

RESEARCH PROJECT

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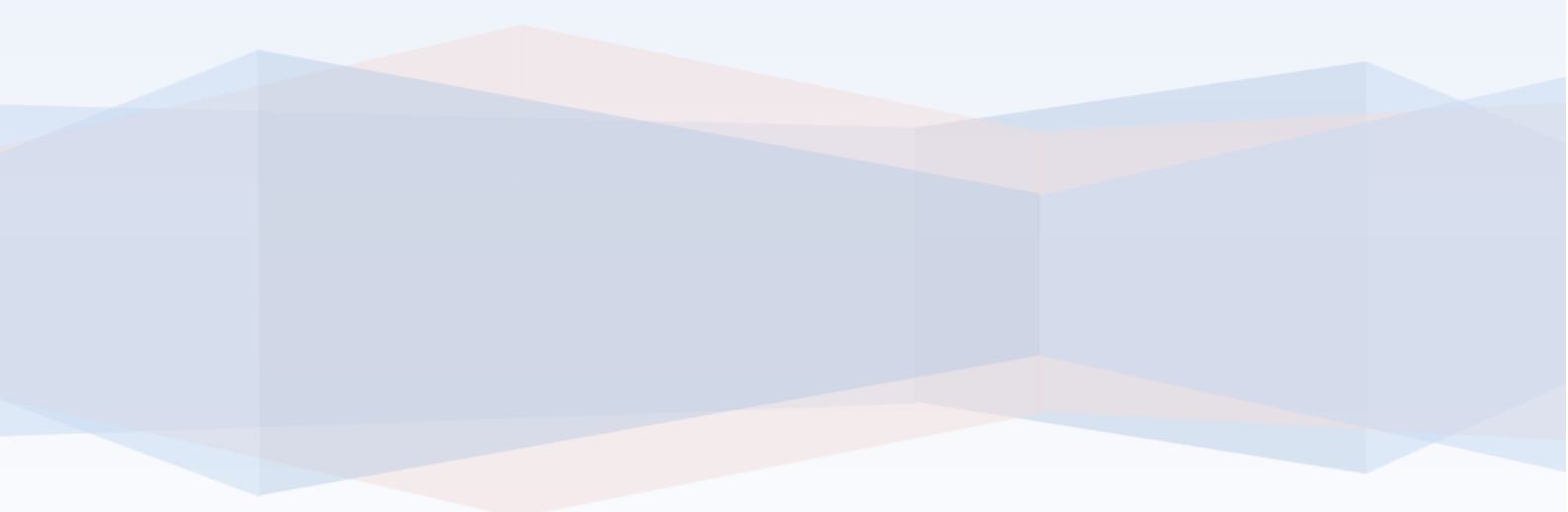
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**AN EXPLORATION OF FOOD WASTE MANAGEMENT ATTITUDES AND
BEHAVIOR: PICK N' PAY FOOD WASTE REDUCTION STUDY**

ABSTRACT

Due to its detrimental effects on things like food security, natural resources, and climate change, to mention a few, food waste is still a problem on a global scale. The majority of food waste statistics are based on estimates throughout the whole food supply chain. The retail grocery industry is in a crucial position to influence waste reduction and help South Africa reach its Sustainable Development Goal of halving global food waste by 2030.

With Pick n Pay grocery store as a case study, this research aims to explore how food waste is addressed in the retail sector, and in addition to compare how France implements their program to reduce food waste. This study will examine attitudes and behavior in South African households and the retail sector, and also look into the causes of food waste at the household level as well as specific consumer behavior factors.

The retail sector is one of the supply chain partners with a data and knowledge gap on the amounts of food waste produced and the main causes, and this proof is needed to design culturally tailored and localized consumer education programs. Additionally, this study will look into how social media usage affects people's choices towards food waste prevention in Pretoria households and retail settings like Pick n Pay.

For this research, online survey methods will be used to collect qualitative data, and the evaluation of prior literature on related subjects will also help with data collection. Using search terms like "food waste," "food waste from the retail sector," "food waste from South African retailers," "food waste management," "food waste reduction opportunities," and so on, similar studies will be found that are based on a review of national and international published literature.

Based on survey responses, this research discovered that dairy and meat were the food items that were most frequently wasted, followed by produce like vegetables and cooking oil. These findings are consistent with those of other studies. Pick n Pay has suggested sustainable living, charitable giving, and social

media awareness as ways to minimize and reduce food waste. These results relate to findings from studies carried out both locally and internationally and are not limited to this study.

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INTRODUCTION

According to Dlomo (2021), food waste study objectives are typically diverse or specialized in terms of commodities to be researched, geographic distributions, food supply chain segmentation, and data collection methodology. Some academics have looked into food waste on a worldwide scale, while others have focused on a particular country or area (Oelofse & Nahman, 2013). Some studies, on the other hand, have concentrated on certain food commodities, while others have looked at all food categories (Dlomo, 2021). Articles like those by Oelofse and Nahman (2013) and WWF (2017) looked at the entire food supply chain, while others focused on specific food components. The approach used in food waste studies differs from one researcher to the next.

This project sets the tone for the research by reviewing the literature on food waste studies in the retail industry. The literature also backed up specific research topics, such as the economically and environmental consequences of food waste disposal. This study looks at awareness initiatives that are used to educate households about the necessity of food waste management. Although Notten Bole-Rental and Rambaran (2014) caution that the household food waste estimate may be an overestimate due to the difficulties in extrapolating food waste quantities from reported organic waste quantities, this difference could also indicate that South Africa's post-consumer food waste is potentially higher than the percentage suggested in other articles.

This review will include a strategic backdrop for food waste in South Africa, waste management and food waste recovery structures, the role of social media in food waste prevention behavior, and food waste management tools. In this project, we explore the topic of our study and define the problem statement using the Pick n' Pay food waste reduction commitment as a case study. Research objectives will be established and questions will lead to the current study aim and rationale, not leaving behind the findings and recommendations based on the research undertaken.

Background of study

The retail sector's role in food waste prevention and reduction, both upstream and downstream, has been identified in the literature, and this is due to the belief that the retail sector can influence consumers, apply pressure on suppliers, and redistribute extra food (Dlomo, 2021). The amount of food waste generated and how it is managed is a highly sensitive topic for retailers, and it is largely overlooked. It is critical to understand the elements that influence waste-related behavior to reduce household food waste or consumer-related food waste (Aschemann-Witzel, De Hooge, Amani, Beck-Larsen & Oostindjer, 2015).

According to Bizcommunity (2020), retail partnerships with large suppliers can accelerate the changes needed to reduce food waste. Food waste occurs throughout the food system, from the farm to post-harvest, processing, transportation, wholesale, retailing, and consumption (Bell, 2012). According to other researchers, about 40% of household food waste occurs because there is more food cooked, prepared, and served than can be consumed, and more than half of the food is wasted because the household cannot use it on time.

Cronjé, Merwe, and Müller (2007) discovered that lack of preparation, changing plans, purchasing too much food at first, and not knowing what to do with leftovers all contributed to household food waste. Furthermore, studies have revealed that customers do not waste food irresponsibly, but rather that food waste is the result of socially driven food and eating behaviors (Aschemann-Witzel *et al.* 2015). As a result, it is critical to assess the exact scope of the problem and to find appropriate measures to scale up the food waste hierarchy to avoid or reduce food waste in the long run (Dlomo, 2021). Food waste is a developing topic in South Africa, with a variety of parties showing an interest.

Food waste is handled in the same way as most other waste kinds under the National Environmental Management Waste Act (NEMWA) (Act 59 of 2008), and there is no specific South African regulation on the subject, however, Pick n' Pay has shown an awareness of the problems related with food waste as well as a willingness to solve the issue.

Relevance of study

Many researchers have investigated the reasons for household food waste on other continents, but the picture in South Africa remains unclear. There is a lack of research on South Africans' attitudes and behaviors around food waste, and it is uncertain how much food is thrown out from households, and similarly, South Africa generates more than 9 million tons of food waste each year (Oelofse, 2018). Given the volume of household food waste generated, viable prevention techniques to reduce food waste's environmental impact are required, and to respond effectively to the food waste challenge, Oelofse and Nahman (2013) advocate a detailed study of food waste throughout the food supply chain in South Africa.

Food waste, according to Pick n' Pay (2022), is one of the most serious social, economic, and environmental issues confronting our planet. Pick n' Pay set goals in 2015 to deliver significant waste reduction shifts by 2020, including diverting 20% of their food waste from landfill, and donating any food that has passed its sell-by date but has not expired. McCarthy (2017) is the one researcher who agrees with Pick n' Pay, by mentioning that France prohibits edible food waste from retailers, and pushed businesses to instead donate food to charities.

The rationale of study

According to Bell (2012), reducing food waste is important for the environment because it keeps food out of landfills. It makes sense economically on a small scale by lowering household food bills, and it makes good business sense on a large scale by lowering disposal costs for restaurants, processors, and farmers. Finally, reducing food waste has a social impact when the rescued food is redirected to crisis food providers working to end hunger in our communities. Simple changes in daily living can help to solve this problem because reducing food waste is triples win for the economy, communities, and the environment. We are not only creating a problem when we waste food, but we are also passing up an opportunity to save money for businesses and consumers.

Reducing food waste is beneficial to the environment since putting food in a landfill is similar to putting food in a plastic bag, and the nutrients in food never make their way back to the soil. As a result, sustainable food consumption attempts to reduce economic, social, and environmental impacts while ensuring the long-term viability of natural resources. As a result, future generations' needs are not jeopardized. A decision-making process underpins sustainable consumption. It mixes the social responsibility of consumers with their demands (Vermeir & Verbeke, 2007). Social networking, according to Goldsmith and Goldsmith (2011), is effective for linking people with similar interests. Users can easily share their knowledge, create content, collaborate with others who share similar interests, and spread information throughout the online community.

Adewuyi and Adefemi (2016) argued that almost everyone nowadays is heavily involved with social media and spends far too much time on it. The government and non-government entities have used social media to encourage environmentally conscious behavior and sustainable consumption. Furthermore, information technology can aid in raising an individual's awareness of the environmental impact of their consumption and purchasing patterns. Drozd and Trager (2019), further assert that social media has been widely used to drive individuals towards sustainable behavior, ranging from emphasizing an individual's impact on the environment to driving pro-social behavior in groups. Businesses are changing the way they connect with customers due to the lower cost of social media compared to traditional media. Consumers' primary source of climate science news is the mass media, which has the potential to affect their understanding and attitudes about climate change according to Schäfer (2012).

Problem Statement

PROBLEM: In South Africa, one of the Pick n' Pay concerns is food waste management. Although various international and national studies on food waste have been conducted, they generally provide estimates for the whole food supply chain and information on food waste in specific sectors (Oelofse & Nahman, 2013; Dlomo, 2021). As a result, specific areas such as attitude and behavior in supply chains from the Retail to the household should be explored

and compared, as well as how social media usage can influence consumers' food waste prevention decision-making process. Therefore, effective strategies to reduce food waste in South Africa must be developed to assist other retailers facing the same problem, encourage South Africa to fulfill SDG, by 2030, halve the amount of food waste in the retail and consumer sectors, and reduce food losses along production and supply chain, in particular.

RESEARCH GOAL AND QUESTIONS

Research Questions

Based on the problem statement the research will explore how food waste is managed in the Retail Sector and households, through available information published by other researchers. The study will provide answers to the under-mentioned **research questions**:

- How do other retail sectors in developing countries manage food waste in the retail sector and households?
- What role does social media play in food waste behavior, and does it have a positive impact on attitudes or injunctive norms asserting exposure to food waste information?
- What strategies did Pick n' Pay and France retailers use to manage and minimize their food waste at the retail level for many years?

Research Objectives

By end of this study, these **research objectives** should be able to provide answers to the research questions:

- To determine what other retail sectors in other countries are doing to manage food waste, what tactics they are using to control food waste in their households and retail sector, and to assess if the Pick n Pay food waste reduction program can be improved
- To explore the desired role of social media and assess levels of awareness and the impact that it has on household food waste management, as well as the impact of social interaction on an individual's environmental behaviors, how does Pick n Pay manage its social media interactions.
- To assess and provide retailers with effective strategies for food waste management practices that Pick n' Pay and France retailers have used for many years to reduce food waste at the retail level so that they can help South Africa to fulfill Sustainable Development Goals by 2030.

Research Aim

The research has three aims. Firstly, to explore the studies conducted by other countries, concerning the Pick n' Pay study that was implemented to reduce food waste in the retail sector. Secondly, we explore the extent to which social media influences consumer waste reduction behaviors within and across sectors, as well as whether interaction consistency exists. Thirdly, we explore how Pick n' Pay and France manage to minimize food waste at the retail level for many years and recommend that new strategies be developed so that other retailers get encouragement.

In terms of the first aim, we attempt to study how France became the world leader in food waste reduction, as well as research other retailers who have taken part in food waste reduction initiatives. According to McCarthy (2017), France emerged as a model of food sustainability after becoming the first country to prohibit edible food waste from supermarkets in 2015, forcing stores to instead donate food to charities. On the production side, French farmers adapted to climate change, and their government encouraged forest growth, which is essential for keeping soil quality and water integrity.

The second aim is to find out how retailers use social media to reduce food waste in the supply chain and the household. Social media engagement has been demonstrated to influence behavior in earlier studies, according to Young, Russell, Robinson, and Barkemeyer (2017), and there are three initiatives with the message to encourage food waste reductions. Because of their dominance in the social media sphere, focusing on Facebook, Twitter, and Instagram will determine if it is effective, and they could provide the ability to apply behavioral interventions on a much larger scale, as well as improve behavior change on environmental issues and food waste.

The third aim is to provide households and other retailers with the recommendation of developing effective strategies that would assist in food waste management practices that Pick n' Pay and France have used and implemented for many years to reduce food waste at the retail level. Because

the research design must be flexible to facilitate knowledge of an unknown topic of research, data replication (reliability) and accuracy (validity) are usually not scientific requirements in exploratory studies (du Plooy-Cilliers *et al.*, 2014). As a result, in this study, we will use qualitative methods such as surveys and existing literature in exploratory studies.

LITERATURE REVIEW

Food Waste Management

Food waste is "any food, and inedible parts of food, removed from the food supply chain to be recovered or disposed of (including composted, crops plowed in/not harvested, anaerobic digestion, bioenergy production, co-generation, incineration, disposed to sewer, landfill or discarded to sea)" (DEFF & CSIR 2019). Food waste is defined differently by different academics because there is no universal definition (Dlomo, 2021). However, the terms "food loss" and "food waste" are commonly used in scholarly publications, and the context in which they are used depends on the researcher's study interests. Food waste or loss, according to Gustavsson, Cederberg, Sonesson, Otterdijk, and Meybeck (2011), is defined as any food product intended for human consumption that is wasted or lost in some portions of the food supply chain, even if it is redirected to other phases of the food waste management strategy, such as animal feed or energy generation.

According to the authors, despite having limited access to resources and technology, small farmers dominate the output. The majority of the time, farmers concentrate on production tasks and exhibit little enthusiasm for the post-harvest and marketing processes, which are mostly handled by middlemen and traders. Parfitt, Barthel, and Macnaughton (2010) further explain that although many of these marketplaces meet the needs of establishments such as supermarkets, and fast food retailers, their principal markets include wholesalers and wet markets that are infamously disorderly. These farmers do not invest in new technology or raise yields by increasing production inputs since they have limited access to financial resources and low profits from agricultural operations (Parfitt *et al.*, 2010)

Meaningful Brands

According to Martin-Rios, Demen-Meier, and Cornuz (2018), Food waste is a global problem having negative effects on the environment, society, and

economy. A deeper awareness of subjects such as brand identity, meaning, image, and reputation will assist brand owners to communicate more effectively with stakeholders such as shareholders, customers, employers, and others as the food industry attempts to build distinctive identities.

Food waste impacts

Food waste has several negative implications, including social, environmental, and economic impacts. Therefore, the magnitude of food insecurity does not justify the magnitude of food that gets wasted globally, and in South Africa, most of the produced food gets wasted whilst a few million people go to bed hungry (WWF, 2017). The South African Constitution provides for access to food and sufficient nutrition yet food poverty, hunger, and malnutrition in various forms remain a challenge (WWF, 2019). Even though significant progress has been made in the fight against hunger, Africa's malnutrition rate is over average. The percentage is alarming because it is higher than the global average. Increased efficiency levels in the food supply chain would aid in increased food security by reducing food waste. To make this a reality, efforts must be made to comprehend the underlying causes of food waste (Dlomo, 2021).

Pick n' Pay (2021) states that considering that food security is a major concern in South Africa, waste and food waste are a major emphasis for them, and they kept more than 60% of their waste out of landfills. They further mentioned that they raised R39 million for FoodForward SA by selling over 1.6 million reusable bags and donating the extra food. The Feed the Nation Foundation generated R136 million for hunger relief initiatives in a year in which unemployment and poverty rose rapidly, enabling the distribution of more than 28 million meals to disadvantaged families throughout South Africa (Pick n' Pay, 2021). This was accomplished by a team effort from their employees, customers, suppliers, rival corporations, and foundations both locally and globally.

Food production and supply chain processes and impacts

Changing environmental conditions also hampers sustainable food systems, and the effects of climate change will make it impossible to produce the same amount of food in the future. Food production will have to treble globally by 2050 to support the expanding population, according to estimates. South Africa, too, is concerned about its ability to feed a population that is predicted to rise to 73 million by 2050 (WWF, 2019). Greenhouse gases are generated throughout the food supply chain, and these are climate change precursors that pose a substantial environmental threat. Land disposal is still the most feasible and cheapest alternative for waste management in South Africa, which is a cause for concern (Dlomo, 2021).

In developing countries, unsustainable food systems have a huge economic impact, and the cost of edible food waste along the food supply chain is higher. This wastage and loss occur primarily early in the food supply chain in South Africa. A study conducted by WWF (2017) in Rustenburg, North West province, discovered the weight of food waste as a percentage of the total weight of domestic garbage collected in different households. Although it is well recognized that low-income groups are prone to consume less in general, research on food waste flows in Enkanini informal settlement, Stellenbosch, Western Cape, revealed that informal settlement families generate more food waste per week than better-off households.

This could be caused by insufficient storage facilities, such as a lack of refrigeration, and a conservative estimate of the cost of embedded energy wasted as a result of food waste is more than a billion annually, based on a combination of diesel and power costs. According to Dlomo (2021), this shows a loss of food that should sustain the rising population, as well as a loss of resources used to produce the food and the emission of greenhouse gases when the food is transported and disposed of.

The findings from a study conducted by Gustavsson *et al.* (2011), argued that the amount of food waste generated varies by food product and geographic

distribution, for example, developing countries experience more food waste at the earlier stages of the food supply chain, whereas developed countries experience more food waste at the later stages of the food supply chain. Developing countries usually lack appropriate infrastructure, such as efficient harvesting technologies, transportation, and warehouses, which, when combined with climate conditions, leads to increased food waste at the start of the food supply chain. Fruit, vegetables, and cereals are the main types of food waste in South Africa, according to Oelofse and Nahman (2013); they estimated the quantity of food loss at each step of the food supply chain in South Africa.

Cronjé, van der Merwe, and Müller (2018), on the other hand, argue that there is a notable lack of research into what types of food are mostly wasted in households, and they observed that bananas and apples are the most wasted fruits, while tomatoes and potatoes are the most wasted vegetables, based on their study, which found that bananas, apples, and grapefruit led to a moderate increase in fruit consumption of 6% in South Africa, and tomatoes and potatoes were the most wasted vegetables. As a result, it's not surprising that the most often consumed fruits and vegetables are also the most wasteful (Cronjé *et al.*, 2018).

Therefore the market phase of the food supply chain focuses on food waste from the grocery retail sector, which includes food sold to customers for consumption off-site, with distribution covering food waste that happens during distribution to markets, and losses that happen during the time of wholesale and retail markets. Storefronts such as convenience stores, supermarkets, superstores, and hypermarkets are just a few of the store formats that make up retail as argued by Dlomo (2021). The retail industry has been defined as "store formats" (hypermarkets & supermarkets) that sell food for consumption outside the storefront. Despite the grocery retail sector's relatively small contribution to food waste when compared to other sectors of the supply chain, the literature highlights the grocery retail sector's role as important for food waste avoidance and reduction, both upstream and downstream, and this is due to the belief that the retail sector can influence consumers, exert pressure on suppliers, and redistribute excess food.

Packaging, labeling, and recording impacts

Oelofse and Nahman (2013), argued that most retailers were not recording their waste, which led to unrecorded in-store waste, defined as food waste that is disposed of but not recorded due to quantification mistakes in unpackaged food waste and non-recording of food waste components. If this waste was recorded, it would have been pre-store or in-store waste, but the fact was that the participating retailers' bins were full of pre-store, in-store, and unrecorded food waste. Dlomo (2021) commented that product shelf life has been highlighted as one of the leading sources of food waste, and it varies depending on factors such as product type, packaging, and refrigeration quality.

Products with a short shelf life are frequently rejected due to degradation caused by too much time spent traveling through the food supply chain. Fresh produce's shelf life may already be affected when it arrives at the retailer after a long journey (Dlomo, 2021). Food waste is a serious problem that stems from worries about freshness and cosmetic perfection in terms of weight, shape, size, and look of fresh produce (Cronjé *et al.*, 2018). Consumers are typically hesitant to buy "imperfect" produce and choose retailers depending on the quality of fresh produce they offer. This behavior leads to the wasting of good food and the production of unneeded food waste. Even though low-quality fresh fruit is frequently rejected at the farm gate, retailers are in a unique position to employ waste-reduction initiatives.

Limited buyer flexibility and over-purchasing associated with packing size, according to FUSIONS (2014), is another contributor to food waste generation, both at the retail and consumer level, as packed products cannot be sold if one of the items in the package is damaged. For example, if one of the fruits in a pack were spoiled, the client would avoid purchasing that pack. Packaging flaws caused by poor handling by personnel and customers when shopping, according to Lebersorger and Schneider (2014), were highlighted as one of the main causes of food waste development in their research.

According to Pick n Pay (2021), as a retailer with millions of customers and thousands of suppliers, they are conscious of their reach and the environmental impact they have along their value chain. They also stated that they are focusing on energy, refrigerants, water, waste, and packaging as part of a broad range of aims and solutions to lessen their effect. A sustainable food system faces significant obstacles due to climate change (Pick n' Pay 2021). They are taking action to identify climate-related risks and opportunities to increase their resilience to climate change over the long term, building on their contributions to the CDP.

Consumer behavior

Studies of the composition of hospitality garbage around the world have revealed that considerable volumes of food are wasted and discarded, even though there is a significant possibility to prevent food waste at the household level (Oelofse and Pienaar, 2016). Food waste in the hospitality industry, as argued by Porpino (2016), is a neglected topic within the field of consumer behavior. When one considers that this situation occurs towards the end of the food chain, wastage at this stage entails a loss of resources required for food production.

Food waste reduction strategies impacts

According to published literature, one of the triggers for the accumulation of food waste in the grocery retail sector is a lack of training and awareness of food waste prevention and reduction strategies, such as proper handling and efficient food item rotation which is supported by Dlomo (2021). Also, FUSIONS (2014) admits that the retail industry has a high level of staff turnover and a large number of part-time employees, indicating that competent workers are in short supply. In this case, the cost of wasting food could be less than the expense of training employees in waste control strategies.

As employee attitudes toward food waste reduction strategies were highlighted as an issue by Dlomo (2021) some of the respondents, stated that their employees were uninterested in these initiatives. However, the majority of these

participants expressed confidence in training as a means of changing employees' behavior and, as a result, reducing food waste. Goodman-Smith, Miroso, and Skeaff (2020) echoed this belief in training, with the retail compliance manager recommending ongoing training to get staff to respond positively to waste management techniques. Customer ignorance of technical features of a product, such as when a fruit or vegetable is ripe, how to prepare it, and how to use it as an ingredient, may result in further food waste (FUSIONS, 2014).

There is general agreement in the literature that promotional actions, both at the retail and consumer stage, contribute significantly to the development of food waste. Promotions induce consumers to buy too much food, claims Dlomo (2021). The "buy one, get one free" policy and big package deals are two examples of this. According to research by Dlomo (2021), 75% of the participants overspent their budgets during the preceding three months to take advantage of sales. Some also complained that portions and packaging were larger than necessary.

Poor forecasting and insufficient information exchange between grocery retailers and their suppliers, according to Goodman-Smith *et al.* (2020), contribute to the production of food waste. Food waste resulting from promotions happens in the grocery retail industry as well because stores receive too many items during promotions (Dlomo 2021). But new data management technologies, like blockchain, can help with order forecasting by reducing the discrepancy between expected and actual sales.

Such technology enhances inventory control and tracks and traces items' information across the food supply chain (Marin *et al.*, 2019). Influencing consumer behavior is critical because consumer food waste behaviors are complex due to the interaction of numerous home activities.

According to social impact theory, people can learn from one another and change their attitudes and behaviors as a result (Goldsmith & Goldsmith, 2011). Households may be able to reduce their environmental impact by attempting to

use this to change pro-environmental behavior. This is based on the notion that people are more likely to act if someone in their social network imparts knowledge. The likelihood that the information will affect behavior increases with the strength of the network.

Social Media Influence impacts

Young *et al.* (2017) argued that social media contact has been shown to influence behavior in previous studies, and there are three programs with messaging to drive food waste reductions. The first is a social influencer intervention that retailers will implement on their Facebook pages to encourage customers to interact with them. Through the retailer's print/digital magazine and e-newsletter, two extra information interventions can be used as a comparison. Three, a national survey tracker that will monitor consumers' self-reported food waste one month before, two weeks after, and five months after interventions (Young *et al.*, 2017).

Customers who saw the Facebook intervention had a substantial difference in the frequency with which they threw food away. However, unlike the electronic newsletter, there was no obvious reduction in the frequency of food waste when compared to baseline levels, then participants who saw the Facebook intervention led to a significant reduction in the amount of food waste as Young *et al.* (2017) confirmed through their study. When compared to their original food waste quantity, the amount of food waste reduction slowed down and now it has remained considerably different from before social media engagements.

Promotional activities play a substantial impact on the development of food waste, according to the literature, both at the retail and consumer level. According to Dromo (2021), promotions encourage consumers to buy too much food, such as the "buy one, get one free" policy and massive package deals. In a study done by other authors, the majority of participants over-purchased in the preceding three months to take advantage of an offer, and several pointed out that the portion/packaging was greater than necessary.

Poor forecasting and inadequate information sharing between grocery stores and their suppliers, according to Dlomo (2021), contribute to the development of food waste. Food waste happens in the grocery retail sector as well, as a result of too many items being distributed to stores during promotions. Emerging data management technology like block-chain, on the other hand, can help with order forecasting by reducing the gap between expected and actual sales. According to Marin, Marin, and Vidu (2019) such technology enhances the inventory management by tracking and tracing product information across the food supply chain.

Policy and Legislation impacts

Dlomo (2021) mentioned that policy and legislation are as important tools for reducing food waste in the retail sector, and this is due to complications with date labeling, which make it difficult to redistribute food for re-use by those in need. While some nations have adopted legislation to allow for the donation of food that has been affected by date labeling, most countries lack such policy and legislation. Date labeling is an important part of the retailing process for merchandising. The objective of date labels like "sell-by" and "best-before" is to assure product freshness for consumers and to help retailers with stock rotation.

Date labeling is regarded as one of the primary contributors to food waste globally; according to Dlomo (2021) at the latter stages of the food supply chain, market, and consumer. The majority of this is due to a misunderstanding of "sell-by," "use-by," and "best-before" dates. Grocery stores frequently remove items that are approaching or have passed their "sell-by" and "best-before" dates from sales and discard them.

Food that is still in good condition is rejected rather than donated in the grocery retail industry, according to literature, because retailers are concerned about corporate image implications and prosecution if a later consumer becomes ill after eating that food (Dlomo, 2021). Retailers in countries where there is no legislation encouraging food redistribution are hesitant to donate products that have passed their "best-before" date to charitable organizations. Even though

the products are safe to eat, businesses are concerned about legal action if the charity recipients become ill (Dlomo, 2021).

Under certain conditions, some developed countries have enacted legislation to encourage the redistribution of products that have passed their "best-before" dates. However, putting this into effect remains a challenge because there is a lack of clarity in terms of how to properly manage such products. After all, authorities do not provide extensive formal guidelines on the matter. As a result, shops are wary of donating these goods because of the potential for issues (FUSIONS, 2014).

According to WWF (2017) in South Africa, there is no specific legislation that governs food waste, and despite this, the food business has a reputation for being overly controlled, resulting in the rejection of otherwise viable items. Food waste is regulated by waste or waste management legislation in general, and environmental health practitioners, the Department of Water and Sanitation, and the Department of Environmental Affairs enforce this Act. The National Environmental Control "Waste Act 59 of 2008" and the National Environmental Management "Waste Amendment Act 26 of 2014" are policies, legislation, and regulations that govern the management of food loss and waste.

Dlomo (2021) suggested that civil and agreement-based initiatives are inclusive approaches that entail engaging stakeholders and equipping them with information and awareness, and the goal is to urge stakeholders to accept environmental responsibility and put pressure on businesses and governments to improve their environmental performance. Environmental education, public involvement, and media exposure are examples of platforms that can be used to accomplish this (Dlomo, 2021). In the case of food waste, such initiatives include the WWF SA Market Institute's food waste program, which brings together key stakeholders from the hospitality, retail, and food service sectors to promote data transparency and a better understanding of how to speed up the adoption of waste measurement and reduction strategies (WWF, 2020).

Socio-Cultural Theory (SCT)

Lantolf, Thorne, and Poehner (2015) used the principles and structures of Socio-Cultural Theory (SCT) to investigate this problem. They further argued that human mental functioning is fundamentally a mediated process that is organized by cultural artifacts, activities, and concepts, and that within this framework, humans are understood to use existing and create new, cultural artifacts that are everywhere.

Ramukhwatho (2016) counters Lantolf *et al.* (2015)'s argument by conducting a study to explore households' beliefs, attitudes, and behaviors toward food waste, and find that multiple behaviors cause food waste, such as behaviors related to household shopping practices, such as the way households plan their shopping, behavior during food preparation, food storage, and food consumption. In another argument WWF (2017) stated that while companies realize the need to identify, measure, and manage the problem of food loss and waste, the strategic value of implementing food loss and waste prevention efforts is less clear.

Although most businesses assumed that the majority of the food was wasted elsewhere in the supply chain, this was not the case in their industry. When asked if consumer education was being provided to help enhance understanding of packaging innovations, cooking and storage tips, or date labels to reduce waste levels, they frequently said no (WWF, 2017).

Ramakhwatho (2016) was further supported by a study, which revealed that a large percentage of respondents 'mostly' or 'always' checked the food they had in the house before going shopping. Food waste prevention, according to Dlomo (2021), will not only save money for households, but will also have larger economic, social, and environmental benefits, as well as addressing food and water security concerns and contributing to the creation of more sustainable food systems.

Cronjé, van der Merwe and Müller (2018) argue that repurposing meal leftovers to make a new or different meal takes more effort, and consumers in their study

said it was easier to use bread for sandwiches rather than leftovers because the latter must be stored properly and cannot always be utilized as is.

When Parizeau, Massow, and Martin (2015) recognize that social, cultural, economic, and institutional variables influence food waste, the issue becomes more challenging and concluded that to keep homes from wasting food, customers should not buy too much food and end up throwing it away. A different approach to this study looks at several studies on household food waste that identified the reasons for waste as cooking too much, food not used in time, special offers, food going moldy, plate leftovers, and food that looked, smelled, or tasted bad (Ramukhwatho, 2016). Other issues raised by CSIR (2019) include date codes, notably sell-by and expiry dates, forgotten goods in storage, packaging that cannot be resealed and provides poor protection, slow consumption, and pests.

Social Exchange Theory (SET)

Cropanzano and Mitchell (2005) introduced another argument of Social Exchange Theory (SET) which is defined as one of the most important conceptual frameworks in organizational behavior, as a result, model tests and implementations rely on an incompletely stated set of ideas, and there are a variety of resources, such as love, status, information, money, commodities, and services, but organizational scientists have yet to fully recognize the majority of them.

Theory of Planned Behaviour (TPB)

Teoh, Koay, and Chai (2021) introduced the Theory of Planned Behaviour (TPB) to explain human behavior from a social-psychological perspective, expanding on the Theory of Reasoned Action. The TPB is currently one of the most widely used and influential models for predicting human social behavior, with the addition of perceived behavioral control as a predictor of intention to carry out behavior, in addition to attitude and subjective norms, because most people do not have complete voluntary control over their actions, and in other words, the individual's capacity and the external environment determine whether or not a

behavior may be successfully carried out while believing that social media usage has a significant impact on attitudes and injunctive norms.

Social media contact can influence behavior by delivering messages that support food waste reduction. The jury is still out on whether social media can influence behavior change and hence reduce food waste, according to Young *et al.* (2017), but the evidence must be gathered and several intervention strategies are explored. The argument continues, as Cumming (2013) adds that research is about building a strong evidence base and that it is vital to share both positive and negative findings.

Some companies are also utilizing social media to teach customers how to reduce food waste by repurposing leftovers and properly storing food. Training and awareness, according to Dlomo (2021), are the foundations of food waste prevention and reduction by both retailers and consumers. Raising awareness is also recommended as a platform for changing the attitudes and behaviors of retail employees at all levels to strengthen their commitment to reducing food waste in their stores. Raising customer awareness, according to other sources, can affect consumer behavior and demand, and knowing the social, economic, and environmental consequences of food loss can help all food supply chain stakeholders increase their commitment to waste reduction.

Finding common ground in attitudes and behaviors towards food waste will be made easier by the aforementioned theories. By examining socio-culture, we will be able to determine whether or not human mental functioning is fundamentally a mediated process that is structured by cultural artifacts, activities, and concepts, and whether or not people know how to use previously existing frameworks and create new, universal cultural artifacts.

RESEARCH PARADIGM

Thomas Kuhn, a historian, is credited with coining the term "paradigm." It is defined as a "group of beliefs and demands that impact what should be studied, how research should be conducted, and how results should be interpreted" for scientists in a given profession (du Plooy-Cilliers, Bezuidenhout and Davis, 2014). Common Research Paradigms include Positivism, Interpretivism, and Critical realism. Positivists assume that there is only one reality that can be measured and understood, hence they prefer to conduct research using quantitative methods and usually provide a hypothesis that can be validated or denied through statistical data analysis (Kivunja and Kuyini, 2017). The existence of a relationship between two variables is more important to positivism than the reasons for it.

Alharahsheh and Pius (2020), assert that with a subjective viewpoint and via the critique of positivism, interpretivism emerged. It is more interested in complex variables and context-related aspects, and it views people as distinct from physical phenomena because they can't be studied in the same manner as physical phenomena (Alharahsheh and Pius, 2020). As a result, research in the social sciences must be distinguished from research in the natural sciences.

According to Carson, *et al.* (2001), pragmatics frequently integrates positivist and interpretivism concepts in the same research effort, using both qualitative and quantitative methodologies to study distinct aspects of a research subject. They believe that the best research procedures are the ones that answer the research issue the best. A paradigm is made up of numerous positions that are categorized as Epistemology position, Ontology position, metatheoretical position, methodological position, and axiological position (Alharahsheh and Pius, 2020).

Ontology can be defined as the nature of reality as stated by (Hudson and Ozanne, 1988), hence it is primarily concerned with the phenomenon's nature of existence, and the process of determining the truth or solution to a research issue by indicating existing types of knowledge. As stated by Carson, Gilmore,

Perry, and Gronhaug (2001), epistemology is addressed how a researcher intends to uncover knowledge to reach reality and is also considered an internal factor within the research as it is associated with how a researcher can distinguish between the right and wrong, and how they view the world around them.

Because theory is inseparable from research, and a good research study is usually built on a sound theoretical foundation, metatheory refers to investigating the theoretical lenses that provide direction to research in a particular field of study. Metatheory helps us look at the underlying assumptions and implications of particular theories, and it helps us refine our thinking so that we can come up with more sophisticated ways of describing and explaining phenomena. The theory is used for a variety of purposes, including describing and explaining phenomena (du Plooy-Cilliers *et al.*, 2014).

The methodology is a comprehensive phrase that refers to the study design, methods, approaches, and processes followed in a well-planned investigation to learn something new (Keeves, 1997). Data collection, participants, instruments applied, and data processing, for example, are all aspects of methodology, and to summarize, the process expresses the logic and flow of the systematic methods used to undertake a research endeavor to learn more about a study problem, while detailing the assumptions made, as well as the constraints discovered and how they were overcome, by focusing on how to learn about the world or a specific area of it according to Moreno (1947).

RESEARCH APPROACH AND METHODOLOGY

To fulfill the research objectives of this study and provide justification for the methodological decisions made, this section discusses the research approach and methodology.

Research Methodology

The research, aimed at exploring food waste management practices in the Pick n Pay grocery retail, follows qualitative methods to help us build, create theories and conceptual frameworks, and, to put it another way, generate assumptions. The notion that social reality is in constant change and is impacted by how people see reality on a personal level is known as interpretivism. Interpretivism relies on qualitative research to gain a comprehensive understanding of multiple realities (Lewis, 2003). Focus groups, surveys, and in-depth interviews are examples of these methodologies that can be employed; this study will employ an online survey as its primary data collection method. Du Plooy-Cilliers *et al.* (2014) define a population as "the complete group of people or entities from whom information is desired." We can determine what they have in common, once we know who to go to for answers.

To determine our sample size, we must review our question and problem. We'll also distinguish between the target and accessible populations, and we'll produce a list of people we'd like to contact or a list of the objects we'll be investigating at. To select a representative sample for a quantitative study, we'll need a list of all the individuals or items in the population, which is referred to as the sampling frame. When determining who the entire population is or gaining access to the full population is practically impossible, non-probability sampling is used. We will use a non-probability sample to complete our study because we may not always have access to a sampling frame that encompasses the full population.

Methodological Approach

We will employ qualitative methods because of the nature of this study, which may be considered as a process of reducing our uncertainty regarding influential theories or themes based on our problem. Our research will be exploratory, as we will be using publicly available content, and an online survey as primary data to address our research questions. Furthermore, research has indicated that customers do not irresponsibly waste food, but rather result from socially influenced food and eating behaviors (Aschemann-Witzel *et al.* 2015). As a result, understanding the true scope of the problem and determining appropriate methods to scale up the food waste hierarchy to avoid or reduce food loss over time is crucial (Dlomo, 2021).

The online survey questionnaire will be attached, as appendices and secondary data will be covered in the table below:

Research Objective	Methodology	Author Reference
How do other retail sectors in developing countries manage food waste in the retail sector and households?	Analyzing existing (secondary) France and Global food waste management data; Analyzing online survey (Primary) data	DEFF & CSIR. 2019; Consumer Goods Council of South Africa. 2020; Bizjak and Barczak, 2018; Condamine, 2020; Bizjak and Barczak, 2022; Condamine, 2021; WWF. 2017; Online survey.
What role does social media play in food waste behavior, and does it have a positive impact on attitudes or injunctive norms asserting exposure to food waste information?	Analysis of existing (secondary) social media role and food waste attitude and behavior data; Analyzing online survey (Primary) data	Inderscience Enterprises Ltd. 2017; Young <i>et al.</i> 2017; Goodman-Smith <i>et al.</i> 2020; Strotmann <i>et al.</i> 2017; Kliaugaitė and Kruopienė, 2018; Dlomo, 2021; Online survey.

What strategies did Pick n' Pay and France retailers use to manage and minimize their food waste at the retail level for many years?	Analyzing existing data (secondary) on France and Pick n Pay programs; Analyzing of online survey (Primary) data	Pick n Pay sustainable living report. 2021; Pick n' Pay, 2022; Zero Waste Europe. 2020; Condamine, 2020; Dlomo, 2021; UN Department of Economic and Social Affairs. 2021; Condamine, 2021; DEA, 2019; Goodman-Smith <i>et al.</i> 2020; Natural Resources Defense Council. 2015; Online survey.
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Population and Sampling

To support the argument, the literature review was conducted with an online survey directed to Pick n Pay consumers. The population was based within Pretoria to construct an online survey to accommodate other populations that will not be able to participate in face-to-face engagements due to COVID-19. The non-probability sampling method entails selecting subjects, which will supply the study with valuable data. Participants were chosen for convenience sampling depending on their availability and desire to participate (Creswell, 2014). The purpose of this study was to gain a comprehensive understanding of how food waste is managed in the retail industry by combining readily available literature with non-probability convenience sampling methods among Pick n Pay consumers. As a result, the sample size of 4 participants will be considered adequate for this study, as they are selected based on their geographical proximity to the researcher and their willingness to participate. Literature that is easily accessible will also help in comparing what France has already accomplished—they are recognized as the world leader in food waste

management initiatives—to what Pick n Pay is doing with its reduction techniques and commitment to sustainable living.

Data collection methods

The definition of qualitative data by QuestionPro (2021) is data that approximates and characterizes. Therefore, in this study qualitative data will be gathered using online survey methods. In addition to allowing the researcher to create criteria via which massive data sets can be observed, this type of data collection is crucial in finding the specific frequency of traits or qualities, and it will aid in addressing research questions. Qualitative data relates to people's feelings, perceptions, and emotions. It also assists in understanding the language used by consumers so that issues may be resolved quickly and effectively.

The assessment of existing literature on similar topics will also assist in data collecting. This study will be based on a review of national and international, published literature, and similar studies will be identified using search terms such as "food waste," "food waste from the retail sector," "food waste from South African retailers," "food waste management," "food waste reduction opportunities," and so on in EBSCO Host and Google Scholar.

The background data on food waste in the retail sector, including food waste drivers, management systems, preventative and reduction methods, and the most frequently thrown food categories, will be gathered through the literature study. The reviewed article will also include data and information on food waste from the retail business, which may be compared to the conclusions of this study. This information will aid in data collection and help to build questionnaires for online surveys.

Data analysis method

Deductive analysis of qualitative data is done using a structure that has been predetermined by the researcher. The data analysis will be rapid and simple because it will be guided by questions. Since the collected data will largely be

unstructured, it will be crucial for the researcher to transpose the data. One of the best ways to organize the data is to revisit the research objectives, organize the data following the questions posed, and then arrange the research objectives in a table so they are visually clear. Setting up appropriate codes for the data that has been obtained is crucial because it is one of the finest ways to compress the huge quantity of data that has been gathered. Deriving theories from relevant research findings is a vital process in qualitative data analysis, and the Codes will be produced per the literature review.

ANALYSIS OF DATA AND FINDINGS

A web-based questionnaire and online tools were used to collect data in July 2022 (Microsoft Forms). To support the questionnaire design, a pilot study involving three Pick n' Pay customers was undertaken. The authors based on earlier research designed the items. We made an effort to consider the hardship, sensitivity, and importance of responses. The survey was created in English and made available to consumers through online channels (Email & Whatsapp).

The survey was structured in 24 questions; the first group (composed of two questions) are related to respondents' accepting to take the survey and to determine that they are Pick n' Pay consumer; two questions belong to the second group and are based on demographics; nine questions were composed base on the food waste impact; four questions we composed base on the food waste reduction strategies; four were composed base on the social media influence; the last one is composed by three questions aimed at policy and legislation.

A link was given to potential respondents, and a total of 6 respondents—5 of whom satisfied the requirements for buying at Pick n' Pay—took the survey. In practice, the survey asked people to reply only if they were in charge of buying or cooking, and it was distributed by email or online platforms (Fiore, Pellegrini, La Sala, Conte, and Liu, 2017). Since the survey was based on the fact that they were Pick n' Pay customers, none of the cases were eliminated during data screening. Five responders made up the final sample as a result.

The first step was a demographical analysis. **Graph 1** provides a summary of demographics related to age. The average age of the sample taken was between 36 – 45 years of age, and their profession shows that they are professionally employed.

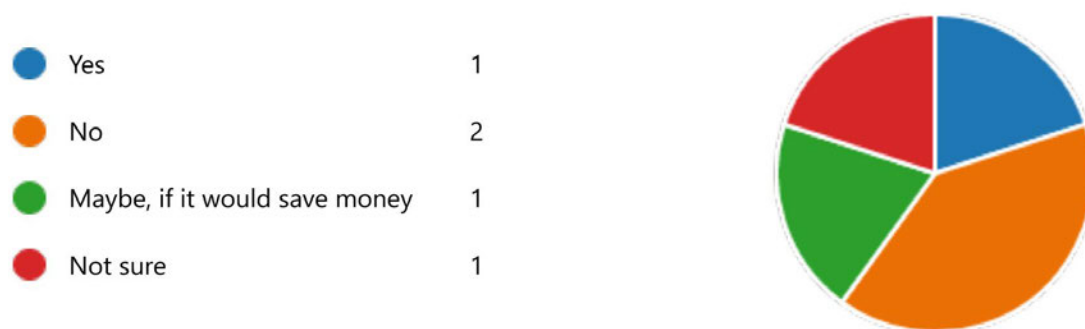


Graph 1: *The above graph shows demographics based on age (Source: Online Survey 2022).*

The second part of the survey covered food waste impacts, while basing the information on the weekly and monthly food purchases, we explored that most respondents assert that some household members don't always finish their meals. The other respondents mention that they don't waste any food in their households, while others confirm that food is left too long in the fridge or freezer, and others believe that we tend not to plan meals.

Participants believe that although they rarely have food waste vegetables sometimes do get their way to the bin, while others think that Spinach, Bread, and Starch such as Rice and Pap, Cooked food, and old Vegetables are the main foods that get wasted. The majority believes that there is very little food waste in their households while the other asset is that a reasonable amount of food gets wasted. The respondent mentions that they dispose of or compose food that is wasted in their households. The participants confirmed that they are living with children in their households.

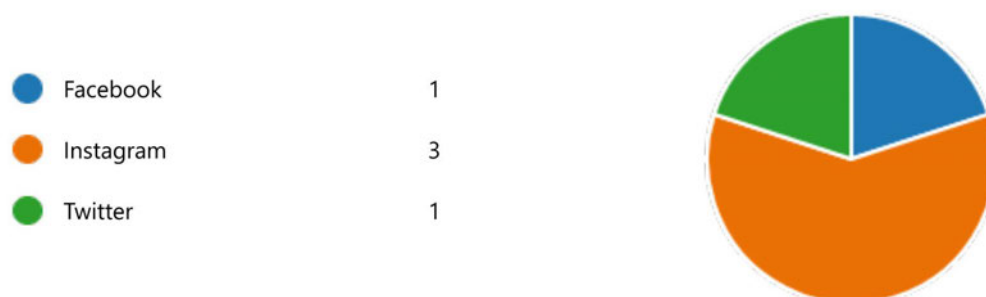
The following Graph shows if the separation of food waste in the household is viable, and the majority think that it is not while others think that it would save money they could do it.



Graph 2: *The above graph shows the response from "Would it be possible for you to separate your food waste (no packaging)?" (Source: Online Survey 2022).*

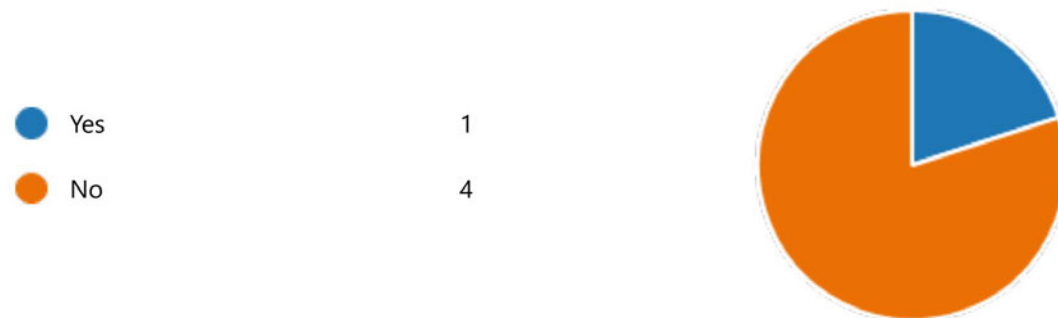
Looking at some strategies to reduce food waste respondents mentioned that they are buying only what is needed, and writing a shopping list before they go to the store. The motivation for them to reduce food waste is family expectations, to save money and it is the right thing to do. While they assert that there are no barriers others argued that the lack of space becomes the issue that leads them to dispose of food that is left over.

They think social media can influence their behavior towards food waste in their households, by having awareness campaigns, which can focus on education of food waste reduction strategy focusing mainly on children, and others are not sure if it could assist or influence anyone in food waste issues. Social media that can be most influential to these campaigns could be Instagram, followed by Facebook and Twitter as suggested by participants.



Graph 3: *The above graph confirms the resulting base on the respondent on an influential social media platform. (Source: Online Survey 2022).*

Graph below shows that there are few people who know and understand food waste policy and legislation on food waste in South Africa.



Graph 4: *The above graph is the testimony of why more exploration of Policy and Legislation in South Africa is needed. (Source: Online Survey 2022).*

A secondary Literature review that was done on Pick n' Pay retail outlets provided an existing food waste measurement, and the findings about the three research goals are presented in this section and discussed:

- *RO 1: To determine what other retail sectors in other countries are doing to manage food waste, what tactics they are using to control food waste in their households and retail sector, and to assess if the Pick n Pay food waste reduction program can be improved*
- *RO 2: To explore the desired role of social media and assess levels of awareness and the impact that it has on household food waste management, as well as the impact of social interaction on an individual's environmental behaviors, how does Pick n Pay manage its social media interactions.*
- *RO 3: To assess and provide retailers with effective strategies for food waste management practices that Pick n' Pay and France retailers have used for many years to reduce food waste at the retail level so that they can help South Africa to fulfill Sustainable Development Goals by 2030.*

Results related to RO 1: Determining what other retail sectors in other countries are doing to manage food waste, what tactics they are using to control food waste in their households and retail sector, and to assess if the Pick n Pay food waste reduction program can be improved.

Condamine (2020) noted that while food waste in France is lower than the EU average, it is more evenly distributed throughout the entire food supply chain. Food waste at the consumer level accounts for 53% of waste in the EU, but only 33% of waste in France, which includes collective catering and restaurants. A further 14% of activity takes place at the retail level, with the remaining activity-taking place during the production and process stages.

According to the author, the initial law passed in 2016 focused on the retail sector initiatives to reduce food waste in the sector as a whole, but it also established a strategy for food waste prevention through the adoption of a food waste hierarchy, as it also prohibited the destruction of unsold food products. Then according to Bizjak and Barczak (2022), numerous additional measures were approved through decrees and regulations, extending the reach of the 2016 law to include catering and food distribution in addition to more general goals to cut down on food waste by 50 percent by 2025.

Condamine (2021) argued that to achieve a zero food waste food system, Zero Waste Europe welcomed a move by the European Commission to launch the process of establishing legally binding targets for reducing food waste across the EU. The author further argued that food waste was a multifaceted issue that not only damages the environment and the climate but also is also immoral. Therefore, it was crucial to effectively address that problem by setting effective and challenging goals for the upcoming years.

The literature further asserts that although the targets may not be fully implemented until 2023 after the first data reporting in 2022, the European Commission is fully mandated by the European Parliament's decision on the Farm to Fork strategy to maintain a high level of ambition throughout the process, and the amended Waste Framework Directive (Directive 2008/98/EC),

which was adopted in 2018, includes the goal of reducing food loss and waste by 50 percent by 2030 (SDG 12.3), which was approved by all UN member states in 2015. Bizjak and Barczak (2022) added that to make those goals legally enforceable at the EU level and to align with the coalition's aspirations for sustainability and tackling climate change, this process should only be added. If anything, this ought to inspire more strict commitments to guarantee that the goals are reached by 2030.

Condamine (2021) emphasized that voluntary commitments from consumers or raising public awareness alone won't be enough to reach the 50% reduction target, instead of placing the blame on consumers, the blame should fall on the players that are influencing the food system through legal requirements and monetary incentives. As indicated in the Farm to Fork policy, the EU's transformation to a sustainable food system should include addressing food loss and waste holistically (Condamine, 2021).

To accomplish this, it is necessary to manage food waste throughout the entire supply chain and tie it to other aspects of the transition, such as food that requires no packaging, deposit return programs, or community-supported agriculture. According to Condamine (2020) at the primary production level, harvest food losses should be specifically taken into account, although the EU technique for measuring food waste excludes food loss at this stage, it has been shown that harvest food losses are consistently underreported. Therefore, ambitious initiatives to address food waste should involve including it within the bounds of the targets. To enable the policy to provide the optimum alternative for unavoidable food loss and waste, the process should explicitly relate to the hierarchy of food waste (Condamine, 2021).

Pick n' Pay (2021) claims that they have put a lot of effort into minimizing the effects of their packaging, and the scaled-up results have been quite encouraging. For instance, updated packaging for bottled water and fresh juices reduces plastic usage by 1,566 tons annually. Promoting lifecycle thinking is essential for cutting down on packaging waste. Pick n Pay promised that by 2023, their branded items would sport the new logo. They did this by introducing

a revised on-pack recycling label to help customers understand how to recycle their packaging.

Results related to RO 2: Exploring the desired role of social media and assessing levels of awareness and the impact that it has on household food waste management, as well as the impact of social interaction on an individual's environmental behaviors, how does Pick n Pay to manage its social media interactions.

The foundation of food waste prevention and reduction by retailers and consumers is education and awareness. According to Goodman-Smith et al. (2020), the literature emphasized that educating consumers about food waste and staff can help make a difference. It is also stated that to disseminate knowledge about food waste reduction further along in the retail life cycle, retail leadership needs to take the helm of such efforts, and this observation is consistent with the findings of previous research by (Goodman-Smith et al., 2020).

To improve retail employees' commitment to reducing food waste in stores, it is also proposed that raising awareness serves as a platform for changing the attitudes and behaviors of retail staff, regardless of level (Strotmann, Göbel, Friedrich, Kreyenschmidt, Ritter, and Teitscheid, 2017). Increasing awareness may alter customer demand and behavior, according to Kliaugait and Kruopien (2018), and Knowing how food waste affects society, the economy, and the environment can help all parties involved in the food supply chain be more committed to reducing food waste added (Goodman-Smith et al., 2020 & Kliaugaitė and Kruopienė, 2018).

Food waste initiatives must raise public awareness of the importance of date labeling and the effects of food waste on the environment. Strotmann et al. (2017) claim that both customers and retailers are impacted by the misunderstanding of date labeling, and further mention that customers who are better informed about the significance of various labels (such as "best-before" and "use-by") may be able to reduce food waste at the household level. The

German Logistic Association focuses on increasing consumer awareness of "best-before" and "use-by" dates to alleviate this issue (Kliaugaitė and Kruopienė (2018).

The UK program "Love Food-Hate Waste," which was thought to have helped save over 137,000 tonnes of consumer food waste within a year by teaching people about date labels, is one example of numerous initiatives aimed at increasing awareness of food waste. Germany's "Too Good for the Bin" initiative also offered suggestions for responsible shopping and consumption (Strotmann et al., 2017). These kinds of initiatives could be viewed as good practices that South Africa's retail sector could adopt, however, spreading knowledge about food waste is inadequate. Regarding appropriate merchandising methods and product qualities, consideration is required, and these elements are frequently undervalued, and this is the foundation for many of the waste-producing aspects in the grocery retail industry.

Results related to RO 3: Assessing and providing retailers with effective strategies for food waste management practices that Pick n' Pay and France retailers have used for many years to reduce food waste at the retail level so that they can help South Africa to fulfill SDG by 2030.

Pick n' Pay (2022), through their War on Waste effort, set high goals for themselves in 2015, and even if they haven't yet met those goals, they have learned some important lessons. With 76 percent more stores and a 38 percent increase in gross let-able area, they are currently utilizing 10% less energy than they were ten years ago. According to the authors, their carbon footprint has shrunk by 10% year over year, and they use renewable energy to cut their emissions by more than 7 000 tons annually. Over the last three years, they have cut their food waste by 30%, and they have joined the global 10x20x30 Food Waste Initiative, where they are collaborating with their top 20 suppliers to cut waste in their value chain by an additional 50% by 2030.

Blockchain technology, for example, aids in more precise market demand forecasting. This solution allows for the decentralized, irreversible storage of

digital data and the traceability of products at every point in the food supply chain (Marin et al., 2019). Blockchain technology promotes connections and information sharing between retailers and suppliers, ", particularly concerning forecasting and market-intelligence activities" (Dlomo 2021).

Condamine (2021) asserts that the European Parliament has embraced the 50 percent target to be reached by 2030 and it should be maintained even though SDG goal 12.3 was adopted in 2015, supporting Condamine's (2020) argument that the target to be reached was strongly recommended that the European Commission assess an option of at least 50 percent. The fact that those goals won't be legally enforceable until 2023 shouldn't be used as an excuse to scale back their ambition; on the contrary, it should stimulate increased attempts to reduce GHG emissions by 55 percent by 2030.

According to the UN - Department of Economic and Social Affairs (2021), European rules like RoHS (2002/95/EC) and REACH have had a significant impact on France's strategy for the prevention of the manufacturing of hazardous substances. To reduce the use of six hazardous compounds in electrical and electronic equipment, the RoHS directive (Restriction of the use of certain Hazardous Substances in Electrical and Electronic Equipment) was created. The REACH regulation aims to limit and forbid the use of specific hazardous compounds as well as encourage R&D to create substitutes for such substances.

Condamine (2020) said that France had created economic incentives to promote less polluting technology concurrently, such as a regulation of advantageous eco-contributions for LED lamps compared to other types. Beyond the decrease in waste and the danger level, the issue of separating hazardous and recyclable materials is the focus of several efforts, and the inclusion of hazardous trash in mixtures does provide a barrier to recycling. An adjustment to the eco-contribution was made to promote easy access to hazardous materials in waste electrical and electronic equipment Condamine (2020). The implementation of a

waste tax (TGAP) is a method used in economics to encourage waste producers to minimize the amount of waste they produce, according to other research.

The research revealed that the main reason for decreasing food waste was to save money, which supports the findings of literature in which other authors frequently highlighted financial value as a motivator for the adoption of food waste reduction programs in the retail sector. Similar conclusions were reached by Dlomo (2021) and Goodman-Smith *et al.* (2020), although in these investigations, environmental concerns were recognized as one of the primary drivers for merchants to reduce food waste. These results make it abundantly evident that knowledge was a key factor in educating the retailers about the damaging effects of food waste on the environment and the costs involved in disposing of food waste in landfills.

According to the literature, past research recommended using regulatory measures to assist food redistribution by the retail sector and to prevent food waste from being dumped in landfills. Redistribution of surplus food for reuse is recognized as a key strategy in preventing food waste from being discarded; yet, issues about food safety and date labeling continue to prohibit the grocery store sector from donating extra food (Dlomo 2021). Related findings are also presented in a research carried out by other authors, where one participant identified the chance to reduce food waste in the South African grocery retail sector as the relief of the donor from accountability.

The best technique to enable reduction, according to some research, is procurement management, and then if possible, donating food as a kind of reuse. This requires the involvement of a third party, such as a food bank, to release the donor from responsibility. However, this suggestion is not supported by the "duty of care" and "cradle to grave" principles guiding waste management under the NEMWA, and some nations have adopted a variety of tools to support surplus food redistribution and release the donor from responsibility, according to Goodman-Smith *et al.* (2020). An illustration of this is the "Good Samaritan Law," which was established and put into effect in Italy and recognizes non-profit and social utility organizations as final consumers.

However, the giving businesses must assure food safety before donating, utilizing their internal processes. In this situation, food consumers cannot sue the food donor in the event of future poisoning or misuse (Dlomo, 2021). The study suggested limiting the disposal of organic waste as a way to cut down on food waste, and this tool is widely used in nations like Europe and the USA. For instance, the Swedish government banned the disposal of organic waste in landfills in 2005, and Massachusetts State issued legislation imposing a disposal ban in October 2014.

Affected institutions, including institutions, restaurants, and food outlets, have the choice to donate food that is still safe to eat and to send any leftovers to facilities for recycling and resource recovery under Massachusetts state standards. However, this is only applicable to organizations that produce at least one ton every week (Dlomo 2021). Although the landfilling of food waste has not yet been expressly forbidden or regulated in South Africa, there are several legal measures in place to prevent it. The GNR. 636 of August 2013's norms and regulations for waste disposal to land restrict the disposal of trash with high calorific content and garbage with a high liquid content in landfills. However, these limitations currently only apply to hazardous trash (DEA, 2019).

Composting is one of the initiatives supported by the NWMS to help meet the NEMWA's waste management hierarchy goals. To facilitate this, the DEA, now known as the DEFF, founded the NOWCS in 2013 intending to foster and promote the diversion of organic waste from disposal sites for soil beneficiation and other applications through composting (Dlomo, 2021). A draft of the anticipated national norms and standards for organic waste composting (GN. 1135 Draft National Norms and Standards for Organic Waste Composting), which will ease the licensing requirements for waste composting facilities, was published in the gazette in September 2019 (DEA, 2019).

Through the DEA & DP, one of the South African provinces has put in place a strategic plan to divert 100 percent of organic waste from landfills by 2027 and a target of 50 percent organic waste by 2022, and this could serve as inspiration or a chance to divert rubbish from landfills. UN - Department of Economic and

Social Affairs (2021) mentioned that the French State has collaborated with all parties through the Environment Grenelle to develop and incorporate its sustainable development policy. France complies with both European legal requirements and Environmental Grenelle's requirements when it comes to garbage. Due to this simultaneous pressure, innovative policies and high-performing organizational, financial, and regulatory tools are being implemented.

ETHICAL CONSIDERATIONS, LIMITATIONS, AND TRUSTWORTHINESS

Ethical Considerations

Ethical considerations should be addressed and taken into account during any research, according to Lewis (2013). This study will not include any animals or vulnerable human participants due to the nature of the study. The necessary institutions will provide ethical clearance. To obtain the research data, the mandatory authorization process from the relevant participants will be followed. This is to ensure that the identification information and personal details of research participants are kept private and anonymous. Before the interviews, interviewees will be given consent forms to sign.

Limitations and Assumption of Study

Aside from the extent of the study's limitations, the following other assumptions and limitations should be noted: the study solely looked at retail food waste. Specific factors, such as COVID-19 limits, may influence food waste generation, and these special circumstances are not taken into account in this study. The findings of this study are intended to add to a better knowledge of how food waste is currently managed in the retail industry, with an emphasis on Pick & Pay, and they do not necessarily represent what can be expected from retail industries in South Africa.

It is presumed that the responses of those who will take part in the interviews will be honest and that they will accurately represent the opportunities and challenges of food waste management in South Africa. The data sample mainly includes Pick & Pay, which is part of one retail group and does not include other retail groups in South Africa. Because Pick n Pay is chosen as a participating retailer, the findings of this study might be representative of this geographic location and may not be representative of all retail outlets in South Africa. There will be time constraints due to participant availability for interviews, as well as delays due to certain interviews, which might be rescheduled.

Reliability and validity/trustworthiness

The term 'reliability' refers to a concept that is often used to analyze or evaluate quantitative research in all types of studies. Testing is viewed as a way of extracting information in the qualitative paradigm. As a result, the most important test of any qualitative study is its quality. A competent qualitative study can assist us in "understanding a situation that is otherwise cryptic or perplexing" (Eisner, 1991). Validation as investigation, action, and communication are three methods of validity in qualitative research. To address the issues of validity, usefulness, and dependability, researchers rely on experience and literature.

Validity in qualitative research is concerned with description and explanation, as well as whether or not the supplied explanation corresponds to the given description. In this context, Golafashani (2003) suggests that maximizing validity or trustworthiness might lead to more credible and defensible results, which is one of the concepts proposed by Bashir, Afzal, and Azeem (2008) as the structure for both doing and documenting high-quality qualitative research. As a result, a study's quality is linked to the results' validity and, as a result, to the study's validity or trustworthiness being tested and improved.

The Feasibility of Study

Before you can begin any research project, you must be able to persuade readers that the research is feasible and that the time and resources required are reasonable and justified (Dlomo, 2021). We will present a budget for our research, and additionally, timetables will be supplied for our study, specifying when specific aspects of the research will be finished. In short, we'll show our readers that we've thoroughly considered all of the concerns surrounding our approach, as well as the relationship between these issues and our study goals.

Anticipated Contribution of Study

This research will look at attitudes and behavior in the retail and household sectors in South Africa, as well as examine how France manages to implement

their food waste reduction program. It will also look into the reasons for food waste in the household and other consumer behavioral components. This study will also look into how customers' use of social media influences their food waste reduction decisions in the retail sector and households. We will give excellent food waste management approaches that Pick n' Pay and France have used and executed for many years to reduce food waste at the retail level to households and other retailers.

CONCLUSIONS AND RECOMMENDATIONS

This section provides the conclusions and recommendations related to the three research objectives.

Recommendations

This section offers some suggestions for improved food waste management in the grocery retail sector, drawing on the findings of this study and the literature. Utilizing a digital information management solution like block-chain can reduce the discrepancy between anticipated and real sales, which can enhance order forecasting. Through this decentralized network, supply chain participants can share product information, particularly regarding product demand and forecasting, and such technology tracks and traces product information across the food supply chain and enhances inventory monitoring (Marin *et al.*, 2019).

At the retail and consumer level, there has to be more understanding and awareness of food waste. To reduce food waste, the behavior must change (Goodman-Smith *et al.*, 2020; Kliaugait & Kruopien, 2018). Awareness campaigns can address problems including the detrimental effects of food waste and misunderstandings surrounding the interpretation of date labels. Successful awareness campaigns in other nations include "Love Food-Hate Waste" and "Too Good for the Bin." Food waste generation at the household level can be decreased by using communication channels like social media to educate customers about date labeling and increase consumer awareness of food waste (Dlomo 2021).

The literature suggested using smartphone apps to reduce consumers' misunderstanding of date labeling because they can be used to track food expiration dates and notify customers to use their food before it spoils. However, for such interventions to be successful, stakeholders in food waste, including the government, farmers, merchants, and interested and impacted groups, must work together. Food waste regulation through law and policy has been identified as a potential enabler for food waste prevention and reduction, and the emphasis needs to shift to a regulatory framework that would enhance food

redistribution by addressing concerns about food safety and date labeling, which are typically a barrier for the donation of surplus food by the grocery retail sector (Goodman-Smith *et al.*, 2020).

By giving social institutions the legal status of "end user," policies might concentrate on reducing the financial weight of accountability placed on the donating retailer. The disposal of food waste at the landfill would also be restricted by the establishment of landfill prohibitions or limits (Dlomo 2021). Investment in technologies for treating food waste must be increased, and cooperation between the public and private sectors is essential to facilitating investment in the waste management industry.

The identified challenges relating to food waste make the topic a point of importance and open a gap for more studies to be executed in South Africa. Recommendations for further studies include the Evaluation of food waste management beyond the grocery retail store "gate" – i.e. investigating what happens with food waste that is not donated to charities.

Further recommendations include investigating opportunities and challenges for diverting food waste away from landfill, considering best practices and lessons learned from developed countries such as France, and exploration of customer perceptions and expectations concerning the management of food waste (i.e. how important aesthetical aspects and "sell-by" dates, for instance).

The investigation of consumer demand, behavior, and factors driving food waste in the grocery retail sector would also assist in the development of strategies to be implemented in other retail sectors around South Africa, and repeating the research objectives and research approach used for this study in more provinces and including more stores to gather more empirical data on how waste is managed by the other members of the retail sector.

Conclusion

Based on the theme *"An exploration of food waste management attitudes and behavior: Pick n' Pay food waste reduction study,"* this study looked into addressing three research objectives related to food waste.

- *RO 1: To determine what other retail sectors in other countries are doing to manage food waste, what tactics they are using to control food waste in their households and retail sector, and to assess if the Pick n Pay food waste reduction program can be improved*
- *RO 2: To explore the desired role of social media and assess levels of awareness and the impact that it has on household food waste management, as well as the impact of social interaction on an individual's environmental behaviors, how does Pick n Pay manage its social media interactions.*
- *RO 3: To assess and provide retailers with effective strategies for food waste management practices that Pick n' Pay and France retailers have used for many years to reduce food waste at the retail level so that they can help South Africa to fulfill Sustainable Development Goals by 2030.*

It also presented a problem statement based on food waste, comparing what other countries are doing vs. what Pick n' Pay has implemented, and demonstrating what other approaches are used around the world to understand food waste. Because most food is thrown out at the end of the food supply chain in developed countries, household food waste is a significant issue. This waste has a complicated set of economic, social, and environmental effects. We discussed food waste by highlighting the definition found in literature and associated challenges caused by inconsistencies in the definition.

It also highlighted the diversity of methods used in food waste studies. This revealed that a variety of methodologies are used to understand food waste, globally. The literature review has indicated that fresh produce, followed by dairy and bakery products are the most dominant food waste categories identified by the literature. The last section of the literature review discussed food waste

management from South Africa's strategic direction focusing on governance/management approaches. The most major factors of food waste generation were reviewed, with shelf life and concerns with date labeling being the most prominent. On our rationale, we explored how communities benefit from sustainable food waste management. We then looked into how social media influence and interaction may help reduce food waste.

This study offers information that could help in optimizing consumer behavior that affects how much food is wasted. To limit the quantity of food waste, findings also give consumers the knowledge and resources they need to handle their food-related activities. A major obstacle to improving consumer ethics and a global sustainability approach in the retail industry is preventing food waste. As long as there are food losses and waste along the entire supply chain, the retail and household level approaches are crucial.

Although the current study concentrates on Pick n' Pay customers, the framework's fundamental ideas should be repeatable and thus relevant to any retail. Because culture is known to affect consumers' food waste behavior, it could also be interesting to compare our findings to those of other studies that used data from different provinces in South Africa and used a similar confirmatory factor analysis technique. These additional actions may be essential for providing fundamental principles for revising policies and campaigns meant to reduce the amount of food waste produced in households..

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APPENDICES

Interview Instrument & Consent form for participants

AN EXPLORATION OF FOOD WASTE MANAGEMENT ATTITUDES AND BEHAVIOR: PICK N' PAY FOOD WASTE REDUCTION STUDY (Heading)

Consent form for participants

I participant, agree to participate in the research conducted by Mthokozisi Zwane in an exploration of food waste management attitudes and behavior: pick n' pay food waste reduction study.

This study has been broken down for me, and I am aware of what my involvement in it will entail in terms of its requirements. I understand that:

1. I consent to being interviewed and recorded for the purpose of this study.
2. My privacy will not be compromised in any way. My name and any other identifying information you provide will be kept confidential.
3. My involvement in this study is entirely optional, and I reserve the right to opt out of further involvement in the study at any time. Should I decide to opt out of participating in the study, my decision will not have any impact on the outcome.
4. During the course of the research interview, it's possible that I won't answer any of the questions that are posed to me.
5. When the findings of the study are published, it is possible that I may be explicitly cited; however, my name will be concealed.

1. Select "Yes" to continue or select "No" to opt out.

Yes (The form must continue)

No (The form must end)

2. Do you shop at Pick n' Pay

Yes (The form must continue)

No (The form must end)

Demographics

3. Age:

0 - 14

15 - 21

22 - 35

36 - 45

46 - 65

65+

4. Profession:

--

Food waste impacts

5. How frequently do you purchase food?

	Daily
	Weekly
	Monthly

Other (please specify)

--

6. What food item do you find gets wasted most often in your household?

	We don't waste any food in our household
	Some household members don't always finish their meals
	We like to eat the freshest food possible
	Family members change their plans (and they don't turn up for dinner)
	We're generally too busy to cook meals that we've planned
	We aren't sure how to store food properly
	We can't store food properly
	Food is left too long in the fridge or freezer
	We cook too much food
	Food goes off before the 'use by' or 'best before' dates
	We buy too much food
	We don't check the fridge, freezer or cupboards before going shopping
	We tend not to plan meals in advance
	We don't tend to use leftover ingredients in other meals
	Other (please specify)

7. What do you think are the main reasons that food gets wasted in your household?

	We don't waste any food in our household
	Some household members don't always finish their meals
	We like to eat the freshest food possible
	Family members change their plans (and they don't turn up for dinner)
	We're generally too busy to cook meals that we've planned
	We aren't sure how to store food properly
	We can't store food properly
	Food is left too long in the fridge or freezer
	We cook too much food
	Food goes off before the 'use by' or 'best before' dates
	We buy too much food
	We don't check the fridge, freezer or cupboards before going shopping
	We tend not to plan meals in advance
	We don't tend to use leftover ingredients in other meals
	Other (please specify)

8. What food item do you find gets wasted most often in your household?

--

9. How much food would you say that your household usually throws away each week?

	An excessive amount
	Not more than you should
	A reasonable amount
	Very little
	None

10. If you waste food, what process do you use to manage food waste?

	Composting
	Disposal
	Food Sharing Scheme
	Donate To A Food Charity
	Other (please specify)

11. Would it be possible for you to separate out your food waste (no packaging)?

	Yes
	No
	Maybe, if it would save money
	Not sure

12. How much of the following items are included in your total food waste

	Large %	Medium %	Small %	None
Produce/vegetable matter				
Packaged foods such as bakery goods and canned foods				
Dairy				
Meat				
Bones from meat				
Cooking oil				

13. Are you a parent with children in your household?

	Yes
	No

Food waste reduction strategies impacts

14. Which of these actions are you currently doing at home?

	Checking the fridge/ freezer/pantry before shopping
	Writing a meal plan
	Writing a shopping list
	Buying only what is needed
	Check use by and best before dates
	Consider how food is stored to keep it fresh
	Consider portion size
	Use leftovers
	I make vegetable stock from my food scraps
	None of the above
	All of the above
	Other (please specify)

15. What motivates you to avoid food waste? Pick from the options below or tell us your thoughts.

☐	It's easy to do
☐	It saves money
☐	It saves time
☐	Family expectations
☐	Environmental concerns
☐	It's the right thing to do
☐	To be honest, I'm not very motivated.
Other (please specify)	

16. How do you typically dispose of the following unused foods?

	Discard in trash	Animal feed	Composting	Anaerobic digester	Donate	Other	Not Applicable
Still edible (i.e. ugly veggies, items past date but still good)							
Food that has gone visibly bad							
Scraps from food prep							
Cooking Oil							

17. What do you see as barriers to your efforts to reduce food waste? (choose all that apply)

☐	Lack of storage space
☐	Hygiene or food storage issues
☐	Too expensive to dispose
☐	Don't know all my options
☐	Logistics of giving food away
☐	No Barriers

Social Media Influence impacts

18. Do you think social media can influence your behaviour towards food waste in your household?

--

19. Do you think social media can be used as a tool to trigger changes to reduce food waste from households?

--

20. Do you think retail store like Pick n Pay, could be able to encourage you to cut food waste through social media?

--

21. Which social media platform do you think would work for food waste awareness programmes?

	Facebook
	Instagram
	Twitter

Policy and Legislation impacts

22. Which of these actions are you currently doing at home?

	Checking the fridge/ freezer/pantry before shopping
	Writing a meal plan
	Writing a shopping list
	Buying only what is needed
	Check use by and best before dates
	Consider how food is stored to keep it fresh
	Consider portion size
	Use leftovers
	I make vegetable stock from my food scraps
	None of the above
	All of the above
	Other (please specify)

23. Do you know what is food waste policy or legislation in South Africa?

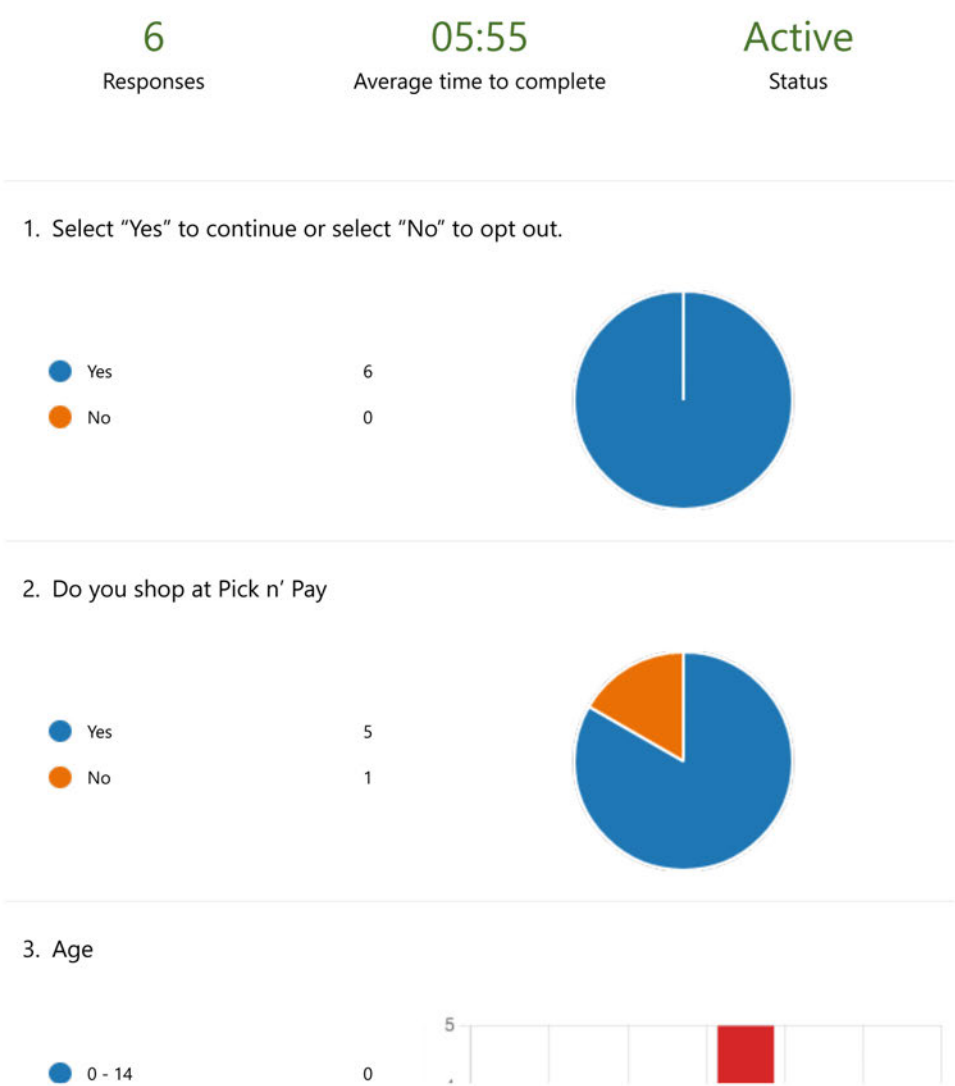
	Yes
	No

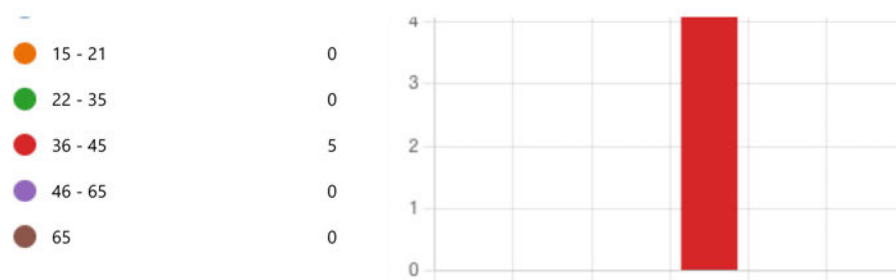
24. How would you prefer to get awareness about policy or legislation in South Africa related to food waste?

--

Online Survey Responses

AN EXPLORATION OF FOOD WASTE MANAGEMENT
ATTITUDES AND BEHAVIOR:





4. Profession

5
Responses

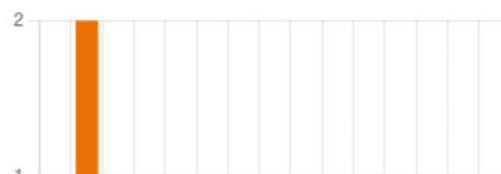
Latest Responses

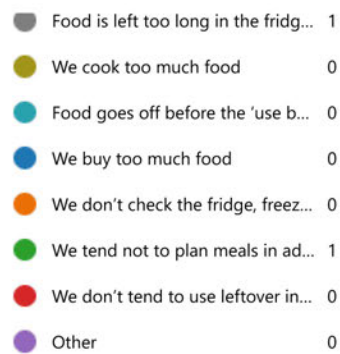
*"Communication and Marketing Specialist"**"Manager "*

5. How frequently do you purchase food?

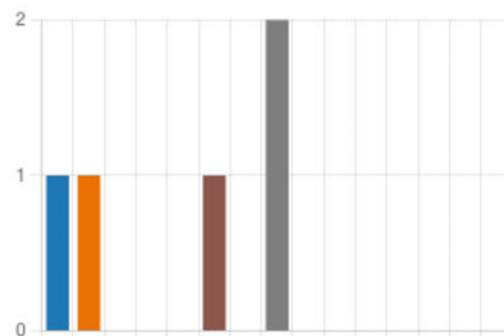
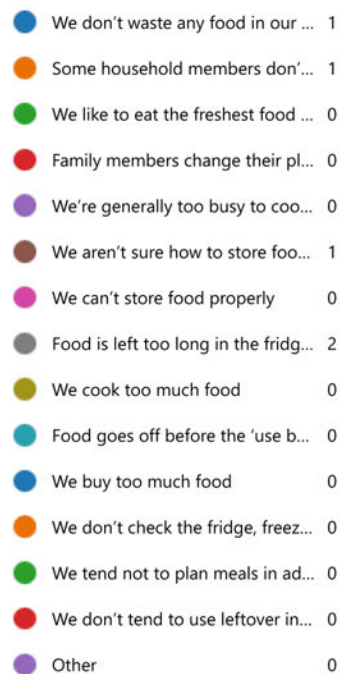


6. What food item do you find gets wasted most often in your household?





7. What do you think are the main reasons that food gets wasted in your household?



8. What food item do you find gets wasted most often in your household?

5

Latest Responses

"Carrots, rice, meat"

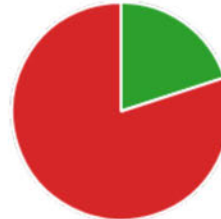
Responses

starch - rice, pap

"Cooked food and old vegetables "

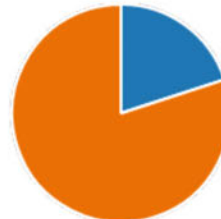
9. How much food would you say that your household usually throws away each week?

An excessive amount	0
Not more then you should	0
A reasonable amount	1
Very little	4
None	0



10. If you waste food, what process do you use to manage food waste?

Composting	1
Disposal	4
Food Sharing Scheme	0
Donate To A Food Charity	0
Other	0



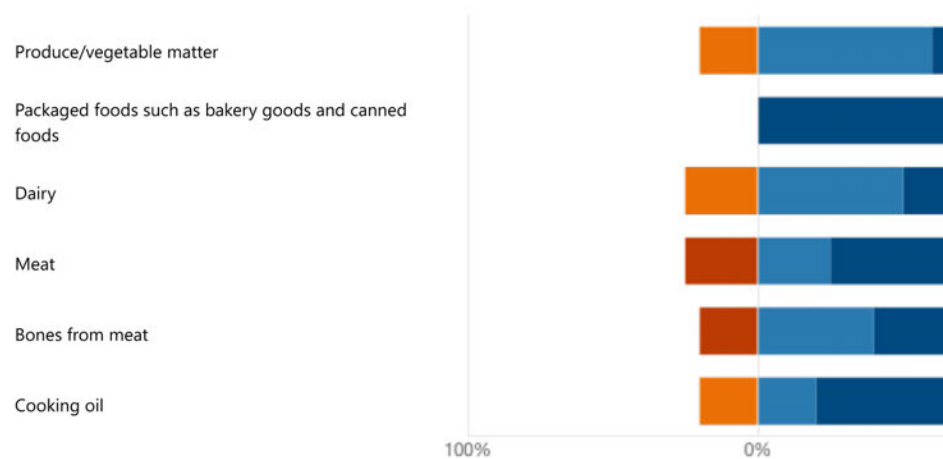
11. Would it be possible for you to separate out your food waste (no packaging)?

Yes	1
No	2
Maybe, if it would save money	1
Not sure	1

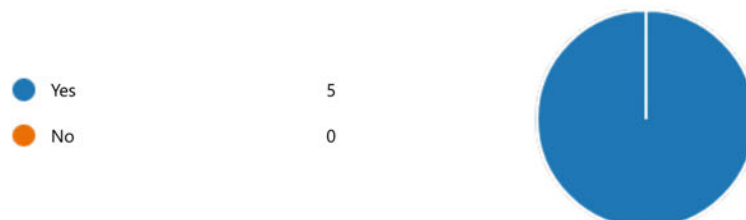


12. How much of the following items are included in your total food waste

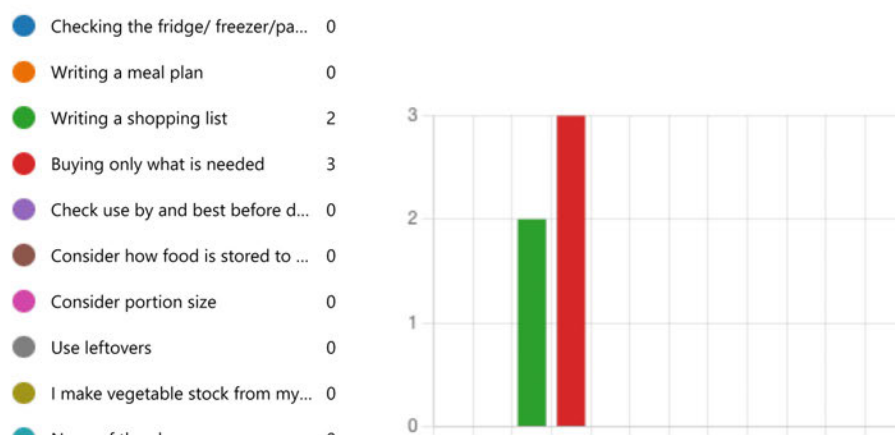
Large % Medium % Small % None



13. Are you a parent with children in your household?

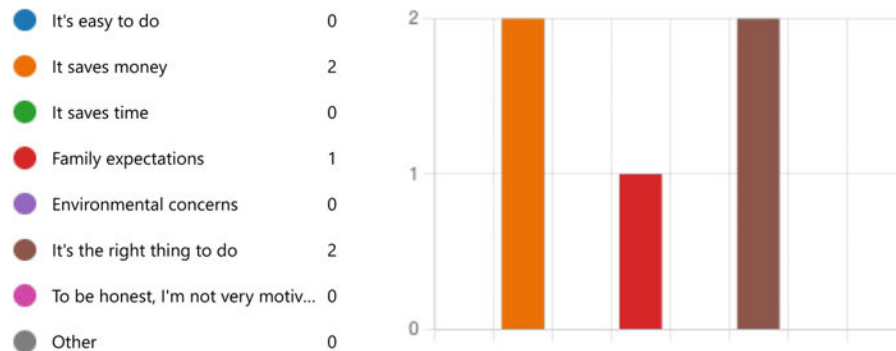


14. Which of these actions are you currently doing at home?



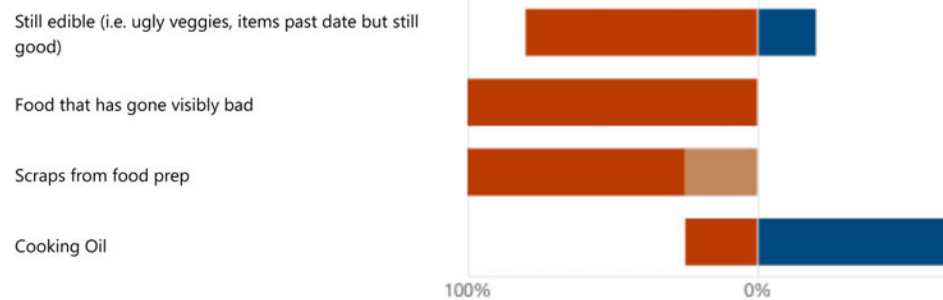


15. What motivates you to avoid food waste? Pick from the options below or tell us your thoughts.

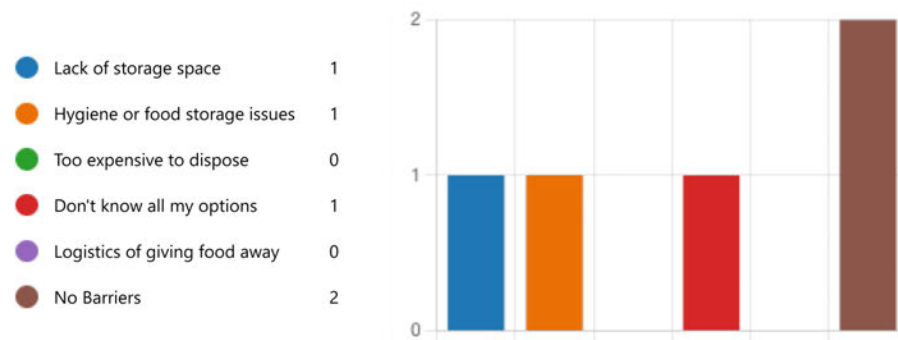


16. Question

■ Discard in trash
 ■ Animal feed
 ■ Composting
 ■ Anaerobic digester
 ■ Donate
 ■ Other
 ■ Not Applicable



17. What do you see as barriers to your efforts to reduce food waste? (choose all that apply)



18. Do you think social media can influence your behaviour towards food waste in your household?

5
Responses

Latest Responses

"Yes"

"Not sure "

19. Do you think social media can be used as a tool to trigger changes to reduce food waste from households?

5
Responses

Latest Responses

"Yes"

"Yes"

20. Do you think retail store like Pick n Pay, could be able to encourage you to cut food waste through social media?

5
Responses

Latest Responses

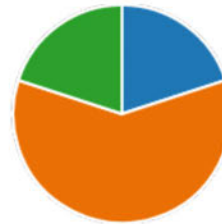
"Yes"

"Yes "

21. Which social media platform do you think would work for food waste awareness

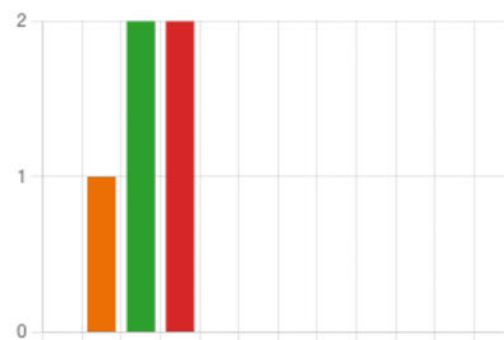
21. Which social media platform do you think would work for food waste awareness programmes?

Facebook	1
Instagram	3
Twitter	1



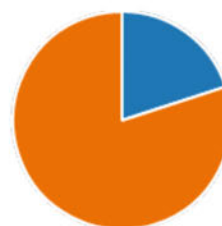
22. Which of these actions are you currently doing at home?

Checking the fridge/ freezer/pa...	0
Writing a meal plan	1
Writing a shopping list	2
Buying only what is needed	2
Check use by and best before d...	0
Consider how food is stored to ...	0
Consider portion size	0
Use leftovers	0
I make vegetable stock from my...	0
None of the above	0
All of the above	0
Other	0



23. Do you know what is food waste policy or legislation in South Africa?

Yes	1
No	4



24. How would you prefer to get awareness about policy or legislation in South Africa related to food waste?

5
Responses

Latest Responses

"Awareness pamphlets/brochures, push messages/videos o...

"Social media campaign "

Ethical Clearance Letter



Date: 23 June 2022

Student name: Mthokozisi Zwane

Student number: [REDACTED]

Campus: Vega Pretoria

Re: Approval of RESE8419/RMET8429 Proposal and Ethics Clearance

HONOURS/PGDip ETHICAL CLEARANCE LETTER

Your research proposal and the ethical implications of your proposed research topic were reviewed by your supervisor and the campus research panel, a subcommittee of The Independent Institute of Education's Research and Postgraduate Studies Committee.

Your research proposal posed no significant ethical concerns, and your supporting documents and instruments are in order to proceed. We hereby provide you with permission to proceed with your research.

In the event of you deciding to change your research methodology in any way, kindly consult your supervisor to ensure all ethical considerations are adhered to and pose no risk to any participant or party involved. A revised ethical clearance letter will be issued.

We wish you all the best with your research!

GENERAL CONDITIONS TO BE FULFILLED IN RELATION TO RESEARCH

Permission is granted to proceed with the above study subject to the conditions listed below being met and may be withdrawn should any of these conditions be flouted.

Please note: The panel has not considered the merits, accuracy or ethical soundness of the research. The only merits examined are the use of The IIE as a sample.

Permission is granted subject to the following conditions:

1. The researcher(s) will need to obtain informed consent in writing from all of the participants in his/ her sample if the study is not anonymous.
2. The researcher(s) may only use the data collected for research purposes and in no other way.

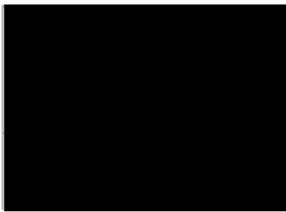
3. Photographs of human subjects may only be taken if relevant to the research, informed consent was obtained, and even with informed consent, the photographs may not be published on any online platforms.
4. The researcher is responsible for supplying and utilising his/her own research resources, such as stationery, photocopies, transport, faxes and telephones and should not depend on the goodwill of the institutions and/or the offices visited for supplying such resources.
5. No names or identifying information of participants may be used within the research and the research must be voluntary.
6. Please make it clear that the information will not be used punitively in any way and participants may in no way be counselled/advised based on this.

Supervisor name: **Ivan Mkhomazi**



Signature: _____

Campus Postgraduate Coordinator (CPC) name: **Ria Van Zyl**



Signature: _____