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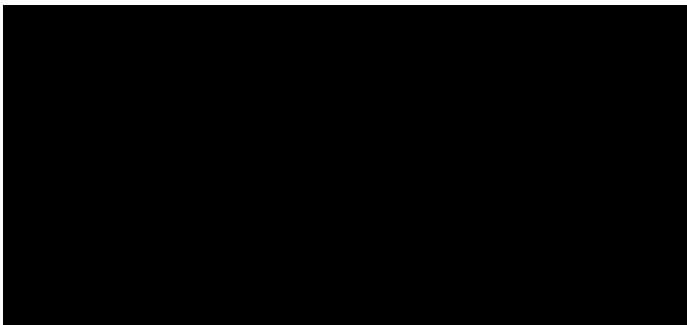
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Contents

Abstract	5
1. Introduction	6
1.1 Rationale	6
1.2 Problem Statement.....	7
1.2.1 Sub Problems	7
1.3 Research Goal.....	7
1.4 Research Questions	8
2. Literature Review	9
2.1 About Food Lovers Market	9
2.2 Food Lovers Market Supply Chain	10
2.3 Food Lovers Market Waste Management Efforts.....	10
2.4 Meaningful Criteria.....	10
2.5 Food Wastage in Food Supply Chain	11
2.6 Food wastage perceptions in South Africa	12
2.7 Nutritional Knowledge in South Africa	13
3. Conceptualisation of key terms	13
3.1.1 Fresh Produce	13
3.1.2 Food Waste	13
3.1.3 Consumer	13
3.1.4 Healthy Food	14
3.1.5 Nutritional Knowledge of Food	14
4. Research Paradigm	15
5. Research Methodology	18
5.1 Purpose of the survey.....	18
5.2 Research Strategy.....	19
5.3 Research Design	20
5.4 Sampling Plan	20
5.4.1 Unit of analysis	20
5.4.2 Criteria	21
5.5 Data Collection Instrument	21
5.6 Data Processing and Analysis	22
5.6.1 Quantitative Data Analysis	22
5.7 Research Reliability and Validity	23

6.	Data Analysis and Presentation of Results	24
6.1	Analysis of Data	26
6.2	Findings	27
7.	Conclusions and Recommendations	30
7.1	Ethical Considerations	30
7.1.1	Research perspective in South Africa	30
7.2	Limitations and Trustworthiness	30
7.3	Recommendations.....	30
7.4	Conclusions	31
8.	Reference List	33
	Appendix A.....	37
	Appendix B.....	40

Abstract

Food waste is a phenomenon underestimated by many countries in the world, and it is seeing a steady growth each year of production according to the World Wide Fund (2019). Food waste has become a norm, and this needs to be changed soon. This study focused predominantly on the consumer level of food waste and attempted to better understand the reason as to why food waste is occurring at this level in the food supply chain, and also to determine whether nutritional knowledge plays a role in fresh produce waste specifically.

The study uncovered the reasoning behind consumers wasting their unconsumed foods especially with regards to fresh produce like fruits and vegetables. Quantitative research was conducted for this study by means of an online survey, sent to employed individuals between the ages of 26 years to 51 years and Older. The results show that the younger age group in women are more knowledgeable about nutritional value of fruits and vegetables and older men are more aware of the nutritional value of fresh produce. Furthermore, the study uncovered that food waste is impacted by how people see nutritional value of fresh produce and how they dispose of unconsumed foods.

1. Introduction

According to the World Wide Fund (WWF) a third of South Africa's food is wasted in a year of food production (WWF, 2017). In a country affected by poverty, this food waste phenomenon is troubling, as many people in South Africa go to sleep without food everyday (WWF, 2019). The aim of the WWF is to find alternative ways to reduce food waste and for food manufacturers and retailers to better manage their food wastage (WWF, 2017), and furthermore, to collaborate with Government to facilitate waste management in the food supply chain. The focus of this study was to explore the food production and distribution industry focusing specifically on the food supply chain to identify where food waste can be better handled and lessened through the chain. As more consumers are becoming aware of their contribution to the pollution and global footprint, it seemed fitting to analyse consumers behaviours as well, regarding food waste management (Feucht and Zander, 2017).

Fresh produce contributes about 44% to the food waste phenomenon, thus this study focused on fresh produce waste specifically (WWF, 2017). Scoping and adding more focus to the research, a retail brand was chosen in the food supply chain. This study focused on the Food Lovers Market brand and how their fresh produce line specifically contributes to food waste at the consumer level. Food Lovers Market was analysed to determine whether the brand can be classified as a meaningful brand in relation to food wastage.

1.1 Rationale

Since fresh produce is a high contributor to food waste in the supply chain (WWF,2019) and Food Lovers Market is a fresh produce outlet, it seemed fitting to study the brands relationship with food waste as well as how fresh produce consumers contribute to food waste. Identifying what the main causes were for this was fundamental in finding sustainable measures to alleviate fresh produce being wasted.

Furthermore, investigating what the relationship was between consumers and nutritional value of fresh produce will assist the aims of the WWF which are to find solutions for food chain supply key players like retailer Food Lovers Market and their consumers with their impacts on fresh produce waste

1.2 Problem Statement

The epistemological position of Positivism dictates that knowledge is gained through empirical evidence and observation of this evidence (Du Plooy - Cilliers, 2014). For this study causal relationships were generalised and objective regarding the Food Lovers Market consumer. With the positivism paradigm as the framework used for this research, the below statement was the core problem at hand.

The lack of nutritional knowledge is high amongst consumers and this combined with the perception of the high cost of healthy foods leads to food waste, particularly in the fresh produce category. Consumers are failing to appreciate the value of fresh produce and are thus contributing to food waste.

1.2.1 Sub Problems

As defined in Davis (2014) by Leedy and Ormrod (2013) sub problems are smaller components of researchable areas that add to the problem to which is being investigated.

Relating to this study the below were sub problems that contributed to the existence of the phenomenon being researched here.

- High cost of healthy food contributes to food waste
- Consumers believe fresh produce is expensive
- Fresh produce longevity is a reason to not purchase fresh produce

1.3 Research Goal

Davis (2014) elaborates that the aims of research will determine the process and the outcome of the research study. Thus, being clear at the start of the research about the purpose of your study is a vital step in the research process. The aim of this study was to conduct correlational research. Correlational research can be described as research that aims to find a link or a relationship between two or more aspects of a situation (Davis, 2014). Using correlational research intention was to attempt to establish the link between fresh produce consumers nutritional knowledge of fruits and vegetables and their food waste. The prediction of the study was that fresh produce waste is causally linked to consumer's knowledge of nutritional value of their food.

1.4 Research Questions

Research questions are used to narrow down the research topic and assist in finding other ways in which the problem could be looked at (Bezuidenhout and Davis, 2014).

The main research question of this study was the below

Is nutritional value an important deciding factor in a consumer's mind when disposing of their fresh produce waste?

The below are sub-questions that assisted in investigating the research problem further.

- Do consumers recycle fresh produce?
- Do consumers consider other options or ways for disposing of fresh produce?

2. Literature Review

A literature review explains the theoretical, descriptive, and empirical effort of research you have worked on for your topic of interest (Struwig and Stead, 2013). The purpose of a literature review is to explore the research previously done on the same topic and identify if there are any gaps in the literature to justify why you are embarking on additional research (Struwig and Stead, 2013). The literature review of this study evaluated and analysed the Food Lovers Market brand and their position on Food Waste Management measures and determine whether these measures can classify the brand as a meaningful brand. This literature review also addressed fresh produce waste in detail to establish the possible connection to food waste at the consumer level.

2.1 About Food Lovers Market

Founded in 1993 Food Lovers Market formally known as Fruit & Veg City opened its doors in Cape Town, South Africa (Food Lovers Market, 2020). Owned by two brothers the rebranding of the Fruit & Veg City outlet to Food Lovers Market has seen the brand grow extensively across South Africa and into our neighbouring countries (Food Lovers Market, 2020). The brand values are centred on trust, honesty, and integrity, and their brand identity is that they are considered by many as leader in the delivery of fresh produce to the consumer (Food Lovers Market, 2020). The Food Lovers Market group consists of other partner outlets like Food Lover's Eatery, FreshStop, Market Liquors and Diamond Liquor Outlets and has partnered with International company Seattle Coffee Company as the inhouse coffee outlet (Food Lovers Market, 2020).

Apart from specialising in fresh produce, Food Lovers Market has an in-house product line offering various everyday essential items from tinned goods and cold drinks to household detergents (Food Lovers Market, 2020). This study focused primarily on the supply chain of the fresh produce as fresh produce is the main contributor to food waste in South Africa (WWF, 2019). Fresh produce can be described as the food that grown and harvested in large quantities with the purpose to be sold (Collins Dictionary, 2020), this would typically consist of fruits and vegetables as well as meat products (Collins Dictionary, 2020).

2.2 Food Lovers Market Supply Chain

As a predominantly fresh produce retailer Food Lovers Market uses the standard fresh food supply chain (Food Lovers Market, 2020). Food Lovers Market sources its fresh produce from large farmers, but they also give opportunity to include small farm suppliers in their supply value chain (Food Lovers Market, 2020). Food Lovers Market buys directly from the market floor across South Africa, this means that all produce is purchased directly from the farmers (Food Lovers Market, 2019). Once purchased the fresh produce is then sold to the consumer as is or with minimal alteration and packaging (Food Lovers Market, 2019).

The intricacies of where the waste occurs is at the processing phase as consumer demand for better refined products means that more fresh produce is cut off (Oelofse and Pienaar, 2016). The contribution of Food Lovers Market to food wastage is mostly in store as products not sold and expired are discarded of by each store, as previously mentioned retail waste is contributed by food expiring and perishing while on the shelf in store (Fao, 2011).

2.3 Food Lovers Market Waste Management Efforts

Creating and managing sustainable ways to alleviate and reduce the food waste input is what can be classified as the process of food waste management (Garcia-Garcia et al, 2017). Food Lovers Market has the start at the beginning approach to food waste management, they take a stance that consumers should not waste food as wasted food means wasted water (Food Lovers Market, 2017). Another way Food Lovers Market is creating sustainable ways to curb food waste, is to encourage farmers to have produce already prepped when delivered, this “from farm to fork” process ensures that fresh produce is not impacted in anyway before it reaches the shelves (Food Lovers Market, 2019). The Zero Waste initiative by Food Lovers Market shows the brand is highly involved in the cause to manage food waste, with articles for customers on how to store leftover food educates consumers about not wasting food (Food Lovers Market, 2018).

2.4 Meaningful Criteria

A meaningful brand is described as a brand that has a positive impact on the personal and collective wellbeing of its consumer while ensuring the functions of the brand are also beneficial to the consumer and community (Havas Group, 2017). The criteria of a meaningful brand consist of creating a balance between

the wellbeing of consumers and community, while still creating meaning for the brand in the consumer's mind (Havas Group, 2017). Below is an analysis on Food Lovers Market according to what constitutes a meaningful brand.

Personal Benefits are the intangible elements that improve individual people's lives (Havas, 2017). Food Lovers Market essentially brings the ambience of the fruit and veg market to its consumer in a fresh modern way (Food Lovers Market, 2020). This modern "theatre of food" setting draws in customers and thus gives customers a healthy option for food in an inspiring way. However, their bargain pricing can sometimes disassociate their brand with quality, as cheap often means low quality.

Collective Benefits are the elements that improve society and serve society in a positive way (Havas, 2017). Food Lovers Market has a few projects and initiatives that give back to the community as well as the planet, the "Earth Lovers initiative" shows that the brand does indeed have a collective benefit (Food Lovers Market, 2020).

Functional Benefits are the tangible elements that make the brand's functionality important and beneficial to the consumer (Havas, 2017). Food Lovers Market has many stores (including convenience stores "FreshStop") that are easily accessible, the brand ensures that healthy eating options are easily accessible.

According to Cook, Enslin, Erwin, and Carmody (2010), organisations and brands are redesigning their framework to ensure a sustainable relationship between the business and the community and the environment. Although Food Lovers Market has redesigned their brand it is important to analyse where they stand with creating a sustainable relationship with the environment regarding food waste management.

2.5 Food Wastage in Food Supply Chain

Supply Chain Management is the management of movement and processing of raw materials into an organisation (Kruger et al, 2013). Managing the interconnected systems of getting a refined and finished product to the consumer is what constitutes supply chain management (Kruger et al, 2013). The food processing supply chain consists of four phases which are namely producing, processing, retailing and consuming (Fao, 2011). Food waste is defined as the loss of food at any of the four stages of the food supply chain (Fao, 2011). Food loss

refers to the decreased edible food mass in the food supply chain meant for human consumption (Fao, 2011). Food loss or waste is food lost in any one of the four phases of food supply chain (Fao, 2011).

Food can be lost and wasted through the supply chain during these processes:

Agricultural Production can consist of harvest spillage or damage accounting for the loss in this phase of the food supply chain (Fao, 2011). Post harvesting and storage phase accounts for food waste due to degradation during handling, transporting and storage of produce (Fao, 2011). Processing can account for a large portion of food wasted as foods are sorted, and refined to suit better consumption (Fao, 2011). Distribution phase includes retailing of supermarkets and wholesalers and products not sold are often discarded which in turn contributes to food loss (Fao, 2011). Consumption phase includes the restaurant and household level of consumable food stuff discarded contributing to the total food loss and waste (Fao, 2011). Food Lovers Market falls into the distribution phase of the food supply chain this means that they contribute through unsold products by discarding these expired goods.

According to Feucht and Zander (2017) food production contributes largely to the production of greenhouse gas emission, this meaning that not only is food wasted during production, it is also affecting the environment negatively while being produced. Regulations and policies in place for food waste management in South Africa are currently not regulated. As previously mentioned, other sociological issues like poverty and job security, as well as environmental issues, like water shortages across South Africa have taken presidency for which the government has to deal with (WWF,2019).

In a developing country like South Africa, food waste occurs mainly at the beginning phases of the food supply chain and the contributing factor is how the produce is processed and stored at the phase of production (Dutoit, 2018). The gap to be investigated is the consumer contribution to food waste in South Africa.

2.6 Food wastage perceptions in South Africa

For this study it was important to consider what are the current perceptions of food waste amongst South Africans. Although the primary research to still be conducted will give more indicative premises in determining these perceptions, studies conducted on a small sample by Oelofse and Pienaar (2016) show that the

common reasons food is wasted by consumers is that they are preparing too much food and also consumers are confused by the labelling of products (The use by date, the expiry date).

Cultural heritage also plays a role in how food is prepared and contained after preparation, this illustrating the relationship between food and people and ultimately triggering food wastage (Oelofse and Pienaar, 2016). This study evaluated how Food Lovers Market can change this dilemma faced by consumers, and ultimately influencing this behaviour for the better.

2.7 Nutritional Knowledge in South Africa

According to research done by Koen, Wentzel-Viljoen, Nel and Blaauw (2018) consumers do not read the nutritional information on food labels, for various reasons like lack of interest and level of education being the cause of consumers not reading the information provided (Koen et al, 2018). Understanding the nutritional information is important and thus can influence how food is wasted by consumers. The consumer who does not know what the nutritional value of food is will likely dispose of it because they would deem it not beneficial for their health (Koen et al, 2018).

3. Conceptualisation of key terms

3.1.1 Fresh Produce

Fresh produce can be described as the food that grown and harvested in large quantities with the purpose to be sold (Fresh Produce, 2020) this would typically consist of fruits and vegetables as well as meat products (Fresh Produce, 2020)

3.1.2 Food Waste

Defined food waste is the loss of food at any point of the food supply chain (Oelofse and Nehman, 2013). For this study food waste will be referring to fresh produce wastage specifically.

3.1.3 Consumer

A person who purchases goods or services for their personal use (Cant, 2013), this study will be referring specifically to a Food Lovers Market consumer when using this term.

3.1.4 Healthy Food

Healthy food can be defined as the food that is grown and prepared naturally and does not contain artificial substances or processes (Health Food, n.d.). Healthy food is food believed to have good nutritional value for your body, these health foods include Fruits and Vegetables which fall under the fresh produce sector in the human food chain (Hartzenberg, 2017). This study will narrow down the topic by focusing on consumers and how they contribute to fresh produce waste. Since Food Lovers Market is primarily a fresh produce outlet (Food Lovers Market, 2020), this study will also investigate the impacts they have on fresh produce waste.

3.1.5 Nutritional Knowledge of Food

Can be defined as the knowledge of the processes related to nutrition involving one's health and the food they purchase and consume (Soederberg Miller and Cassady, 2015). For this study nutritional knowledge will be referenced in the regard of consumers knowledge of the nutritional benefits of fresh produce (fruits and vegetables) specifically.

4. Research Paradigm

Food waste is a troubling phenomenon that is faced in South Africa (WWF, 2019) this broad topic offers many interesting points of view available for research. To narrow down the topic further a research paradigm needs to be chosen to take lead in the research efforts. A research paradigm is the study of beliefs and assumptions of a phenomenon or of reality (Du Plooy-Cilliers et al, 2014). A research paradigm consists of four positions or components, which are namely Epistemology, Ontology, Axiology, Metatheoretical, Methodological (Rehman & Alharthi, 2016).

Epistemology refers to the nature of knowledge and how the process of this knowledge is acquired and validate (Gall, Gall, & Borg, 2003, p. 13).

Ontology refers to beliefs of reality that the research position will assume, what reality exists and what further information is there about the reality (Rehman & Alharthi, 2016).

Axiology refers to the values and judgement of values the research will assume through the research process (Du Plooy-Cilliers et al, 2014).

Metatheoretical position refers to the theory-based lens that will provide a road map for the intended research (Du Plooy-Cilliers et al, 2014).

Methodological position refers to the research instruments and methods to approach the collection of data (Rehman & Alharthi, 2016).

These positions or components of a research paradigm assist in clustering and directing the way in which your research will be structured. These components will help navigate the research undertaken and ensure the purpose of the research is consistent throughout the process (Du Plooy-Cilliers et al, 2014).

There are various research paradigms and traditions but the three mentioned below are the main approaches to research predominantly used by researchers across all fields (Du Plooy-Cilliers et al, 2014).

Briefly defined:

Positivism is used to discover causal relationships to predict and control events (Plooy-Cilliers et al, 2014).

Interpretivism is used to discover and understand meaningful social constructs (Plooy-Cilliers et al, 2014).

Critical Realism is used to expose myths and empower people to transform societal norms radically (Plooy-Cilliers et al, 2014).

It is important to decide on which research paradigm tradition you will use in the beginning stages of the research study as this will shape the way the research will go without compromising its integrity, and to ensure that a golden thread of thought is consistent and carried throughout the research process (Du Plooy-Cilliers et al, 2014).

This study used a positivism research paradigm as the approach for conducting the research, this was due to the aim of the research being to discover causal relationship between nutritional knowledge and consumer waste of a typical fresh produce consumer who sometimes purchases their fruits and vegetables at Food Lovers Market. As previously stated, the epistemological position of the positivism research paradigm is knowledge we wish to acquire will need to be through observations of consumer behaviour to find empirical evidence of whether this relationship does exist (Du Plooy-Cilliers et al, 2014). Ontological position of a positivism research approach considers that reality is external and does apply to all people (Du Plooy-Cilliers et al, 2014), thus general grocery consumers needed to be considered for the research. Axiological position of positivism ensures that the values of the research are objective and are non-bias (Du Plooy-Cilliers et al, 2014), thus for this research no bias can be shown to consumers or to Food Lovers Market to ensure objectivity of the purpose of the study. Metatheoretical position of the positivism research paradigm is to show theory-based research that there are causal relationships and that they can be generalised (Du Plooy-Cilliers et al, 2014), for this research it was imperative to show that the knowledge acquired can be applied to any other retailer and their consumer. Methodological positioning of positivism research paradigm refers to the technique to be used (Du Plooy-Cilliers, 2014), this research through the positivism paradigm used quantitative methods as a technique to gather information.

As mentioned by the WWF (2019) fresh produce (fruits and Vegetables) accounts for the largest portion of food waste in the food supply chain. Fresh produce waste was the core focus of this study as a research topic. To continue preserve the

positivist research paradigm of this study, these below factors are the basis for fine tuning the research topic.

Direct Experience - Children are taught from a young age that fruits and vegetables are good and healthy for their bodies, as mentioned by President's Council on Sports, Fitness and Nutrition (2017), good nutrition is important in leading a healthy lifestyle. We are however not privy of knowing the costs of food until we are adults and therefore, we forget the lessons of healthy food being beneficial and we begin to associate healthy eating as an expensive choice to make (Kuzemchak, 2020).

Tradition and Cultural heritage and cultural practises play a role in how food is prepared and preserved in the life of an average South African consumer (Oelofse and Pienaar, 2016). This relationship between the consumer and food is an interesting subject as it can account for how food is wasted by the consumer. Being open minded when studying this topic is important especially when investigating consumers of different cultures in South Africa.

The Media - Healthy living has become a trendy topic in recent times, and the media has played a big role in facilitating people's attempt to lead healthy eating lifestyles (Euromonitor, 2017). To lead a life of healthy living, healthy food is a main contributor to your efforts. With social media being at the frontline of sharing healthy habits, this does pose a question of whether food waste particularly fresh produce waste can be part of the healthy living conversation today (Euromonitor, 2017).

Status quo is that fresh produce is a high contributor to food waste in the supply chain (WWF, 2017). Furthermore, fresh produce is no longer exclusive to retailers, informal trading of fresh produce is also a purchase contact point reaching the lower LSMs (Hartzenberg, 2017).

5. Research Methodology

The intention of this study was to find the relationship between nutritional knowledge and food waste amongst consumers. To establish the connection some numerical data needs to be produced to see how high or how low nutritional knowledge is amongst fresh produce consumers as well as determine their food waste behaviours.

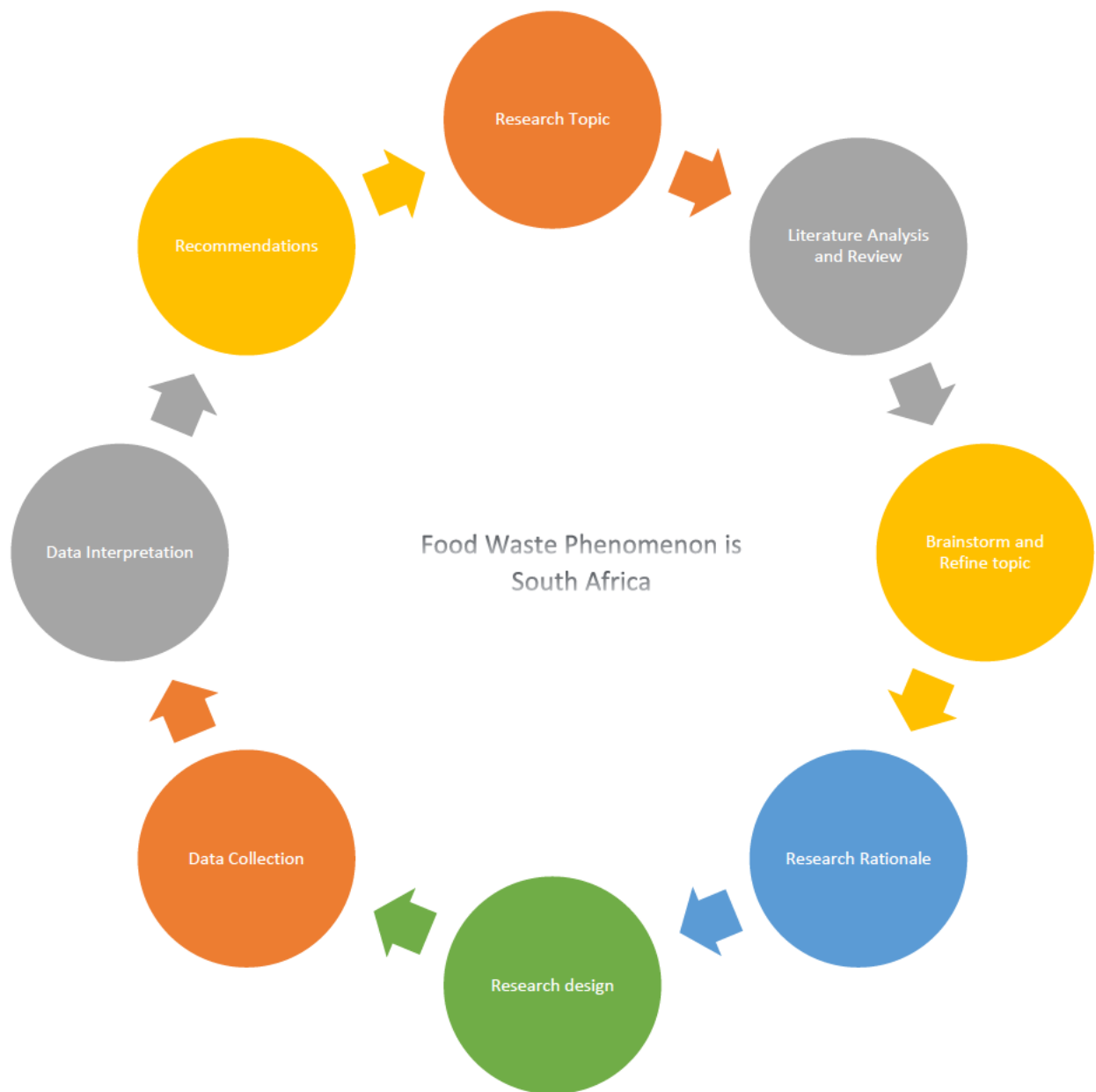
The methodological considerations for this study from a positivist perspective were quantitative research. The population on which the study will be conducted had been taken into consideration and average grocery shopping consumers were the market considered for this study. Quantitative data will be collected using a digital online survey. The study will use a quantitative research approach, that is primarily about numbers and generally involves surveying a larger group of people, using a structured questionnaire that contains predominantly closed-ended, or forced-choice, questions. Selecting this design will make it easier to analyse data since response will be in a numerical form to attain the objectives of this study (Walker ,2018)

5.1 Purpose of the survey

Exploratory research

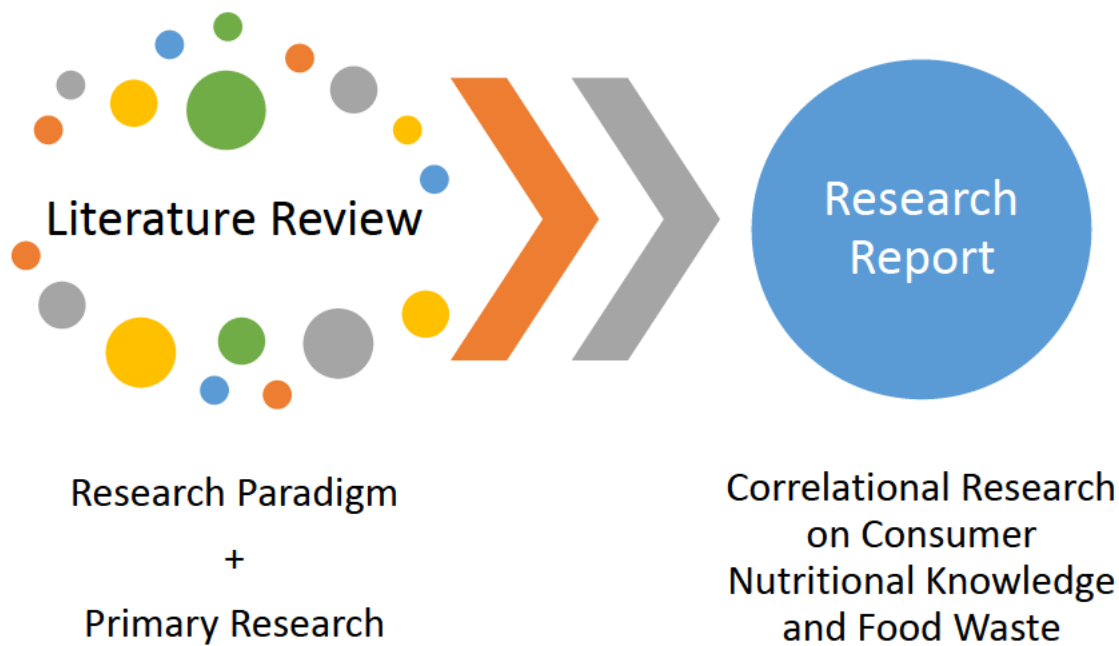
Further information is desired about the research variables of this study which Nutritional knowledge and fresh produce consumers.

5.2 Research Strategy



For this study, the topic had been selected initially, and after secondary research was conducted, the topic was therefore refined to focus specifically on fresh produce and food waste at a consumer level.

5.3 Research Design



The above is the illustration of how the research design of this study was constructed. The main elements being existing literature on the topic as well primary research conducted during the study. All this with the direction of the positivist research paradigm leading the research efforts had this research report as the desired outcome.

5.4 Sampling Plan

Sampling can be defined as a subset of the accessible population for which you wish to use for your study (Pascoe, 2014).

The study used a population of people who are employed and have a stable income into their households, this means that the “breadwinner” was the candidate of choice as they would most likely individual to make executive decisions on what is purchased and consumed in their household. According to Pascoe (2014), quantitative research requires that the sample used shares the similar characteristics of a larger population or group. Therefore, for the purpose of this study the common characteristic was the employment status of the candidate.

5.4.1 Unit of analysis

According to Khan (2014), units of measurement are associated with all numerical measurements. It is important to specify the units in your research to ensure other

readers are well informed of the numbers of your research. A sample size of 30 participants was the ideal unit of data we could have used, however the many limitations currently faced in South Africa impacted this study severely.

5.4.2 Criteria

According to Devine, Jastran, Jabs, Wethington, Farell and Bisogni (2006), women are the frequent decision makers regarding household food and nutrition, and would ideally be the demographic of focus for the study, however due to the ontological positioning of positivism research, the reality of the food waste phenomenon applies to everyone and therefore both men and women will be considered for this research (Du Plooy-Cilliers, 2014).

In terms of age group, candidates over the age 18 was also a pre-requisite as to ensure that validity and ethical considerations are met.

Candidates who are primary decision maker for food in their households was also a key element, as these individuals would have more insight into what and why their purchase habits are as is.

5.5 Data Collection Instrument

The method to be used for this research study was online surveys, with the current time we live in due to COVID 19 pandemic. Online surveys will ensure that safety health precautions are adhered to throughout the study. With the positivism research paradigm in mind, online surveys can ensure that the information is generalised and sent to a broader population (Du Plooy and Cronje, 2014). Online surveys also assure the participants that their information will be dealt in confidentiality.

The online questionnaires were created on Google Forms and were distributed via an email link and a WhatsApp message with the link sent to general consumers above the age of 18, please see below examples image 1.

<https://forms.gle/XKV53M9GFtMz2GeTA>

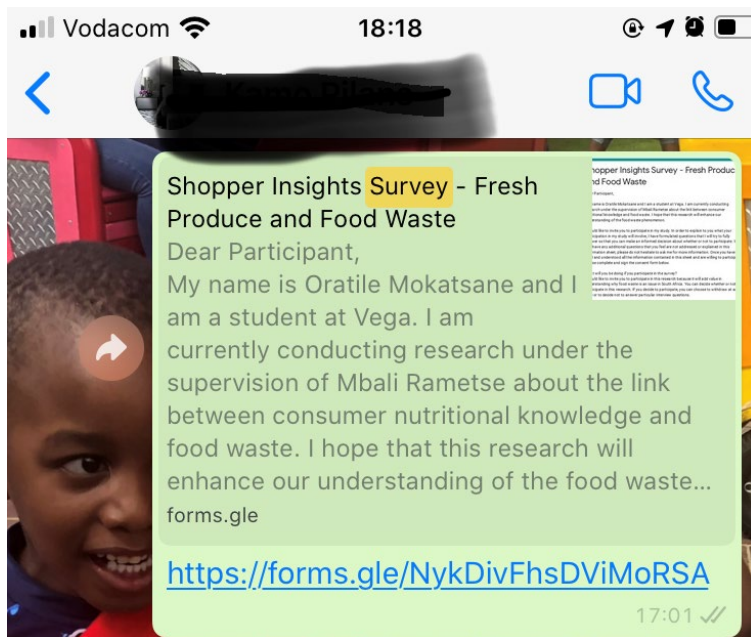


Image 1 WhatsApp request

Participants were asked to sign a consent form before participating in this research study. The consent form provided: (1) an overview of the study and its aims; (2) participants' right to confidentiality, privacy, and anonymity; (3) storage and handling of data; and (4) usage of the results.

5.6 Data Processing and Analysis

5.6.1 Quantitative Data Analysis

Descriptive statistics: When data had been received, instead of applying well established algorithms and making some predictions, the first step was to read and understand the data by applying statistical techniques, moreover, descriptive statistics (Narkhede, 2018). Descriptive statistics are brief descriptive quantities that summarize a given data set, which can be either a representation of the entire or a sample of a population. Descriptive statistics will provide a summary of the samples and the measures used in this study (Narkhede, 2018). The descriptive statistics that were used in the study include gender and age.

Inferential statistics: Inferential statistics were used to draw conclusions from the data that will allow the researcher to answer the questions initially posed regarding the link between nutritional knowledge and consumer waste. This is where the study used sample data to answer research questions (Struwig and Stead, 2017)

5.7 Research Reliability and Validity

The accurate of the score was to be verified for reliability before being examine for its validity. Reliability refers to the extent to which the same answers can be obtained using the same instruments more than one time (Babbie, 2010). Validity of research can be explained as an extent at which requirements of scientific research method have been followed during the process of generating research findings (Oliver,2010).

6. Data Analysis and Presentation of Results

As previously mentioned, the study used quantitative data collection as a method for which to acquire the data for this study. Statistical data allows us to have proof for the information we are seeking (Khan, 2014).

Data Set

A data set can be described as the collection of data for your study (Khan, 2014). The different information requested from candidates of this study included questions that could inform the study about their behaviour with fresh produce waste in their households. This information was used to understand this behaviour as well as inform the recommendations of the research.

Sample

Sampling can be defined as a subset of the accessible population for which you wish to use for your study (Pascoe, 2014).

The study used a population of people who are employed and have a stable income into their households, this means that the “breadwinner” was the candidate of choice as they would most likely individual to make executive decisions on what is purchased and consumed in their household. According to Pascoe (2014), quantitative research requires that the sample used shares the similar characteristics of a larger population or group. Therefore, for the purpose of this study the common characteristic was the employment status of the candidate.

Population

Only 12 respondents participated in the study, although the survey link was sent to 30 potential participants. The reluctance to participate could be due to the Covid 19 Pandemic and Lockdown measures in South Africa, having affecting purchasing habits of consumers. Also due to the pandemic job losses affecting many including those requested to participant.

Describing the Data

Central Points

As previously mentioned, employment status was a central point for this study, therefore can be included with the medians gender and age of this study.

Presentation of Data

The data sets were presented in forms of images as well as explanatory sections that interpret the graphics used.

6.1 Analysis of Data

As described by Bhatia (2019) data analysis is the process in which a phenomenon is broken down into its fundamental parts for it to be better understood. When data was received for this study, instead of applying established algorithms and making too many predictions, the first step was to read and understand the data by applying statistical techniques, specifically descriptive statistics (Narkhede, 2018). Descriptive statistics are brief descriptive quantities that summarise a give data set, which can be a representation of the entire sample of the population. Descriptive statistics provided a summary of the samples and measures used in this study (Narkhede, 2018). For this study, the descriptive statistics used included median (gender and age) and grouping of certain open-ended questions.

The open-ended question in the online survey contained written responses and due to the qualitative nature of the responses, content analysis was used to analyse this data to suit the study. Content analysis is a research tool used to determine the presence of certain words, themes or concept in data sets (Struwig and Stead, 2017). This allows the research to quantify and analyse the presence, meanings and relationships of such words, themes or concepts.

The below data sets were content analyses and certain themes or words where coded as to mean the same or similar thing.

WHICH STORE DO YOU PRIMARILY PURCHASE YOUR
FRUITS AND VEGETABLES?

WOOLWORTHS

MY LOCAL FRUIT AND VEG STORE

WOOLWORTHS

FOOD LOVERS MARKET

FOOD LOVERS MARKET

FOOD LOVERS MARKET

FOOD LOVERS MARKET + WOOLWORTHS

PICK N PAY

CAREIRA

LOCAL GROCER

PICK N PAY

FOOD LOVERS MARKET + WOOLWORTHS

The responses in green were coded to mean Local grocer was the preferred store although expressed differently by each participant.

6.2 Findings

This section of the research report will present an overview of the results obtained from the data collected through the online survey.

- Demographic findings

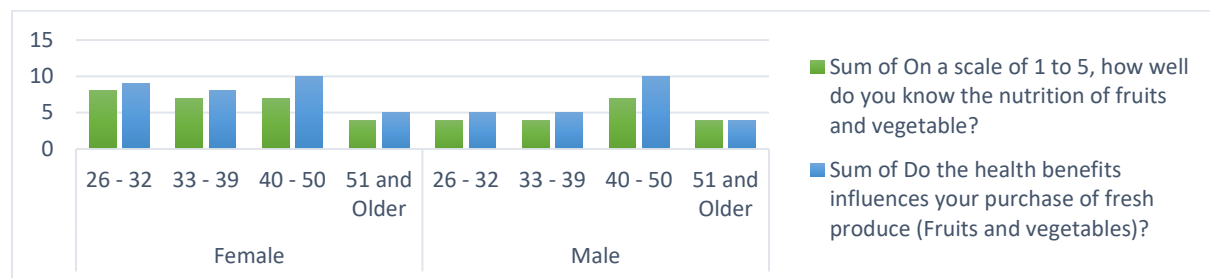


Figure 1: Age and Gender Vs Nutritional Knowledge

More women participated in this study, speaking to their role in the households as well as how they see food waste. It can also be seen that men in the 40 to 50 age group know more about nutritional knowledge of fresh produce. On the contrary to the male participants, younger women in the 26 to 32 age group is more confident in the nutritional knowledge of fresh produce. This could be due to the higher usage of social media with conversations about healthy living lifestyles in this age group being primarily through social media.

- Store preference vs Meaningful brand

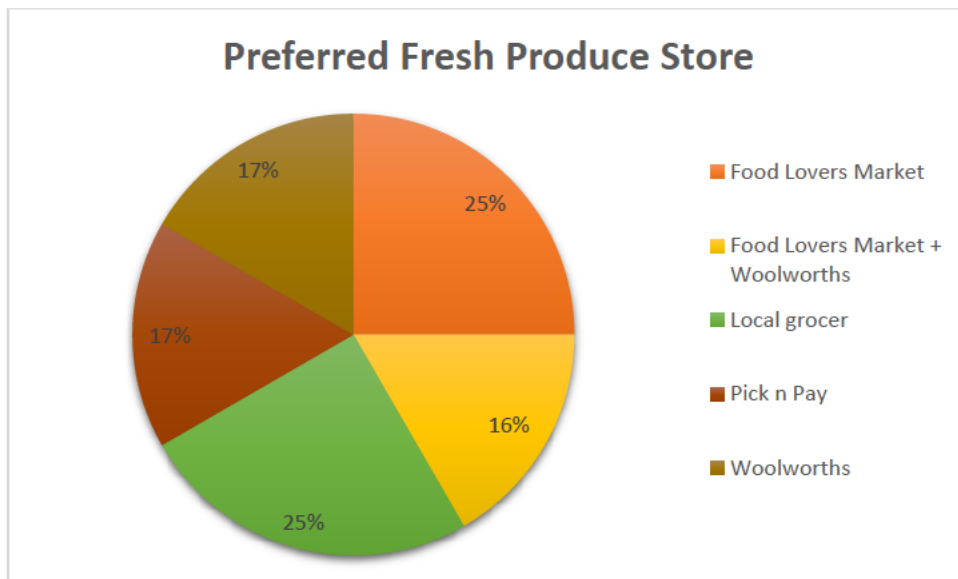
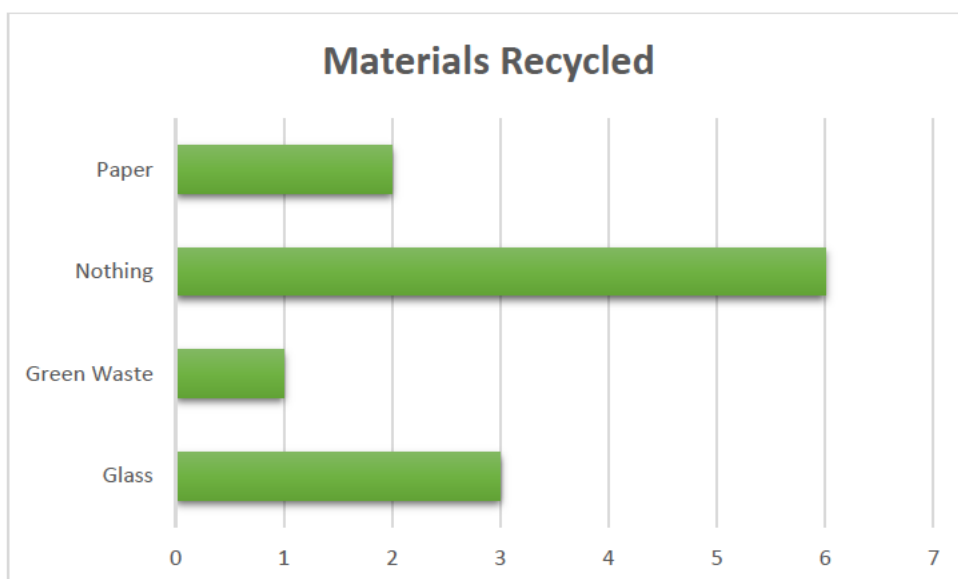


Figure 2: Preferred Store

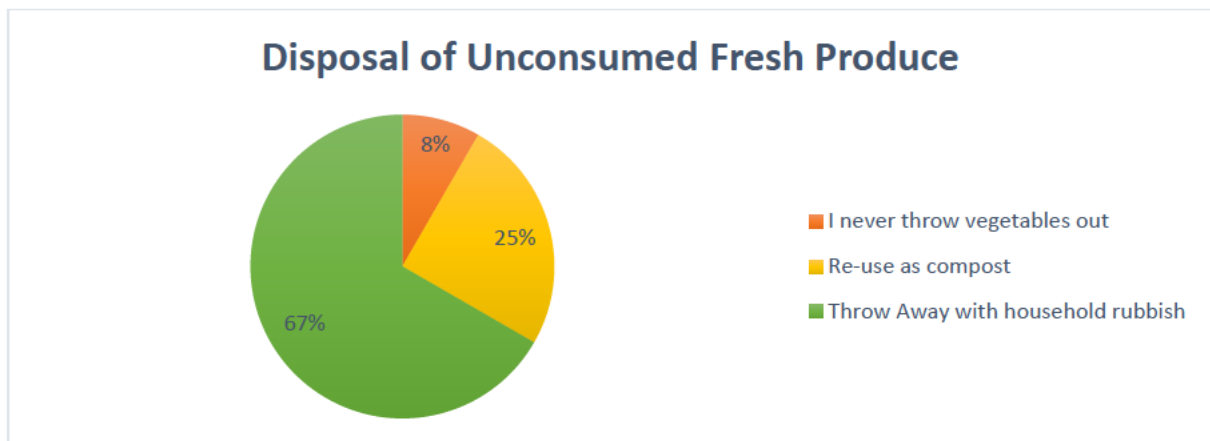
As seen above the above figure, Food Lovers Market ranks the highest preferred store for participants, with the store holding 41% of the share. With freshness and the availability of bulk fresh produce being the main reason why the store is preferred. This could also be interpreted to mean that Food Lovers Market is a meaningful brand because there are common benefits received from the store as stated by participants.

- Recycling Habits

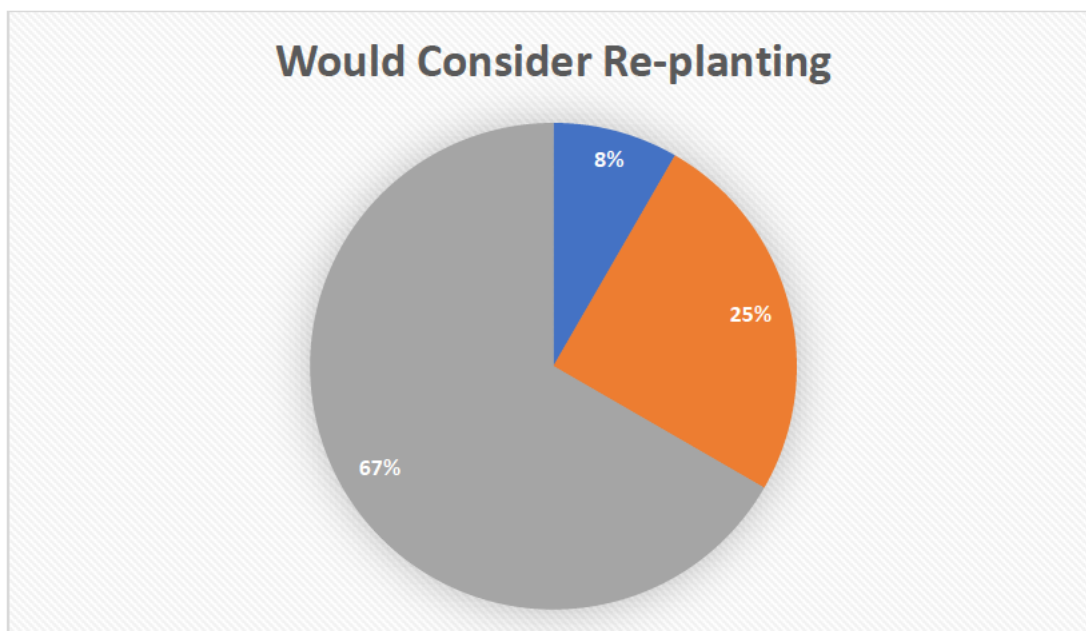


Most of the participants do not recycle in their home and the participants who said they recycled in their household mostly recycled Glass and paper.

- Consumer food waste behaviour



A staggering 67% of the participants said they dispose of their unconsumed fresh produce with their usual household waste. Where only 25% re-use as compost. This result is surprising as this speaks to the participant's lack of knowledge of other measures to dispose of fresh produce waste.



As seen above 67% of the participant said they would most likely consider re-planting unconsumed fresh produce as a means of disposing of them. Where 8% had average response to this method of recycling.

7. Conclusions and Recommendations

7.1 Ethical Considerations

Ethical aspects relevant to the research procedure ensures that the research study conducted is of high standard and produces credible results. To ensure that these standards were met, the following statement was made that the researcher will be honest, fair, and respectful toward participants. Participants' rights and dignity will also be respected, including participants' privacy and anonymity (Struwig and Stead, 2013)

7.1.1 Research perspective in South Africa

Research cannot be done in a vacuum and it can be affected by the historical social factors which are connected to how we see issues that we want to research (Struwig and Stead, 2013). Therefore, when doing research in South Africa, historical political factors do impact how we as South Africans will see the food waste phenomenon (Struwig and Stead, 2013), so with this in mind we need to be aware and consider that these socio historical factors have affected what people believe and view global issues like Food Waste. Another position with prospects for research is to analyse the relationship between South Africa being a developing country and food waste, as previously mentioned socio historical factors do present us with other issues, especially in a developing country that already has other problems to deal with like poverty and job security, and these other predominant issues might be seen as more important issues to tackle rather than food waste management issue (Ngoc Bao Dung Thi, Gopalakrishnan Kumar, Chiu-Yue Lin, 2015)

7.2 Limitations and Trustworthiness

The global pandemic COVID 19 has affected how the research will done. The time in which to collected data will affect the number of participants the study will be questioning.

7.3 Recommendations

Although the food waste phenomenon is world problem there are ways in which the government and brands like Food Lovers Market can help begin to alleviate this problem.

- Re-plant produce initiatives that could be part of the packaging/ branding of their on-shelf stock
- Government should officially regulate the food waste management and offer tax benefits for brands and companies who actively participate in the project.
- To involve consumers Food Lovers Market can create a rewards program that will motivate consumers to be green and re-plant their unconsumed produce.

This phenomenon is still here to stay for years to come, but if South Africa just takes the first step, then perhaps the whole world can follow suit in trying to alleviate Food waste.

7.4 Conclusions

Food waste is an important phenomenon to explore in the South African context, according to Oelofse and Nehman, 2013) the lack of knowledge around the topic is the barrier that prevents the problem to be addressed. Using positivism research approach seemed ideal for this study because as we have seen with the research done so far, there are many underlying socio-cultural influences on food waste. Food waste impacts other issues like food security and water waste. The multi layered system of the food supply chain is influenced differently by each part of it, and it was important to analyse the research with more straight forward research method. Food Lovers Market has developed a good brand identity for the brand; however the brand could be a more meaningful brand if they were to play a bigger role in ensuring food wastage is decreased throughout all their contact points of the food supply chain. Without disputing the current initiatives, the brand supports, Food Lovers Market could be more visible with what measures they take on to curb food waste. The food waste management program in South Africa needs to be more regulated to ensure all businesses in the food supply chain contact points are held accountable with regards to their contribution to food waste. By addressing Food Waste other issues like food security could benefit in the long-term results of food waste management.

On a consumer level Food Lovers Market has a great gap that they could exploit to create consumer awareness programs that will educate consumers on how to better handle their food waste particularly fresh produce. Furthermore, Food

Lovers Market has an opportunity to step into the healthy living space as a brand by leading their consumers to healthy lifestyles through their fresh produce, and to encourage their consumers that purchasing fresh produce is just the first step to healthy living in your own home. For food waste management programmes to work the buy in and the participation of consumers is important, this ultimately helps the whole food supply chain manage waste better.

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Appendix A

Shopper Insights Survey - Fresh Produce and Food Waste Questionnaire

1. Do you consent to the study?
2. What is your gender?
3. Which Age group do you fall in?
4. For which of the following are you the primary decision-maker about what to purchase in your household?
5. In your grocery shopping list are fruits and vegetables always on the list?
6. How often do you purchase fruits and vegetables?
7. On a scale of 1 to 5, how well do you know the nutrition of fruits and vegetable?
8. Do the health benefits influence your purchase of fresh produce (Fruits and vegetables)?
9. Do you typically make a decision about fresh produce you purchase beforehand or at the time of purchase?
10. Do you know what food waste is?
11. Do you recycle in your home?
12. What do you recycle in your home?
13. How do you dispose of your fruits and vegetables that you did not consume?
14. Would you consider re-planting the fruits and vegetables that you do not consume?
15. Which store do you primarily purchase your fruits and vegetables?
16. Why do you prefer this store for purchasing fruits and vegetables?

Shopper Insights Survey - Fresh Produce and Food Waste

Dear Participant,

My name is Oratile Mokatsane and I am a student at Vega. I am currently conducting research under the supervision of Mbali Rametse about the link between consumer nutritional knowledge and food waste. I hope that this research will enhance our understanding of the food waste phenomenon.

I would like to invite you to participate in my study. In order to explain to you what your participation in my study will involve, I have formulated questions that I will try to fully answer so that you can make an informed decision about whether or not to participate. If you have any additional questions that you feel are not addressed or explained in this information sheet, please do not hesitate to ask me for more information. Once you have read and understood all the information contained in this sheet and are willing to participate, please complete and sign the consent form below.

What will you be doing if you participate in the survey?

I would like to invite you to participate in this research because it will add value in understanding why food waste is an issue in South Africa. You can decide whether or not to participate in this research. If you decide to participate, you can choose to withdraw at any time or to decide not to answer particular interview questions.

Your inclusion in this study is purely voluntary.

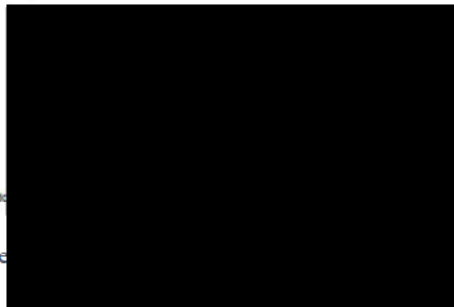
Even if you agree to participate in this study, you may withdraw at any time without having to provide an explanation for your decision.

Will my identity be protected?

Participation in this survey is anonymous. We agree to protect your identity. We will not use your name in any research summaries to come out of this research and we will also make sure that any other details are disguised so that nobody will be able to identify you.

Please feel free to contact me or my supervisor should you have any questions or concerns about this research, or if there is anything you need to know before you decide whether or not to participate.

You should not agree to participate unless you are completely comfortable with the procedures followed.



<https://doi.org/10.1111/1365-3113.12111>

1/5

Figure

Appendix B

Raw Data

Name and Surname	1. Do you consent to participating in the study	2, What is your gender	3.Which Age group do you fall in	4. For which of the following are you the primary decision-maker about what to purchase in your household? (Select all that apply.)	5. In your grocery shopping list are fruits and vegetables always on the list?	6. How often do you purchase fruits and vegetables?	7. On a scale of 1 to 5, how well do you know the nutrition of fruits and vegetable?	8. Do the health benefits influences your purchase of fresh produce (Fruits and vegetables)?
[REDACTED]	Yes	Female	33 - 39	Groceries	5	Weekly	5	5
[REDACTED]	Yes	Male	40 - 50	Groceries	5	Weekly	4	5
[REDACTED]	Yes	Female	51 and Older	Groceries	5	Weekly	4	5
[REDACTED]	Yes	Male	40 - 50	Home Maintenance	3	Bi Weekly	3	5
[REDACTED]	Yes	Female	26 - 32	Groceries	4	Bi Weekly	4	5
[REDACTED]	Yes	Female	26 - 32	Groceries	5	Bi Weekly	4	4
[REDACTED]	Yes	Male	51 and Older	Groceries	4	Weekly	4	4
[REDACTED]	Yes	Male	26 - 32	Groceries	4	Bi Weekly	4	5
[REDACTED]	Yes	Female	33 - 39	Groceries	5	Bi Weekly	2	3

█	Yes	Female	40 - 50	Groceries	5	Weekly	5	5
█	Yes	Male	33 - 39	Groceries	5	Bi Weekly	4	5
█	Yes	Female	40 - 50	Groceries	5	Once a Month	2	5

9. Do you typically make a decision about fresh produce you purchase beforehand or at the time of purchase?	10. Do you know what food waste is?	11. Do you recycle in your home?	12. What do you recycle in your home	13. How do you dispose of your fruits and vegetables that you did not consume?	14. Would you consider re-planting the fruits and vegetables that you don't consume?	15. Which store do you primarily purchase your fruits and vegetables?	16. Why do you prefer this store for purchasing fruits and vegetables?
Beforehand	Yes	Yes	Glass	I never throw vegetables out	5	Woolworths	Shelf life
Both	Yes	No	Nothing	Throw Away with household rubbish	5	My local fruit and veg store	Their fruits are reasonably priced and are nice and fresh
Beforehand	No	Yes	Paper	Re-use as compost	5	Woolworths	Always fresh
At the time of purchase	Yes	No	Nothing	Throw Away with household rubbish	5	Food Lovers Market	Most of their fruit are fresh and they have variety to choose from
Beforehand	Yes	No	Green Waste	Re-use as compost	4	Food Lovers Market	It has a variety and there is always a sale
Beforehand	Maybe	No	Nothing	Throw Away with household rubbish	3	Food Lovers Market	I can buy in bulk specials

Beforehand	Maybe	Yes	Glass	Re-use as compost	4	Food Lovers Market + Woolworths	Freshness, Availability and In-season.
Both	Maybe	No	Paper	Throw Away with household rubbish	5	Pick n Pay	It's the closest store next to me at the moment
At the time of purchase	Maybe	No	Nothing	Throw Away with household rubbish	4	Careira	Good quality, wide variety and affordable
At the time of purchase	No	No	Nothing	Throw Away with household rubbish	5	Local grocer	Cheap prices
Beforehand	Yes	Yes	Glass	Throw Away with household rubbish	5	Pick n Pay	It's a one stop shop with all fruit and veggies we normally use
At the time of purchase	Yes	No	Nothing	Throw Away with household rubbish	5	Food Lovers Market + Woolworths	The Freshness of their products