
4. Quantifying the well-being gains or societal value realised by consumers and compare that to the economic value captured in the system.

1.2 Context of the Study

In South Africa, as part of the national response to COVID-19, residents were instructed to avoid leaving their homes to curb the spread of the virus. As a result of lockdown regulations, retailers were forced to reduce their operating hours and to reduce their in-store occupancy.

The operations of retailers were limited, leading to lower revenues without a proportionate reduction in costs, leaving them in danger of large financial losses.

Faced with a predicted reduction in profitability, retail organisations had to respond rapidly to the changed business environment. Organisations needed to innovate in as a response to the changed demands & customer lifestyles and to take advantage of opportunities presented by the changing marketplaces, their structures and dynamics (Baregheh et al., 2009; Heinonen & Strandvik, 2020).

Large grocery retailers Pick n Pay, Checkers, and Woolworths each introduced on-demand grocery delivery services; namely, Pick n Pay asap!, Checkers Sixty60, and Woolworths Dash (Reuters, 2020). Each of these applications offers consumers the ability to order groceries to be delivered to their door within 60 minutes or within operating hours on the same day of placing an order. OneCart and Zulzi were pre-existing on-demand grocery services, which also offered a mobile application through which customers could order groceries and have them delivered to their doors within a few hours (Hartzenberg, 2018; Jackson, 2018).

1.3 Research Problem Statement

Innovation differs from invention, although both are novel solutions. Innovation requires delivery of wider value or utility, whereas invention needs only to be a novel solution (Gault, 2018). Historically, researchers and business people have used the value created through commercialisation to assess the success of an innovation or invention. However, using commercial value alone is limiting – inventions and innovations sometimes create greater value for society than their commercial success would suggest.

While businesses often have the capability to measure the value created in value networks, typically as value-in-exchange – trading of money for goods or services (Vargo et al., 2008). They also have the means to develop ways to identify value perceived and received by the consumer. They typically measure value exclusively from the perspective of the firm, in monetary terms.

There are a number of business tools which firms use to measure social value captured. Firms can use frameworks borrowed from social enterprise theories and non-profit-focused firms, but few of these take the consumer's experience of innovation into account. An example of such is the use of the balanced scorecard tool at the Sri Lankan Commercial Bank (Gooneratne & Hoque, 2021).

The value of innovation at the level of the firm is then focused primarily on financial outcome, which may fail to capture the full benefit of an innovation (Gustafsson et al., 2020). On the other hand, in cases where financial value cannot be illustrated, innovation managers face difficulty in gaining required support for the rollout of innovations aimed at consumers or users. Developing a way to measure societal value of innovation remains challenging, from the consumer's point of view.

1.4 Significance of the Study

This study aims to advance a systematic value understanding model for use by South African strategy and innovation managers aspiring to capture markets through service innovation. The research will provide leaders of firms with a tool for viewing holistically the value created through innovation. Making such a model available could potentially lead to greater value created through innovation that is not created with monetary value capture as the sole desired impact. This study aims to evaluate the value of the grocery-on-demand innovation beyond financial outcomes.

1.5 Delimitations of the Study

This study will not include restaurant food delivery services, examples of which are Uber Eats, Mr Delivery, Dinnerbox meal plans delivery, and meal ingredients delivery such as U-Cook. These will be removed from this investigation as they offer a different solution to that of grocery on demand. That is they offer a substitute to grocery purchase management as their primary solution, whereas grocery on demand offers grocery purchase management as the primary focus. The study will focus only on the service innovation as delivered by Checkers sixty60, P n P asap!, Woolworths Dash, Zulzi, and OneCart.

1.6 Definition of Key Terms

Service innovation	The outcome of a changed or new process, a service offering which is implemented, brings value and is used widely (Gustafsson et al., 2020)
Grocery-on-demand application	Ultrafast or same-day grocery picking and delivery services, which use a mobile application for customer interface (Hartzenberg, 2018; Jackson, 2018)
Value	Utility of an experience, good or service (Helkkula et al., 2018)
Value-in-exchange	Value exchanged between firm and consumer/from a consumer point of view, the monetary value forfeited to attain a product or service (Helkkula et al., 2018)
Firm value	Value gained by the firm, either as value-in-exchange in output-based or value-in-use for process-based archetypes (Helkkula et al., 2018)
Value-in-use	Increased utility of employees or customers caused by changed inputs or processes (Helkkula et al., 2018)
Value-in-experience	Phenomenological individual customer experience of a service innovation (Helkkula et al., 2018)
Actor network	A group of actors (people, processes and objects) which act in co-ordination in pursuit of shared interests (Gooneratne & Hoque, 2021).
Value network	A network of actors, customers firms and partners which act together to co-create value (Navarro-Meneses, 2022)

1.7 Research Questions

In order to locate value experienced by the consumer within the total value created by an innovation, this study will investigate three components of total value: the value captured by implementing firms, the value captured by the value network, and the value captured by consumers and users.

Investigating these components will shed light on the following issues: the value created and captured by the grocery-on-demand applications; the types and magnitude of value created by the grocery-on-demand service innovation; how the value is created; who creates the value when a service innovation is diffused; how the value is captured by implementing firms; and

how the value is captured by users and/or consumers of the innovation. Finally, what are the implications for innovation managers?

Through a literature review, the study will find frameworks through which to understand service innovation and how value is created and captured in service-dominant industries – such as retail. This will lay a path for identifying grocery on demand as an example of service innovation.

Research questions

1. Is grocery on demand an innovation? If so, what kind of innovation? How does it create value?
2. How does value-in-exchange paid by consumers compare to value derived by the value network?
3. How does perceived consumer value, made up of well-being gains, relationship value and value-in-experience, compare to value-in-exchange paid by the consumer?

1.8 Outline and Structure of the Report

Chapter One introduces the purpose, context and significance of the research study. In Chapter Two, a review will be presented of the existing literature on service innovation, which provides definitions of innovation concepts, service innovation and value. Following that, Chapter Three outlines the research methodology of this study, while Chapter Four presents the results. In Chapter Five, a discussion of the results is carried out in light of the study aims, and Chapter Six concludes the study, reiterating key findings from the research performed and offering innovation managers recommendations for conducting business and suggestions for further studies for researchers.

CHAPTER TWO: LITERATURE REVIEW

2.1 Innovation

In this study, the interest is in understanding the value created through innovation, specifically service innovation, and how consumers, the firm, and the firm's value network capture and experience value. The researcher first provides a definition of innovation, describes the different types of innovation, and locates service innovation within the adopted definitions of innovation. In 1934, Joseph Schumpeter, who is widely regarded as a seminal figure in innovation studies, described innovation as an invention that is introduced to the market and makes substantial profit. According to Schumpeter, the value captured in the market differentiates invention from innovation. He described innovation as a new product, service, process, or idea (Schumpeter, 1934). Innovation scholars have since classified innovation as a new combination of new and existing resources and/or knowledge (Gault, 2018) or the development and operationalisation of new technologies (Afuah, 2003).

In a recent study by Singh and Aggarwal (2022) during which they reviewed 208 definitions of innovation found in the literature, they came to the following conclusion: that innovation is the implementation of inventive ideas with monetary value or social impact goals. This occurs when new solutions are put into use that create value; when new technology or ideas are used, which contribute to market or financial gain. This definition is consistent with that of Schumpeter II (1952), which emphasises novelty: the use of new combinations of existing and new solutions for the purpose of adding value, defined either as competitive advantage or growth.

Organisational innovation can be implemented in products, services, operations, processes, and people (Baregheh et al., 2009). Organisational innovation, therefore, can be understood as new methods for organising people, practices and decision-making within a firm (Tavassoli & Karlsson, 2015).

2.2 History of Innovation in Services

Service research scholars have provided multiple overlapping explanations for what service innovation is. In the 1930s (the first generation of the nature and consequence of services), researchers in innovation, in services, and in innovation in services were debating the definitions and conceptualisations of innovation in services and their outputs/outcomes because

the ‘materiality-bias’ of that time made it difficult to describe a difference between manufactured goods and services, which led to incorrect evaluation of economic performance in services. (Gallouj & Savona, 2009). This argument was rooted in a lack of clarity about how services produce value, when the output of the service is immaterial – and indivisible from the profits of the sale of products (Gallouj & Savona, 2009). As an example, the service value of a security guard watching over a textiles factory cannot easily be separated from the sale of the textiles produced.

The second generation of the conceptualisation and evaluating of services arguments began in the 1960s (Gallouj & Savona, 2009). Service value or the value of services was then measured by the income earned in wages in the service sector. These wages increased proportionally with average wage increases in the rest of the economy, which meant that the national value for services, when measured as the total in wages paid, showed slow or flat growth when compared to the value of manufacturing (Gallouj & Savona, 2009). These debates on the value of services continued into the 1990s. The underlying hindrance to the ability of researchers to conceptualise service output was their inability to identify and measure the value of services.

This inability to conceptualise service innovation leads to difficulty in developing proper measurements and in specifying the relationships between services, service innovation, and any other concepts (Witell et al., 2016). In addition to the difficulty in conceptualising service innovation, researchers have considered the services sector as either being technology backward, or have not been able to use historical variables for quantifying innovation to explain the performance of service sectors and the competitive strategies of the firms therein (Cainelli et al., 2006).

An approach taken in attempting to overcome the issue of valuing the performance of the service sector in an economy was to move away from measuring the performance of that nation as the physical stock of goods accumulated or created, and to move toward considering the volume or value of transactions in that economy (Gallouj & Savona, 2009). Similarly, macro-economists represent two approaches to measuring the total market value of an economy. First, there is Gross National Income, which is the total market value of final goods and services produced by an economy each year. Second, there is Gross Domestic Product, the sum of all the money spent in an economy. This is the expenditures approach, while the sum of all the income earned in an economy is the allocation approach, and the sum of the value added by

each transaction in the stages of production of a good or service is the production approach (Janse van Rensburg et al., 2011).

2.3 Defining Service Innovation

Researchers have developed three approaches to classifying how innovation can be described:

1. Assimilation: This equates the amount of innovation that has taken place in an organisation or nation to the amount of adoption or assimilation of new technologies, treating innovation in services and in manufacturing the same way. (Gallouj & Savona, 2009; Helkkula et al., 2018; Nijssen et al., 2006; Sicotte & Bourgault, 2008)
2. Demarcation: This approach tries to develop a specific framework for service innovation while differentiating it from product and process innovation (Gadrey et al., 1995; Gallouj & Savona, 2009).
3. Synthesising: This approach attempts to create a common conceptual framework for both tangible and intangible products – thus using a broader definition of product (Gallouj & Savona, 2009).

Witell et al. (2016), in a study to find a single definition of service innovation, found the assimilation approach to be most common approach to defining service innovation, and found that these studies focused on impact of new technology to ascertain the amount of innovation which took place. An important assumption of this approach is that the service sector has become more technology driven and capital intensive. (Savona & Gallouj, 2008).

Demarcation researchers argued that innovation studies have not recognised innovation in services as a different but valuable contribution to product innovation (Witell et al., 2016). Scholars using demarcation approach have highlighted the peculiarities of service innovation, in both output and processes, that researchers had overlooked previously (Drejer, 2004; Droege et al., 2009), namely, the intangibility of services and their creation of integration, knowledge creation and non-technological elements (Hipp & Grupp, 2005; Witell et al., 2016).

In accordance with the synthesising approach, Lusch and Nambisan (2015) use service-dominant (S-D) logic to further understand service innovation in the information systems (IS) and information technology (IT) sector. Historically, researchers have favoured goods-dominant (G-D) logic to understand innovation in IT and IS, which focuses on tangible goods as an output or outcome of production (Lusch & Nambisan, 2015). S-D logic views firms as actors in a service ecosystem with other actors (including other service providers and

consumers), who support resource mobilisation (supporting both data, information, and knowledge mobilisation, and increasing its density) and value co-creation with other actors in the ecosystem (Lusch & Nambisan, 2015).

In S-D logic, a service is redefined as applying resources through action to benefit another actor or oneself (Lusch & Nambisan, 2015). In this way, services and goods are not interchangeable; rather, goods become appliances that support the delivery of a service. Goods or products are used by consumers to get a job done, or to deliver a service to oneself (Lusch & Nambisan, 2015).

Toivonen and Tuominen (2009) define service innovation as a service that is either new or renewed, in use either by developers or by customers, in such a way that it creates value for users. Even as the definition of service innovation became clearer, so some researchers on new service development used the term service innovation to define three different concepts, namely: the process of developing a service innovation, the outcome of service innovation, and the design of a service (Biemans et al., 2016; Menor et al., 2002). Witell et al. (2016) further delineated these three concepts and deduced that service innovation is an outcome of internal business processes, which impacts customers. This nuanced understanding separates service innovation from the process of innovation development.

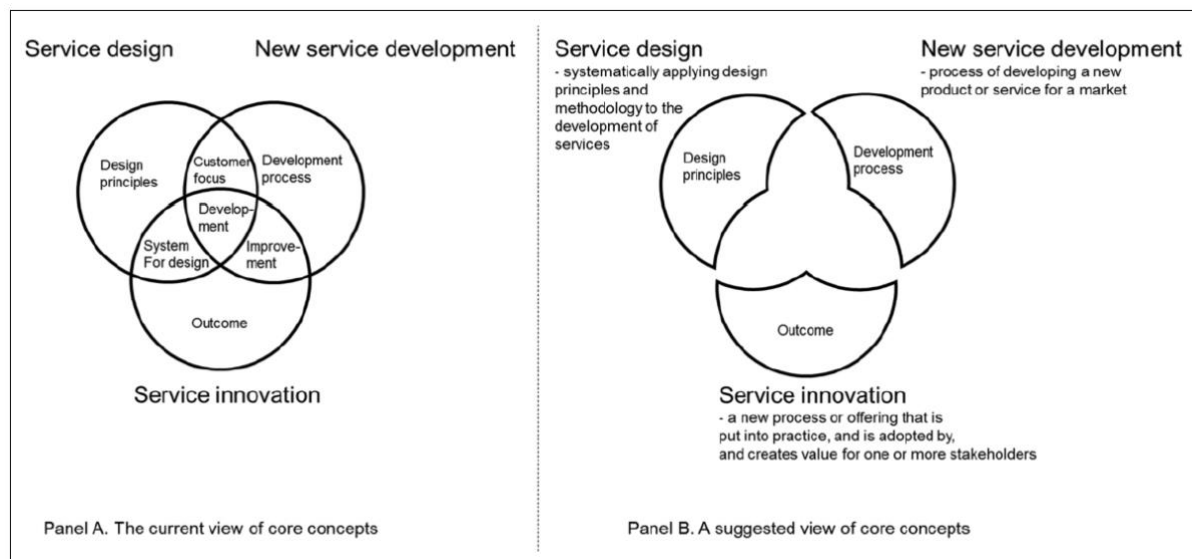


Figure 1: Distinction between new service development, service design and service innovation

Source: (Gustafsson et al., 2020)

As illustrated in Figure 1, Panel A, researchers understand that an overlap exists among the concepts service design, service innovation, and new service development, which has led to the interchangeable use of service innovation to describe all three of these concepts (Biemans et al., 2016; Menor et al., 2002; Witell et al., 2016). In Panel B, the removal of the overlap is seen. The researchers create a clear distinction between service design (systemic application of design principles to develop services), and new service development (development of new services or products), and service innovation (the outcome of newly developed or renewed services or products that are in use and that create value for users) (Gustafsson et al., 2020)

The demarcation perspective provides another more nuanced approach to understanding innovation in specific industries – particularly service industries such as health care, retail and tourism, identifying the key characteristics as novelty, customer, service or product and firm (Witell et al., 2016). Again, demarcation researchers have tried to understand service innovation as different from product innovation, and have further focused on service innovation as an outcome of a business relationship between two actors and not only a service that is new to the firm (Witell et al., 2016).

2.4 Service Systems

If one is to use the systemic archetype of innovation to understand service innovation, one needs to understand the context in which innovation takes place and the actors in the system (Helkkula et al., 2018). Rubalcaba et al. (2012) describe a service system as a configuration of firms, people, information, technology and other systems. Vargo et al (2008), and Larivière et al. (2017) add to this description by including the physical and digital environments.

The development of technology has impacted the business environment, including the roles of buyers, firms, their employees, and users (Larivière et al., 2017). Lee and Hassard (1999), in their definition of actor network theory, indicate that actors are most concerned with their own gains when engaging in a network, and so they will only remain active in this network if they believe in or perceive an alignment of interest with others acting in the network. The stability of the network is reliant on actors remaining consistent in delivering their assigned role in that network (Doolin, 1999).

Actor–network theory posits that networks are formed through the problematisation of a set of circumstances by a focal actor who will then identify other actors who are affected. This focal actor will then engage with relevant actors and convince these actors of an alignment in their interest through solving the problem as a network. This act of enrolling additional actors by the

focal actor is referred to as *intéressement* (Gooneratne & Hoque, 2021). In order to use the systemic archetype to understand service innovation, the actors, the actor network, and their role in the network need to be identified and their role understood.

2.4.1 The Role of the Firm

Larivière et al. (2017) identify four business models which firms use to create value: service provider, asset builder, network co-ordinator and technology developer. The service provider uses human capital and skills to build value – these include professional services. The asset builder is a firm that uses physical capital assets to build value, through leasing, distributing, and building. The network co-ordinator use their ability to create connections and to facilitate collaborations in order to create value. Finally, the technology developer creates value through selling ideas and IP. Firms may also hybridise these models to deliver unique value propositions (Larivière, et al., 2017).

2.4.2 The Role of People

In this study, consumers have already been identified as actors in the service system (Section 2.2). People, particularly users of innovation, mobilise their own and public resources (including data, information and knowledge) and, together with other actors, increase resource density and co-create value in the system (Lusch & Nambisan, 2015).

2.4.3 Employees

People inside the firm are employees. The **enabler** assists people and technology to play their roles well; the **innovator** monitors and intervenes actively in customer engagement with the firm; the **coordinator** harmonises with different actors to ensure delivery of service; while the skill set in each employee may be the **differentiator** between two firms with the same services and technology (Larivière, et al., 2017).

2.4.4 Customers

People outside the firm: enablers, innovators, coordinators or differentiators. Customers can be viewed as partial employees (Van Doorn et al., 2010), and thus, take on similar roles to those of the employee (Larivière, et al., 2017).

2.4.5 Role of Technology

The role that technology plays in these business models is to augment human capital and skills, to substitute human capital and skills, and to facilitate the creation of connections and networks (Larivière, et al., 2017).

2.4.6 The Role of Business Environment

An additional driver to accelerating service innovation was found to be the COVID-19 pandemic and the response to the requirements for social distancing (Heinonen & Strandvik, 2020). In this regard, COVID acted as a catalyst for service innovation. An empirical study conducted by Heinonen and Strandvik (2019) was able to categorise this type of innovation as ‘imposed service innovation’. The COVID-19 pandemic response required people to be more spatially flexible, health- and wellness conscious, and to use technology to support these requirements. Although most of the innovations in the study by Heinonen and Strandvik (2020) were for the sole purpose of surviving the new business and health environment – rather than for developing new market opportunities, the pandemic as a catalyst has accelerated service innovations which may yet remain relevant afterwards.

2.4.7 Service Constellation vs Service Ecosystem

Although a consumer may engage a single firm to receive a service, the service may be made up of, and dependent on component services from a number of firms (Van Riel et al., 2013). If we are to understand a service ecosystem as the set of people, processes, firms and goods needed to deliver on a specific service, then we can understand the service constellation as the group of services (and the developers of those services) that make up a variety of services which the consumer can refer to collectively as an experience (Van Riel et al., 2013). An example of this would be a vacation abroad, where the consumer might perceive air travel, train travel, hotel accommodation, and local restaurants as a single experience.

2.5 Value in Service Innovation

Identifying the value of services and being able to demarcate innovation in services provides us with a basis to understand, vaguely, the value of service innovation. The vagueness is illustrated in the substitutable use of new service development and service innovation (Menor et al., 2002). Service innovation has also been used to describe a newly designed service that

has yet to be commercialised or marketed (Gustafsson et al., 2020). Additionally, contrasting views exist regarding how to evaluate the value of this type of innovation (Skålén et al., 2015; Witell et al., 2016). The problem has already been outlined in the previous section (2.2) of not being able to value service innovation owing to the trouble with conceptualising a definition of service innovation.

The effects of innovation on actors in an innovation system as well as on society at large need to be further understood. Researchers have used business-related key performance indicators (KPIs) to measure the impact of innovation in terms of monetary value, customer satisfaction or relative market share growth. Less so, some experiential indicators have been used, such as well-being or social welfare (Gustafsson et al., 2020). Also, the impacts of service innovation on customer satisfaction, loyalty, financial performance, new market development and well-being (Witell et al. 2016; Gustafsson et al., 2020).

Researchers have overlooked the value or impact of innovations on consumers, focusing largely on economic performance (Cainelli et al., 2006), on consumers as actors in service innovation (Lusch et al., 2015), and at changing consumers' roles in innovation for value co-creation (Michel et al., 2008; Rubalcaba et al., 2012). The argument of researchers about the importance of understanding service innovation goes beyond the economic or performance-linked value derived by developer towards value from the perspective of customers. This is because the performance-linked view provides limited understanding of a service innovation and its impact on consumers, as a service innovation might not be generating revenue for the developer (Witell et al., 2016).

Using the synthesising approach to service innovation, which emphasises value (Gallouj & Savona, 2009), Helkkula et al. (2018) propose a classification for defining forms of service innovation: output-based, process-based, experiential, and systemic archetypes (Gallouj & Savona, 2009; Helkkula et al., 2018).

In viewing service innovation as an output, both Witell et al. (2016) and Helkkula et al. (2018) turn their focus to performance metrics for the delivery of service innovation, and both the output-based and process-based archetypes measure value as the value gained by the firm, either as value-in-exchange in output-based or value-in-use for process-based archetypes (Helkkula et al., 2018).

The experiential and systemic archetype views have a wider focus on value created–value experienced, since these consider more players involved in the delivery and experience of the service innovation and look at a broader set of resources which enable the service innovation (Helkkula et al., 2018). The experiential archetype adds the experience of customers of a service innovation, that is value-in-experience, which is the individual phenomenological customer experience of a service innovation (Helkkula et al., 2018).

The systemic archetype includes the value-in-context and incorporates even more actors involved in the service innovation: the customer and other firms in the ecosystem. This enables service innovation and co-creates value through the integration of privately-owned resources, publicly-owned resources, and resources owned by the firm (Helkkula et al., 2018). Customers, consumers, and users of services and products are not interested in the intrinsic characteristics of products, but in what products or goods and services ‘do’ for the users in relation to other resources, which assists in creating value for the user (Rubalcaba et al., 2012). The systemic archetype of innovation takes a broad view of value and, using this approach to understanding service innovation, will yield results that go beyond the value earned by the firm, into the value experienced and created by society (Helkkula et al., 2018). In S-D logic, value is not fully described by the costs accumulated through transforming a resource into a particular output, but is better described as occurring when a particular output is valuable to a customer or user (actor) (Lusch et al., 2015). In this way, firms do not deliver value, but offer engagement to users/other actors to co-create value (Lusch et al., 2015).

2.6 Consumer Value Captured

Previous studies have identified consumer-perceived service value as the difference between the utility of the product and the price that the consumer pays to attain the product (Wang & Juan, 2016). This could also be described as value experienced and value-in-exchange (Helkkula et al., 2018).

How then will the value co-created by a service innovation be measured? That is, how will value-in-experience and value-in-context for the consumer be measured?

2.6.1 Value-In-Experience –Relationship Value

Prasetya et al. (2019), use relationship value scales which address value creation through the development of a relationship between actors in a business exchange. The relationship scales were developed through a review of the literature on relationship value (Prasetya et al., 2019).

Relationship value as a concept is premised on the idea that value benefits are the result of the interaction between individuals and/or firms (Prasetya et al., 2019). Relationship value is made up of four value factors: personal value, which speaks to the ease of interaction; financial value, which is the monetary value paid to attain the service; knowledge value, which refers to the accuracy and usefulness of information shared through the interaction; and strategic value, which relates to the decrease in uncertainty and the increase in stability owing to the interaction (Prasetya et al., 2019).

2.6.2 Value-In-Experience – Well-Being

Consumer well-being is a measurable concept which is used in the study of macro-marketing, this being the field of study focused on the nexus between marketing and society (Sirgy, 2021). The conceptualisation of consumer well-being is important since it provides a proxy for the impact of consumer goods and consumption on societal welfare, and the levels of consumer well-being are related directionally and proportionally to societal welfare (Ekici et al., 2018; Sirgy, 2021).

2.7 Summary

In section 2.2 and 2.3 the history of conceptualising service innovation and how that contributed to our ability to measure value created through service innovation were discussed. Researchers have described the ways in which we can conceptualise value, accounting for value experienced. Consumer value is then defined as the difference between the utility experienced in consuming a service and the value exchanged for that service – the utility experienced can include impacts to relationships and well-being. This perspective will be further investigated by using value-in-experience to attempt to measure the gap between utility and value-in-exchange.

2.8 Theoretical Framework(s)

Through the research discussed in the literature review, this study will adopt the following concept definitions: Service innovation is the outcome of organisational activity (Gustafsson et al., 2020). This means creating a new or renewed service, through which users capture value , by using and experiencing the service.

The value created through service innovation can be defined at three levels. The first level is economic trade value, that is the monetary value that is exchanged from consumer to firm, or firm to firm. A wider view is the value-in-use by the firm and value-in-experience by the consumer, which takes into account non-monetary value gained through the use of innovation. Examples are productivity increase for firms and consumers or well-being increase for consumers. The broadest view of value is created through service innovation, where researchers define value-in-context, which considers a wider set of players and resources used to develop an innovation, and view value as being co-created (Lusch & Nambisan, 2015).

This research paper does not claim to find a clear relationship between value created and value captured, in that value captured does not account for total value created. The construct of interest in this study is therefore value captured and experienced.

The value captured by users and developers of an innovation can then be viewed from two points of view: the firm view and the consumer point of view. The implementing firm captures value through value-in-exchange, which is economic value traded between firm and consumer, and value-in-use, while the consumer captures value through value-in-experience (Helkkula et al., 2018), and both consumer and firm enjoy the value of having an exchange (relationship value) (Prasetya et al., 2019).

2.9 Conceptual Framework

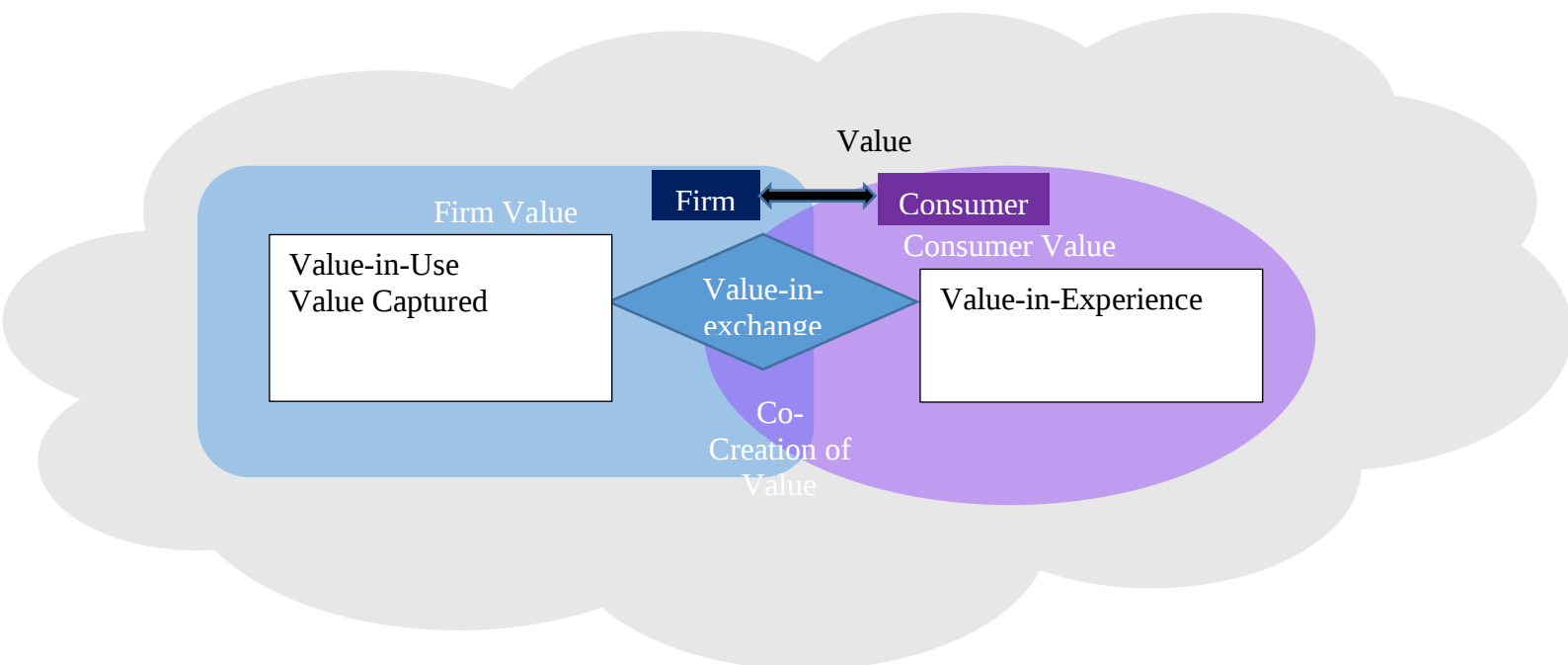


Figure 2: Conceptual Framework: Firm–Consumer Exchange and Value

As innovation is implemented and diffused by firms and consumers, value is created by and for both firms and consumers. It is not clear how to go about evaluating the total value created which is depicted by the amorphous grey shape in the figure above, nor how it is shared between firms (the blue shape) and consumers the purple oval - or any other actors in the creation of the value. However, there is a mechanism that firms use to capture value – namely value in exchange – which is the monetary value which consumers and customers forfeit to the firm in order to make use of a firm’s service – the blue rhombus overlapping firm and consumer. The value-in-exchange is recorded as the price of a service and reported in firms’ annual reports cumulatively as revenue. There is however more value that is experienced and used for both firms and consumers which is phenomenological and not quantified nor easily quantifiable. This research attempts to find, at least in part, a method to understand better the value that is created and apportioned between firm and consumer.

2.10 Propositions and Hypotheses

Proposition 1: Grocery on demand is a service innovation which is novel, creates value, and is widely diffused.

Proposition 2: Value gained by implementing firms, in the value network, is greater than the value-in-exchange paid by consumers.

Hypothesis 1: Perceived consumer value made up of consumer time–cost savings, consumer well-being gains and consumer relationship value is greater than the value-in-exchange captured by the implementing firms.

Perceived Consumer Value

$$\cong \hat{\beta}_1 TimeCostSaving + \hat{\beta}_2 Relationship Value + \hat{\beta}_3 Consumer Well being + \hat{\epsilon}$$

Hypothesis 1a: $\mu_{TimeCostSavings} - \mu_{ValueInExchange} \geq 0$

Hypothesis 1b: $\mu_{RelationshipValue} \geq 0$

Hypothesis 1c: $\mu_{Consumer Well being} \geq 0$

To test Hypothesis 1a, the researcher conducted a one-sided paired t-test with:

$$H0: \mu_{TimeCostSavings} - \mu_{ValueInExchange} = 0$$

$$H1: \mu_{TimeCostSavings} - \mu_{ValueInExchange} \geq 0$$

To test Hypothesis 1b, the researcher conducted a one-sided t-test with:

$$H0: \mu_{RelationshipValue} = 0$$

$$H1: \mu_{RelationshipValue} \geq 0$$

To test Hypothesis 1c, the researcher conducted a one-sided t-test with:

$$H0: \mu_{ConsumerWellBeing} = 0$$

$$H1: \mu_{ConsumerWellBeing} \geq 0$$

CHAPTER THREE: RESEARCH STRATEGY AND METHODOLOGY

This chapter describes the approach taken to further understand the stated hypotheses and propositions. The rest of this chapter will describe in detail how the researcher tested each of the concepts and underlying constructs described in earlier chapters.

3.1 Introduction

The researcher has selected a methodological pragmatic approach in order to compile a comprehensive view of value-in-service innovation (Creswell & Tashakkori, 2007; Goldkuhl, 2012). Methodological pragmatism allows for the use of a combination of methods which best suit the research purpose and empirical situation (Goldkuhl, 2012). This includes the use of mixed methods in order to compare and integrate the qualitative and quantitative answers to the research questions, which contain qualitative propositions and quantitative hypotheses, to create a single coherent view of value created, enjoyed and experienced through service innovation (Onwuegbuzie et al., 2009).

This research used quantitative methods to infer parameters about the population of on-demand-grocery and in-store shoppers, by examining the perceived value of sample respondents, and by using inferential statistical methods to evaluate the value perceived by the consumers. This assumes that true or correct parameters exist about this population and that, once a reliable proportion of the population was sampled, information was able to be inferred about the total population (Onwuegbuzie et al., 2009).

The researcher also used qualitative methods to validate and further understand the concept that is value, and its breakdown between consumer and firm, and the relationship between value created, exchanged and captured. However, the researcher is aware that there is not a sample large or random enough to give an exact and unchanging view of consumers. Also, because of the inherent bias created in the sample selection, and because value perceived or experienced is a phenomenological concept, the results of this study, as is the nature of any study, cannot be objective and so an interpretivist approach was taken (Onwuegbuzie et al., 2009).

3.2 Research Purpose

The purpose of the research is to explore perceived value experienced by consumers of on-demand grocery services, and to compare that to the value reported by the firms and their partner firms and service providers. The aim of this research was to gain a view of value created, experienced, and captured in service innovation. The core research question therefore related to how value is disseminated between firm and consumer. The two target populations of interest were therefore firms and consumers. This report wants to draw inferences about how customers have perceived the value of grocery on demand, and how firms consider value when commercialising service innovations.

3.3 Selection of Participants

There are two populations of interest, consumers – specifically grocery shoppers, and service innovation specialists – experts of consumer-facing solutions. The population whose perceived value of grocery-on-demand this study sought to understand, is the population of users of grocery on-demand services and non-users (non-users in this case are shoppers who perform grocery shopping but do so through brick and mortar in-store visits), and so the participants who were surveyed are grocery shoppers. The questionnaire was delivered to the widest group of consumers through publication online. The research instrument selected includes a section on respondent demographics, which allowed the researcher to stratify the sample and to have a better idea of how certain sub-populations of the population of grocery-on-demand and in-store shoppers perceived the greatest value and which perceived the least value. The researcher understands that self-selected samples of this kind have biases. This is discussed further in Section 3.5 under the limitations of the study.

The second population of interest was the innovation professional who supported the validation and verification of the researcher's conceptualisation of value and its components, as stated in Section 2.10. The selection of the interview participants required some level of expertise on innovation and consumer adoption/perceived value. Six experts from the service industry were interviewed – including from the implementing firms, and service strategy experts. Experts were sourced through the researcher's own professional networks –current and previous colleagues as well as the university's network.

3.4 Data Collection

3.4.1 Value Construct

In order to understand the value construct in the deployment of a service innovation, the researcher conducted interviews with experts in consumer facing service innovation. Through the interviews, deeper insights were gained about the total value generated in consumer-facing service innovations, value co-created, captured, experienced, and in use. The expert interview format is a semi-structured interview, and the data gathering and sense making is based in grounded non-probabilistic theory.

The survey instrument can be found in Appendix B

3.4.2 Value Network and Value Captured by Implementing Firms

To draw up the grocery-on-demand value network, the researcher methodically searched through news media regarding grocery-on-demand in South Africa. Through the collection of articles mentioning specific grocery-on-demand services available in South Africa, the researcher created a repository of media articles about grocery-on-demand, on which analysis was carried out. Analysis of this data was used to draw up the value network of the grocery-on-demand service applications. The network was drawn up using soft computing and fuzzy cognitive mapping and the value in this network was abstracted qualitatively through analysis of the value sentiment of stakeholders of the network (Navarro-Meneses, 2022). The concept of value, captured by firms was investigated through a methodical qualitative analysis of media published by and about the implementing firms and partner firms.

3.4.3 Consumer Perceived Value

The population of consumers of service innovation, and specifically grocery on demand, is very large, even in South Africa; therefore, in order to collect an adequately large sample of consumers to draw real insights quickly, a questionnaire was seen as the best instrument. An online questionnaire which is self-managed, allows respondents to complete it simultaneously and at their own convenience.

The questionnaire used is an adjusted survey instrument used in peer-reviewed and published studies on the topic of consumer value, perceived value and shopping well-being. Use of a modified version of existing instruments is meant to ensure that the instrument measures the

intended concepts and their underlying constructs. The researcher used the take-home income and time spent shopping of the questionnaire respondents to derive a mathematical model which estimates the rand value of time savings through the use of on-demand grocery applications. Further to the survey questionnaire used, the researcher also carried out analysis of the use and penetration of the mobile applications used by consumers for grocery on demand. Two application analytics sites were useful in collecting statistics about the use and penetration of these application, that is Data.ai and Similarweb, which show mobile application statistics across both Apple and Google application publishing platforms.

3.4.4 Relationship Value and Consumer Well-Being

The survey questionnaire used metrics and survey questions from Prasetya et al. (2019) to measure relationship value, as perceived by consumers, while perceived usefulness questions from Tian et al. (2020) were used to inform these perceived value questions. Using statements already used in empirical shopping well-being studies by Ekici et al. (2018), and Nghia et al. (2020), the researcher was able to create a list of statements that the respondents could use to rate their phenomenological alignment to their own lives. Through re-using and editing already existing measures of relationship value and consumer well-being in the consumer questionnaire, the researcher had some confidence that these measures are reliable and valid.

3.5 Data Analysis

As stated earlier, the researcher used mixed methods and analysed both qualitative and quantitative data surrounding service innovation. As is the convention for Wits Business School (WBS) students, researchers use propositions to indicate an idea that will be tested qualitatively and they use hypotheses to indicate an idea to be tested quantitatively.

In the literature review section of this report, the researcher identified the tension between the output-based views of innovation and the experiential and systemic archetypes of innovation (Helkkula et al., 2018). As a result, the researcher anticipated that implementing firms would report the value of service innovation in monetary terms (Gustafsson et al., 2020), but would experience and gain value beyond the monetary value captured (Helkkula et al., 2018). Similarly, customers, when prompted, would report experiencing value beyond the monetary value-in-exchange paid over to the firm (Ekici et al., 2018; Prasetya et al., 2019; Sirgy, 2021).

Aspara and Tikkanen (2009) posited that firms with a higher focus on consumer value creation, rather than on the firm's own value capture attained above average revenue and, ultimately, profit growth. In this study, the researcher's interest was in understanding the interplay between value creation and value capture amongst implementing firms, their value network, and consumers.

The researcher carried out an analysis of the interviews with senior leaders at firms which took part in the grocery-on-demand services as well as those with industry experts. A search for themes and patterns in the qualitative data collected by interview and by media review, was used to produce a report (Braun & Clarke, 2006). The researcher, having already produced a literature review around the topic of service innovation, value, actor networks and value networks, was equipped with some understanding of the value construct and used this understanding to conduct inductive analysis to identify latent themes in the data (Braun & Clarke, 2006).

3.5.1 Analysis Process

As the purpose of the study is to recognise grocery on demand as a service innovation, unpack and understand the value construct as a consequence of service innovation; evaluate the perceived value experienced by users, value and non-users of grocery-on-demand solutions; and compare that to value gained through the actor network or value network of grocery on demand: data was collected in 3 tranches. These tranches were a Media analysis – including internal and external media on grocery on demand, a consumer survey, and an interview of retail experts. The explanation of each tranche follows.

3.5.1.1 Media and Document Analysis

The researcher undertook to unpack sentiment of business journalists, consumer journalists, industry analysts and consumers. A repository of media articles was found through search for the topics 'grocery on demand', 'grocery delivery' and articles which mention the grocery retailers which have become pioneers in grocery on demand. The repository of media articles was scrutinised in search for any mention of novelty, value and consumer adoption of the grocery on demand solutions. A table indicating the research terms sought in these articles to find the paragraphs which were deeply scrutinised is available in Appendix D. The result of the media analysis is found in Section 4.2 of this report.

The list of these grocery retailers was then further collaborated by searching top South African e-commerce applications found on both Apple and the Google Play application publishing platforms through third party analytics solutions sites Data.ai and Similarweb. Further to identifying the top e-commerce applications, an analysis of the sub-type of applications was completed to understand how many of these applications were grocery on demand services and how many were typical delivery applications. An analysis of the consumer ratings and engagement was performed for each of the top e-commerce applications across each publishing platform.

3.5.1.2 Consumer Survey

A consumer survey was published on the survey platform Qualtrics. The survey was shared with anonymous links and on the researcher's personal social media accounts on LinkedIn and Facebook, and distributed to friends, family, associates, classmates and colleagues on an individual basis. The first question asked by the survey is whether the respondent consents to their responses being used in a research report. The survey was set up such that the platform did not save any personal information such as IP addresses, so the responses were truly anonymous and cannot be used to recognise any group or individuals through their responses to any of the questions. The survey was published on the date that ethics panel approved this research project – 30 January 2023 and kept open until 400 or more responses were captured. The ideal number was pre-determined to be 400 respondents, and the questionnaire was completed by 420.

A note on the accessibility of the survey: Owing to the selection of the auto-next option on Qualtrics, the researcher did not expect to receive responses from people living with epilepsy since the animation used in auto-next may cause seizures. The nature of Qualtrics is also such that it does not make use of a text to speech tool, which would make the survey available in an audible format for people living with loss of sight. Furthermore, the grocery-on-demand applications do not cater for accessibility for people who live with loss of sight, so this study may be limited to sighted people even in its research topic.

3.5.1.3 Expert Interviews

Six grocery and retail experts were approached to be interviewed for this study. One of the identified participants was unable to align their schedule to meet the timeline of the research study. Five interviews were conducted, before which each expert completed a consent form which allowed them to give specific consent to being interviewed, recorded, disclosing their

professional opinions, and having their anonymised responses used in the research report. None of the experts shared any proprietary information and were prompted by the consent form and at the beginning of each interview not to share any proprietary information.

The researcher carried out all interviews through online video conferencing, initially through Google meets and then MS Teams. All interviews were recorded on the researcher's personal use computer, which uses password and fingerprint to prevent access. These recordings were then transcribed onto MS Word documents and then analysed for themes.

In order to test that the on-demand grocery solution is a service innovation, the researcher tested that the solutions are novel, have created value for users, and have been diffused widely. In order to understand the value gained and captured by implementing firms, the researcher investigated the performance of the applications of the implementing firms, through online application analytics websites.

The analysis of interviews with experts, enabled an understanding of the value construct and how value is created and shared between firms and consumers. Further to the analysis of annual reports and media articles on the implementing firms, the researcher analysed the value network created through implementation by systematically analysing media articles to draw up a list of firm actors in this network and the value they capture. Following Makofane et al. (2013), the researcher developed a data extraction method for two analytical views: media analysis and application analytics. These views were derived as follows: media analysis contained the fields: industry commentary, consumer reception, and value network; and application analytics containing the fields: downloads, app ratings, and usage. For each media article, the researcher extracted paragraphs that contained relevant information about the grocery-on-demand solutions and their consumer reception and analysed those paragraphs in terms of the data extraction fields (Makofane et al., 2013; Navarro-Meneses, 2022). A spreadsheet with the analysed paragraphs is found in Appendix D.

3.6 Limitations of the Study

Owing to the method of selection of the questionnaire, the researcher understands that there were internal biases in the sample of respondents and that the sample would not be able to get population representation since the initial selection of participants was connected to the researcher, either as colleagues, friends, family or classmates.

Furthermore, self-selected samples carry a behaviour bias since respondents to a self-selection questionnaire are more interested in providing information about their experience than would a population of people who are not interested in completing a questionnaire. Considering that the questionnaire was internet based, respondents belonged to a population which have the resources - time, access to a mobile device, access to internet) to complete the questionnaire.

3.7 Ethical Considerations

This researcher followed the ethical requirements laid out by the Wits Business School, namely, requesting ethical approval before collecting data from human participants; ensuring that the data collected from participants by survey remained anonymous by not capturing IP addresses, nor requesting data that the researcher could use to identify any participant. The participants of the research interviews will continue to remain anonymous, and their insights are tokenised in the final research report and any partial report that is made available to a public audience. The researcher ensured that all data collected from participants was protected for the duration of the study and that it will be destroyed once no longer needed. The researcher requested and attained consent from all participants.

3.8 Validity and Reliability

Validity in research is a matter of whether or what quantity of trust an evaluator or another stakeholder can put into the methodology, findings and recommendations of a research study (Zohrabi, 2013). There are four layers to validity with which the researcher is concerned, namely content, internal, utility, and external. Content validity is concerned with the research instruments used and whether these capture or measure the intended constructs adequately and effectively. To this end, this research used three instruments to understand service innovation value: a consumer questionnaire, expert interviews and media analysis of service innovation. The consumer questionnaire was adapted from questionnaires developed, peer-reviewed and published by experts in the field of research (Ekici et al., 2018; Nghia et al., 2020; Prasetya et

al., 2019; Tian et al., 2020), while the interview question set was developed through a literature review of value in service innovation (Aspara & Tikkanen, 2013; Helkkula et al., 2018; Skålén et al., 2015; Vargo et al., 2008), and the approach to media analysis was adopted from scholars of research itself (Creswell & Tashakkori, 2007; Makofane et al., 2013; Onwuegbuzie et al., 2009; Zohrabi, 2013). Together with the use of existing methods and the adaptation of existing instruments, this research report will have undergone numerous iterations and checks by the research supervisor by the time it will be submitted for evaluation.

Internal validity is a matter of the representativity of the findings of reality, that is, how closely the findings land to the truth or reality (Zohrabi, 2013). To that end, the researcher used three methods to collect data and to triangulate findings in an attempt to strengthen findings and to increase internal validity. The third concern of reliability is utility, that is, how useful the findings of a research report are for stakeholders (Zohrabi, 2013).

This research focused on the service innovation of grocery-on-demand in South Africa. The construct of value, shared between grocery-on-demand firms and consumers, was analysed. Applying a similar analysis of the value construct can prove useful to innovation managers deciding whether to implement a potential innovation, which may not yield immediate monetary value but may create value-in-use for the firm, or enormous value-in-experience for their customers. The researcher used actor-network theory and value-network mapping to analyse value. This type of analysis can be generalised to all value-creating activities (Caic et al., 2019; Fan et al., 2020; Navarro-Meneses, 2022).

Reliability in research is concerned with whether a particular study could be repeated by another researcher and yield similar results (Zohrabi, 2013). In quantitative analysis, reliability can be attained by using a large enough sample that is representative of the real world, so that if the same survey were used thereafter on a similar sized sample of the population, the results remain the same. For this research, the researcher was comfortable that 300 questionnaire respondents could provide a measure of reliability of the findings. In qualitative analysis, reliability is concerned with whether if an independent researcher followed a meticulous documentation of the data collection and analysis processes conducted, the person would obtain the same findings. That is a test of whether the findings and conclusions reached by the researcher, logically follow on from the data and analysis.

CHAPTER FOUR: PRESENTATION OF FINDINGS/RESULTS

4.1 Overview

This chapter aims to present the data collected as outlined in Chapter Three. The chapter is structured as follows: first, there is an explanation of the process followed for data collection, then the presentation of the data, and an interpretation of the data.

4.1.2 Background Profile of Respondents

4.1.2.1 South African Online Retail Users

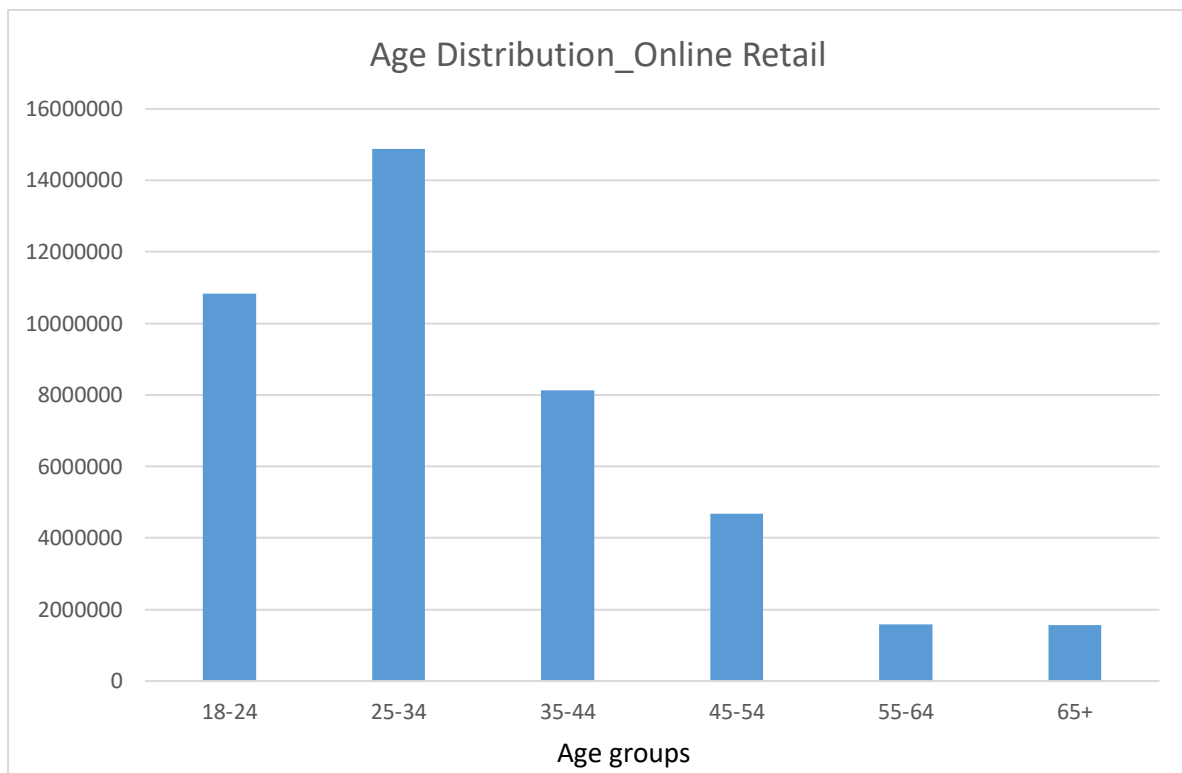


Figure 3: Online Retail Usage by Age



Figure 4: E-commerce Users Split by Gender

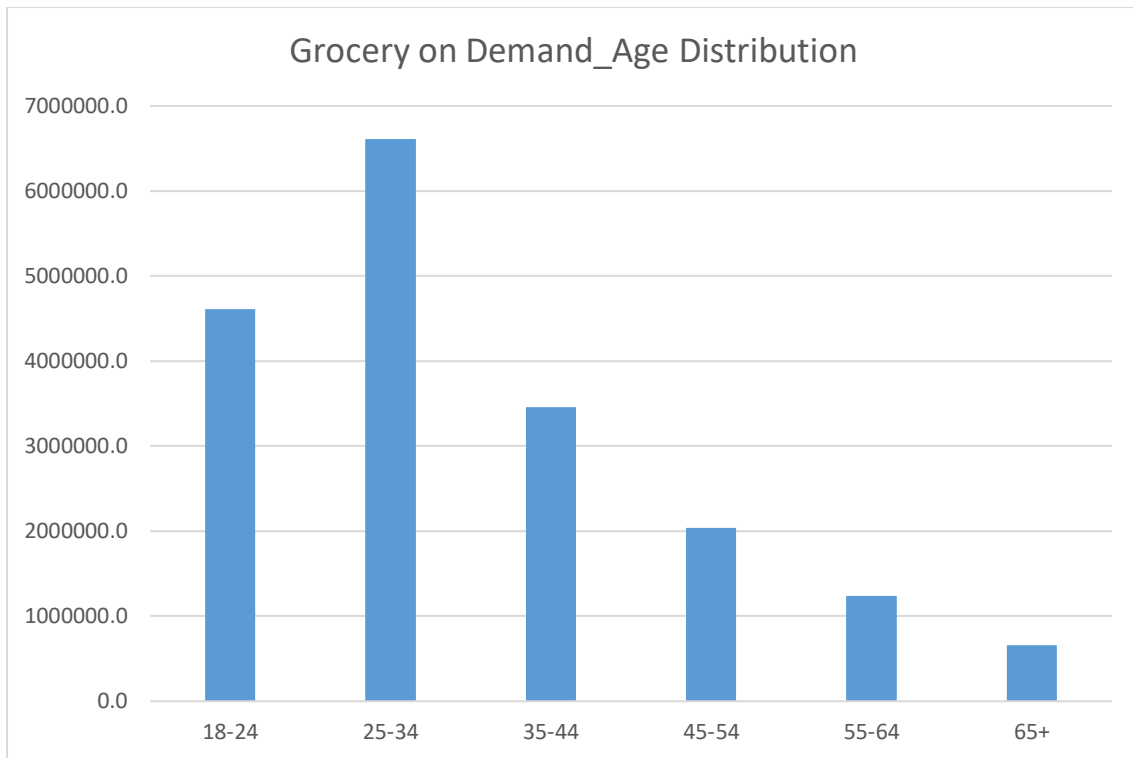


Figure 5: Grocery on Demand, Users by Age

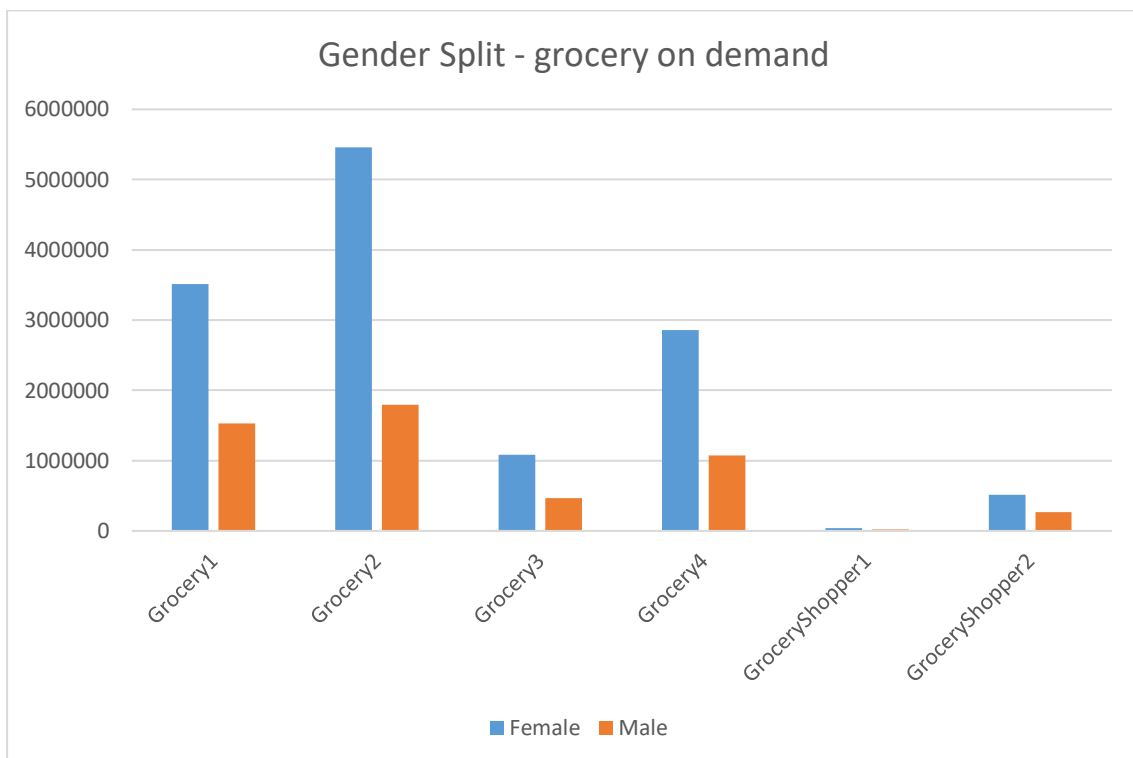


Figure 6: Grocery on Demand by Retailer Split by Gender

Questionnaire respondents - consumers

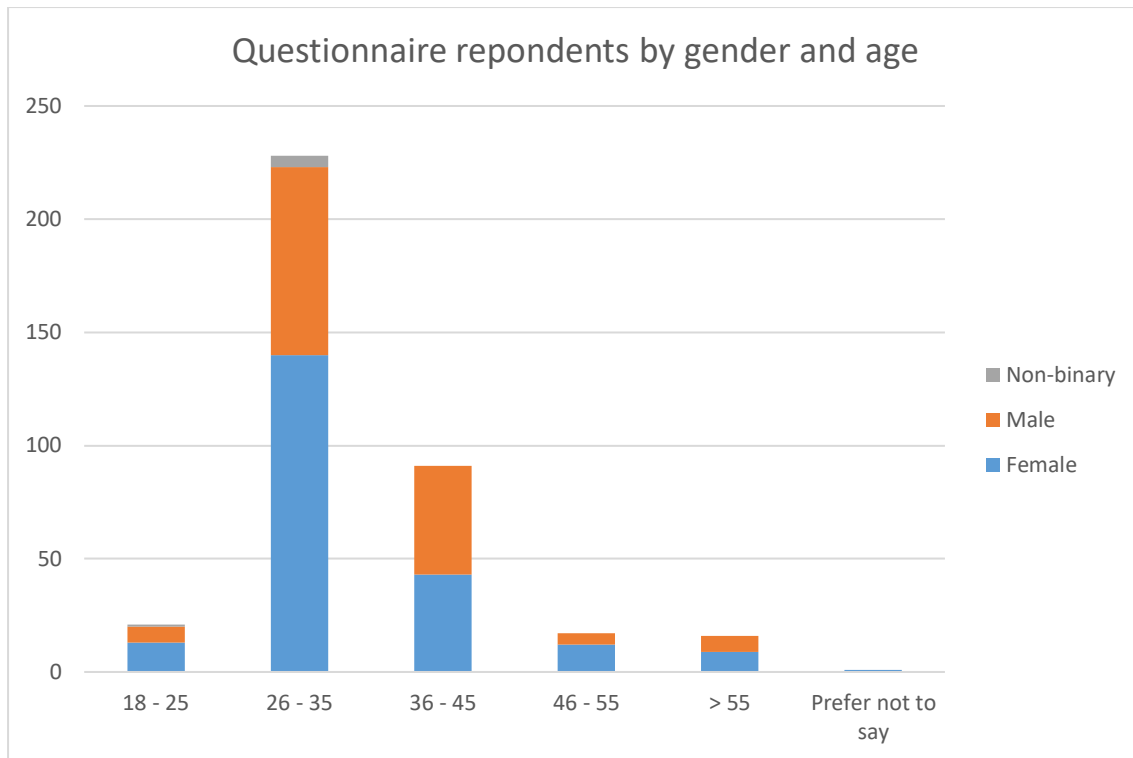


Figure 7: Questionnaire Respondents by Age and Gender

Table 1: Research Interview Participants [Role and Industry]

Date of interview	Participant	Role	Business Unit	Length
6 February 2023	Interviewee 1	Strategy Senior Manager	Grocery Retailer	1:00:17
7 February 2023	Interviewees 2 and 3	Chief Commercial Officer; Sales and Service Manager	Digital Retail Bank	1:20:06
7 February 2023	Interviewee 4	Head of Innovation	Strategy Consulting	0:28:13
9 February 2023	Interviewee 5	Omni-channel Product Manager	Grocery Retailer	0:30:58
10 February 2023	Interviewee 6	Growth and Innovation Partner	Strategy Consulting Retail Focused	1:02:12

4.2 PRESENTATION OF FINDINGS AND DATA RESULTS

Through collating the media and media analysis as well as the interview transcripts, the researcher was able to analyse the information presented by the interviewees and derive themes that were consistent across interviews. Below is a view on how these themes address the research questions, propositions and hypothesis posed in previous chapters.

4.2.1 Proposition 1: Grocery on demand is a service innovation which is novel, creates value, and is diffused widely.

Through interviews of industry experts, the researcher was able to uncover the following themes which speak to whether the grocery on demand solution can be classified as a service innovation, using the definition of innovation adopted.

4.2.1.1 *Changes in Customer Behaviour*

The South African government's response to the COVID-19 outbreak was to enact a national lock-down, along with trade restrictions. This retail industry was issued restrictions on operating hours, the number of people allowed to be in a store at any time and a mandated response to any potential COVID-19 contamination. Although these restrictions forced some retailers to respond through finding ways to meet business and customer needs within the restriction framework; some of the large grocery retailers were already planning the implementation of grocery on demand services. As described by interviewees a key enabler of the adoption of grocery on demand services, was the rise of e-retail in South Africa over prior years; e-retail served as a training ground for consumers, enabling them to have comfort in trying on-demand grocery when it became available. Furthermore, e-retail trends had indicated that speed and convenience had become top of mind for consumers. Grocery on demand in South Africa was in development before COVID-19 restrictions. COVID-19 created a testing ground and may have accelerated adoption by consumers, as consumers feared for their health and safety, they found it fitting to use grocery delivery solutions.

... [e-retailer] definitely helped with consumer behaviour, shaping behavior in SA so I think it was going there. But it was going there a little bit slower. And we could see from the way that customers were scheduling their shopping that urgency was a thing...

- Interviewee 1

... you know about radical innovation and you know about the adoption attached to those spheres of innovation, right? People don't adopt radical innovations. [consumers] adopt incremental innovations and if you [a firm implements] a radical innovation, [the firm will] get a very small niche. Of course, when I say this, I'm saying in relation to this African consumer, not necessarily into the global consumer.

- Interviewee 2

... there are lots of people that were concerned about safety. So, you know you eliminated the need to mingle with people. So, if you if you were feeling like you were at risk, you could shop in the safety of your home.

- Interviewee 6

4.2.1.2 Consumer Adoption and Business Excitement

As grocery on demand use grew through 2020 to 2022, business journalists and investment analysts expressed interest in how implementation of grocery on demand was impacting the brand and market sentiment for the retail groups investment prospects. Reporters would also remark about the diffusion of the grocery on demand solutions, specifically the number of users and the speed with which they were acquired.

150% increase in annual sales and remained the top South African grocery app with 2.4 million downloads

Media 1

As many as 19% of South African shoppers used grocery delivery services more than 10 times in the final quarter of 2021, says head of [consumer spend app] Insights.

Media 10

Hand in hand with greater connectivity is the advent of Rapid Grocery Delivery (RGD) in the country. Today, 28% of connected South Africans have used an RGD app in the last month, 49% of whom say they use one at least weekly, and 62% of whom say they intend to use one more often. While the most visible of these is the [grocery1] app, other stores are also experiencing rapid growth. [grocery 4] currently has more than a million downloads and grew its user base 300% [in 2021]. [grocery2] shopping app currently has 1.5 million users, and its overall ecommerce sales are growing by double digits.

Media 25

Further to the excitement behind consumer reception and the impact on investment prospects, business reporters would remark to the spill-over into adjacent markets. The implementation of grocery on demand at retail stores required a growth in those employed to fulfil order, such as pickers and delivery drivers.

Top five stock picks for 2023 – [international paper and packaging group], [grocery1] group, [food service product distributor], [resource companies], and [property development] ‘The development and successful implementation of [grocery1] app shows innovation and agility to changing market dynamics and execution success. The sustained growth of [grocery1] and the on-demand grocery delivery app has allowed the group to monetise digital and alternate revenue stream opportunities’

Media 3

We anticipate this transaction will add to the more than 4,000 jobs already created by [grocery 1] as we continue to grow in the communities in which we operate, said [grocery 1 group] chief executive. While [grocery1] has rapidly expanded to over 261 stores and has created over 4,100 new jobs – up from 800 at the end of 2020

Media 11

The largest private employer in South Africa, [grocery1] employs 142,602 people. It said it created 3,897 new jobs over the past year, including the creation of 2,870 [grocery1] app related posts and 3,584 jobs since its launch in November 2019

Media 22

...head of online and mobile at [grocery2], said that the race for tech talent is on across the country, with retailers dialling up their investment to ensure they are appropriately structured to respond competitively.

Media 16

And even once South Africa’s lock down restrictions had been eased, consumers continued to use grocery on demand as a primary shopping tool.

One of the biggest shifts seen is that local consumers are still going into stores less often, which points to curtailed lockdown shopping occasions despite the removal of restrictions, said [research house] South Africa managing director. [corporate property group] said that the

growth of online on-demand shopping is driving business through our malls, positively impacting trading densities

Media 18

4.2.1.3 Media Analysis

Table 2: Media Analysis Summary

Sources/Articles	Media	Illustration of Innovation Characteristics		
		Novelty	Creates Value	Diffused Widely
Business reporter	Media 1	✓	✓	✓
Business reporter	Media 2	–	✓	–
Business reporter	Media 3	–	✓	–
Business reporter	Media 4	✓	✓	✓
Business reporter	Media 5	–	✓	✓
Business reporter	Media 6	✓	–	✓
Industry expert analysis	Media 7	✓	–	✓
Business reporter	Media 8	✓	✓	✓
Business reporter	Media 9	–	✓	–
Business reporter	Media 10	✓	✓	✓
Business reporter	Media 11	✓	✓	–
Business reporter	Media 12	–	✓	–
Business reporter	Media 13	✓	✓	✓
Business reporter	Media 14	✓	✓	–

Sources/Articles	Media	Illustration of Innovation Characteristics		
		Novelty	Creates Value	Diffused Widely
Business reporter	Media 15	✓	✓	✓
Business reporter	Media 16	–	✓	–
Business reporter	Media 17	–	✓	✓
Business reporter	Media 18	–	✓	✓
Business reporter	Media 19	–	–	–
Business reporter	Media 20	✓	✓	–
Business reporter	Media 21	–	–	–
Business reporter	Media 22	–	✓	✓
Business reporter	Media 23	–	–	✓
Business reporter	Media 24	✓	✓	–
Marketing report	Media 25	✓	✓	✓
Industry research organisation	Media 26	✓	✓	–
Industry report	Media 27	✓	–	–

4.2.1.4 Application Analytics

The researcher was able to draw insights into the popularity of the grocery on demand applications amongst South African consumers by finding the list of top fifteen applications used across apple and google publishing platforms. The grocery on demand applications, are in the top fifteen list of retail applications with most active users, consumers total time spent using applications, and usage penetration rank – see Figure 7. In fact, grocery on demand applications took up four positions in the top 15 e-commerce applications by usage penetration, the inference that can be made is that these applications are not only well favoured by consumers, but also frequently used by consumers, in comparison to all e-retail applications available in South Africa.

Table 3: Top Applications by Type: Number of Users, Time Spent and Usage Penetration

#	Top Apps by Number of Users	Top Apps by Total Time Spent	Top Apps by Usage Penetration
1	E-Commerce B2C	E-Commerce B2C	E-Commerce B2C
2	Fashion	Fashion	Grocery on Demand
3	Other Shopping	Other Shopping	Fashion
4	Grocery on Demand	Grocery on Demand	Fashion
5	Grocery On Demand	E-Commerce B2C	Fashion
6	Resell	Other Shopping	Pharmacy and Drugstore
7	E-Commerce B2C	Other Shopping	Other Shopping
8	E-Commerce C2C	Resell	E-Commerce B2C
9	Fashion	Grocery on Demand	Grocery on Demand
10	E-Commerce B2C	E-Commerce B2C	Fashion
11	Fashion	E-Commerce C2C	Resell
12	BNPL	Fashion	Coupons and Rewards
13	E-Commerce C2C	Coupons and Rewards	Fashion
14	E-Commerce Retailer	Other Shopping	Grocery on Demand
15	Coupons and Rewards	Fashion	Grocery on Demand

Further to these applications being well favoured by consumers, below is a comparison of the number of times the various grocery on demand applications were visited by customers, and compared to the number of times the most popular South African e-retail solutions are visited. As discussed earlier, the e-retail applications have existed and been in use for several years prior to grocery on demand, which has been in use for just over two years. Looking at the below graph it is clear that grocery on demand applications are collective more popular than the second most popular e-retail application available to South Africans and separately the grocery on demand applications would rank as fourth, fifth and sixth place if ranked against e-retail applications by site visits.

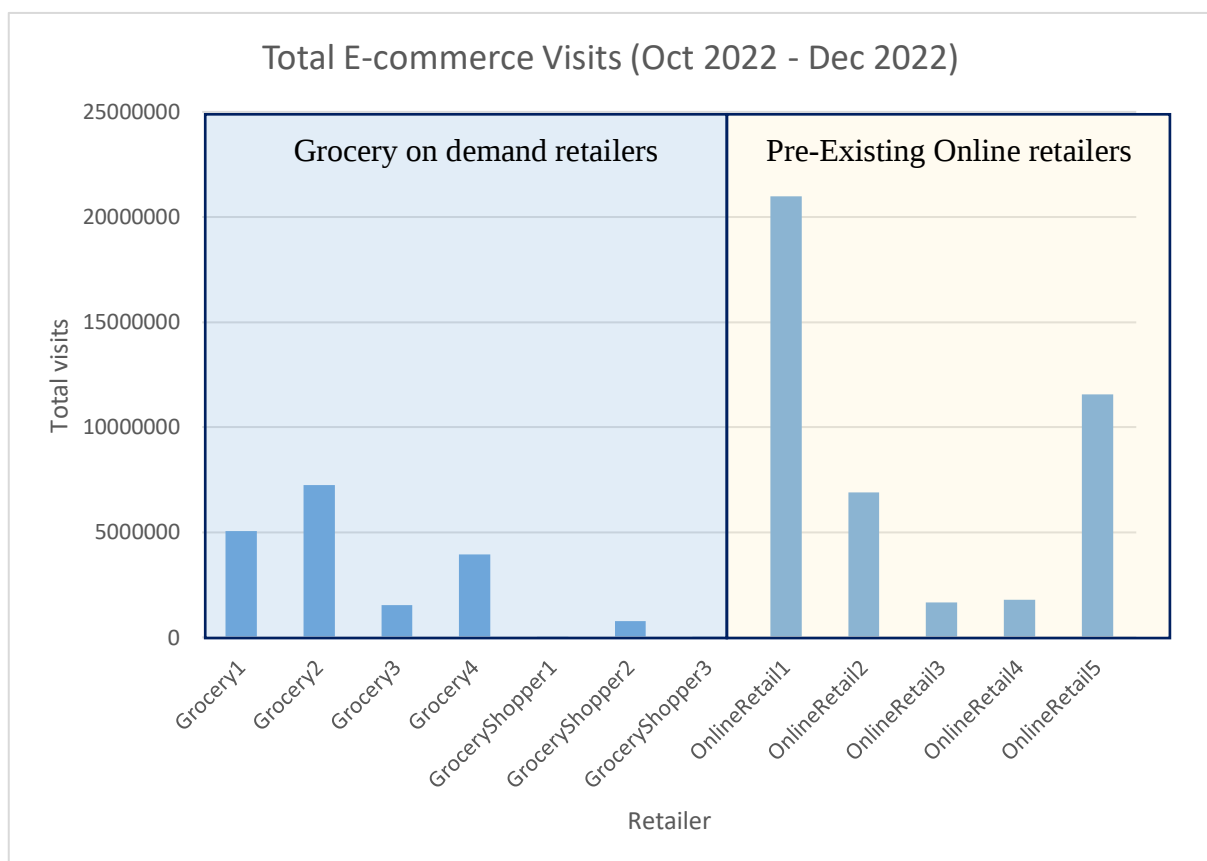


Figure 7: Comparison of Various Grocery-on-Demand Site Visits Against Various Online Retail Application Site Visits

When comparing the e-retail applications ratings to those of grocery on demand applications it is noted that collectively grocery on demand applications are as well rated as e-retail applications. Again, it is to be noted that the e-retail applications have existed many years before grocery on demand which means the developer teams have had more time to fix issues with the applications in comparison to grocery on demand. The researcher can infer that the customers of grocery on demand are delighted with the grocery on demand solution and that the solution is valuable to its users.

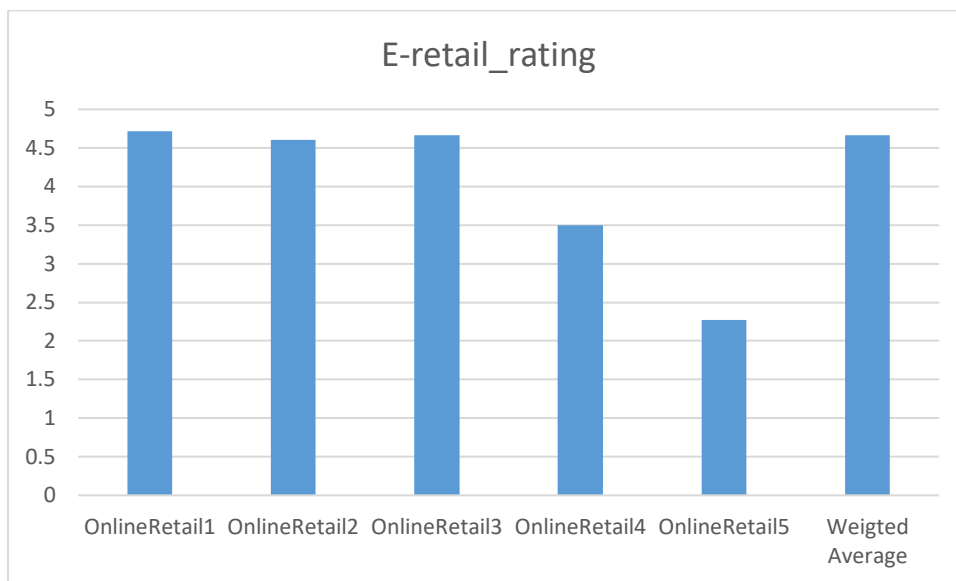


Figure 2: User Ratings of e-retail Applications Across Apple and Google Publishing Platforms

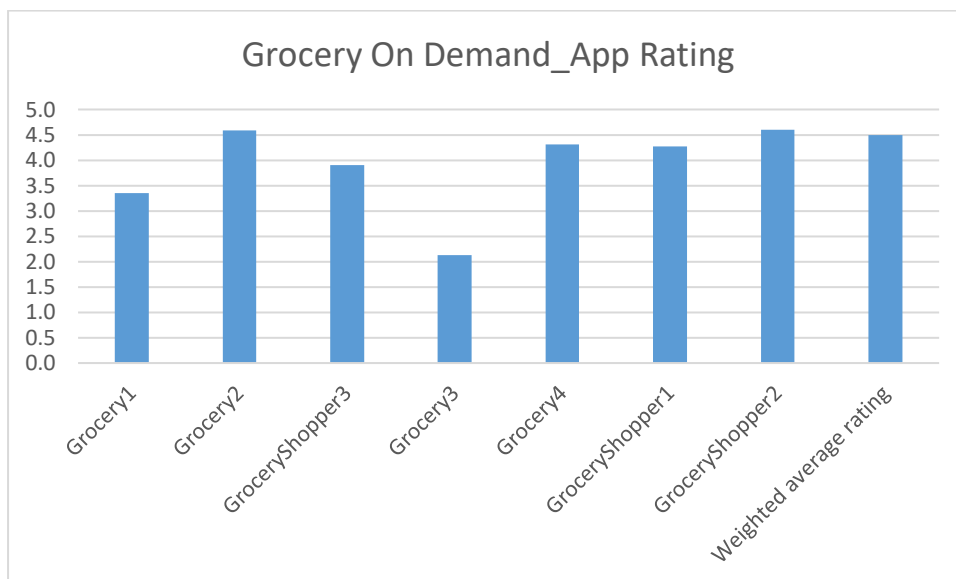


Figure 3: User Ratings of Grocery-on-Demand Applications Across Apple and Google Publishing Platform

4.2.1.4 Summary of Findings for Research Proposition 1

Grocery on demand solutions are used widely by consumers in South Africa with well over two million downloads of the application, the users of the applications have also rated them highly with a rating above 4.5 out of 5 across application publishing platforms. The grocery on demand application is valuable to consumers.

The grocery on demand applications have changed customer behaviour and created excitement in adjacent industries and markets. Although elements of grocery on demand solutions are not entirely unique to the solution, grocery on demand has seemingly merged two existing solutions; restaurant prepared food on demand and e-retail, to create a solution faster than existing e-retail solutions and delivery of a more complex basket of goods than a takeaway meal. This re-configuration of elements of existing solutions, delivery of value and wide diffusion of this solution, qualifies grocery on demand as a service innovation. Grocery on demand is novel, creates value and is diffused widely in South Africa

4.2.2 Proposition 2: Value gained by implementing firms in the value network is greater than the value in exchange by consumers.

Through interviews of industry experts, the researcher was able to uncover the following themes which speak to the manner in which grocery on demand was implemented, the actors that played a part in the implementation and the value created for these actors.

4.2.2.1 Networked Implementation

Through analysis of the media as well as the interview transcripts the researcher was able to develop a view of the actors involved in the delivery of grocery on demand. This actor network is made up of the grocery retailers, fast moving consumer goods manufacturers, logistics companies, internet service providers (ISPs), telecommunications companies, labour market, labour unions, motorcycle manufactures, motorcycle rental companies, delivery drivers, grocery pickers, customers and municipal infrastructure. These actors together make it possible for each order to be placed, picked, packaged, and delivered.

...we needed to send things to customers quickly and in an economical fashion and sending a big truck is not quick and not cheap so smaller orders on bikes you can do it, you can have micro delivery service where it goes a short distance from a shop in the area to your house quite quickly

- Interviewee 1

... it made economic sense to move to a smaller vehicle and then the delivery ecosystem had been evolving anyway, so even pre-on demand groceries, the likes of [food delivery service] ... had already started doing that and that type of delivering network became more popular with [fast food restaurant] and other takeaways also doing the same sort of delivery model. So, we tapped into a delivery model that already existed

- Interviewee 1

...shifted to working with an on-demand food delivery

- Interviewee 1

Now we've got a span of drivers for [grocery retailers], so there's a fair bit of employment there, and obviously not just about the driver itself. You've got the companies that handle the logistics

- Interviewee 5

...with the advent of a new smart devices at very low cost price points and I think you've got a much bigger proportion of the South African consumer who can shop online and they don't have to have a laptop.

- Interviewee 6

In December 2021, the [grocery 1] said it had entered into a joint venture with its existing [grocery 1] logistics partner, the [logistics group], in which both parties will own 50%.

Media 11

[grocery 4] has launched its new Groceries section on [online retail 1] platform. The companies announced a partnership in May 2022. Shoppers will have access to items and products available at their local [grocery 4] stores. Orders will be picked in-store by [grocery 4] staff. The orders will be delivered by [online retail 1] delivery fleet. Shoppers will be able to earn [grocery 4] points through the purchases.

Media 13

4.2.2.1 The Role of the Customer

Understanding how consumer facing organisations see their customers and how they keep track of consumer trends, divided the participants into two camps. Customers and consumers are the most important element of an organisation; however, the first group sees the customer as a beneficiary of operations, while the second group sees the customer as a source of information about how to meet customer needs. While all customer facing organisations intend to serve

their customer, the difference in the approach to serving the customer suggests the difference in customer role. In the organisations that see customers as beneficiaries, the approach to engagement is delivering solutions to the customers based on trends in the retail industry. The approach taken by organisations who engage their own customers consistently to understand what is driving their habits suggests they see the customer as a key actor in their operations.

In addition, the organisations who view customers as key actors also use customer insights as sources of innovation, while those that view the customer as a beneficiary search for sources of innovation in retail trends, both domestically and internationally. This difference is expressed in the quotes that follow:

...so we are constantly looking at what shoppers are buying or not buying, what specials they are shopping, what time of the month, the week, the year, which area, which stores.

- Interviewee 1

... it's physical hardware enabled by technology [and] the ambassadors are human beings so that provides lots of practical physical touch [points]. You can have meaningful dialogue between business and consumer.

- Interviewee 2

It's quite [an] old school mentality [,] most of the development companies where [decision makers] in the boardroom say: 'this is what we're doing for the next year', and then the [developers] go off and build it. But there's no real interaction with the customers [and] no real understanding [of] what the customers really need, and I think that's a fault for most companies because you end up building stuff [that] customers don't really want.

- Interviewee 5

...artificial intelligence allows companies to use the data that they've got, it's too much [data] for a human to process ... we're getting all of this data and then making meaning out of it, by looking at things like weather patterns and store formats, competitors, []. In order for them to then start making the right decisions so data is really important, provided they use it [] it's not just the data, it's the AI that helps with the intelligence and the ability to address [the patterns].

- Interviewee 6

4.2.2.2 Value Beyond Profits

The interview participants described grocery on demand as being a very convenient service for customers to use, the convenience is further unpacked as requiring less effort, using less time, and using less of the customers resources. The customer trades in thirty-five to fifty rand in order to gain the convenience of having groceries delivered to their door within 60 minutes to a day of placing their order.

... [it's the] convenience, [the] time saving, [it's] probably not a price play. There aren't cheaper products online than in store for any of the retailers, but it's definitely saving time and the convenience of not having to actually put in effort and go to [the] store.

- Interviewee 1

...the time saving is insane and [in] this day and age time actually does count. It really does at a certain level

... as you start to get busier that time actually does count. And even if all [grocery-on-demand] does is it decreases the chance that you're going to smack your kid, then that's a good thing, [that's] taking away from your stress and tension

- Interviewee 4

... on demand is value created for the customer rather than the company, because the basket size is quite limited on an on-demand grocery shop, where if you walked into the store, you could get on-sell, customers would buy complimentary product a lot more easily that they would online. So, in that way its swayed towards more value for the customer than the company. But having said that, I think if you offer a really good, on demand service, you actually capture customers that you probably wouldn't have had.

- Interviewee 1

...selling more products. I don't think there's any more profitable to sell online versus in a store, if anything it becomes more expensive, because you need a bit more staff on our end you need a bit more staff and then you need to pay for the logistics of it and for the customers it's a little bit more expensive because you pay for logistics, even though we don't recover 100%, so it's costing on both ends for logistics. The delivery fee doesn't cover the cost of delivery. It doesn't cover the cost of delivery on average.

- Interviewee 1

...and the problem with the delivery fee is people like me do the math and driving my car to [grocery retailer] and back is like two hundred rand flat to the local [grocery retailer] [on fuel and vehicle wear and tear]. [Plus] time and effort in that store, it takes me an hour.

- Interviewee 4

... it's been proven that it's actually cheaper to get it delivered to your door than it is to go to the shops. In terms of costs. You're not getting in your car, you're not driving, you're not wasting petrol, no wear and tear. Also, just in terms of convenience where it's not your time, [you're] not spending half an hour driving to the shop and [driving] back. So, definitely there's plenty [of] value around making consumers lives easier.

- Interviewee 5

This convenience costs the retailers more than the thirty-five to fifty rand that their customer pays over, to have the groceries delivered. As discussed in the previous section the network of actors involved in the delivery of grocery on demand, includes logistics companies and delivery drivers, who earn a service fee and wages respectively for delivery. These logistics organisations charge more than thirty-five rand for each delivery, the researcher can then infer that the grocery retailers are subsidizing the cost of delivery above the R35 to R50 paid by the customer.

That R35 that is paid, it doesn't cover the delivery leg

- Interviewee 1

... if the product cost R10 in store, it costs R10 on the app. And they actually can't get away with marking it up because people are kind of aware of these things and they'll see that

- Interviewee 4

And the more they sell, the more they are losing. So, it's not good for them unless strategically is good. Maybe. I mean, take me for example, wouldn't touch[grocery1] ... So, maybe they've endeared themselves ... So strategically that wasn't too bad

- Interviewee 4

They're actually not making money off of a delivery of a basket of goods. Now as the volume increases, that [is where] the economics change. But it's fairly expensive for a retailer.

- Interviewee 6

The researcher can infer that grocery on demand is not sustainable for the retailers, if observed from a purely monetary point of view grocery on demand is value destructive, for the retailers who pay more for the delivery contracts with logistics firms, while only receive thirty-five rand to fifty rand from the customer. Further analysis of the value network and benefits of grocery on demand was carried out. The value captured by the retailers is in winning over new customers, improving frequency of shopping per customer and better communication of product specials. The retailers who have opted for grocery on demand have improved the value of their relationship with customers.

... implementing firm – more products sold – higher sales for the company and for the stores, stores are selling more products as a result of on-demand and increasing their sales targets... and depending on product mix there is [a] margin to be made.

- Interviewee 1

... more baskets are being bought at each store, people are shopping are more because they can, basket size has decreased but the frequency of shopping has increased, as well as more customers than previously. Someone overseas can do shopping for their parents

- Interviewee 1

[grocery1] got me now. I used to shop at the [grocery2], never [grocery1] But now I'm sticking with [grocery1].

- Interviewee 4

They definitely focus on delivering value. This whole thing [function] of pointing me to specials, they must be selling so many more specials now, than they ever used to in store, [because] you didn't see the specials as easily

- Interviewee 4

So, the customer needs to [know] if they [are] getting value, then they will come back to you again and again. That's how you kind of build your relationship and you get [returning] patrons.

- Interviewee 5

...what the retailer does benefit from is the ongoing loyalty [from] that customer shopping with the retailer. And then when they're looking, in store, hopefully they go to that retailer

- Interviewee 6

Retailers which have opted to not implement a grocery on demand online option are at risk of losing their in-store customers to online options and may need to at the least create some online presence to compete.

Back then people [companies] were profit orientated. I don't think we had to do that kind of thing... now things might be a bit different.

Interviewee 4 describing how, in their experience at an FMCG [Fast Moving Consumer Goods manufacturer] 15 years prior, each product or service sold had to be profitable, as opposed to current loss-leader approaches to customer management.

...if you're not online, you're losing out. So I mean, if I'm sitting at home and I can't get in my cause, I'm in a meeting and I need to order some food for tonight or some groceries or whatever might happen. And I will then have to go to the [grocery1] app and you know then [grocery3] would lose out on that business. So I think for the retailers ... you losing customers to other people and that speaks directly to value because then to them they're losing money, the bottom line.

- Interviewee 5

A chunk of [grocery 1's app] growth came at the expense of [grocery 2] Food. It competes in the high-end market, and [grocery 2's app] is still far behind [grocery 1's app].

Media 1

The actor network created through implementation of grocery on demand derives both monetary value and non-monetary value.

...delivery partner grows, because [of] more orders. So, for the companies that were already doing on-demand food deliveries, they can make more money from having more orders and then more exposure. They can build on the existing efficiencies by growing [revenue] more [than their costs] by having groceries on their platform. The benefit outweighs the cost, otherwise they wouldn't do it

- Interviewee 1

[If] delivery partners grow their network, and scale, [their] unit cost could go down, because of economies of scale. There, potentially, is a revenue and profit impact for delivery partners) where they can get more revenue while getting more efficient

- Interviewee 1

The labour partners may stand to gain by getting additional income because of increased membership and increase in membership fees. And more members means [sic] more negotiation power

- Interviewee 1

I think the other thing is ... what e-commerce has done is it's created a lot of jobs

- Interviewee 6

4.2.2.3 Summary of Findings for Research Proposition 2

The grocery on demand solutions implemented in South Africa have had greater reach than just the retail industry, in which they operate. These solutions have had impact in labour market, logistics industry and grown retailers' ability to use data to better serve their customers. Furthermore, retailers have gained deeper relationships with logistics firms, through creation of joint ventures and increased the relationship they hold with customers. The value captured and enjoyed by logistics firms is greater than the payments (value in exchange) made by customers. The value network created through grocery on demand implementation have created a new way of managing any households monthly/weekly needs. The value network created through grocery on demand implementation may yet have opportunity to experience and exchange more value as new configurations within the network are developed to optimise the solution.

4.2.3 Consumer Questionnaire Results

4.2.3.1 Shopping Modality

When looking through the questionnaire results, there is a clear trend overall moving from in store shopping, to grocery on demand. The data results show that pre-lock down 13 respondents, out of 420 total respondents, were using grocery on demand, which increased to 133 respondents during lock down and remained at 133 post lock down. 343 respondents were in store shoppers before lock down, and that decreased to 206 during lock down and increased

after lock down to 221. The change of in store visits can be attributed to respondents following lockdown restrictions and having grocery on demand made available. The increase after lock-down indicates that some respondents went back to normal, but a remaining group have stuck to grocery on demand. 120 out of the 137 respondents that changed their modality from in store shopping changed to grocery on demand, and the remaining 17 moved to online shopping. After lockdown, 15 of the 17 respondents that moved to online retail moved back to shopping in store. The respondents who moved to grocery on demand during lockdown, remain users of grocery on demand after lockdown.

Of the 120 respondents who moved to grocery on demand during lockdown 73 identify as female, 56 identify as male, and 3 identify as non-binary. After lockdown the group of 133 grocery on demand respondents, shifted to 86 female, 45 male and 1 nonbinary. This indicates that more women became users of the grocery on demand solution and men and non-binary users returned to shopping in store.

The majority (90.2%) of the respondents, who opted to shop using grocery on demand during lock down, are between the ages of 26 to 45 and similarly 88% of respondents using grocery on demand after lockdown are between ages 26 and 45.

Of 133 users of on-demand during lockdown, 126 can be described as very busy – with studying and working simultaneously. Of the respondents who opted for grocery on demand during lock down and of the respondents the respondents who opted for grocery after lockdown, 85% and 89% respectively live by themselves or with a family. Of respondents who opted for grocery on demand during lockdown, 38% earn more than R55k each month, and 39% of the respondents who opted for grocery on demand after lockdown earn more than R55k each month.

4.2.3.2 Shopping Frequency

Overall, more respondents shopped once a week than any other frequency before, during and after lock down. The number of respondents who opted to shop once a week increased by 68 people during lock down and decreased by 76 after lock down, to 214 respondents shopping once a week (8 fewer than pre-lockdown).

4.3.2.3 Shopping Duration

Shopping duration pre lock down showed a mode at the less than two-hour frequency. This shifted to less than 30 minutes each week during lock down and increased marginally after lockdown to the less than one-hour duration.

Duration (hours) was coded as follows:

Table 4: Shopping Duration coding

Answer Option	Numeric Approximation (per week)
“less than 30 minutes”	0.25
“less than 1 hour”	0.5
“less than 2 hour”	1
“less than 4 hours”	2
“4 hours or more”	6

4.2.3.4 Shopping Time Cost

Shopping time cost (in rands per month) was calculated as follows:

Shopping Time Cost (per month) = duration each week $\times$ 4 weeks each month $\times$ hourly wage.

Wage (per hour) was calculated as follows:

Table 5: Wage Per Hour Calculation

Answer Option	Numeric Approximation
“0–R10 000”	$5000 \times 1/4 \times 140$
“R10 000–R20 000”	$15000 \times 1/4 \times 140$
“R20 000–R30 000”	$25000 \times 1/4 \times 140$
“R30 000–R35 000”	$32500 \times 1/4 \times 140$
“R35 000–R40 000”	$37500 \times 1/4 \times 140$
“R40 000–R45 000”	$42500 \times 1/4 \times 140$
“R45 000–R50 000”	$47500 \times 1/4 \times 140$
“R50 000–R55 000”	$52500 \times 1/4 \times 140$
“>R55 000”	$7000 \times 1/4 \times 140$

Wage (per hour) was coded using the midpoints of the wage option bins and used to calculate wage per hour for each respondent.

For all respondents, the mean of shopping time cost is R906 each month, with a standard deviation of R898. As shopping time cost is a function of income, and income is a function of years of experience, the expectation is that the shopping time cost will be directionally related to income and to age. Similarly, the shopping time cost will be directionally related to occupation.

4.2.3.5 Shopping Time Cost Savings

In this study shopping time cost savings can come about by decreasing shopping duration, as it is assumed that wages remain relatively consistent or increasing over the short time period, and respondents were only able to input a single figure for income so any shopping time cost savings will be in terms of that income amount.

The researcher compared the time cost of shopping pre-lock down, to the time cost of shopping during lock down to calculate the time cost savings made by users of grocery on demand who moved from shopping in store to grocery on demand once it became available.

The researcher decreased the time cost of grocery on demand shopping by the time cost of in store shopping. According to Figure 11 below, these figures yielded a sample with mean -R415.20, this sample mean was tested for significance using a t-test and found to be significantly different from 0 at p-value less than 0.05. an inference can be made that using grocery on demand costs a user on average R415.20 less than the customer using their own time to go in store and shop that basket of goods, each month.

4.2.3.6 Shopping Time Cost Utility

The researcher then wanted to compare shopping time cost to the price paid for grocery on demand services, to find a monetary value to represent the utility experienced or value-in-experience for consumers when opting to use grocery on demand. This value was only derived for respondents who opted to continue using grocery on demand as their primary shopping mode. Grocery on demand services are priced between R35 and R50 depending on the retailer, for this study R50 is used as the price to derive the conservative time cost profit customers made. Customer utility is time cost - 50× Freq Shopping. The time cost profit sample has a mean of R270.12 and is significantly different from 0 at the p value less than 0.05.

One Sample t-test

data: time_cost_data\$delta_time_cost

sample estimates: mean of x -415.1989

t = -4.3566,

df = 109,

p-value = 2.999e-05

Figure 10: Time Cost Saving t-test for Significance

4.2.3.7 Relationship Value

Respondents of this questionnaire were asked to rate the value of the relationship they had formed with retailers through use of grocery on demand. This was accomplished by giving respondents statements about the value they place on their relationship with grocery on demand retail, which they could disagree, agree or remain neutral about. This measure was then coded as -2 for strongly disagree, -1 for disagree, 0 for neutral, 1 for agree and 2 for strongly agree.

The sample mean derived from the statement responses was 0.395, this mean was then tested for significance and was found to be significantly different from 0 at the p-value less than 0.05. The researcher can infer that the relationship value experienced by users of grocery on demand is greater than 0. Users on average found the relationship they had with grocery on demand retailers to be of value.

One Sample t-test

data: data\$relationship_value

sample estimates: mean of x 0.3954877

t = 10.169,

df = 273,

p-value < 2.2e-16

alternative hypothesis: true mean is not equal to 0

Figure 11: Relationship Value t-test of Significance

4.2.3.8 Consumer Well-Being

Respondents of the questionnaire were asked to rate the wellbeing gains that they experienced due to using grocery on demand. This was accomplished by giving respondents statements about their wellbeing when using grocery on demand that they could disagree, agree or remain neutral about. This measure was then coded as -2 for strongly disagree, -1 for disagree, 0 for neutral, 1 for agree and 2 for strongly agree.

The sample mean derived from the statement responses was 0.632, this mean was then tested for significance and was found to be significantly different from 0 at the p-value less than 0.05. The research can infer that the users of grocery on demand increased their wellbeing through use of grocery on demand instead of shopping in store.

One Sample t-test

data: data\$consumer_wellbeing

sample estimates: mean of x 0.6324701

t = 13.39,

df = 250,

Figure 12: Consumer Well-being t-test of Significance

4.2.3.9 Summary of Hypothesis 1: Perceived Consumer Value is Greater Than the Value-in-Exchange Captured by Retailers

Hypothesis 1: Perceived consumer value made up of consumer time-cost savings, consumer wellbeing gains and consumer relationship value are greater than the value-in-exchange captured by retailers.

Perceived Consumer Value

$$\cong \hat{\beta}_1 \text{TimeCostSaving} + \hat{\beta}_2 \text{Relationship Value} + \hat{\beta}_3 \text{Consumer Well being} + \hat{\epsilon}$$

Hypothesis 1a: $\mu_{\text{TimeCostSavings}} - \mu_{\text{ValueInExchange}} \geq 0$

Hypothesis 1b: $\mu_{\text{RelationshipValue}} \geq 0$

Hypothesis 1c: $\mu_{\text{Consumer Well being}} \geq 0$

To test hypothesis 1a, the researcher conducted a two-sided paired t-test with:

$$H0: \mu_{\text{TimeCostSavings}} - \mu_{\text{ValueInExchange}} = 0$$

$$H1: \mu_{\text{TimeCostSavings}} - \mu_{\text{ValueInExchange}} \geq 0$$

One Sample t-test

data: time_cost_data\$consumer_profit_during

sample estimates: mean of x = 270.1261

t = 4.1842,

df = 108,

Figure 13: Consumer Time Cost Profit t-test of Significance

To test Hypothesis 1b, the researcher conducted a two-sided t-test with:

$$H0: \mu_{RelationshipValue} = 0$$

$$H1: \mu_{RelationshipValue} \geq 0$$

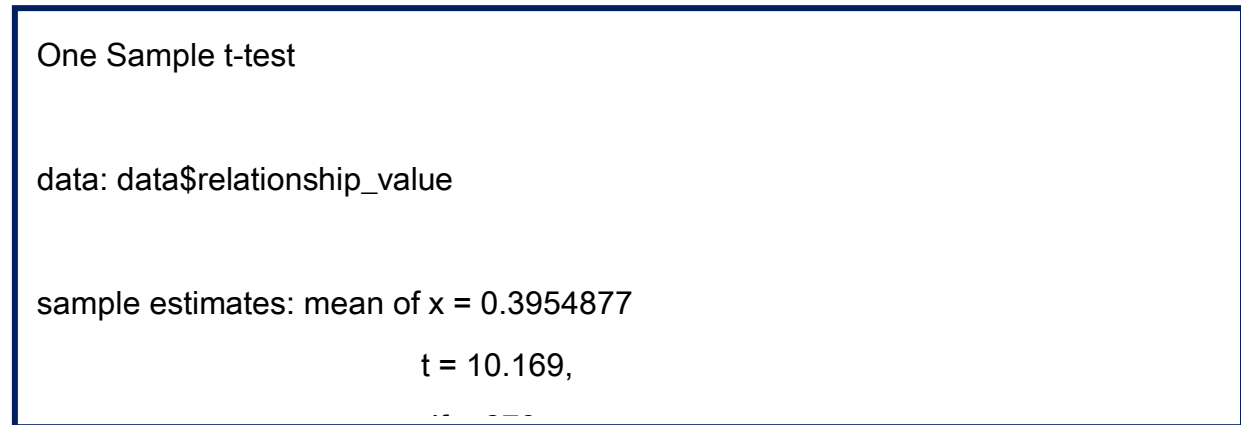


Figure 14: Relationship Value t-test of Significance

To test Hypothesis 1c, a two-sided t-test was conducted with:

$$H0: \mu_{ConsumerWellBeing} = 0$$

$$H1: \mu_{ConsumerWellBeing} \geq 0$$

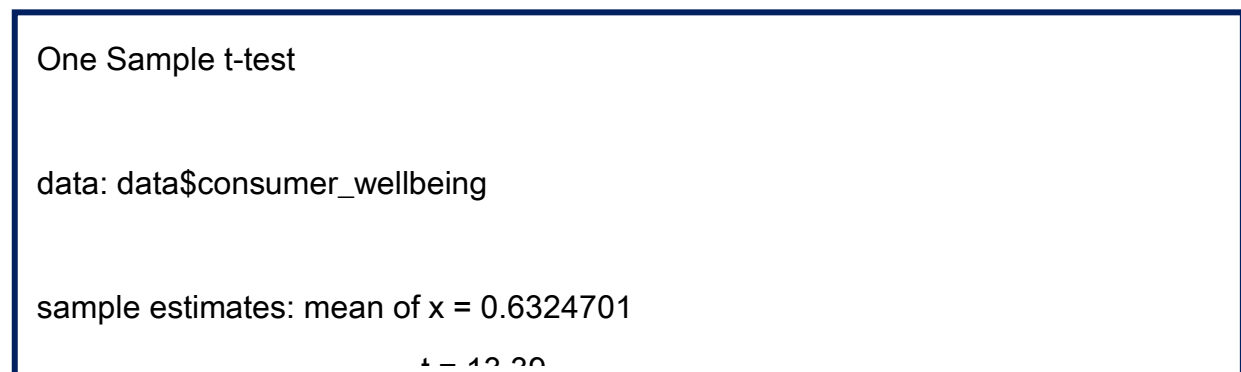


Figure 15: Consumer Well-being t-test of Significance

For each of the three tests above the researcher was able to reject the null hypothesis that the means of time cost saving in (figure 12), relationship value in (figure 13) and consumer wellbeing in (figure 14) are 0. All three of the means of these measures are significantly greater than 0, at the p-value of less than 0.05. The researcher can conclude that perceived consumer value of grocery on demand is greater than 0.

4.3 SUMMARY OF FINDINGS

4.3.1 Change in Consumer Behaviour

The results of this study suggest that grocery on demand became especially attractive to consumers as a result of health and safety concerns during the COVID-19 lock down with the increased convenience of same day delivery. Consumers who began using grocery on demand during the lockdown have chosen to remain users of the solution, for the most part, and the change in their shopping modality has persisted. The number of respondents in this study for whom grocery on demand persists as their preferred modality for grocery shopping, suggests that this solution has been adopted widely by the population of consumers with similar profiles.

4.3.2 Consumer Adoption and Business Excitement

Through media analysis the researcher was able to infer that grocery on demand has created excitement in industries adjacent to retail, specifically logistics and financial organisations. This is illustrated by both the increased consideration of the brand and the increased tradability of implementing firms' stocks.

4.3.3 Value Beyond Profit

Although the price for delivery of a basket of groceries is less than the cost incurred by implementing firms, the implementing firms are willing to incur this cost. The research study suggests that the implementing firms are gaining deeper insight into their customers' habits, improving their interaction with the customers, and increasing shopping frequency. Furthermore, the value that consumers place on the relationship they hold with retailers, is increased, owing to grocery on demand.

4.3.4 Perceived Consumer Value

Through the questionnaire responses, the researcher was able to evaluate the perceived consumer value of grocery on demand. Perceived consumer, value made up of consumer time-cost savings, consumer well-being gains and consumer relationship value is greater than the value-in-exchange captured by retailers.

CHAPTER FIVE: ANALYSIS AND DISCUSSION OF RESEARCH FINDINGS

5.1 Introduction

The purpose of this chapter is to articulate the researcher's contribution to service innovation and value literature. In chapter two literature review, the researcher summarised existing arguments on the topic of service innovation and value creation. This chapter aims to explain how this study and the results presented in chapter four further literature on value and service innovation.

In chapter two a conceptual framework was introduced to conceptualise value of service innovation, in this chapter the researcher will clarify how the findings in chapter four assist in furthering the literature on value.

5.2 Background

At the start of this report the researcher listed out three research questions that they wanted answered:

- A. Is grocery on demand a service innovation? If so, what kind of innovation? How does it create value?
- B. How does Value-in-exchange paid by consumers compare to value derived by the value network?
- C. How does perceived consumer value, made up of wellbeing gains, relationship value and value-in-experience, compare to value-in-exchange paid by the consumer?

To study and further understand the value made available through a service innovation, the researcher went about investigating consumer perceived value - through a consumer questionnaire and investigating firm derived value - through expert interviews. Finally, value-network derived value was investigated through Media analysis.

5.3 Is Grocery on Demand a Service Innovation?

The researcher approached understanding what a service innovation is, by reading through literature on the topic. Service innovation can be defined as the outcome of a re-configuration of existing and new knowledge or resources, that is implemented and adds value to multiple

stakeholders (Gustafsson et al., 2020a). This study has tested whether the grocery on demand solution is novel, adds value and is diffused widely. It is clear through the number of downloads and consumer ratings of the grocery on demand applications that grocery on demand is widely diffused and valued by users, (see table 2 and table 3 in Chapter 4). However, the novelty of the solution can be questioned as similar solutions have existed in other parts of the world, this solution is new to South Africa but not the world.

5.3.1 Innovation Novelty and User Preparedness

It has long been agreed that users or consumers are key actors in innovation as both a source of innovation and a co-developer (Bogers et al., 2010). It is suggested that the type of interaction between firms and consumers and the proximity and location of both firm and consumer will impact the degree of novelty of an innovation (Harirchi & Chaminade, 2014) and greater involvement of consumers in the innovation process is associated with breakthrough innovations while the more proximal the firm and consumer are located in relation to the other the more incremental or less radical the innovation developed (Asheim & Isaksen, 2002). Furthermore the type of customer also has an impact on the degree of novelty, where emerging market customers are more associated with incremental rather than radical innovation (Govindarajan et al., 2011). So, it is no surprise that South African retailers which have focused on a South African customer would produce an incremental innovation, as implied in expert interviews.

5.3.2 Measurement of Value

Although, the media analysis and app analytics, pointed to grocery on demand being an innovation because of its wide diffusion and regional novelty, if the researcher were to look only at monetary value captured by retailers (focal actors in the value network), the grocery on demand service might not have met the value adding criterion of innovation – only in the strictest sense. However, once the total value derived by the value network or actor network is considered, it becomes clear that engaging in the delivery of grocery on demand adds value to all actors, including value enjoyed through the establishment of the value network. This leads the researcher to believe that new ways of quantifying value, as an outcome of service innovation, need to be further developed. Understanding value becomes crucial as we begin to understand the link between value-in-experience in customers and their repeat engagement

with that service – which is referred to as customer loyalty or stickiness. Value experience is a predictor of the repetitive engagement by customers (Cronin et al., 2000).

5.3.3 Value-in-Exchange Paid by Consumers Compared to Value Derived by the Value Network

Finding ways of conceptualising the value of a service in Chapter Two, leads to understanding that value is a more complex construct than just value-in-exchange or monetary value traded between actors in a network (Vargo et al., 2008). This is made apparent in this study by the responses to a consumer questionnaire, the expert interviews and the media analysis. The actor network of entities involved in the implementation of grocery on demand, and the value created and derived through engaging in this network is different from the monetary value traded between actors. Actors gain value by engaging in the value network even when they make monetary losses. Although this study specifically tests the relationship value gains for consumers, the value network created is a network of actors who each has a bilateral relationship with all actors that they engage with and who, in turn, gain value through that engagement (Prasetya et al., 2019). Furthermore, in the knowledge economy (Tchamyou, 2017), the context in which these firms currently exist, there is value to be gained through using that data intelligently to find new needs to service and to innovate current offerings (Hankammer et al., 2019).

5.3.4 Perceived Consumer Value Compared to Value-in-Exchange

Customers and users evaluate the value of a service by the value of the process of using that service (Kukk & Leppiman, 2016). In this study, the researcher has undertaken to use the value of consumers' time, their wellbeing gains, and the value they attribute to the relationship they hold with the service provider to estimate the phenomenological concept; value-in-experience. The result is an estimate of consumer time cost based on individuals' income and the amount of time they would typically spend performing a service for themselves. A similar approach is to use an estimate of the resources a customer would need to use to perform that service. Both approaches are dependent on the individual consumer context and require knowing the consumer to calculate. In the study the value-in-experience by the customer, when estimated as a function of time, was far larger than the value-in-exchange paid by the customer. This means that the customer experiences a surplus of value (Hinterhuber, 2004). This could mean an opportunity for firms to capture more of the value created through innovation.

5.3.5 Value Co-creation and Dissemination

Previous management scholars have found ways to model perceived customer value against different dimensions of the user experience, including utilitarian control, emotional value, effort and value for money (Mohd-Any et al., 2015) in order to predict the value that a consumer may experience when undertaking a transaction with a firm. Furthermore, scholars in logistics management have investigated models which analyse value exchange flows between economic entities as a result of delivering a service (Mazur & Milewski, 2018). This research report undertakes to find a way to compare value holistically as an outcome of engagement around a service innovation in order to understand which actors in a value network gain more than others. To the extent that the empirical data in this study illustrate it, consumers gain the most from engaging with an innovation.

5.3.6 Relationship Value and Jobs to be Done Theory

It is essential to have an understanding of the requirements, demands and needs of your consumer or future customer, to effectively design products and services for solving that need (Abrell & Durstewitz, 2016; Hankammer et al., 2019). The practice of collecting data on consumers from a distance, and finding correlation between different groups of consumers and their purchasing patterns, serves a firm by articulating what customers have bought but misses the opportunity to find out why and what drives those purchases, i.e., what job those consumers needed done (Christensen et al., 2016). With actors in the value network having a bilateral relationship between each other (including customers), each actor can then make use of that relationship to better understand what their customer needs, pain points are, simply the actor can use knowledge gained through the relationship to further understand their customers jobs to be done (Prasetya et al., 2019). Actors in a value network have more opportunities to derive value through engaging the network than value-in-exchange transactions.

5.3.7 Customer Perceived Value and Price

Firms offer consumers value propositions – which is made up of a product or service at a price - and the value of such a proposition is only realised once the consumer accepts the service (Sandström et al., 2008). The pricing of a proposition is, initially, a firm's decision and has shown to be its most impactful lever in pursuit of profitability (Hinterhuber, 2004). Pricing

from a firm's perspective has historically involved the firm using their internal cost of production plus a satisfactory margin to allocate cost to each unit of output – this is activity based pricing (Shin et al., 2012) however firms are moving towards a value-based pricing model (Hinterhuber, 2004). If firms were to try to price services based off the value-in-experience estimations, they could find greater profit, assuming their number of customers remained the same, this pricing strategy is referred to as value-based price discrimination (Hinterhuber, 2004). Pricing can be approached through different methodologies. In the context of technology and data, it can be performed dynamically to meet each consumers willingness to pay (Seele et al., 2021) – this is known as algorithmic pricing. Algorithmic pricing is supported by digital ecosystems, where customers leave digital traces of their purchases, habits, and preferences (Seele et al., 2021). This approach to pricing would mean a reduction in the value surplus enjoyed by customers and may decrease the customers' brand loyalty, and so must be implemented carefully.

5.4 SUMMARY OF DISCUSSION

In this chapter, the researcher analysed and discussed the results of the media analysis, consumer questionnaire and expert interviews. The aim of this chapter is to link the results of the study, in Chapter Four to the literature review in Chapter Two.

This research suggests that there is a more holistic view of the impact of an innovation, beyond the monetary value that is typically reported. Service innovation and other types of innovation make use of actor networks to implement an invention and to co-create value. The value created through innovation actor networks is illustrated in monetary value and its value in use and in experience. An example of value in experience and in use is the perceived value experienced by consumers.

This study aimed to understand the relationship between consumer perceived value and the monetary value reported by firms and found that consumer perceived value can be greater than value reported by firms. Furthermore, firms may gain more in the use of their innovation by consumers than they need to capture from consumers. This may mean that it might still be worthwhile for firms to undertake service innovation with the aim of gaining value intrinsically from the use of the innovation, and a nominal monetary value captured from consumers.

CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

The purpose of this study is to explore value created, experienced and captured by grocery retailers and consumers through implementation of a service innovation. The researcher pursued three objectives through this study; testing how well the ‘Grocery-on-Demand’ model fits into the definition of service innovation, identifying and quantifying the value captured by the implementing firms, and comparing the economic value gained by retailers and actors in the value network with the economic and well-being gains of consumers.

The specific research question posed at the start of the research study were:

- A. Is grocery on demand a service innovation? If so, what kind of innovation? How does it create value?
- B. How does Value-in-exchange paid by consumers compare to value derived by the value network?
- C. How does perceived consumer value, made up of wellbeing gains, relationship value and value-in-experience, compare to value-in-exchange paid by the consumer?

To answer these questions the researcher undertook a review of literature on the topics of service innovation, value creation and value experienced. Basing their understanding of value; derived, enjoyed, and captured, and service innovation, the researcher undertook to collect data from expert insights on the topic of innovation, collect media sentiment on grocery on demand and survey consumers on their sentiment of grocery on demand and the value they have enjoyed.

In this chapter, the study will be summarised to major findings of the study and final conclusions. The report will then articulate recommendations for innovation managers and other key stakeholders and finally potential studies that could be considered in future research.

6.2 MAJOR FINDINGS

6.2.1 Measurement of Value as an Outcome of Innovation

In investigating how service innovation is defined, the researcher had to unpack the history of the understanding of service, and the service-based exchange versus goods dominant understanding of innovation. and innovation within services. Through the study of literature,

the researcher was able to develop a conceptual framework of value co-created and shared between firms and consumers, leading to an understanding of value that is beyond monetary value exchanged and includes value that is experienced. Value-in-exchange being the phenomenological and individualised value gained through interacting or engaging a service or good (Helkkula et al., 2018), within a firm, this could be the value gained through using an innovation – which could be the increased ease of doing business or speed of output as examples.

Through the study of grocery on demand in the South African context it was found that grocery consumers, implementing firms and other actors in the value network all derived value from engaging grocery on demand both in the form of monetary value and in experience. When investigating the total value derived by the value network, it becomes clear that engaging in the delivery of grocery on demand adds value to all actors, including value enjoyed through the establishment of the value network. This leads the researcher to believe that new ways of modelling value, as an outcome of service innovation, need to be further developed.

6.2.2 Value Derived Through Engagement in Innovation is Greater Than Value Exchanged for Consumption

This study undertook to understand value creation as an outcome of service innovation and how that value is shared between the actors in the actor network. Through this study the researcher identified monetary value captured by retailers implementing grocery on demand was less than the value captured by logistics actors and other actors in the value network. Value derived in experience, in use and through increase in relationship value & consumer well-being far outstrip the monetary value gained by the value network in delivery of an innovation.

6.3 KEY CONCLUSIONS OF THE STUDY

6.3.1 Is Grocery on Demand a Service Innovation?

This study found that the implementation of grocery on demand in South Africa is a service innovation, in that it is a regional novelty, diffused widely and creates value for consumers, retailers and other actors in the value network surrounding the innovation. The network of actors is responsible for the co-creation of this service innovation. Each of these actors gained value beyond the flow of monetary consideration exchanged while implementing grocery on demand.

6.3.2 Value-in-Exchange Paid by Consumers Compared to Value Derived by the Value Network

When investigating the value created and derived through this innovation, the researcher found that the financial value forfeited by customers in order to use the service was less than the value enjoyed within the value network, both monetary value and value in use. The implementation of grocery on demand allowed actors in its value network; retailers, logistics firms, motor vehicle manufacturers, labour unions, the labour market, grocery pickers, delivery people, and consumers to capture or experience value through engaging the service innovation.

6.3.3 Perceived Consumer Value Compared to Value-in-Exchange Paid by the Consumer

Customers of grocery on demand, in the context of this study, had gained far more value than they had forfeited to access use of the innovation. Consumers experienced an increase in wellbeing, increased the value they place on the relationship they hold with retailers and experienced substantial savings in time.

6.4 RECOMMENDATIONS FOR BUSINESS/STAKEHOLDERS

This study undertook to find other meaningful criteria with which managers could assess an innovation's success. Historically, researchers and business people have used the value created through commercialisation to assess the success of an innovation or invention. However, using commercial value alone is limiting – inventions and innovations sometimes create greater value for society than their commercial success would suggest.

In this paper the researcher undertook to find a holistic view of value delivered through service innovation, both for consumers and firms and found that this value is contextual. Value co-created, through an innovation is greater than the monetary value captured by a firm. The focus on financial outcome for innovating firms fails to capture the full benefit of an innovation (Gustafsson et al., 2020). Innovation managers ought to approach value from a systematic understanding of value to make innovation decisions that will enable the sustainable capture of markets.

The research conducted here suggests that consumers with busy schedules are finding value in services that simplify their lives, while saving them time. In this study, the data collected from consumers clearly illustrated the value they put on the relationship established with retailers through grocery on demand and the value they place on the improvement in their wellbeing associated with grocery on demand. This suggests that time constrained consumers are willing to spend more on services which will improve their well-being. The consumers of grocery on demand are concerned with value they will derive from a solution even if it costs more, as their time is the resource, they are less willing to forfeit.

6.5 SUGGESTIONS FOR FUTURE RESEARCH

This study found that value created through an innovation is greater and more complex than monetary value captured by a firm. Innovation is co-created through actor networks that include consumers of services and firms are acting on the requests of consumers when delivering a new service or solution. While it was clear from this study that consumers are interested in adding value to their lives through their purchases it would be interesting to understand in which circumstance consumers may be more interested in novelty than value.

- Are consumers concerned with novelty of innovation, or do they focus on value added to their lives?
- What are consumers most interested in: novelty, value or diffusion of innovation?

Although this study illustrated the large time cost saving and time cost profit (time cost less cost of the service) consumers experienced through using a service innovation, it may be of interest to pricing managers to understand the minimum saving, profit or utility a consumer would need to experience in order to make the decision to purchase a solution.

- What is the minimum value-profit a consumer requires to purchase a good? What is the minimum value-in-exchange to value-in-experience ratio required?

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APPENDICES

APPENDIX A – INTERVIEW QUESTIONS

Descriptive information

1. What is your job profile/what are your responsibilities?
2. How long have you been working in retail and/or consumer-facing services?
3. Can you describe the current consumer environment in which you operate?

Consumer service adaptations

4. In your professional opinion, what role does the consumer play in your organisation?
5. What are the current consumer trends which are driving changes in your business?
6. In your professional opinion, how should an organisation adapt to these trends?

Value creation

7. In your opinion, what value is created by services like grocery-on-demand in your industry?
8. What role does your organisation typically play in value creation in this industry?
9. What role do your partners play in value creation in this industry?
10. What role do your customers play in value creation in this industry?
11. What role do consumers play in value creation in this industry?

Value capture

12. How do you see an organisation typically capturing value in this industry?
13. How do your partners capture value in this industry?
14. How do your customers capture value?
15. If we had to imagine a pie representing the value created, how much of the pie created is typically captured by organisations like yours, captured by partners, and enjoyed by customers?

APPENDIX B – CONSUMER SURVEY

Grocery-on-Demand consumer perceived value survey

Start of Block: Purpose and Consent

The purpose of this survey is to collect your feedback and experience in using Grocery-on-Demand services. These invaluable insights will be used to complete the Master's research of Reabetswe Makofane: Service innovation and consumer welfare in the Grocery-on-Demand retail market in South Africa.

Grocery-on-Demand is the pre-arranged delivery of groceries through a digital network connection (this study excludes delivery of food takeaway/prepared food).

Please do your best to answer all questions. You may withdraw and return to complete the survey at any time.

All responses will be confidential and anonymous, with no identifying information captured. The information collected will be held securely in a password-protected computer and database, used only for the purpose of this research report

I have read and understood the purpose of this study and I agree to continue with the survey:

☐ Yes, I consent (1)

Start of Block: Demographic Information

Q2 What is your gender?

☐ Male (1)

☐ Female (2)

☐ Non-binary (3)

☐ Other (4)

Q3 What is your age?

- ☐ 18–25 (1)
- ☐ 26–35 (2)
- ☐ 36–45 (3)
- ☐ 46–55 (4)
- ☐ > 55 (5)
- ☐ Prefer not to say (6)

Q4 What is your occupation?
(select all that apply)

- ☐ Studying (Part-time) (1)
- ☐ Unemployed (2)
- ☐ Employed (Full-time) (3)
- ☐ Employed (Part-time) (4)
- ☐ Self-Employed (5)
- ☐ Studying (Full-time) (6)

Q5 Describe your household:

- ☐ I live by myself (1)
- ☐ I live with a roommate (2)
- ☐ I live with more than one roommate (3)
- ☐ I live with my family (4)

Q6 What is your monthly take home income?

- ☐ 0–R10 000 (1)
- ☐ R10 000–R20 000 (2)
- ☐ R20 000–R30 000 (3)
- ☐ R30 000–R35 000 (4)
- ☐ R35 000–R40 000 (5)
- ☐ R40 000–R45 000 (6)
- ☐ R45 000–R50 000 (7)
- ☐ R50 000–R55 000 (8)
- ☐ >R55 000 (9)

Start of Block: Grocery Behaviour

Q7 Who is responsible for the bulk of grocery shopping in your household?

- ☐ I am (1)
- ☐ Another adult in the household (2)
- ☐ Split equally between all adults in the household (3)

Q8 How often do you make household grocery purchases?

- ☐ Daily (1)
- ☐ 4–6 times a week (2)
- ☐ 2–3 times a week (3)
- ☐ Once a week (4)
- ☐ 3–4 times a month (5)

Q9 Which is your preferred mode of shopping?

- ☐ Online (1)
- ☐ In a physical store (2)

Q10 Which is your preferred physical store(s)? If other, please specify.
(select all that apply)

- ☐ Checkers/Shoprite (1)
 - ☐ Pick n Pay (2)
 - ☐ Spar (3)
 - ☐ Woolworths (4)
 - ☐ Other, please specify (5)
-

Q11 Which is your preferred grocery-on-demand application(s)? If other, please specify
(select all that apply)

- ☐ Checkers Sixty60 (1)
 - ☐ Pick n Pay asap! (2)
 - ☐ Woolworths Dash (3)
 - ☐ OneCart (4)
 - ☐ Zulzi (5)
 - ☐ Other, please specify (6)
-

Q12 How long have you been using online retail applications?

- ☐ 0–12 months (1)
- ☐ 1–2 years (2)
- ☐ 2–3 years (3)
- ☐ More than 3 years (4)
- ☐ Never used it (5)

Perceived Value and Impact of COVID-19 Hard Lockdown

Q13 How did/do you typically do your grocery shopping?

	In Store (1)	Grocery-on-Demand (60 minute–1 day delivery) (2)	Online retail (with 2–3-day delivery) (3)
Pre COVID-19 hard lockdown (before March 2020) (1)	☐	☐	☐
During COVID-19 hard lockdown (March 2020–April 2022) (2)	☐	☐	☐
After COVID-19 hard lockdown (after April 2022) (3)	☐	☐	☐

Q14 How frequently did/do you do your grocery shopping?

	Daily (1)	4–6 times a week (2)	2–3 times a week (3)	Once a week (4)
Pre-COVID-19 hard lockdown (before March 2020) (1)	☐	☐	☐	☐
During COVID- 19 hard lockdown (March 2020– April 2022) (2)	☐	☐	☐	☐
After COVID- 19 hard lockdown (after April 2022) (3)	☐	☐	☐	☐

Q15 How much time did/do you spend inside physical grocery stores, each week?

	4 hours or more (1)	less than 4 hours (2)	less than 2 hour (3)	less than 1 hour (4)	less than 30 minutes (5)
Pre-COVID-19 hard lockdown (before March 2020) (1)	☐	☐	☐	☐	☐
During COVID-19 hard lockdown (March 2020–April 2022) (2)	☐	☐	☐	☐	☐
After COVID-19 hard lockdown (after April 2022) (3)	☐	☐	☐	☐	☐

Start of Block: Relationship Value and Well-being

Q16 To what extent do you agree with the following statements about your personal experience with Grocery-on-Demand?

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	N/A (6)
Grocery-on-Demand services improve my home life (1)	☐	☐	☐	☐	☐	☐
Grocery-on-Demand services make my grocery shopping more convenient (2)	☐	☐	☐	☐	☐	☐
Grocery-on-Demand services makes my interaction with others living in my home, better (3)	☐	☐	☐	☐	☐	☐
Grocery-on-Demand services have made my monthly responsibilities easier to navigate (4)	☐	☐	☐	☐	☐	☐
The benefits of using Grocery-on-Demand services are greater than the cost of the service (5)	☐	☐	☐	☐	☐	☐

Q16 (continued) To what extent do you agree with the following statements about your personal experience with Grocery-on-Demand?

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	N/A (6)
Compared to in store grocery shopping, Grocery-on-Demand services improves the quality of my grocery shopping experience (6)	☐	☐	☐	☐	☐	☐
Compared to in store grocery shopping, Grocery-on-Demand services gives me greater control over my grocery shopping (7)	☐	☐	☐	☐	☐	☐
Compared to in store grocery shopping, Grocery-on-Demand services enable me to access groceries more quickly (8)	☐	☐	☐	☐	☐	☐

Q17 To what extent do you agree with the following statements about how well Grocery-on-Demand assists you with planning for your household?

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	N/A (6)
Grocery-on-Demand services allow me to better plan my home life (1)	☐	☐	☐	☐	☐	☐
Grocery-on-Demand services fit well into how I like to carry out grocery shopping (2)	☐	☐	☐	☐	☐	☐
Grocery-on-Demand services fit well with my lifestyle (3)	☐	☐	☐	☐	☐	☐

Q18 To what extent do you agree with the following statements about how useful the information received through Grocery-on-Demand services is?

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	N/A (6)
Grocery-on-Demand services provide me with more accurate information about available stock than in store (1)	☐	☐	☐	☐	☐	☐
Grocery-on-Demand Services provide me with more accurate price information than in store (2)	☐	☐	☐	☐	☐	☐
Grocery-on-Demand services allow me to keep track of my grocery basket size and value (3)	☐	☐	☐	☐	☐	☐
Grocery-on-Demand services allow me to keep track of pricing changes (4)	☐	☐	☐	☐	☐	☐

Q19 To what extent do you agree with the following statements about the costs of using Grocery-on-Demand services?

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	N/A (6)
Grocery-on-Demand service offers me discounts (1)	☐	☐	☐	☐	☐	☐
Grocery-on-Demand services provide me a cost advantage than shopping in store (2)	☐	☐	☐	☐	☐	☐
Grocery-on-Demand service offers me options to decrease the cost of my shopping basket (3)	☐	☐	☐	☐	☐	☐
Grocery-on-Demand service offers me flexibility of payment method (4)	☐	☐	☐	☐	☐	☐

APPENDIX C – SURVEY RESULTS

SHOPPING MODALITY

Shopping Modality by gender	Female	Male	Non-binary	Overall
	(N=235)	(N=167)	(N=6)	(N=420)
modality_pre_lockdown				
Grocery-on-Demand (60 minute–1 day delivery)	5 (2.1%)	6 (3.6%)	2 (33.3%)	13 (3.1%)
In Store	204 (86.8%)	135 (80.8%)	3 (50.0%)	343 (81.7%)
Online retail (with 2-3 day delivery)	2 (0.9%)	5 (3.0%)	0 (0%)	7 (1.7%)
Missing	24 (10.2%)	21 (12.6%)	1 (16.7%)	57 (13.6%)
modality_during_lockdown				
Grocery-on-Demand (60 minute–1 day delivery)	73 (31.1%)	56 (33.5%)	3 (50.0%)	133 (31.7%)
In Store	126 (53.6%)	78 (46.7%)	2 (33.3%)	206 (49.0%)
Online retail (with 2–3 day delivery)	17 (7.2%)	10 (6.0%)	0 (0%)	27 (6.4%)
Missing	19 (8.1%)	23 (13.8%)	1 (16.7%)	54 (12.9%)
modality_after_lockdown				
Grocery-on-Demand (60 minute–1 day delivery)	86 (36.6%)	45 (26.9%)	1 (16.7%)	133 (31.7%)
In Store	121 (51.5%)	96 (57.5%)	4 (66.7%)	221 (52.6%)
Online retail (with 2–3 day delivery)	8 (3.4%)	4 (2.4%)	0 (0%)	12 (2.9%)
Missing	20 (8.5%)	22 (13.2%)	1 (16.7%)	54 (12.9%)

Shopping Modality by age	18 - 25	26 - 35	36 - 45	> 45	Prefer not to say	Overall
	(N=26)	(N=247)	(N=98)	(N=37)	(N=1)	(N=420)
modality_pre_lockdown						
Grocery-on-Demand (60 minute–1 day delivery)	1 (3.8%)	8 (3.2%)	4 (4.1%)	0 (0%)	0 (0%)	13 (3.1%)
In Store	17 (65.4%)	210 (85.0%)	84 (85.7%)	32 (86.5%)	0 (0%)	343 (81.7%)
Online retail (with 2–3 day delivery)	0 (0%)	4 (1.6%)	2 (2.0%)	1 (2.7%)	0 (0%)	7 (1.7%)
Missing	8 (30.8%)	25 (10.1%)	8 (8.2%)	4 (10.8%)	1 (100%)	57 (13.6%)
modality_during_lockdown						
Grocery-on-Demand (60 minute–1 day delivery)	4 (15.4%)	84 (34.0%)	36 (36.7%)	9 (24.3%)	0 (0%)	133 (31.7%)
In Store	15 (57.7%)	127 (51.4%)	45 (45.9%)	19 (51.4%)	0 (0%)	206 (49.0%)
Online retail (with 2–3 day delivery)	0 (0%)	12 (4.9%)	9 (9.2%)	6 (16.2%)	0 (0%)	27 (6.4%)
Missing	7 (26.9%)	24 (9.7%)	8 (8.2%)	3 (8.1%)	1 (100%)	54 (12.9%)
modality_after_lockdown						
Grocery-on-Demand (60 minute–1 day delivery)	6 (23.1%)	81 (32.8%)	36 (36.7%)	10 (27.0%)	0 (0%)	133 (31.7%)
In Store	13 (50.0%)	135 (54.7%)	52 (53.1%)	21 (56.8%)	0 (0%)	221 (52.6%)
Online retail (with 2–3 day delivery)	0 (0%)	5 (2.0%)	3 (3.1%)	4 (10.8%)	0 (0%)	12 (2.9%)
Missing	7 (26.9%)	26 (10.5%)	7 (7.1%)	2 (5.4%)	1 (100%)	54 (12.9%)

Shopping Modality by occupation	high_busy	medium_busy	low_busy	Overall
	(N=366)	(N=25)	(N=17)	(N=420)
modality_pre_lockdown				
Grocery-on-Demand (60 minute–1 day delivery)	12 (3.3%)	1 (4.0%)	0 (0%)	13 (3.1%)
In Store	308 (84.2%)	21 (84.0%)	13 (76.5%)	343 (81.7%)
Online retail (with 2–3 day delivery)	7 (1.9%)	0 (0%)	0 (0%)	7 (1.7%)
Missing	39 (10.7%)	3 (12.0%)	4 (23.5%)	57 (13.6%)
modality_during_lockdown				
Grocery-on-Demand (60 minute–1 day delivery)	126 (34.4%)	5 (20.0%)	2 (11.8%)	133 (31.7%)
In Store	179 (48.9%)	16 (64.0%)	10 (58.8%)	206 (49.0%)
Online retail (with 2–3 day delivery)	25 (6.8%)	1 (4.0%)	1 (5.9%)	27 (6.4%)
Missing	36 (9.8%)	3 (12.0%)	4 (23.5%)	54 (12.9%)
modality_after_lockdown				
Grocery-on-Demand (60 minute–1 day delivery)	124 (33.9%)	5 (20.0%)	3 (17.6%)	133 (31.7%)
In Store	195 (53.3%)	17 (68.0%)	9 (52.9%)	221 (52.6%)
Online retail (with 2–3 day delivery)	11 (3.0%)	0 (0%)	1 (5.9%)	12 (2.9%)
Missing	36 (9.8%)	3 (12.0%)	4 (23.5%)	54 (12.9%)

Shopping modality by type of household	I live by myself	I live with a roommate	I live with more than one roommate	I live with my family	Overall
	(N=121)	(N=46)	(N=6)	(N=234)	(N=420)
modality_pre_lockdown					
Grocery-on-Demand (60 minute–1 day delivery)	6 (5.0%)	1 (2.2%)	0 (0%)	6 (2.6%)	13 (3.1%)
In Store	104 (86.0%)	39 (84.8%)	6 (100%)	192 (82.1%)	343 (81.7%)
Online retail (with 2–3 day delivery)	1 (0.8%)	0 (0%)	0 (0%)	6 (2.6%)	7 (1.7%)
Missing	10 (8.3%)	6 (13.0%)	0 (0%)	30 (12.8%)	57 (13.6%)
modality_during_lockdown					
Grocery-on-Demand (60 minute–1 day delivery)	38 (31.4%)	18 (39.1%)	1 (16.7%)	76 (32.5%)	133 (31.7%)
In Store	68 (56.2%)	17 (37.0%)	5 (83.3%)	114 (48.7%)	206 (49.0%)
Online retail (with 2–3 day delivery)	4 (3.3%)	6 (13.0%)	0 (0%)	17 (7.3%)	27 (6.4%)
Missing	11 (9.1%)	5 (10.9%)	0 (0%)	27 (11.5%)	54 (12.9%)
modality_after_lockdown					
Grocery-on-Demand (60 minute–1 day delivery)	46 (38.0%)	12 (26.1%)	1 (16.7%)	73 (31.2%)	133 (31.7%)
In Store	63 (52.1%)	28 (60.9%)	5 (83.3%)	124 (53.0%)	221 (52.6%)
Online retail (with 2–3 day delivery)	1 (0.8%)	0 (0%)	0 (0%)	11 (4.7%)	12 (2.9%)
Missing	11 (9.1%)	6 (13.0%)	0 (0%)	26 (11.1%)	54 (12.9%)

Shopping modality by income	0 - R10 000	R10 000 - R20 000	R20 000 - R30 000	R30 000 - R35 000	R35 000 - R40 000	R40 000 - R45 000	R45 000 - R50 000	R50 000 - R55 000	>R55 000	Overall
	(N=28)	(N=39)	(N=60)	(N=39)	(N=35)	(N=32)	(N=24)	(N=30)	(N=119)	(N=420)
pre_lockdown										
Grocery-on-Demand (60 minute–1 day delivery)	0 (0%)	0 (0%)	2 (3.3%)	2 (5.1%)	0 (0%)	0 (0%)	2 (8.3%)	0 (0%)	7 (5.9%)	13 (3.1%)
In Store	20 (71.4%)	34 (87.2%)	52 (86.7%)	29 (74.4%)	31 (88.6%)	29 (90.6%)	21 (87.5%)	29 (96.7%)	95 (79.8%)	343 (81.7%)
Online retail (with 2–3 day delivery)	0 (0%)	0 (0%)	0 (0%)	1 (2.6%)	0 (0%)	1 (3.1%)	0 (0%)	0 (0%)	5 (4.2%)	7 (1.7%)
Missing	8 (28.6%)	5 (12.8%)	6 (10.0%)	7 (17.9%)	4 (11.4%)	2 (6.3%)	1 (4.2%)	1 (3.3%)	12 (10.1%)	57 (13.6%)
during_lockdown										
Grocery-on-Demand (60 minute –1 day delivery)	4 (14.3%)	13 (33.3%)	16 (26.7%)	15 (38.5%)	8 (22.9%)	4 (12.5%)	10 (41.7%)	10 (33.3%)	51 (42.9%)	133 (31.7%)
In Store	17 (60.7%)	20 (51.3%)	32 (53.3%)	17 (43.6%)	19 (54.3%)	23 (71.9%)	12 (50.0%)	18 (60.0%)	48 (40.3%)	206 (49.0%)
Online retail (with 2–3 day delivery)	0 (0%)	2 (5.1%)	6 (10.0%)	1 (2.6%)	4 (11.4%)	3 (9.4%)	1 (4.2%)	1 (3.3%)	9 (7.6%)	27 (6.4%)
Missing	7 (25.0%)	4 (10.3%)	6 (10.0%)	6 (15.4%)	4 (11.4%)	2 (6.3%)	1 (4.2%)	1 (3.3%)	11 (9.2%)	54 (12.9%)
after_lockdown										
Grocery-on-Demand (60 minute–1 day delivery)	3 (10.7%)	9 (23.1%)	20 (33.3%)	8 (20.5%)	9 (25.7%)	10 (31.3%)	10 (41.7%)	11 (36.7%)	52 (43.7%)	133 (31.7%)
In Store	16 (57.1%)	27 (69.2%)	32 (53.3%)	26 (66.7%)	20 (57.1%)	18 (56.3%)	13 (54.2%)	18 (60.0%)	50 (42.0%)	221 (52.6%)
Online retail (with 2–3 day delivery)	1 (3.6%)	0 (0%)	2 (3.3%)	0 (0%)	2 (5.7%)	2 (6.3%)	0 (0%)	0 (0%)	5 (4.2%)	12 (2.9%)
Missing	8 (28.6%)	3 (7.7%)	6 (10.0%)	5 (12.8%)	4 (11.4%)	2 (6.3%)	1 (4.2%)	1 (3.3%)	12 (10.1%)	54 (12.9%)

SHOPPING FREQUENCY

Shopping frequency by gender	Female	Male	Non-binary	Overall
	(N=235)	(N=167)	(N=6)	(N=420)
frequency_pre_lockdown				
Once a week	124 (52.8%)	93 (55.7%)	4 (66.7%)	222 (52.9%)
2–3 times a week	82 (34.9%)	44 (26.3%)	1 (16.7%)	127 (30.2%)
4–6 times a week	9 (3.8%)	10 (6.0%)	0 (0%)	19 (4.5%)
Daily	2 (0.9%)	2 (1.2%)	0 (0%)	4 (1.0%)
Missing	18 (7.7%)	18 (10.8%)	1 (16.7%)	48 (11.4%)
frequency_during_lockdown				
Once a week	174 (74.0%)	112 (67.1%)	4 (66.7%)	290 (69.0%)
2–3 times a week	31 (13.2%)	30 (18.0%)	1 (16.7%)	63 (15.0%)
4–6 times a week	6 (2.6%)	2 (1.2%)	0 (0%)	8 (1.9%)
Daily	5 (2.1%)	2 (1.2%)	0 (0%)	7 (1.7%)
Missing	19 (8.1%)	21 (12.6%)	1 (16.7%)	52 (12.4%)
frequency_after_lockdown				
Once a week	121 (51.5%)	91 (54.5%)	2 (33.3%)	214 (51.0%)
2–3 times a week	76 (32.3%)	46 (27.5%)	2 (33.3%)	124 (29.5%)
4–6 times a week	16 (6.8%)	5 (3.0%)	0 (0%)	22 (5.2%)
Daily	1 (0.4%)	5 (3.0%)	0 (0%)	6 (1.4%)
Missing	21 (8.9%)	20 (12.0%)	2 (33.3%)	54 (12.9%)

Shopping frequency by age	18 - 25	26 - 35	36 - 45	> 45	Prefer not to say	Overall
	(N=26)	(N=247)	(N=98)	(N=37)	(N=1)	(N=420)
frequency_pre_lockdown						
Once a week	13 (50.0%)	137 (55.5%)	52 (53.1%)	20 (54.1%)	0 (0%)	222 (52.9%)
2–3 times a week	6 (23.1%)	75 (30.4%)	33 (33.7%)	13 (35.1%)	0 (0%)	127 (30.2%)
4–6 times a week	0 (0%)	11 (4.5%)	6 (6.1%)	2 (5.4%)	0 (0%)	19 (4.5%)
Daily	0 (0%)	2 (0.8%)	1 (1.0%)	1 (2.7%)	0 (0%)	4 (1.0%)
Missing	7 (26.9%)	22 (8.9%)	6 (6.1%)	1 (2.7%)	1 (100%)	48 (11.4%)
frequency_during_lockdown						
Once a week	16 (61.5%)	175 (70.9%)	69 (70.4%)	30 (81.1%)	0 (0%)	290 (69.0%)
2–3 times a week	2 (7.7%)	39 (15.8%)	18 (18.4%)	4 (10.8%)	0 (0%)	63 (15.0%)
4–6 times a week	0 (0%)	6 (2.4%)	2 (2.0%)	0 (0%)	0 (0%)	8 (1.9%)
Daily	1 (3.8%)	4 (1.6%)	1 (1.0%)	1 (2.7%)	0 (0%)	7 (1.7%)
Missing	7 (26.9%)	23 (9.3%)	8 (8.2%)	2 (5.4%)	1 (100%)	52 (12.4%)
frequency_after_lockdown						
Once a week	13 (50.0%)	133 (53.8%)	48 (49.0%)	20 (54.1%)	0 (0%)	214 (51.0%)
2–3 times a week	5 (19.2%)	76 (30.8%)	32 (32.7%)	11 (29.7%)	0 (0%)	124 (29.5%)
4–6 times a week	1 (3.8%)	10 (4.0%)	7 (7.1%)	4 (10.8%)	0 (0%)	22 (5.2%)
Daily	0 (0%)	3 (1.2%)	2 (2.0%)	1 (2.7%)	0 (0%)	6 (1.4%)
Missing	7 (26.9%)	25 (10.1%)	9 (9.2%)	1 (2.7%)	1 (100%)	54 (12.9%)

Shopping frequency by occupation	high_busy	medium_busy	low_busy	Overall
	(N=366)	(N=25)	(N=17)	(N=420)
frequency_pre_lockdown				
Once a week	198 (54.1%)	11 (44.0%)	12 (70.6%)	222 (52.9%)
2–3 times a week	115 (31.4%)	9 (36.0%)	3 (17.6%)	127 (30.2%)
4–6 times a week	17 (4.6%)	2 (8.0%)	0 (0%)	19 (4.5%)
Daily	4 (1.1%)	0 (0%)	0 (0%)	4 (1.0%)
Missing	32 (8.7%)	3 (12.0%)	2 (11.8%)	48 (11.4%)
frequency_during_lockdown				
Once a week	258 (70.5%)	18 (72.0%)	13 (76.5%)	290 (69.0%)
2–3 times a week	60 (16.4%)	2 (8.0%)	1 (5.9%)	63 (15.0%)
4–6 times a week	8 (2.2%)	0 (0%)	0 (0%)	8 (1.9%)
Daily	5 (1.4%)	2 (8.0%)	0 (0%)	7 (1.7%)
Missing	35 (9.6%)	3 (12.0%)	3 (17.6%)	52 (12.4%)
frequency_after_lockdown				
Once a week	189 (51.6%)	12 (48.0%)	12 (70.6%)	214 (51.0%)
2–3 times a week	114 (31.1%)	8 (32.0%)	2 (11.8%)	124 (29.5%)
4–6 times a week	20 (5.5%)	2 (8.0%)	0 (0%)	22 (5.2%)
Daily	6 (1.6%)	0 (0%)	0 (0%)	6 (1.4%)
Missing	37 (10.1%)	3 (12.0%)	3 (17.6%)	54 (12.9%)

Shopping frequency by type of household	I live by myself	I live with a roommate	I live with more than one roommate	I live with my family	Overall
	(N=121)	(N=46)	(N=6)	(N=234)	(N=420)
frequency_pre_lockdown					
Once a week	63 (52.1%)	26 (56.5%)	4 (66.7%)	128 (54.7%)	222 (52.9%)
2–3 times a week	41 (33.9%)	12 (26.1%)	2 (33.3%)	71 (30.3%)	127 (30.2%)
4–6 times a week	6 (5.0%)	3 (6.5%)	0 (0%)	10 (4.3%)	19 (4.5%)
Daily	1 (0.8%)	0 (0%)	0 (0%)	3 (1.3%)	4 (1.0%)
Missing	10 (8.3%)	5 (10.9%)	0 (0%)	22 (9.4%)	48 (11.4%)
frequency_during_lockdown					
Once a week	89 (73.6%)	30 (65.2%)	4 (66.7%)	165 (70.5%)	290 (69.0%)
2–3 times a week	20 (16.5%)	6 (13.0%)	1 (16.7%)	36 (15.4%)	63 (15.0%)
4–6 times a week	2 (1.7%)	3 (6.5%)	0 (0%)	3 (1.3%)	8 (1.9%)
Daily	1 (0.8%)	2 (4.3%)	1 (16.7%)	3 (1.3%)	7 (1.7%)
Missing	9 (7.4%)	5 (10.9%)	0 (0%)	27 (11.5%)	52 (12.4%)
frequency_after_lockdown					
Once a week	67 (55.4%)	27 (58.7%)	4 (66.7%)	115 (49.1%)	214 (51.0%)
2–3 times a week	38 (31.4%)	10 (21.7%)	2 (33.3%)	73 (31.2%)	124 (29.5%)
4–6 times a week	3 (2.5%)	3 (6.5%)	0 (0%)	16 (6.8%)	22 (5.2%)
Daily	2 (1.7%)	1 (2.2%)	0 (0%)	3 (1.3%)	6 (1.4%)
Missing	11 (9.1%)	5 (10.9%)	0 (0%)	27 (11.5%)	54 (12.9%)

Shopping frequency by income	0 - R10 000	R10 000 - R20 000	R20 000 - R30 000	R30 000 - R35 000	R35 000 - R40 000	R40 000 - R45 000	R45 000 - R50 000	R50 000 - R55 000	>R55 000	Overall
	(N=28)	(N=39)	(N=60)	(N=39)	(N=35)	(N=32)	(N=24)	(N=30)	(N=119)	(N=420)
pre_lockdown										
Once a week	16 (57.1%)	26 (66.7%)	30 (50.0%)	20 (51.3%)	20 (57.1%)	15 (46.9%)	14 (58.3%)	15 (50.0%)	64 (53.8%)	222 (52.9%)
2–3 times a week	6 (21.4%)	9 (23.1%)	20 (33.3%)	11 (28.2%)	11 (31.4%)	14 (43.8%)	6 (25.0%)	13 (43.3%)	36 (30.3%)	127 (30.2%)
4–6 times a week	0 (0%)	1 (2.6%)	3 (5.0%)	3 (7.7%)	2 (5.7%)	1 (3.1%)	3 (12.5%)	1 (3.3%)	5 (4.2%)	19 (4.5%)
Daily	0 (0%)	0 (0%)	1 (1.7%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	3 (2.5%)	4 (1.0%)
Missing	6 (21.4%)	3 (7.7%)	6 (10.0%)	5 (12.8%)	2 (5.7%)	2 (6.3%)	1 (4.2%)	1 (3.3%)	11 (9.2%)	48 (11.4%)
during_lockdown										
Once a week	18 (64.3%)	30 (76.9%)	46 (76.7%)	26 (66.7%)	26 (74.3%)	23 (71.9%)	21 (87.5%)	20 (66.7%)	78 (65.5%)	290 (69.0%)
2–3 times a week	3 (10.7%)	5 (12.8%)	7 (11.7%)	6 (15.4%)	5 (14.3%)	6 (18.8%)	1 (4.2%)	8 (26.7%)	21 (17.6%)	63 (15.0%)
4–6 times a week	0 (0%)	0 (0%)	1 (1.7%)	1 (2.6%)	0 (0%)	0 (0%)	1 (4.2%)	0 (0%)	5 (4.2%)	8 (1.9%)
Daily	0 (0%)	1 (2.6%)	1 (1.7%)	1 (2.6%)	0 (0%)	1 (3.1%)	0 (0%)	1 (3.3%)	2 (1.7%)	7 (1.7%)
Missing	7 (25.0%)	3 (7.7%)	5 (8.3%)	5 (12.8%)	4 (11.4%)	2 (6.3%)	1 (4.2%)	1 (3.3%)	13 (10.9%)	52 (12.4%)
after_lockdown										
Once a week	13 (46.4%)	25 (64.1%)	31 (51.7%)	19 (48.7%)	20 (57.1%)	15 (46.9%)	15 (62.5%)	19 (63.3%)	55 (46.2%)	214 (51.0%)
2–3 times a week	7 (25.0%)	8 (20.5%)	22 (36.7%)	13 (33.3%)	11 (31.4%)	13 (40.6%)	5 (20.8%)	8 (26.7%)	37 (31.1%)	124 (29.5%)
4–6 times a week	1 (3.6%)	2 (5.1%)	1 (1.7%)	1 (2.6%)	2 (5.7%)	2 (6.3%)	3 (12.5%)	2 (6.7%)	8 (6.7%)	22 (5.2%)
Daily	0 (0%)	0 (0%)	1 (1.7%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	5 (4.2%)	6 (1.4%)
Missing	7 (25.0%)	4 (10.3%)	5 (8.3%)	6 (15.4%)	2 (5.7%)	2 (6.3%)	1 (4.2%)	1 (3.3%)	14 (11.8%)	54 (12.9%)

Shopping duration by gender	Female	Male	Non-binary	Overall
	(N=235)	(N=167)	(N=6)	(N=420)
duration_pre_lockdown				
less than 30 minutes	21 (8.9%)	20 (12.0%)	2 (33.3%)	43 (10.2%)
less than 1 hour	82 (34.9%)	59 (35.3%)	1 (16.7%)	142 (33.8%)
less than 2 hour	87 (37.0%)	61 (36.5%)	1 (16.7%)	150 (35.7%)
less than 4 hours	29 (12.3%)	11 (6.6%)	1 (16.7%)	41 (9.8%)
4 hours or more	1 (0.4%)	2 (1.2%)	0 (0%)	3 (0.7%)
Missing	15 (6.4%)	14 (8.4%)	1 (16.7%)	41 (9.8%)
duration_during_lockdown				
less than 30 minutes	91 (38.7%)	66 (39.5%)	4 (66.7%)	162 (38.6%)
less than 1 hour	85 (36.2%)	50 (29.9%)	1 (16.7%)	136 (32.4%)
less than 2 hour	31 (13.2%)	31 (18.6%)	0 (0%)	62 (14.8%)
less than 4 hours	10 (4.3%)	5 (3.0%)	0 (0%)	15 (3.6%)
4 hours or more	3 (1.3%)	1 (0.6%)	0 (0%)	4 (1.0%)
Missing	15 (6.4%)	14 (8.4%)	1 (16.7%)	41 (9.8%)
duration_after_lockdown				
less than 30 minutes	46 (19.6%)	32 (19.2%)	2 (33.3%)	81 (19.3%)
less than 1 hour	85 (36.2%)	62 (37.1%)	1 (16.7%)	148 (35.2%)
less than 2 hour	68 (28.9%)	51 (30.5%)	1 (16.7%)	120 (28.6%)
less than 4 hours	16 (6.8%)	6 (3.6%)	1 (16.7%)	23 (5.5%)
4 hours or more	3 (1.3%)	2 (1.2%)	0 (0%)	5 (1.2%)
Missing	17 (7.2%)	14 (8.4%)	1 (16.7%)	43 (10.2%)

Shopping duration by age	18 - 25	26 - 35	36 - 45	> 45	Prefer not to say	Overall
	(N=26)	(N=247)	(N=98)	(N=37)	(N=1)	(N=420)
duration_pre_lockdown						
less than 30 minutes	2 (7.7%)	26 (10.5%)	13 (13.3%)	2 (5.4%)	0 (0%)	43 (10.2%)
less than 1 hour	4 (15.4%)	94 (38.1%)	29 (29.6%)	15 (40.5%)	0 (0%)	142 (33.8%)
less than 2 hour	8 (30.8%)	88 (35.6%)	42 (42.9%)	12 (32.4%)	0 (0%)	150 (35.7%)
less than 4 hours	5 (19.2%)	20 (8.1%)	10 (10.2%)	6 (16.2%)	0 (0%)	41 (9.8%)
4 hours or more	0 (0%)	2 (0.8%)	0 (0%)	1 (2.7%)	0 (0%)	3 (0.7%)
Missing	7 (26.9%)	17 (6.9%)	4 (4.1%)	1 (2.7%)	1 (100%)	41 (9.8%)
duration_during_lockdown						
less than 30 minutes	3 (11.5%)	100 (40.5%)	45 (45.9%)	14 (37.8%)	0 (0%)	162 (38.6%)
less than 1 hour	9 (34.6%)	86 (34.8%)	29 (29.6%)	12 (32.4%)	0 (0%)	136 (32.4%)
less than 2 hour	6 (23.1%)	33 (13.4%)	14 (14.3%)	9 (24.3%)	0 (0%)	62 (14.8%)
less than 4 hours	1 (3.8%)	7 (2.8%)	6 (6.1%)	1 (2.7%)	0 (0%)	15 (3.6%)
4 hours or more	0 (0%)	4 (1.6%)	0 (0%)	0 (0%)	0 (0%)	4 (1.0%)
Missing	7 (26.9%)	17 (6.9%)	4 (4.1%)	1 (2.7%)	1 (100%)	41 (9.8%)
duration_after_lockdown						
less than 30 minutes	2 (7.7%)	54 (21.9%)	21 (21.4%)	4 (10.8%)	0 (0%)	81 (19.3%)
less than 1 hour	5 (19.2%)	95 (38.5%)	35 (35.7%)	13 (35.1%)	0 (0%)	148 (35.2%)
less than 2 hour	9 (34.6%)	64 (25.9%)	32 (32.7%)	15 (40.5%)	0 (0%)	120 (28.6%)
less than 4 hours	2 (7.7%)	14 (5.7%)	5 (5.1%)	2 (5.4%)	0 (0%)	23 (5.5%)
4 hours or more	1 (3.8%)	2 (0.8%)	1 (1.0%)	1 (2.7%)	0 (0%)	5 (1.2%)
Missing	7 (26.9%)	18 (7.3%)	4 (4.1%)	2 (5.4%)	1 (100%)	43 (10.2%)

Shopping duration by occupation	high_busy	medium_busy	low_busy	Overall
	(N=366)	(N=25)	(N=17)	(N=420)
duration_pre_lockdown				
less than 30 minutes	38 (10.4%)	4 (16.0%)	1 (5.9%)	43 (10.2%)
less than 1 hour	129 (35.2%)	9 (36.0%)	4 (23.5%)	142 (33.8%)
less than 2 hour	136 (37.2%)	6 (24.0%)	7 (41.2%)	150 (35.7%)
less than 4 hours	35 (9.6%)	3 (12.0%)	3 (17.6%)	41 (9.8%)
4 hours or more	3 (0.8%)	0 (0%)	0 (0%)	3 (0.7%)
Missing	25 (6.8%)	3 (12.0%)	2 (11.8%)	41 (9.8%)
duration_during_lockdown				
less than 30 minutes	152 (41.5%)	7 (28.0%)	3 (17.6%)	162 (38.6%)
less than 1 hour	118 (32.2%)	10 (40.0%)	7 (41.2%)	136 (32.4%)
less than 2 hour	55 (15.0%)	4 (16.0%)	3 (17.6%)	62 (14.8%)
less than 4 hours	13 (3.6%)	0 (0%)	2 (11.8%)	15 (3.6%)
4 hours or more	3 (0.8%)	1 (4.0%)	0 (0%)	4 (1.0%)
Missing	25 (6.8%)	3 (12.0%)	2 (11.8%)	41 (9.8%)
duration_after_lockdown				
less than 30 minutes	77 (21.0%)	4 (16.0%)	0 (0%)	81 (19.3%)
less than 1 hour	137 (37.4%)	8 (32.0%)	3 (17.6%)	148 (35.2%)
less than 2 hour	102 (27.9%)	8 (32.0%)	9 (52.9%)	120 (28.6%)
less than 4 hours	20 (5.5%)	1 (4.0%)	2 (11.8%)	23 (5.5%)
4 hours or more	4 (1.1%)	1 (4.0%)	0 (0%)	5 (1.2%)
Missing	26 (7.1%)	3 (12.0%)	3 (17.6%)	43 (10.2%)

	I live by myself	I live with a roommate	I live with more than one roommate	I live with my family	
Shopping duration by household	(N=121)	(N=46)	(N=6)	(N=234)	Overall
duration_pre_lockdown					
less than 30 minutes	22 (18.2%)	5 (10.9%)	0 (0%)	16 (6.8%)	43 (10.2%)
less than 1 hour	43 (35.5%)	17 (37.0%)	2 (33.3%)	79 (33.8%)	142 (33.8%)
less than 2 hour	34 (28.1%)	15 (32.6%)	2 (33.3%)	98 (41.9%)	150 (35.7%)
less than 4 hours	13 (10.7%)	5 (10.9%)	2 (33.3%)	21 (9.0%)	41 (9.8%)
4 hours or more	1 (0.8%)	0 (0%)	0 (0%)	2 (0.9%)	3 (0.7%)
Missing	8 (6.6%)	4 (8.7%)	0 (0%)	18 (7.7%)	41 (9.8%)
duration_during_lockdown					
less than 30 minutes	59 (48.8%)	22 (47.8%)	1 (16.7%)	80 (34.2%)	162 (38.6%)
less than 1 hour	33 (27.3%)	13 (28.3%)	2 (33.3%)	87 (37.2%)	136 (32.4%)
less than 2 hour	13 (10.7%)	5 (10.9%)	1 (16.7%)	42 (17.9%)	62 (14.8%)
less than 4 hours	6 (5.0%)	1 (2.2%)	1 (16.7%)	7 (3.0%)	15 (3.6%)
4 hours or more	2 (1.7%)	1 (2.2%)	1 (16.7%)	0 (0%)	4 (1.0%)
Missing	8 (6.6%)	4 (8.7%)	0 (0%)	18 (7.7%)	41 (9.8%)
duration_after_lockdown					
less than 30 minutes	41 (33.9%)	11 (23.9%)	0 (0%)	29 (12.4%)	81 (19.3%)
less than 1 hour	39 (32.2%)	15 (32.6%)	2 (33.3%)	90 (38.5%)	148 (35.2%)
less than 2 hour	27 (22.3%)	10 (21.7%)	2 (33.3%)	81 (34.6%)	120 (28.6%)
less than 4 hours	3 (2.5%)	6 (13.0%)	2 (33.3%)	12 (5.1%)	23 (5.5%)
4 hours or more	1 (0.8%)	0 (0%)	0 (0%)	4 (1.7%)	5 (1.2%)
Missing	10 (8.3%)	4 (8.7%)	0 (0%)	18 (7.7%)	43 (10.2%)

Shopping duration by income	0 - R10 000 (N=28)	R10 000 - R20 000 (N=39)	R20 000 - R30 000 (N=60)	R30 000 - R35 000 (N=39)	R35 000 - R40 000 (N=35)	R40 000 - R45 000 (N=32)	R45 000 - R50 000 (N=24)	R50 000 - R55 000 (N=30)	>R55 000 (N=119)	Overall (N=420)
pre_lockdown										
less than 30 minutes	2 (7.1%)	4 (10.3%)	3 (5.0%)	7 (17.9%)	2 (5.7%)	5 (15.6%)	4 (16.7%)	2 (6.7%)	14 (11.8%)	43 (10.2%)
less than 1 hour	4 (14.3%)	10 (25.6%)	25 (41.7%)	12 (30.8%)	11 (31.4%)	13 (40.6%)	6 (25.0%)	13 (43.3%)	48 (40.3%)	142 (33.8%)
less than 2 hour	12 (42.9%)	18 (46.2%)	26 (43.3%)	11 (28.2%)	16 (45.7%)	10 (31.3%)	10 (41.7%)	7 (23.3%)	39 (32.8%)	150 (35.7%)
less than 4 hours	4 (14.3%)	4 (10.3%)	4 (6.7%)	3 (7.7%)	4 (11.4%)	2 (6.3%)	3 (12.5%)	7 (23.3%)	8 (6.7%)	41 (9.8%)
4 hours or more	0 (0%)	0 (0%)	0 (0%)	2 (5.1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (0.8%)	3 (0.7%)
Missing	6 (21.4%)	3 (7.7%)	2 (3.3%)	4 (10.3%)	2 (5.7%)	2 (6.3%)	1 (4.2%)	1 (3.3%)	9 (7.6%)	41 (9.8%)
during_lockdown										
less than 30 minutes	5 (17.9%)	12 (30.8%)	20 (33.3%)	15 (38.5%)	12 (34.3%)	15 (46.9%)	13 (54.2%)	11 (36.7%)	59 (49.6%)	162 (38.6%)
less than 1 hour	9 (32.1%)	13 (33.3%)	29 (48.3%)	12 (30.8%)	12 (34.3%)	14 (43.8%)	5 (20.8%)	15 (50.0%)	27 (22.7%)	136 (32.4%)
less than 2 hour	6 (21.4%)	10 (25.6%)	6 (10.0%)	5 (12.8%)	6 (17.1%)	0 (0%)	5 (20.8%)	2 (6.7%)	20 (16.8%)	62 (14.8%)
less than 4 hours	2 (7.1%)	0 (0%)	2 (3.3%)	2 (5.1%)	3 (8.6%)	1 (3.1%)	0 (0%)	1 (3.3%)	3 (2.5%)	15 (3.6%)
4 hours or more	0 (0%)	1 (2.6%)	1 (1.7%)	1 (2.6%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (0.8%)	4 (1.0%)
Missing	6 (21.4%)	3 (7.7%)	2 (3.3%)	4 (10.3%)	2 (5.7%)	2 (6.3%)	1 (4.2%)	1 (3.3%)	9 (7.6%)	41 (9.8%)
after_lockdown										
less than 30 minutes	1 (3.6%)	7 (17.9%)	11 (18.3%)	7 (17.9%)	4 (11.4%)	5 (15.6%)	10 (41.7%)	7 (23.3%)	29 (24.4%)	81 (19.3%)
less than 1 hour	6 (21.4%)	11 (28.2%)	21 (35.0%)	18 (46.2%)	18 (51.4%)	19 (59.4%)	4 (16.7%)	12 (40.0%)	39 (32.8%)	148 (35.2%)
less than 2 hour	12 (42.9%)	14 (35.9%)	22 (36.7%)	5 (12.8%)	8 (22.9%)	6 (18.8%)	7 (29.2%)	7 (23.3%)	37 (31.1%)	120 (28.6%)
less than 4 hours	2 (7.1%)	4 (10.3%)	2 (3.3%)	3 (7.7%)	3 (8.6%)	0 (0%)	1 (4.2%)	3 (10.0%)	4 (3.4%)	23 (5.5%)
4 hours or more	1 (3.6%)	0 (0%)	1 (1.7%)	2 (5.1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (0.8%)	5 (1.2%)
Missing	6 (21.4%)	3 (7.7%)	3 (5.0%)	4 (10.3%)	2 (5.7%)	2 (6.3%)	2 (8.3%)	1 (3.3%)	9 (7.6%)	43 (10.2%)

SHOPPING TIME COST

Shopping time cost by gender	Female	Male	Non-binary	Overall
	(N=235)	(N=167)	(N=6)	(N=420)
time_cost_pre_lockdown				
Mean (SD)	887 (773)	947 (1060)	366 (239)	906 (898)
Median [Min, Max]	656 [31.3, 4880]	656 [62.5, 10500]	313 [93.8, 750]	656 [31.3, 10500]
Missing	16 (6.8%)	16 (9.6%)	1 (16.7%)	44 (10.5%)
time_cost_during_lockdown				
Mean (SD)	558 (616)	665 (979)	166 (83.9)	596 (781)
Median [Min, Max]	406 [31.3, 4880]	438 [31.3, 10500]	156 [93.8, 297]	438 [31.3, 10500]
Missing	16 (6.8%)	16 (9.6%)	1 (16.7%)	44 (10.5%)
time_cost_after_lockdown				
Mean (SD)	731 (666)	852 (1070)	366 (239)	774 (851)
Median [Min, Max]	531 [31.3, 4880]	531 [62.5, 10500]	313 [93.8, 750]	531 [31.3, 10500]
Missing	18 (7.7%)	16 (9.6%)	1 (16.7%)	46 (11.0%)

Shopping time cost by age	18 - 25	26 - 35	36 - 45	> 45	Prefer not to say	Overall
	(N=26)	(N=247)	(N=98)	(N=37)	(N=1)	(N=420)
time_cost_pre_lockdown						
Mean (SD)	399 (354)	830 (707)	1060 (818)	1260 (1790)	NA (NA)	906 (898)
Median [Min, Max]	250 [31.3, 1250]	625 [62.5, 4880]	875 [62.5, 3500]	875 [31.3, 10500]	NA [NA, NA]	656 [31.3, 10500]
Missing	7 (26.9%)	19 (7.7%)	5 (5.1%)	1 (2.7%)	1 (100%)	44 (10.5%)
time_cost_during_lockdown						
Mean (SD)	248 (179)	591 (883)	660 (639)	644 (555)	NA (NA)	596 (781)
Median [Min, Max]	250 [31.3, 656]	406 [31.3, 10500]	438 [62.5, 3500]	438 [62.5, 1750]	NA [NA, NA]	438 [31.3, 10500]
Missing	7 (26.9%)	19 (7.7%)	5 (5.1%)	1 (2.7%)	1 (100%)	44 (10.5%)
time_cost_after_lockdown						
Mean (SD)	363 (296)	710 (677)	885 (733)	1120 (1770)	NA (NA)	774 (851)
Median [Min, Max]	250 [31.3, 1060]	469 [62.5, 4880]	625 [62.5, 3750]	625 [62.5, 10500]	NA [NA, NA]	531 [31.3, 10500]
Missing	7 (26.9%)	20 (8.1%)	5 (5.1%)	2 (5.4%)	1 (100%)	46 (11.0%)

Shopping time cost by age	18 - 25	26 - 35	36 - 45	> 45	Prefer not to say	Overall
	(N=26)	(N=247)	(N=98)	(N=37)	(N=1)	(N=420)
time_cost_pre_lockdown						
Mean (SD)	399 (354)	830 (707)	1060 (818)	1260 (1790)	NA (NA)	906 (898)
Median [Min, Max]	250 [31.3, 1250]	625 [62.5, 4880]	875 [62.5, 3500]	875 [31.3, 10500]	NA [NA, NA]	656 [31.3, 10500]
Missing	7 (26.9%)	19 (7.7%)	5 (5.1%)	1 (2.7%)	1 (100%)	44 (10.5%)
time_cost_during_lockdown						
Mean (SD)	248 (179)	591 (883)	660 (639)	644 (555)	NA (NA)	596 (781)
Median [Min, Max]	250 [31.3, 656]	406 [31.3, 10500]	438 [62.5, 3500]	438 [62.5, 1750]	NA [NA, NA]	438 [31.3, 10500]
Missing	7 (26.9%)	19 (7.7%)	5 (5.1%)	1 (2.7%)	1 (100%)	44 (10.5%)
time_cost_after_lockdown						
Mean (SD)	363 (296)	710 (677)	885 (733)	1120 (1770)	NA (NA)	774 (851)
Median [Min, Max]	250 [31.3, 1060]	469 [62.5, 4880]	625 [62.5, 3750]	625 [62.5, 10500]	NA [NA, NA]	531 [31.3, 10500]
Missing	7 (26.9%)	20 (8.1%)	5 (5.1%)	2 (5.4%)	1 (100%)	46 (11.0%)

	high_busy	medium_busy	low_busy	Overall
Shopping time cost by occupation	(N=366)	(N=25)	(N=17)	(N=420)
time_cost_pre_lockdown				
Mean (SD)	958 (924)	421 (345)	433 (433)	906 (898)
Median [Min, Max]	781 [62.5, 10500]	313 [31.3, 1250]	313 [31.3, 1750]	656 [31.3, 10500]
Missing	28 (7.7%)	3 (12.0%)	2 (11.8%)	44 (10.5%)
time_cost_during_lockdown				
Mean (SD)	621 (806)	381 (470)	345 (447)	596 (781)
Median [Min, Max]	438 [31.3, 10500]	313 [31.3, 2250]	250 [31.3, 1750]	438 [31.3, 10500]
Missing	28 (7.7%)	3 (12.0%)	2 (11.8%)	44 (10.5%)
time_cost_after_lockdown				
Mean (SD)	810 (881)	418 (300)	420 (447)	774 (851)
Median [Min, Max]	531 [62.5, 10500]	344 [31.3, 1190]	281 [62.5, 1750]	531 [31.3, 10500]
Missing	29 (7.9%)	3 (12.0%)	3 (17.6%)	46 (11.0%)

	I live by myself	I live with a roommate	I live with more than one roommate	I live with my family	Overall
Shopping time cost by household	(N=121)	(N=46)	(N=6)	(N=234)	(N=420)
time_cost_pre_lockdown					
Mean (SD)	836 (785)	832 (644)	625 (580)	964 (999)	906 (898)
Median [Min, Max]	609 [93.8, 4880]	703 [31.3, 2630]	344 [250, 1750]	813 [31.3, 10500]	656 [31.3, 10500]
Missing	9 (7.4%)	4 (8.7%)	0 (0%)	20 (8.5%)	44 (10.5%)
time_cost_during_lockdown					
Mean (SD)	593 (774)	684 (1600)	703 (798)	572 (495)	596 (781)
Median [Min, Max]	391 [31.3, 4880]	406 [31.3, 10500]	344 [156, 2250]	438 [31.3, 3500]	438 [31.3, 10500]
Missing	9 (7.4%)	4 (8.7%)	0 (0%)	20 (8.5%)	44 (10.5%)
time_cost_after_lockdown					
Mean (SD)	632 (662)	780 (764)	625 (580)	851 (952)	774 (851)
Median [Min, Max]	438 [62.5, 4880]	469 [31.3, 3500]	344 [250, 1750]	625 [62.5, 10500]	531 [31.3, 10500]
Missing	11 (9.1%)	4 (8.7%)	0 (0%)	20 (8.5%)	46 (11.0%)

Shopping time cost by income	0 - R10 000	R10 000 - R20 000	R20 000 - R30 000	R30 000 - R35 000	R35 000 - R40 000	R40 000 - R45 000	R45 000 - R50 000	R50 000 - R55 000	>R55 000	Overall
	(N=28)	(N=39)	(N=60)	(N=39)	(N=35)	(N=32)	(N=24)	(N=30)	(N=119)	(N=420)
time_cost_pre_lockdown										
Mean (SD)	128 (67.4)	333 (183)	509 (261)	853 (1080)	852 (457)	770 (475)	1030 (638)	1270 (835)	1410 (1170)	906 (898)
Median [Min, Max]	125 [31.3, 250]	375 [93.8, 750]	625 [156, 1250]	406 [203, 4880]	938 [234, 1880]	531 [266, 2130]	1190 [297, 2380]	656 [328, 2630]	875 [438, 10500]	656 [31.3, 10500]
Missing	6 (21.4%)	3 (7.7%)	2 (3.3%)	4 (10.3%)	2 (5.7%)	2 (6.3%)	1 (4.2%)	1 (3.3%)	9 (7.6%)	44 (10.5%)
time_cost_during_lockdown										
Mean (SD)	89.5 (62.7)	266 (358)	383 (502)	575 (829)	597 (480)	452 (343)	555 (361)	645 (460)	959 (1130)	596 (781)
Median [Min, Max]	62.5 [31.3, 250]	188 [93.8, 2250]	313 [156, 3750]	406 [203, 4880]	469 [234, 1880]	398 [266, 2130]	297 [297, 1190]	656 [328, 2630]	438 [438, 10500]	438 [31.3, 10500]
Missing	6 (21.4%)	3 (7.7%)	2 (3.3%)	4 (10.3%)	2 (5.7%)	2 (6.3%)	1 (4.2%)	1 (3.3%)	9 (7.6%)	44 (10.5%)
time_cost_after_lockdown										
Mean (SD)	143 (146)	305 (195)	496 (501)	783 (1090)	682 (448)	593 (258)	729 (540)	939 (683)	1240 (1130)	774 (851)
Median [Min, Max]	125 [31.3, 750]	281 [93.8, 750]	313 [156, 3750]	406 [203, 4880]	469 [234, 1880]	531 [266, 1060]	594 [297, 2380]	656 [328, 2630]	875 [438, 10500]	531 [31.3, 10500]
Missing	6 (21.4%)	3 (7.7%)	3 (5.0%)	4 (10.3%)	2 (5.7%)	2 (6.3%)	2 (8.3%)	1 (3.3%)	9 (7.6%)	46 (11.0%)

RELATIONSHIP VALUE

Relationship value by gender	Female	Male	Non-binary	Overall
	(N=235)	(N=167)	(N=6)	(N=420)
relationship_value				
Mean (SD)	0.383 (0.635)	0.408 (0.653)	0.409 (0.969)	0.395 (0.644)
Median [Min, Max]	0.364 [-1.18, 2.00]	0.455 [-1.18, 2.00]	0.364 [-0.545, 1.45]	0.455 [-1.18, 2.00]
Missing	74 (31.5%)	59 (35.3%)	2 (33.3%)	146 (34.8%)

Relationship value by age	18 - 25	26 - 35	36 - 45	> 45	Prefer not to say	Overall
	(N=26)	(N=247)	(N=98)	(N=37)	(N=1)	(N=420)
relationship_value						
Mean (SD)	0.322 (0.678)	0.380 (0.657)	0.437 (0.590)	0.409 (0.748)	NA (NA)	0.395 (0.644)
Median [Min, Max]	0.364 [-0.909, 1.45]	0.455 [-1.18, 2.00]	0.455 [-1.00, 2.00]	0.273 [-0.545, 2.00]	NA [NA, NA]	0.455 [-1.18, 2.00]
Missing	15 (57.7%)	81 (32.8%)	21 (21.4%)	17 (45.9%)	1 (100%)	146 (34.8%)

Relationship value by occupation	high_busy	medium_busy	low_busy	Overall
	(N=366)	(N=25)	(N=17)	(N=420)
relationship_value				
Mean (SD)	0.405 (0.650)	0.187 (0.657)	0.568 (0.369)	0.395 (0.644)
Median [Min, Max]	0.455 [-1.18, 2.00]	0.136 [-0.909, 1.45]	0.591 [0, 1.00]	0.455 [-1.18, 2.00]
Missing	119 (32.5%)	7 (28.0%)	9 (52.9%)	146 (34.8%)

Relationship value by household	I live by myself	I live with a roommate	I live with more than one roommate	I live with my family	Overall
	(N=121)	(N=46)	(N=6)	(N=234)	(N=420)
relationship_value					
Mean (SD)	0.384 (0.678)	0.190 (0.536)	0.0909 (0.805)	0.462 (0.626)	0.395 (0.644)
Median [Min, Max]	0.364 [-1.18, 1.91]	0.182 [-0.818, 1.36]	-0.182 [-0.818, 1.18]	0.455 [-1.18, 2.00]	0.455 [-1.18, 2.00]
Missing	41 (33.9%)	14 (30.4%)	1 (16.7%)	78 (33.3%)	146 (34.8%)

Relationship value by income	0 - R10 000	R10 000 - R20 000	R20 000 - R30 000	R30 000 - R35 000	R35 000 - R40 000	R40 000 - R45 000	R45 000 - R50 000	R50 000 - R55 000	>R55 000	Overall
	(N=28)	(N=39)	(N=60)	(N=39)	(N=35)	(N=32)	(N=24)	(N=30)	(N=119)	(N=420)
relationship_value										
Mean (SD)	0.417 (0.446)	0.405 (0.619)	0.443 (0.599)	0.223 (0.605)	0.296 (0.461)	0.311 (0.620)	0.610 (0.822)	0.322 (0.740)	0.437 (0.702)	0.395 (0.644)
Median [Min, Max]	0.500 [-0.364, 1.00]	0.545 [-0.727, 1.64]	0.455 [-0.727, 1.82]	0.182 [-1.00, 1.55]	0.273 [-0.455, 1.09]	0.227 [-1.00, 1.64]	0.455 [-0.545, 2.00]	0.500 [-1.00, 1.36]	0.409 [-1.18, 2.00]	0.455 [-1.18, 2.00]
Missing	16 (57.1%)	19 (48.7%)	19 (31.7%)	17 (43.6%)	8 (22.9%)	8 (25.0%)	7 (29.2%)	6 (20.0%)	35 (29.4%)	146 (34.8%)

WELL-BEING

Well-being by gender	Female	Male	Non-binary	Overall
	(N=235)	(N=167)	(N=6)	(N=420)
consumer_wellbeing				
Mean (SD)	0.681 (0.719)	0.574 (0.793)	0.219 (0.649)	0.632 (0.748)
Median [Min, Max]	0.625 [-1.13, 2.00]	0.625 [-1.75, 2.00]	0.125 [-0.375, 1.00]	0.625 [-1.75, 2.00]
Missing	89 (37.9%)	67 (40.1%)	2 (33.3%)	169 (40.2%)

Wellbeing by age	18 - 25	26 - 35	36 - 45	> 45	Prefer not to say	Overall
	(N=26)	(N=247)	(N=98)	(N=37)	(N=1)	(N=420)
consumer_wellbeing						
Mean (SD)	0.156 (0.536)	0.592 (0.750)	0.761 (0.756)	0.806 (0.712)	NA (NA)	0.632 (0.748)
Median [Min, Max]	0.188 [-0.625, 1.00]	0.625 [-1.75, 2.00]	0.750 [-1.13, 2.00]	0.688 [-0.375, 2.00]	NA [NA, NA]	0.625 [-1.75, 2.00]
Missing	14 (53.8%)	94 (38.1%)	32 (32.7%)	17 (45.9%)	1 (100%)	169 (40.2%)

Wellbeing by occupation	high_busy	medium_busy	low_busy	Overall
	(N=366)	(N=25)	(N=17)	(N=420)
consumer_wellbeing				
Mean (SD)	0.667 (0.751)	0.195 (0.637)	0.518 (0.651)	0.632 (0.748)
Median [Min, Max]	0.625 [-1.75, 2.00]	0.438 [-1.13, 1.00]	0.500 [-0.375, 1.38]	0.625 [-1.75, 2.00]
Missing	138 (37.7%)	9 (36.0%)	10 (58.8%)	169 (40.2%)

Wellbeing by household	I live by myself	I live with a roommate	I live with more than one roommate	I live with my family	Overall
	(N=121)	(N=46)	(N=6)	(N=234)	(N=420)
consumer_wellbeing					
Mean (SD)	0.657 (0.860)	0.453 (0.711)	-0.150 (0.511)	0.688 (0.710)	0.632 (0.748)
Median [Min, Max]	0.625 [-1.75, 2.00]	0.438 [-1.00, 2.00]	-0.250 [-0.625, 0.500]	0.625 [-1.13, 2.00]	0.625 [-1.75, 2.00]
Missing	70 (57.9%)	14 (30.4%)	1 (16.7%)	72 (30.8%)	169 (40.2%)

Well-being by income	0 - R10 000	R10 000 - R20 000	R20 000 - R30 000	R30 000 - R35 000	R35 000 - R40 000	R40 000 - R45 000	R45 000 - R50 000	R50 000 - R55 000	>R55 000	Overall
	(N=28)	(N=39)	(N=60)	(N=39)	(N=35)	(N=32)	(N=24)	(N=30)	(N=119)	(N=420)
consumer_w ellbeing										
Mean (SD)	0.386 (0.482)	0.536 (0.717)	0.644 (0.763)	0.375 (0.580)	0.385 (0.703)	0.578 (0.692)	0.607 (0.850)	0.487 (0.686)	0.854 (0.797)	0.632 (0.748)
Median [Min, Max]	0.375 [- 0.375, 1.25]	0.500 [- 0.625, 1.88]	0.625 [- 1.13, 2.00]	0.250 [- 0.625, 1.75]	0.500 [- 1.38, 1.50]	0.625 [- 0.250, 1.88]	0.250 [- 0.500, 2.00]	0.500 [- 0.875, 1.63]	0.938 [- 1.75, 2.00]	0.625 [- 1.75, 2.00]
Missing	17 (60.7%)	18 (46.2%)	20 (33.3%)	21 (53.8%)	10 (28.6%)	16 (50.0%)	10 (41.7%)	11 (36.7%)	35 (29.4%)	169 (40.2%)

APPENDIX D – MEDIA ANALYSIS

Sources/articles	Media	Commentary	Commentary on actor in innovation system			Illustration of Innovation Characteristics		
			Consumer reception	Value network	Firm	Novelty	Creates Value	Diffused Widely
Business reporter	Media 1	150% increase in annual sales and remained the top South African grocery app with 2.4 million downloads	✓		✓	✓	✓	✓
Business reporter	Media 2	Since its expansion to groceries, the application has signed up 350,000 users, offers over 5000 grocery and liquor products at in-store pricing, and delivers in an average of 90 minutes.		✓			✓	
Business reporter	Media 3	The development and successful implementation of [grocery1 app] shows innovation and agility to changing market dynamics and execution success. The sustained growth of [grocery1 app] and the on-demand grocery delivery app has allowed the group to monetise digital and alternate revenue stream opportunities.			✓		✓	
Business reporter	Media 4	Online grocery delivery in South Africa has become much more comfortable in recent years. Finding a supermarket delivery online was one of the most challenging tasks before the advent of advanced tech stack. There was a significant delay in grocery delivery services, but now there are numerous apps available, making people's life much more comfortable and accurate. Grocery consumer's purchase is increasing rapidly; more than 21% of customers said that they make online and in-store grocery purchases.	✓			✓	✓	✓

Business reporter	Media 5	We are seeing a lot of proudly South African companies shifting their narrative by supplying South Africans with essential goods delivered to their door during the Lockdown.	✓	👤	👤	👤	✓	✓
Business reporter	Media 6	South Africa's foray into supermarket delivery apps only kicked off fairly recently. Before each one had its own app, there were platforms like [groceryshopper1] and [groceryshopper3] where customers could order from a variety of retailers. Now, retailers are going head to head with one another. [grocery1] came into the market offering a 60-minute grocery delivery service. The [] app was acquired by [grocery4] and, in December 2020, [grocery2] launched [grocery2 app]. We decided to try all three of them on the same day to see what the differences were.	👤	👤	👤	✓	👤	✓

Industry expert analysis	Online sales in South Africa have more than doubled since 2018 (2018: ZAR 14 billion; 2020: ZAR 30 billion, surpassing projected growth by ZAR 10 billion). Online shopping now represents 3 percent of total retail sales in South Africa, up from 1 percent in 2018. This trend is reflected in our survey. Thirteen percent of consumers in South Africa say they have newly moved online since the pandemic started. The propensity to move online cuts across all income tiers (low tier: 12 percent; medium and high tiers: 14 percent). In addition, 38 percent of consumers say they now use online channels one to two times per month, an increase of 6 percentage points compared to pre-COVID-19 levels. Fifty-five percent shop online a few times a year (up from 48 percent).⁴ The online channel is particularly popular for purchases of non-perishable products, such as cosmetics, laundry supplies, and household cleaning supplies. The top reasons consumers give for online shopping are convenience (48 percent), easy price comparisons (38 percent), avoiding contact with people (33 percent), and lower prices (33 percent). The biggest barriers for ordering grocery and household products online include high cost (57 percent), worries about receiving faulty items (46 percent), and the concern that products may differ from how they appear online (43 percent). Media 7	✓			✓		✓
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Business reporter	Media 8	Within its first two years servicing households and spaza shops within KwaZulu-Natal's uMlalazi Municipality, [grocery-on-demand app] completed more than 25,000 orders. Today, [grocery-on-demand app] has more than 5,000 household customers and delivers to more than 200 spaza stores, with a customer return rate above 80%. "We use local drivers who come from the respective villages, so they know the roads, what they look like, and if there should be a shortcut when they navigate to a specific household," says [founder], adding that [grocery-on-demand app] employs 24 staff, including drivers.	✓	✓		✓	✓	✓
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Business reporter	Media 9	In a good week, [grocer delivery driver] earns around R1 300, but is left with about R400 after paying R600 for renting his scooter, and R300 for petrol. In a slow week, he can earn just R500 In a busy week, he earns roughly R2 000 and around R1 200 when things are quiet. He said that more drivers are entering the market. [scooter rental1], owner of [scooter rental business] that sells and rents mainly to corporate clients, said bike sales had increased dramatically in recent years. [Scooter repair 1], owner of [Scooter repair business], repairs and rents scooters. He launched the service to keep up with the demands of his own vehicles. He said it was hard to measure growth in the bike courier industry because drivers and owners come and go “but it is sustainable”. [scooter repair 1] is a member of the Delivery Motorbikes Association, an informal group of about 104 owners started around 2016. They vet drivers, sell vehicle parts among each other and share knowledge about the business. “The 125 cc (scooter) market is the biggest market. Sales have probably tripled month-on-month,”[scooter rental 1] said.						
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Business reporter	Media 10	As many as 19% of South African shoppers used grocery delivery services more than 10 times in the final quarter of 2021, says head of [consumer spend app] Insights. The median transaction value for an on-demand order across the services tested – [grocery 1][grocery2][grocery3] – in the fourth quarter of 2021 was R484 [consumer spend app] data shows that since on-demand shopping has surged alongside the food courier industry, roughly half (45%) of people who order groceries tip delivery couriers. The people who do tip, give on average between R10 and R14.	✓	✓		✓	✓	✓
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Business reporter	Media 11	[grocery1] has calculated that the average [grocery1] app customer saves 33% on fuel and vehicle running costs by shopping via the app and paying the R35 delivery fee. In calculating this saving, [grocery1] considered that South Africa's top-selling passenger vehicles cost R7.01 per kilometre to run. By comparison, the average return journey for a [grocery1] delivery is 7.5km. "If a customer made this trip, it would cost them R52.57. Compared to [grocery1] R35 delivery fee, this realises a saving of R17.57 per trip," it said. n December 2021, the [grocery 1] said it had entered into a joint venture with its existing [grocery 1] logistics partner, the [logistics group], in which both parties will own 50%. "We anticipate this transaction will add to the more than 4,000 jobs already created by [grocery 1] as we continue to grow in the communities in which we operate," said [grocery 1 group] chief executive. while [grocery1] has rapidly expanded to over 261 stores and has created over 4,100 new jobs – up from 800 at the end of 2020	✓	✓		✓	✓	
Business reporter	Media 12	while the re-launch of the group's on-demand grocery offer as [grocery 4] delivered year-on-year growth of over 300% since August 2021.	✓				✓	

Business reporter	Media 13	[grocery 4] has launched its new Groceries section on [online retail 1] platform. The companies announced a partnership in May 2022. Shoppers will have access to items and products available at their local [grocery 4] stores. Orders will be picked in-store by [grocery 4] staff. The orders will be delivered by [online retail 1] delivery fleet. Shoppers will be able to earn [grocery 4] points through the purchases.		✓		✓	✓	✓
Business reporter	Media 14	platform seeing Gross Merchandise Value (GMV) growth of over 200%. [big box retailer 1] has also recently said that it plans to expand its online marketplace [grocery shopper 1] in the coming months as part of a growing push into the internet space. The [big box retailer 1] owner acquired an 87.5% stake in on-demand multi-retailer marketplace [grocery shopper 1] in late 2021,		✓		✓	✓	
Business reporter	Media 15	Due to varying levels of lockdown and sectors of the economy restricted from trading in person, online purchases skyrocketed in 2020, and it seems the preferred platform to purchase has now tipped in online's favour. 1.5million [grocery 1] app downloads, making them the most downloaded app in the on-demand grocery category, and their consumer rewards programme,	✓		✓	✓	✓	✓

Business reporter	Media 16	[] head of online and mobile at [grocery2], said that the race for tech talent is on across the country, with retailers dialling up their investment to ensure they are appropriately structured to respond competitively. head of online and mobile at [grocery 2] said [grocery2] is accelerating its investment in its digital platforms and pushing to become a leading omnichannel retailer. “Over the last three years, we have invested more than R1 billion in our digital capabilities in South Africa, providing new and innovative experiences that meet evolving customer needs and that differentiate us in the market,” she said.	✓	✓			✓	
Business reporter	Media 17	Notably, [grocery3] made excellent progress with its newly developed on-demand shopping platform [grocery3], which has gone live at 87 stores during the second half of the financial year. “Feedback from consumers using this new channel has been extremely positive,” it said. Interest levels from [grocery3] retailers to use the new platform remain high, the group said, and this is expected to enhance [grocery3] ability to assist retailers in driving improved consumer service and engagement going forward. The platform is a late entrant into a highly competitive market that is dominated by [grocery1]. Other retailers also have their own on-demand platforms, including [grocery2], which helped contribute to a 26% surge in online sales for the group in South Africa.	✓				✓	✓

Business reporter	Media 18	One of the biggest shifts seen is that local consumers are still going into stores less often, which points to curtailed lockdown shopping occasions despite the removal of restrictions, said [research house] South Africa managing director. [corporate property group] said that the growth of online on-demand shopping is driving business through our malls, positively impacting trading densities'	✓				✓	✓
Business reporter	Media 19	The biggest movers in the online sales for specific food products in terms of year-on-year growth were long-life milk which saw online sales up by 35% and instant coffee sales increasing by 52%. Bread is also a must in the average online food basket, as is alcohol.		✓				
Business reporter	Media 20	New data from [bank1] Merchant Services shows that the South African online e-commerce market has grown rapidly and is currently estimated at just under R200 billion per annum.	✓			✓	✓	
Business reporter	Media 21	The [grocery1] one-hour grocery delivery app, which is now offered from 266 outlets, has also attracted new customers, [] said. About a third of those using [grocer1] are people who have not shopped with the retailer before.	✓					✓
Business reporter	Media 22	[grocery1] It said that 80% of the population live within 5km of one of its 2,898 stores. The largest private employer in South Africa, [grocery1] employs 142,602 people. It said it created 3,897 new jobs over the past year, including the creation of 2,870 [grocery1] app related posts and 3,584 jobs since its launch in November 2019	✓	✓			✓	✓

Business reporter	Media 23	In SA, [grocery1] on-demand grocery application and the largest in SA, with more than 1.5-million downloads. The service promises to deliver within an hour and offers direct-to-consumer grocery delivery from 233 retail outlets nationwide.	✓					✓
Business reporter	Media 24	Retailers are being forced to do more strategic thinking about how to fulfil orders in this new channel, which requires more nuanced ideas about warehouses, logistics and micro-fulfilment centres. Some are adopting the traditional storefronts as fulfilment centres; others are looking into dark stores — a small local store dedicated to delivery but without the customers. One of the most significant changes concerns the way companies use labour and logistics, as on-demand retailers hire workers who can pick and fulfil orders quickly, pack the items and then get the orders to the consumer. As emerging markets play catch-up, developed markets are still pushing the boundaries of home delivery. [grocery 1] has recently entered into a joint venture with its delivery partner, [logistics group], as part of its strategy to grow its e-commerce platform business. [bank] acted as sole financial adviser and transaction sponsor on the transaction.		✓		✓	✓	

Marketing report	Media 25	Hand in hand with greater connectivity is the advent of Rapid Grocery Delivery (RGD) in the country. Today, 28% of connected South Africans have used an RGD app in the last month, 49% of whom say they use one at least weekly, and 62% of whom say they intend to use one more often. While the most visible of these is the [grocery1] app, other stores are also experiencing rapid growth. [grocery 4] currently has more than a million downloads and grew its user base 300% last year. [grocery2] shopping app currently has 1.5 million users, and its overall ecommerce sales are growing by double digits. This rapid adoption of new forms of commerce is likely due to a number of factors. First, the services are largely inexpensive ([grocery1] costs only R35 per delivery). With petrol prices higher than ever, the brand has said this is on average 33% cheaper than driving to the store (a claim that has been independently verified by [IT News site]). But maybe the biggest factor is a growing desire for seamless purchasing, with people looking to get what they want hassle-free and as quickly as possible. Brands of all kinds should strive to meet this expectation by reducing the friction of commerce and improving their overall customer experience The retail category contributes by far the largest number of brands to the ranking, eight in total, including newly returned [specialist retail1]. The most valuable brand in the category is [grocery2], though the [grocery1] (see Theory in Action below). While rapid grocery delivery (RGD) apps are getting much of the attention in the category, they are only part of a broader effort to leverage masses of customer data to improve customer experiences. The goal is to ease friction	✓			✓	✓	✓
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Industry research organisation	Media 26	Online retail in South Africa more than doubled in just two years, thanks to the explosion in demand for home deliveries brought about by the Covid-19 pandemic, according to new research findings released today. Online Retail in South Africa 2021, a study conducted by [industry researcher] with the support of [payment services, [bank] and [digital marketing], reveals that the total growth for online retail in South Africa in 2020 came to 66%, bringing the total of online retail in South Africa to R30,2-billion.			✓	✓	✓	
Industry report	Media 27	The findings were not a surprise. Already in November 2020, [payment services] released the findings of a survey of 1,000 South African consumers, which found that 68% of respondents were shopping more online since the onset of the pandemic. The categories experiencing the highest growth, aside from data and airtime top-up, were clothing, at 56%, and groceries, at 54%	✓			✓		