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**Citizen Participation and Strategic
Communication through Twitter: Food Waste
Awareness in the Kingdom of Saudi Arabia**

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List of Abbreviations and Acronyms

Ekram	Foodbank Organisation Ekram
Ettam	Saudi Food Bank
FAO:	Food and Agriculture Organisation
FLW	The National Program for Reduction of Food Loss and Waste
GCC	Gulf Cooperation Council
KSA	Kingdom of Saudi Arabia
NGOs	Non-governmental organisations
NPOs	Nonprofit organisations
Shukre	Food bank Organisation Shuker
SIT	Social Impact Theory
SM	Social Media
SNS	Social Network Services
UGT	Uses and Gratification Theory

ABSTRACT

This study investigates the under-researched topic of the extent to which – and how – Twitter is used to undertake food waste awareness campaigns by food bank organisations in the Kingdom of Saudi Arabia (KSA). It provides a better understanding of the role and relevance of Twitter for Food Banks and from empirical evidence gathered presents a model of Twitter-based social media food waste awareness raising in KSA. A mixed-method approach was deployed in the research with a focus on qualitative techniques to understand how Saudi food banks utilise Twitter for their awareness-raising campaigns. The study analysed tweets extracted from four food bank accounts on Twitter (Ettam, Ekram, Shukre, and FLW) using content analysis. A range of semi-structured interviews was conducted with actors in food banks to explore their perspectives on the use of Twitter in awareness campaigns. The study used a framework based on Social Impact Theory (SIT) to analyse the factors that affect Twitter content related to food waste in KSA. The Alkorbi model has been developed through findings which yielded a process to explain how food banks in KSA employ a range of strategies: presenting factual information; community engagement; religious communication; highlighting regulation and policy; promotion of special events; and raising ethical issues to achieve their objectives. These objectives included increasing awareness of food waste in order to reduce it; engagement with the Saudi public; and promotion of food bank services. The research argues that to enhance further their Twitter awareness campaign, food banks can focus on seven core themes to engage their audience successfully, which are elaborated upon in detail in the thesis.

Keywords: *Social Media, Twitter, Social Awareness, Food Waste, Food Banks, Kingdom of Saudi Arabia (KSA)*

CHAPTER 1: FOOD WASTE AS A SOCIAL PROBLEM IN KSA

This chapter introduces the project. It sets the context for the research by establishing the gap in knowledge which the research addresses. This chapter highlights the thesis research questions and objectives, and also briefly introduces the methodology of the research. The chapter establishes the core contribution to knowledge made by the research and concludes with a brief outline of the remainder of the thesis. Because the primary goal of this research is to investigate the role of Twitter in the conversation about food waste in KSA, it will help answer the question of how Saudi food banks (NGOs) have used Twitter to raise public awareness about food waste. Consequently, an understanding of the current use of Twitter by different organisations to reduce food waste would be helpful to contribute new knowledge on how to use Twitter effectively to deal with the food waste issue in the Kingdom of Saudi Arabia (KSA).

1.1 FOOD WASTE AS A GLOBAL PROBLEM

Food waste is an urgent and pressing issue that has far-reaching global impacts across several areas, including health, the economy, and the environment (Sawaya, 2017). The issue of health is particularly concerning, as food waste contributes to malnutrition and hunger, perpetuating a cycle of poverty and inequality. Furthermore, food waste can spread foodborne illnesses and pose serious health risks. The economic consequences of food waste are equally significant, as it results in lost income for farmers, wasted resources used in food production and transportation, and an increased strain on waste management systems. Such waste not only has economic repercussions but also poses a significant threat to our environment. Food waste is responsible for generating significant amounts of greenhouse gases that contribute to climate change, while also consuming precious resources such as water, energy, and fertile land. Additionally, food waste in landfills releases methane, a potent greenhouse gas.

To address global challenges like food waste, everyone must play a part, from consumers and businesses to policymakers and international organisations. We can take a multi-faceted approach to reducing food waste, which includes improving supply chain management, better product labelling, and diverting wasted food to feed those in need.

However, one of the most important solutions is raising awareness about this issue. By using Twitter and other social media platforms, we can educate and engage people in the conversation about food waste and inspire them to take action.

There are two main types of food waste: discarded edibles and uneaten leftovers (Abiad & Meho, 2018). Within, the first group, it is also important to distinguish between 'food loss', which occurs when produce is lost before it leaves the farm, and 'food waste', which occurs when edibles are discarded at any point in the food supply chain. When food is thrown away, it rots in landfills, producing methane, a greenhouse gas that is even more potent than carbon dioxide and hence a contributing factor to global warming (Abiad & Meho, 2018). The misuse of resources like energy and water makes food waste a significant sustainability issue (Närvänen et al., 2018). This, in turn, speeds up climate change and highlights global inequalities between the rich and the poor.

Recent research suggests that households are responsible for the majority of food waste (61%) and that this is a problem in nations with a wide range of incomes (UNEP, 2021). Many market participants are to blame for the massive amounts of edible food that go uneaten at every stage of the food chain, from farm to fork (Parfitt et al., 2010). Recently, food waste has gained traction among marketing researchers (Aschemann-Witzel et al., 2017; Närvänen et al., 2018) and has been studied by academics from a variety of disciplines (Porpino et al., 2016). Despite social marketing's high potential for accelerating change in the context of food waste, the topic is still rather under-researched. Earlier research has focussed on characterising household food waste (Evans et al., 2012), and consumers' behaviour behind it (Jörissen et al., 2015; Katajajuuri et al., 2014).

Therefore, a research gap can be identified in the need for description and analysis of the discourses around food waste through social media, particularly Twitter. As a response to this, this study aims to shed light on how Saudi Arabian food banks make use of Twitter as an informational resource. Consequently, this project will explore how Twitter plays a role in creating public awareness among the Saudi public in the context of food waste. People's attitudes and food waste behaviours can be better understood by looking at how the use of Twitter has been used by these Saudi food banks organisations (Ettam, Ekram, Shukre, and FLW) in their strategies for raising awareness around food waste.

Additionally, this research will explore how Twitter can be successfully used to alter public behaviour with regard to the reduction of wastage in KSA. Several studies have

considered how social media affects the form of corporate social responsibilities (CSR) in various circumstances. An emphasis on social media's role in encouraging citizens to embrace socially responsible behaviour was highlighted (Grygiel & Brown, 2019). Customers' opinions on companies' CSR initiatives are important to companies (Hayes & Carr, 2021). Another study showed that using social media can help an organisation fulfil its social responsibilities (Gómez-Carrasco et al., 2021) by engaging customers. Numerous other researchers have argued that social media can be a good tool for educating and mobilising the public to take socially responsible actions (Chu et al., 2020; Stohl et al., 2017; Wang et al., 2018; Yang et al., 2020). After a brief introduction to KSA culture is given in the following section, the study's context is discussed.

1.2 CONTEXT OF KSA

The Gulf Cooperation Council (GCC)¹ countries are among the world's leading producers of wasted food. Particularly, KSA was named, not so long ago, among the top twenty-five countries for food waste in the world (Al-Khateeb et al., 2021). Food waste is a major issue in this country, averaging 427 kg per person per year. There are a number of different cultural and economic factors that contribute to such food waste. The KSA government's food policies support distributors and producers to make their products more accessible to the citizens. Food is cheap in comparison with other countries with similar environments and it is affordable to almost everyone (Mirza Barjees Baig et al., 2019). As a consequence, it is estimated that the average food waste for Saudi citizens reaches around 27% of their food items (Mousa, 2015). Arabs are known for their generosity towards their guests, serving them food as a sign of good hospitality. Saudis often purchase more food than they need to eat, which ends up being wasted. In particular, 'special occasions' account for almost 70% of the food wasted in KSA (Al-Buainain, 2015).

People in KSA, driven by their culture, like to serve up extravagant food tables at weddings, celebrations, religious festivities such as the Eid festivals, or any social gatherings. The frequently held banquets make food waste unavoidable (Aziz, 2012). Food wastage in

¹ The Cooperation Council for the Arab States of the Gulf [3] (Arabic: مجلس التعاون لدول العربية الخليج), also known as the Gulf Cooperation Council (GCC; Arabic: مجلس التعاون الخليجي) Nakhleh, E. A. (1986). The Gulf Cooperation Council: Policies, Problems and Prospects.

Saudi Arabia, according to Mirza B Baig et al. (2019), is deeply rooted in social and cultural values; thus, there is a need to understand how the social values of the society encourage food wastage in the country (Mirza B Baig et al., 2019). As part of the social culture of Arab people, those who save food are likely to be thought to be "stingy" or "ungenerous" (Balkhi, 2018). As a result, it is correct to say that social and cultural values promote the country's food waste practices. Therefore, this research will also explore the role of social and cultural values in the context of food wastage, which would be helpful to deal effectively with the food wastage issue in KSA.

Furthermore, the government provides food to its citizens at heavily subsidised prices. As a result of the low cost of food, the Kingdom of Saudi Arabia was recently ranked among the top 25 nations for the amount of food that is wasted per capita, which is 427 kg (Al-Khateeb et al., 2021). Throwing away food has a tremendous effect on the environment since it is the primary source of garbage that ends up in landfills (Mirza B Baig et al., 2019). Because of this, at the beginning of 2016, the government established a committee in Middle East and West Asia (MEWA) that included stakeholders from other ministries to assess the impact of food waste, identify its main causes, design solutions, and implement initiatives to reduce food waste and promote awareness of food waste issues (under the King's directives). MEWA intends to launch a nationwide programme to decrease food waste, develop a strategic plan for food reserves and storage, establish an early warning system, and ensure that agricultural markets get timely information (Alshuwaikhat & Mohammed, 2017). KSA imports around 80 percent of its total food supply (Lovelley, 2015), which shows how much the country depends on foreign food and how an increase in wastage can create a food security issue for the country.

The Sustainable Development Goal 12.3 of the United Nations (UN) intends to eliminate food losses throughout production and supply chains, including post-harvest losses, as well as to cut in half by 2030 the average annual amount of food that will be wasted on a global scale at retail and consumer levels (FoodAgricultureOrganization, 2011). One of the driest countries in the Arabian Peninsula is the Kingdom of Saudi Arabia because it has very little water, very high temperatures, and very little rainfall. This makes it difficult to expand agriculturally (Mirza Barjees Baig et al., 2019). Moreover, if water supplies continue to deplete, domestic agricultural performance continues to fall, population growth continues to

accelerate, and climate change continues to worsen, then its reliance on foreign food sources might expand (Mirza B Baig et al., 2019).

1.2.1 Food waste consequences in KSA development

While KSA has the largest area among the countries in the Middle East, it also has the smallest amount of arable land per capita of any country in the world, with just 0.114 hectares of land per person (AlFadley, 2022). Agricultural land occupies only 1,736,472 km² (WorldBank, 2018). Population expansion is putting additional strain on the country's food supply, with numbers exceeding 32 million in 2016 and with a forecasted 43% increase to over 46 million by 2050 (WorldBank, 2018). The population is primarily concentrated in cities. Food waste costs the Saudi Arabian economy \$17 billion annually and this is expected to rise in coming years, according to the Ministry of Environment, Water, and Agriculture (MEWA) (AlFadley, 2022). In addition, food that is wasted has to be replaced, which leads to wasteful imports and increased dependence on other nations.

As mentioned in the previous paragraph, the increase in population would also contribute to the increase in food wastage, which could potentially lead to food security issues for the country in the future. KSA is unique as it is classified as both a developing nation and a high-income country by the United Nations (FoodAgricultureOrganization, 2011). This dual classification suggests that while KSA may have a high level of wealth, there are still significant development challenges that must be addressed. These challenges include reducing food waste, which not only affects the country's economy but also its food security. As the population continues to grow, the issue of food waste will become even more critical for KSA to address in the future. In developing countries, the food waste issue is deeply rooted in a lack of awareness among the public which is also linked with local social and cultural values that enable the wastage of food during different rituals in the society. The largest rates of food waste occur near the beginning of the food chain, where it is most challenging to store and move food before it degrades. In nations with higher per capita incomes, a greater proportion of the overall food supply comes from the consumer and retail end of the food chain. It is quite likely that the latter is the case in KSA because of the country's distinctive food chain, which places more of an emphasis on distribution and consumption than it does on production, as well as its high level of income.

Having acknowledged that the issue of waste food is a public health issue in KSA, a country with one of the highest prevalences of waste food worldwide, this issue has been tackled by a variety of researchers in diverse fields such as environmental, health, social media, and economic areas. The outcome of the previous studies that addressed waste food concluded that awareness of the Saudi public should be a priority in order to change their behaviour regarding food waste issues. Therefore, it is conceivable that employing a study in media research is a the critical arena in which to influence the Saudi public to change their behaviour around reducing food waste. There seems to be a lack of studies based on media research in the Saudi context, which represents a significant gap in the literature that needs to be filled. Thus this study uses a social media in the form of Twitter, which is used by food banks organisations in KSA and could be a rich solution for this issue.

1.2.2 Social and cultural factors of food waste in KSA

The majority of the factors influencing food waste on the part of individuals are related to religiosity, personal perspectives towards the disposal of wasted food, and culture, according to the food waste literature. People's ideas about what is too good to throw away and what is not are heavily influenced by both the culture in which they were raised and the values they hold personally (Alruqaie & Alharbi, 2012; Mirza B Baig et al., 2019) For instance, due to social norms, people may consider food waste as socially acceptable (Waqas et al., 2018). These factors are interconnected and work together to influence the attitudes and behaviours of individuals towards food waste.

Numerous social factors are linked with food waste because food is a sign of communication and social status, which has different meanings among different tribes and ethnic groups. Therefore social factors are embedded within food waste behaviours. Traditions such as Eid, Ramadan, the Hajj, weddings, and other celebrations, all contribute to Saudi Arabia's reputation for hospitality (Mu'azu et al., 2019). Furthermore, per capita income has risen considerably in recent decades, owing primarily to oil money, while food prices are subsidised by the Saudi government, resulting in a high level of food waste (Rehan et al., 2018). Diverse solutions customised to national settings are required to achieve this goal. Concentrating on countries with high waste levels can pay off handsomely.

Furthermore, culture is regarded as one of the most influential aspects concerning food waste. It is generally agreed that culture refers to the shared norms of behaviour, values, and aesthetics among members of a certain society, ethnicity, religion, or epoch (Al-Saleh et al., 2017). Food culture is defined as unique eating habits and consumer behaviours that have developed through generations to the point that they form a whole tradition that is often distinctive from place to place (Mu'azu et al., 2019). In terms of Saudi Arabian culture, the country is known for the generosity it shows to others when it comes to food-related traditions and customs, which involve arranging extra food at home for different occasions (Abuqurayn, 2019). Food waste patterns are shaped by the cultural norms of KSA on significant occasions, as well as daily activities like shopping, cooking, and dining. In KSA, the custom of hospitality is widely recognised and practised (Mu'azu et al., 2019). Beyond the home, this kind of hospitality is extended to eating in restaurants and other establishments. The Saudi people place a premium on making their guests feel at home and welcome, and one way they do this is by feeding them extravagant meals. According to research conducted by (Al-Saleh et al., 2017), KSA generates roughly 600 metric tonnes of garbage every day, with food accounting for a substantial share of this. According to recent statistics, food waste increases from 4,000 to 5,300 tonnes per day during Ramadan, making reckless food intake a typical occurrence in KSA (Rehan et al., 2018).

Celebrations in KSA waste up to 70% of the food produced (Al-Buainain, 2015). Arabs are known for their generosity in hospitality, and food is a common way of welcoming visitors (Sobh & Belk, 2011). Even if a family does not have a lot of food to spare, guests are frequently fed from what little is available. People in KSA frequently buy in bulk and cook far more food than they can eat, resulting in enormous amounts of food being wasted. It is a tradition in KSA to put on elaborate Eid celebrations, weddings, parties, and informal get-togethers. When people try to save food, it is perceived as miserliness and indifference toward others, which are considered negative traits in Arab society (Waqas et al., 2018).

High levels of food waste in KSA are a result of inadequate assessment and education on this issue, both at the policy and individual levels. Food waste studies across the world and UNEP have so far focussed their food waste evaluations on countries such as the United States and Europe, while disregarding those in the Middle East and Arab regions (FoodAgricultureOrganization, 2011). They have also failed to undertake specific research and to take action in KSA. There are few studies on food waste at the national level and, at the

same time, the Saudi Arabian government has not done any research on the subject either. Food prepared for parties and special events in restaurants is thrown away due to a lack of knowledge on the part of consumers. Strict hygiene standards and standards for fresh food consumption are held in high regard by Saudis (Baig & Straquadine, 2014). Because so much food is thrown away at the family level, the “Do Not Waste Food” campaign launched by Food Banks in KSA faces an uphill battle in a world where food is so frequently wasted. Ethical considerations aside, individuals need to understand more about the necessity and significance of food, and how to reduce food wastage.

Because of the seriousness of the food waste problem, the Ministry of Food and Agriculture has taken steps and formed a committee to investigate ways to cut down on food waste and deal with the problem in a long-term manner (Alshuwaikhat & Mohammed, 2017). An advisory group has been formed to investigate how food waste might be reduced in KSA’s food supply network, and to design ways to reduce food waste in society, as food waste is a threat to the Kingdom’s natural resources including groundwater. According to the Ministry’s mission, food supply chain breakdowns may be easier to fix than other issues. Campaigns highlighting the importance of food waste prevention will be launched in KSA restaurants, cafeterias and canteens, as well as in schools and colleges (Mirza B Baig et al., 2019).

People in KSA must figure out how to make better use of the extra food they have on hand if they want to reduce the amount going to waste. Even though it is hard to halt the problem of food waste, it can be reduced greatly by raising public awareness through campaigns and vibrant extended education programmes. A shift in personal and commercial perspectives is required if waste is to be reduced (Balkhi, 2018). KSA society is heavily influenced by Islamic beliefs. Because of this, it would be beneficial if the following passage from (Quran, 632) were read aloud to the world at large:

“O Children of Adam! Dress properly whenever you are at worship. Eat and drink, but do not waste. Surely He does not like the wasteful”.

1.2.3 The role of food banks

KSA’s food banks must undertake a nationwide push to save and properly utilise the country’s food supply, which is largely imported. In KSA, there is the need for a campaign to stop food waste in restaurants, hotels, schools, institutions, and colleges as well as in the home. Food banks can accomplish this by conducting seminars and conferences for planners,

policymakers, and opinion makers such as civil society, youth, and women’s groups. Without popular support, acceptance, and practical implementation of the stated solutions, the government cannot make any progress. Reducing food waste in KSA is possible if people are educated about its relevance. Social media initiatives such as Love Food Hate Waste from the UK could serve as an inspiration, but they must be tailored to the unique circumstances in KSA.

According to Alshamari (2017), foodbanks were the least active nonprofit organisations on Twitter in KSA in 2016, although, at that time, there was a lot of activity and discussion on the Twitter accounts of Saudi food banks and other charitable organisations. The primary sample for the study was 657 Twitter accounts. Those accounts were categorised manually based on the organisations they belong to and the nature of their work. Alshamari (2017), gathered tweet data between 11th and 21st January 2016, and nearly 300,000 tweets were collected and analysed see Figure 1-1).

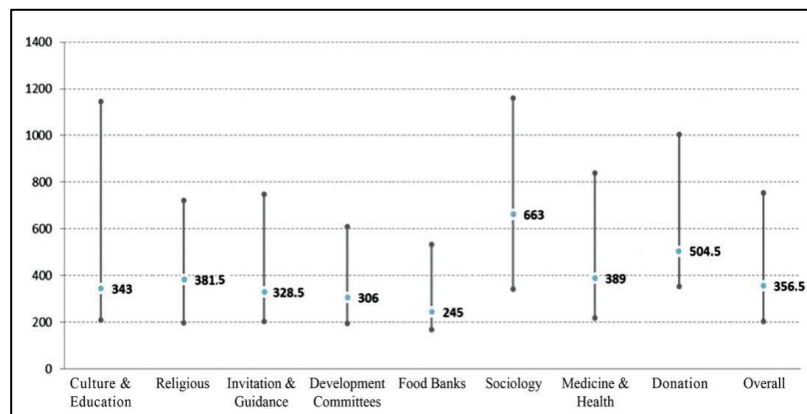


Figure 1-1 Accounts’ food banks in KSA between 11th and 21st January 2016 (Alshamari,2017)

The study concluded that food banks in KSA had a limited presence on Twitter and missed an opportunity to engage with the public and promote responsible food consumption. Despite the high level of activity and discussion on the platform among other charitable organisations, food banks were not actively using Twitter as a means of communication and outreach. This highlights the need for effective social media strategies tailored to the cultural values and norms of KSA and other Arab cultures. By increasing social media activity and outreach, food banks could raise awareness of food waste and encourage individuals to adopt more sustainable food consumption practices.

1.3 SOCIAL MEDIA IN KSA

The use of social media in KSA has expanded significantly since the launch of Twitter in 2006, followed by the launch of several additional platforms and tools. With a 42% growth in the number of users, KSA has moved up to second place among the countries with the greatest rates of growth on Twitter in 2012 (Jiffry, 2013). There is significant growth in the recent years, and it has been identified that 88% of Twitter users engage in video watching through Twitter links (NEWS, 2022), which could be employed to run a food wastage reduction campaign on social media in KSA.

The effect of social groups and the connections that are a part of social media has the capacity to make a major contribution to shaping society (Kurtoğlu, 2022). As stated above, one of the types of content commonly being consumed by on most Twitter users is video, which gives an opportunity for the policymakers and organisations to deal with the food wastage through running a campaign on social media.

The BBC channel examined Twitter's remarkable popularity growth in KSA. On Twitter, BBC Monitoring established a hashtag named #WhyDidTwitterSucceedInKSA and got several responses to the question. The Arab world is less likely to be democratic in real life, making Twitter an ideal place for free expression, as stated by a number of individuals who remarked that citizens of a dictatorship may use Twitter to express themselves freely (Hebblethwaite, 2014). Twitter, according to different scholars (Al-Jabri et al., 2015; Noman et al., 2015) enabled people in KSA to engage in civic and political dialogue without fear of reprisal. In KSA, Twitter is a more successful media medium than more traditional media such as newspapers. Twitter is a free and independent alternative to the state-controlled traditional Arab media, according to a study by Al-Jabri (2015). Noman (2015), on the other hand, believes that Twitter users edit their posts to avoid violating societal norms or the Saudi government's censorship rules. A tweet's content can be used by the authorities as evidence for use in a court case (Chaudhry, 2014). Because of this, Saudi Twitter users should be aware that criticising the Saudi royal family on the platform can get them in serious legal trouble, including possible jail time and libel accusations (Al-Jenaibi, 2016). Most users avoid discussing difficult topics, and still some want to stay nameless (Noman et al., 2015), adopting pseudonymisation.

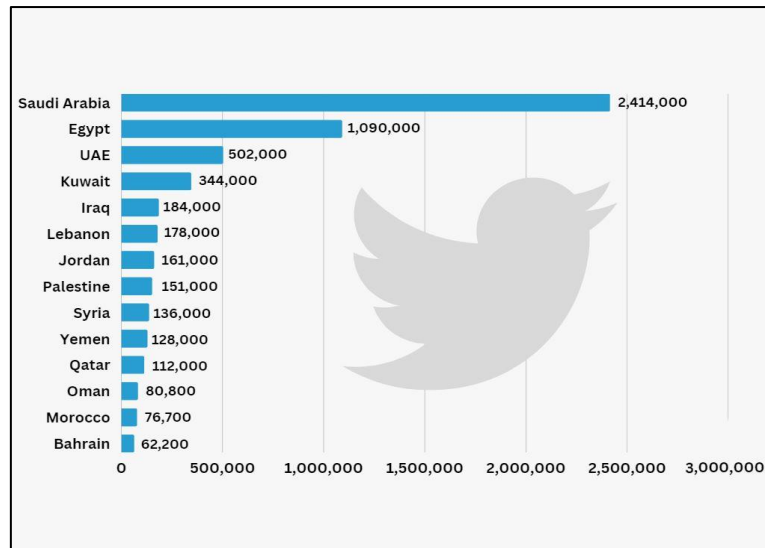


Figure 1-2, The number of users who are actively engaged on Twitter in the Arab region (Adapted by Mourtada & Salem, 2014).

Web 2.0 components such as social networking sites (SNSs) are widely used by internet users and have had a significant impact on how they communicate and share information. Within a relatively short period, social initiatives appear to have had an impact on a significant number of people (Castells, 2014). In 2006, Twitter, a free social networking service, was introduced to the public. Before the end of 2017, users could publish brief messages of within a maximum of 140 characters on this website in real-time (Lovejoy & Saxton, 2012). The maximum number of characters in a tweet has increased to 280 as of November 2017. Research on Twitter's ability to facilitate communication and disseminate information has been extensive (Gleason, 2016; Zhao & Rosson, 2009).

A user of Twitter or another SNS does not have to be a professional journalist to report on events (Al-Jenaibi, 2016). Twitter is a popular SNS in KSA, and Twitter is one of the most widely used SNSs. Forty% of Saudi citizens and Middle Eastern and North African residents use Twitter see Figure 1-2, with women making up nearly half of the country's user base (Baghdadi, 2015). Between 2013 and 2015, the number of people using Twitter in KSA increased by 80% (Baghdadi, 2015), with 5.4 million people in total, tweeting 210 million times collectively every single month, at an average of 5 daily posts (Baghdadi, 2015).

According to Hasaneen (2015), social media channels are highly valued for their speed and simplicity of communication and information exchange. Hasaneen emphasised the importance of using social media as a means of promoting awareness of the goals and activities of nonprofit and charitable organisations. This highlights the potential of social

media to enable these organisations to reach a wider audience and increase public awareness of their mission and activities.

These channels should be used for charitable purposes by everyone who uses them, including public entities and businesses as well as individuals. According to Hasaneen (2015), all charities operating in the KSA should use social media to communicate directly with members of society and those involved in saving food. This will help them introduce themselves to their target group and mobilise support for their activities in service to this group, while also helping to strengthen the process of collecting donations for associations through officially approved means. Food banks' usage of social media must be informed by a thorough study of the method of dealing with the audience of those means, to ensure that the message is delivered in the required manner, according to (Hasaneen, 2015), who stresses that the content of these accounts should vary according to the demographics of the audience. 70% of the messages are meant to raise awareness, and 30% are meant to rally support. He also praised the Association of Disabled Children's initiative regarding the launch of the "Tweet Al-Khair" programme on Twitter, in which celebrities and public figures from various fields of culture, art, sports, and other forms of entertainment use their pages and websites to promote their humanitarian missions, raise awareness of disabilities and disability issues, and profit from a percentage of the advertising revenue.

1.4 THE SIGNIFICANCE OF THIS STUDY

Food waste is a significant global sustainability challenge that has contributed up to 30% of greenhouse gas emissions (Sharp et al., 2010). According to Baig et al. (2022), food waste in KSA comprises the largest percentage of waste, ranging to 50%, followed by paper, cardboard, plastics, and others see Figure 1-3. Saudi Arabia's per capita food waste is also among the highest in the world, amounting to \$17 billion annually. Twitter is the most popular SNS in KSA, due to the ease with which NGOs and individual users can set up accounts for networking purposes, and the site's openness to academic inquiry. Since the interaction with a large number of users makes this an active medium, messages travel much more quickly than through other media.

Debates regarding whether or not Twitter can be used to influence people are particularly relevant to this study. Previous studies focussinghave focussed on identifying the

role of Twitter in the context of online banking behaviour or customer engagement on the this social media platform but they have not identified how Twitter can play a role in developing asocial behaviour or generating social impact on the public to change their behaviour towards food waste. Therefore, the focus of this research is to explore the role of Twitter in creating a social impact on the public to reduce the food waste in KSA.

There has been widespread adoption of social networking sites, especially Twitter, among a large segment of society. Consequently, many charitable and humanitarian organisations have taken advantage of these SNS to communicate with target groups and publicise their messages and goals. However, some organisations are trying to exploit their networking sites as a means of receiving donations. According to Alrefai (2015), for any food bank that wishes to reach out to the general population, using social media is the most effective method available. (Almohaia, 2015) also argues that, for this platform to be truly beneficial, associations must first grasp the significance of their role in raising public awareness and better define themselves. Friendships and family ties are extremely important to KSA's residents, and the reputations they have built are highly prized (Al-Jabri et al., 2015). Individuals acting irresponsibly dishonour not only themselves but also their entire families (Wang et al., 2022). KSA's policies, society, and education system have all changed in fundamental ways because of the effect of SNS such as Facebook and Twitter. (Al-Jenaibi, 2016) claims that social media have caused fundamental changes in the political and cultural aspects of KSA. Part of the reason for this shift is the ease with which people can now share events and news on Twitter in near-real time.

However, there is a lack of studies in KSA that assesses the messages offered by different campaigns and efforts being made by different organisations. This research aims to explore how organisations are currently using Twitter to deal with the issue of food waste in KSA and to identify an effective approach to tackle the issue.

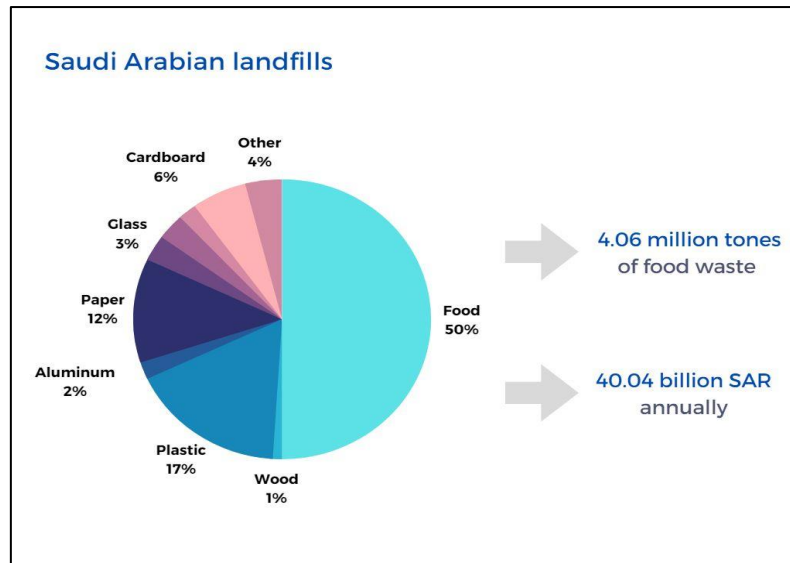


Figure 1-3 Food waste comprises the largest percentage of waste, ranging to 50%

Moreover, while social media campaigns potentially gain large public traffic, their influence on people’s perceptions of, knowledge about, and behaviour toward food waste is under-researched. There is also a need to understand locally-driven public behaviours related to food waste, which are influenced by social and cultural values. Consequently, the understanding of the locality of the issue would be helpful to effectively develop and manage Twitter campaigns to reduce food waste in KSA.

Another reason for this research is the need for evidence to understand how Twitter can be used to create social impact among the public to reduce food waste at the national level. Twitter is a useful tool for connecting with the general population, and a growing number of people all around the world use it to discuss a wide range of issues, including environmental concerns. Twitter engagement can be analysed to better understand and evaluate human behaviour and activities related to food waste, and to identify public opinion and response to different campaigns and initiatives (Jiang et al., 2021). Content analysis of food bank organisations’ Twitter pages could be helpful to understand shared content and the subsequent public response. Overall, this research will provide valuable insights into the role of Twitter in promoting awareness of food waste and the development of effective strategies for addressing this important issue.

1.5 AIM AND OBJECTIVES

1.6 THE AIM:

The aim of this research is to investigate how Saudi food banks may benefit from using Twitter to improve food waste awareness campaigns.

The research aims to explore the impact of Twitter on food waste awareness in the Kingdom of Saudi Arabia, by examining the use of social media by food banks to raise public awareness. The research questions focus on the messages used by food banks on Twitter, their perspectives on using Twitter for food waste awareness campaigns, and the potential for a social media framework to help food bank organisations in KSA develop effective strategies. The research objectives are to analyse the theoretical and critical perspectives of using social media for behaviour change, examine the role of Twitter in reducing food waste, identify the major themes and trends in food waste discussions on Twitter, and develop a model of communication through social media to address public awareness. The following research questions will be answered to achieve these research objectives.

1.7 RESEARCH QUESTIONS

1. What are the key messages of Saudi food banks on Twitter to increase food waste awareness?

This research question aims to understand the messages that Saudi food banks are using on Twitter to raise awareness about food waste. The goal is to identify the key messages that are being communicated through Twitter to the public.

2. How do Saudi food banks view the use of Twitter for food waste awareness campaigns?

This research question aims to understand the perspectives of Saudi food banks on the use of Twitter for food waste awareness campaigns. The goal is to gather insights into the views of food bank organisations on the effectiveness of Twitter as a tool for raising awareness about food waste.

3. How can a social media framework on Twitter help food bank organisations in Saudi Arabia develop strategies to raise public awareness of food waste?

This research question aims to explore how a social media framework on Twitter can help food bank organisations in KSA develop strategies to raise public awareness of food waste. The goal is to understand how food banks can use Twitter to create social impact and change public behaviour towards food waste.

1.8 RESEARCH OBJECTIVES

1. To analyse the theoretical and critical perspectives of using social media to change public behaviour.

The first research objective is to analyse the theoretical and critical perspectives of using social media to change public behaviour. The goal is to understand the existing knowledge and theories about the role of social media in changing public behaviour.

2. To examine the role of Twitter in reducing food waste in Saudi Arabia.

The second research objective is to examine the role of Twitter in reducing food waste in KSA. The goal is to understand the impact of Twitter on reducing food waste in the country and how it can be used as a tool to raise awareness about food waste.

3. To identify the major themes and trends in food waste discussions on Twitter.

The third research objective is to identify the major themes and trends in food waste discussions on Twitter. The goal is to understand the public discourse around food waste on Twitter and the key issues that are being discussed.

4. To develop a model of communication through social media to address public awareness, based on food waste campaigns in Saudi Arabia.

The fourth research objective is to develop a model of communication through social media to address public awareness on food waste. The goal is to create a framework for food bank organisations to use social media, specifically Twitter, to raise awareness about food waste and create social impact.

1.9 DEFINITION OF THE KNOWLEDGE GAP AND METHODOLOGIES EMPLOYED

The research focusses on food banks' use of Twitter to raise awareness about food waste, specifically in the context of food waste on social media (SM) (specifically Twitter), and provides evidence of this in KSA. The aim and objectives of this research were designed to

create a model for promoting awareness about food waste on Twitter, in order to provide new insights into the role of Twitter in promoting awareness of food waste in KSA. The study employs a two-pronged methodology that involves a content analysis of tweets by food banks in KSA and a thematic analysis of in-depth interviews with actors associated with these organisations. The objective is to provide insights that can inform the development of effective social media strategies to raise awareness of food waste and promote its reduction in KSA. The next section will describe the structure of the thesis and provide an overview of the research methodology and analytical approach.

Thesis Structure

This thesis contains 5 chapters, with each chapter consisting of a number of sections.

Chapter One

The introductory chapter identifies the significance of the study and its aim and objectives. This chapter provides some statistical data about the food wastage of KSA and also some literature related to issues including the contextual factors playing a role in increased food wastage in the country. Additionally, this chapter also provide the knowledge on the use of social media on national level, which shows the opportunity for social media to be used to reduce food wastage in the country. It also highlights the knowledge gap it addresses and the research contribution it makes. In addition, it describes the nature of social media and food waste in KSA. It concludes by providing an overview of the structure of this thesis.

Chapter Two

In this chapter, a literature review is presented, as well as a discussion of the theoretical foundations of the investigation. An emphasis on the knowledge gaps that the study intends to fill is also emphasised. This chapter provides a brief contextual overview of KSA. It describes the use of social media and Twitter by NGOs in their strategies. It also considers the ongoing strategies of NGOs and critical social and marketing issues, explaining how organisations integrate Twitter into their work and raise awareness in the environmental and food waste context. It also highlights how online interactions on this platform provide a line of communication between online users and NGOs and government organisations. As the major focus of this research is Twitter, the technological features of Twitter are discussed in this chapter and the role of social media overall is also critically reviewed to develop an in-depth

understanding about the use of social media to reduce food wastage. The major purpose behind the literature review was to develop an in-depth understanding about the topic to contextualise the analysis of Twitter data and to develop semi-structured interview questions to collect the most appropriate data to achieve the research aim and to answer the research questions. Finally, it investigates how socioeconomic and cultural elements shape users' Twitter content, providing insights into the extent to which social media policy and strategies impact public behaviour and practices.

Chapter Three

This chapter describes the methodology employed in this research. It details the mixed method approach taken, explaining the quantitative data collection and analysis methods used. Additionally, an inductive research approach was justified for this research because the major purpose of the research is to develop a context-specific framework that would be helpful for organisations to run and manage social campaigns to reduce food wastage in KSA. Semi-structured interviews were used with Saudi professionals who are working in food bank organisations. Twitter data were analysed using content analysis of their organisation's tweets. The chapter also considers issues relating to research quality (validity and reliability) and compliance with ethical guidelines.

Chapter Four

As this research is based on two types of data, at the first stage data was collected from the Twitter accounts of selected organisations and this data was analysed through content analysis. This chapter is the most important in terms of the analysis of the data. Content analysis is described, discussed, and justified for this research. Additionally, the researcher also developed a framework which is being used to conduct the content analysis, and different categories have been developed using the framework, which is developed in this chapter. The primary purpose of the content analysis was to answer the first research question, but the second research question was also answered through content analysis. More specifically, the second question required more in-depth data; therefore, the second question was also addressed through thematic analysis, which is discussed in the second part of this chapter. Additionally, semi-structured interviews were conducted with professionals who are working in the organisations which are making efforts to reduce food waste in KSA. In this chapter, the results of the Saudi case studies are presented, and findings are compared and contrasted with existing literature and previous studies. This chapter fills the gap in

knowledge by creating a context specific model for the use of social media to reduce food wastage in KSA.

Chapter Five

The concluding chapter summarises the main findings and outlines the limitations of the study. Therefore, this chapter summarises the overall research and the researcher's endeavours to address the research questions by providing a summary answer to each research question. Additionally, this chapter also discusses the research's contribution of knowledge and the practical contributions of the study. It concludes with a discussion of the study's relevance, repercussions, limits, and suggestions for future research as well as a summary of significant results. Consideration of the limitations of the research's future direction is also provided for future researchers in this chapter.

CHAPTER 2. SOCIAL MEDIA, PUBLIC BEHAVIOUR AND FOOD

WASTE: THEORETICAL FRAMEWORKS

The aim of the research is to understand how Twitter can be used to promote awareness about food waste, specifically in addressing the issue of dealing with food waste in Saudi Arabia. The chapter will introduce the topic of food waste in the context of KSA. It will also analyse this phenomenon as a social problem with global resonances. In doing so, it will present an account of the most relevant theories on social media, social interaction, and behavioural changes that can facilitate understanding of cultural and communication issues and development of social marketing campaigns. As food waste is deeply rooted in social and cultural factors, the socio-cultural meaning of food waste will also be discussed and will include food waste behaviour and the of food waste behaviour. The focus of this research will be on Twitter and more specifically, the role of this social media platform in the context of raising awareness and, potentially, social changes in the context of food waste.

2.1 FOOD WASTAGE

Food waste, as defined by the United Nations' Food and Agriculture Organisation (FoodAgricultureOrganization, 2011), includes all situations in which consumables are purchased with the intent of being consumed but are instead discarded, lost, spoiled, or consumed by pets. All food that is brought into the household but is not consumed by humans constitutes food waste (Lyndhurst et al. (2007). According to Rezaei and Liu (2017), food waste occurs at various stages in the food value chain, including but not limited to production, storage, processing, and distribution. The definition of food waste according to Stenmarck et al. (2016) is food removed from the food supply chain that is either not consumed or discarded. Food waste includes all edible and inedible components of food. This comprises composting, unharvested crops, anaerobic digestion, bioenergy production, co-generation, incineration, and disposal to sewers, landfills, or the sea (Stenmarck et al. (2016). Post-harvest (or post-production) losses include food that goes uneaten. A lack of food waste policies and varying definitions of food waste makes it challenging to develop reusable measurement methodologies Zorpas and Lasaridi (2013) state that there are two basic methods for estimating the amount of food that is wasted in the average American household. One of them involves having consumers weigh and record their food waste in a notebook over a set period. The second approach is to examine the final resting location of food waste from residences, such as city-provided garbage cans, and conduct a composition study there. Graham-Rowe et al. (2014) conducted a study in which participants were instructed to save their food scraps for a predetermined time period. Researchers then weighed the trash they collected.

It is difficult to determine the overall amount of food lost due to the fact that the word 'food waste' is used interchangeably in different research to mean both 'food loss' and 'kitchen trash' (Buzby & Hyman, 2012; Schneider, 2013). If the meal was produced to be consumed by humans, its subsequent usage as a raw material or energy source would be considered wasteful. The term 'food loss' refers to the amount of usable food that is produced for human use but goes to waste (Buzby & Hyman, 2012). The term 'food loss' refers to the number of edible goods that are discarded before they reach the consumer due to unavoidable circumstances such as spillage, spoiling, abnormal quality changes (such as bruising or wilting), or other causes of waste (Gustavsson et al., 2011). According to Griffin et

al. (2009) and Kör et al. (2021), edible but uneaten food is considered food waste. What I refer to here is the edible materials that go to waste before, during, and after a home meal preparation, or food materials that can be cooked or eaten raw but have not been eaten, according to Griffin et al. (2009). Vegetable peelings, meat scraps, and spoiled or unused portions of cooked meals all fall under this category of garbage. Skeletal remains, complete animals, and body parts are also included (the latter two generally do not occur in homes).

The European Union is funding the Food Use for Social Innovation by Optimising Waste Prevention Strategies (FUSIONS) initiative, which stands for 'Food Use for Social Innovation by Optimising Waste Prevention Strategies' and aims to make Europe more resource-efficient by drastically cutting down on food waste. German law, European regulations on food law² and proposals for a framework to define food waste made by the EU-funded FUSIONS project are used to define 'food waste' (Gustavsson et al., 2014) as anything that was intended for human consumption but was instead discarded. As a result, they are no longer a source of sustenance for humans. This criterion is useful for this study because the emphasis is on food waste in homes, but it has been criticised for excluding pre-harvest losses and male chicks that are not needed for egg production (Schneider, 2013). Therefore, preventing food waste should be prioritised over finding effective ways to dispose of it, as per the waste hierarchy established by the European Union (del Castillo, 2008). Even while it may be impossible to prevent all kinds of food waste, we may be able to identify the most relevant areas. Leverenz et al. (2019) discovered that 47% and 18% of Germany's total food waste came from private houses and restaurants, respectively. Precisely, the portion of food waste that can be prevented entirely or significantly reduced is the focus of this investigation.

2.1.1 Differences across social and cultural contexts

A lot of what happens to food after it has been thrown out is related to the social and cultural context in which occurs (Allen & Gillespie, 2001; Pearson et al., 2017). Assisting beneficial behavioural changes at the household level, consumer awareness and education (Pearson & Amarakoon, 2019; Pearson et al., 2017; Zamri et al., 2020), campaigns to educate the public

² (The European Parliament and the Council of the European Union: Directive 2008/98/EC; The European Parliament and the Council of the European Union: Regulation (EC) No 178/2002),

about the dangers of food waste are run by a wide variety of organisations, including governments, NGOs, and retailers. These informational campaigns, if well developed, can modify food behaviours by leveraging social media and social marketing techniques (Kim et al., 2020). Social norms can also play a role in shaping environmental behaviours and attitudes, for example, some norms may encourage the conservation of resources, while others may discourage it. Social norms, on the other hand, refer to the unwritten rules or expectations about how people should behave in a particular group or society. Social norms are shaped by the shared beliefs, values, and attitudes of a community and can influence how individuals think and act.

Hofstede's concept of culture as 'unwritten laws of the social game' serves as inspiration for our own definition. A group's members can be easily distinguished from those who do not belong to the group by their shared mental programming (Hofstede et al., 2005). Culture is a social phenomenon that is acquired via one's interactions with others. A community's relationship with food, including how it is produced and stored, who has access to it, what they eat, and any taboos associated with it, is profoundly impacted by the norms and beliefs that make up its food culture (Romero, 2019). Campaigns promoting healthy eating must consider the cultural norms and preferences of the people they aim to serve, or else they will fail. Food interventions or help that do not conform to societal or cultural norms may be rejected, for instance (Zamri et al., 2020).

It is widely acknowledged that consumers in industrialised nations tend to throw away significantly more food than their counterparts in less affluent regions (Joardder & Masud, 2019). Consumers in developed countries can afford to waste food because there is an abundance of food available to them (Joardder & Masud, 2019). As a result, the consumers in these countries tend to overbuy, have high standards of living, and favour food that is both tasty and aesthetically pleasing, all of which contribute to food waste (Joardder & Masud, 2019; Principato et al., 2015). With limited resources and a growing population, consumers in emerging nations simply cannot afford to throw away edible food (Joardder & Masud, 2019). Socio-cultural contexts have also a profound impact on how societies live and engage in environmental sustainability (Chacón Vargas & Moreno Mantilla, 2016). Different cultures, societies, and communities may have different values, beliefs, and practices that influence their approach to environmental issues. For example, some cultures may place a greater emphasis on preserving natural resources for future generations, while others may prioritise

economic development over environmental protection. Additionally, socio-economic factors such as income, education, and access to resources can also play a role in shaping environmental behaviours and attitudes. Understanding these socio-cultural contexts is important for developing effective and inclusive strategies for addressing environmental issues and promoting sustainable practices.

To our knowledge, there has been no significant amount of research addressing the role of cultural norms in the success of efforts to reduce food waste in homes. This research suggests that efforts aimed at reducing food waste may not always reach culturally and religiously diverse communities for a variety of reasons. As such, this research primarily focusses on KSA to get a wide range of local opinions. This study collaborated with a large KSA food retail supermarket and a state government agency (henceforth referred to as 'research partners') to assess the reach and impact of several campaigns aimed at reducing food waste.

2.1.2 Stakeholders and agents in the food waste chain

Relationships among stakeholders in terms of entrepreneurial ecosystems are a reflection of such concerted efforts (Spigel, 2017). Figure 2-1 is an attempt to graphically represent the various parties who play a role in the food supply chain and in the formulation of strategies for dealing with food waste. According to previous research (Bliemel et al., 2016; Mena et al., 2011), there is a favourable correlation between stakeholder collaboration and the strengthening of interorganisational connections and, ultimately, organisational performance (Uzzi, 1997). It is well-established that organisations are bound by diverse interdependencies inside and across the layers of the network in which they are immersed (Simpson & Willer, 2015). To analyse the complex social structures underlying a relational environment, network theory provides a lens through which to explore many, interacting layers (networks) (Lomi & Pattison, 2006; Scott & Carrington, 2011).

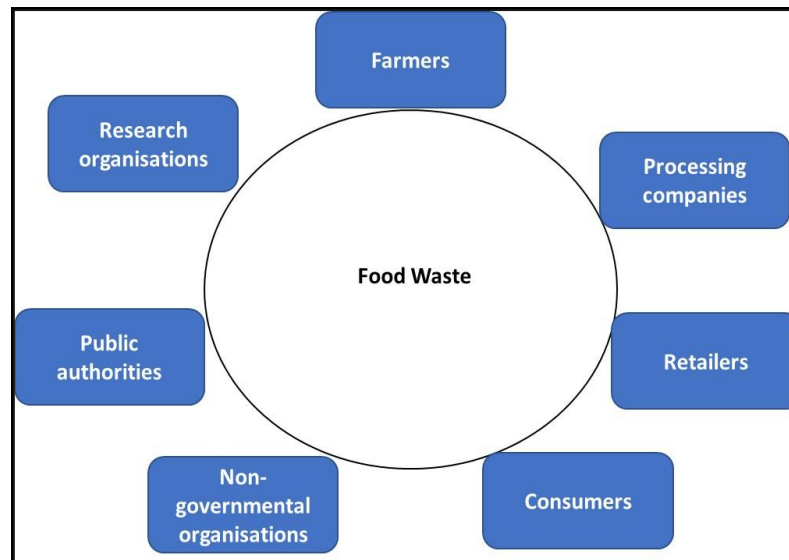


Figure 2-1 Stakeholders involved in the food waste management system.

Many types of stakeholder relationships have been studied in the literature as they pertain to food waste management. Forms of cooperation include exchanging knowledge and resources, working together on projects, and other similar activities. A key source of organisational learning is the sharing of knowledge across stakeholders (Lazega, 2017); the more information a stakeholder shares, the more it will be inspired to come up with new ideas (Reed et al., 2014). One of the major factors contributing to food waste in supermarkets is the failure to share relevant data among key players (Kaipia et al., 2013). For example, in the food industry, sharing resources (e.g., physical venues and personnel) is crucial to promote the integration of several stakeholders in innovation activities (Fountain & Walder, 1998). Specifically, the implementation of a new food waste management system can be aided by the pooling of material resources, as the creation of technologies and practises necessitates the availability of instruments and people facilitating this process (Lipinski et al., 2013). Last but not least, there is a mountain of data demonstrating that organisations with a strong focus on sustainability benefit greatly from participating in formal cooperative ventures (Govindan et al., 2016; Lozano, 2008).

According to Aschemann-Witzel et al. (2017), the complexity of the food waste problem makes it more apparent than ever that stakeholder engagement is essential. Ten Italian food producers' experiences are presented by Garrone et al. (2016) as proof that involving NGOs in the decision-making process is not only helpful, but essential for lowering food waste. Both De Steur et al. (2016); Mourad (2016) stress the value of structured, multi-

stakeholder partnerships in the fight against food waste, but strong networking is required to collectively fight for the food waste reduction in different regions. Therefore, this research explores how Twitter is being used by the NGOs in KSA and also examine the professional point of view on stakeholder engagement through Twitter to reduce the food wastage in KSA.

Furthermore, stakeholders may elect to organise formal projects focussed on achieving new ideas, rather than merely relying on informal communication to gain knowledge that is not publicly available (Bos - Brouwers, 2010). Multiplexity is a conceptual perspective that allows the analyst to take into account the co-existence of several types of interactions, which in turn reflects on the complexity and efficiency of the underlying decision system among the stakeholders. There are two basic structural kinds in social networks, dyads and triads, which represent the smallest units of all potential relational systems. Like single networks, multiplex networks consist of dyads and triads, each of which presents several linkages to the network at once. These links may be directed or undirected (Scott & Carrington, 2011). From the standpoint of social embeddedness, when two actors develop a link in a given setting, their behaviour is often tied to the presence of additional ties (Shipilov & Li, 2012). Overall, it is assumed that the observed connection combinations are indicative of the perceived assets of stakeholders in the food waste governance structure (Bodin & Prell, 2011; Reed et al., 2014). Social media can also become a source of information exchange and resource sharing, or between information exchange and projects, or between resource sharing and projects and so on. Sharing resources is important to the success of a formal cooperative project, especially in the food chain, and instrumental partnerships based on the flow of information are frequently observed alongside more stable collaborations (e.g., sharing resources and joint initiatives) (Galanakis, 2021).

Producers, food processors, merchants, consumers, social organisations, and public authorities are all active participants in the effort to reduce food waste along the entire food supply chain (Aschemann-Witzel et al., 2017). In order to effectively introduce changes in technologies, behaviours, and policies that a single actor cannot finance, there appears to be a consensus that minimising food waste requires cooperative intervention among various stakeholders (Papargyropoulou et al., 2014). However, our understanding of what exactly constitutes a cooperative intervention remains hazy at best. Food waste management systems are notoriously complicated, and Gómez-Carrasco et al. (2021) argue that this complexity necessitates a relational analytical approach that can pivot as needed.

Previous work that has taken such a relational perspective in the context of the food supply chain has suggested that stakeholders can achieve their objectives best through repeated interaction and by relying on multiple relations, given the different interests, resources, and capabilities of the various stakeholders (Steiner et al., 2017). Multi-stakeholder initiatives in the field of food waste management have been hypothesised to facilitate the growth of a wide variety of interlocking relationships, including those of information sharing, resource pooling, and joint venture creation (Saint Ville et al., 2017). There seems to be a noticeable lack of research that considers multiplex networks in the context of food waste management systems. Furthermore, it appears that no research has looked at the factors that influence the connections within these networks, which are crucial for comprehending the actions of stakeholders in the introduction of novel food waste management systems. As Lusher et al. (2013) demonstrate empirically, specific endogenous network characteristics and exogenous organisational attributes drive the networking behaviour of stakeholders; however, to the best of our knowledge, this problem has not been explored in practical applications dedicated to food waste management.

2.1.3 Food waste classifications

For an effective food waste management solution to be identified and implemented, proper food waste classification is a crucial first step. Strategies and approaches should be tailored and adapted to different types of food. Categorising food waste also has a direct effect on our ability to quantify food waste (Kör et al., 2021). This provides motivation for consumers to alter their perceptions and, perhaps, their actions around food waste (Parfitt et al., 2010).

However, a unified taxonomy for wasted food does not exist. Most reports break down food waste into two categories: that which can be prevented and that which cannot. This is the case despite the fact that several studies have tried using various approaches to classify food loss and waste. However, the terms 'avoidable' and 'non-avoidable' food waste were defined inconsistently. Avoidable food waste (such as bread, apples, and meat), possibly avoidable food waste (such as bread crusts and potato skins), and unavoidable food waste (such as meat bones, eggshells, pineapple peel, and teabags) were identified by the Waste and Resources Action Programme (WRAP) (Quested et al., 2013). There are three types of food waste, as defined by Usubiaga et al. (2018): (1) food losses, which refer to edible

products lost during production; (2) unavoidable food waste, which refers to edible products lost during consumption (banana peels, fruit cores, etc.); and (3) avoidable food waste, which refers to edible products lost during consumption.

Schott and Andersson (2015) distinguished between food waste that could have been avoided and waste that was not preventable. In order to characterise the waste that occurred with different types of food and to provide information on the product's life cycle after it has been thrown away, they devised additional subcategories for avoidable food waste. Meat, bread, prepared foods, dairy goods, ready-to-eat meals, fruits, and vegetables were just some of the options. Unopened food, opened food, half-eaten food (such as half an apple), prepared food (such as cooked pasta or fried meat), non-packaged whole vegetables/fruits (such as whole, uneaten apples), unprepared meat, and avoidable food (primarily candies, potato chips, and popcorn) were the different life-stage categories (Schott and Andersson (2015) .

Organic crop residue includes all byproducts from the processing of grains, fruits, and vegetables that have been collected. Catering waste is defined as the non-human consumable leftovers from businesses like restaurants, bars, coffee shops, and food processing plants. Rests from the slaughtering process are an example of animal byproducts (Lin & Chen, 2011). Despite the fact that wasted food was considered valuable in this investigation, neither the edibility of the trash nor the degree to which it had been digested during production were taken into account. For their study, Edjabou et al. (2016), focussed primarily on two types of food waste: vegetable waste and animal food waste. Edjabou et al. (2016) classified vegetable and animal food waste into three distinct buckets: avoidable waste that has been treated, avoidable trash that has not been treated, and nonavoidable waste. In addition, Gómez-Carrasco et al. (2021) used a total of nine indicators to categorise the types of food that end up as waste: edibility (both edible and inedible), state (edible and inedible), origin (both animal-based and plant-based), complexity (single product and mixed product), the presence of animal product (meat, animal product, and animal by-product), treatment (processed and unprocessed), and packaging (packaged and unpackaged, catering waste and non-catering waste).

Key categories employed in this study include avoidable food waste and three indicators of food waste: edibility, status, and provenance. These categories were adapted from those provided by WRAP (Quested et al., 2013). Avoidable food waste refers to food

that was thrown away even though it could have been eaten. Food that was thrown away during the eating phase is considered 'avoidable food waste'. In order to be considered edible, a food item must be suitable for human consumption at any point in its life cycle. Nothing is edible if this is not the case. Fruit skins, animal bones, and the stems of various vegetables are all considered to be inedible. Biologically edible items that cannot be redistributed for human consumption due to the lack of a market (such some types of offal and leftover grain from brewers) are deemed inedible under this theory see Figure 2-2.

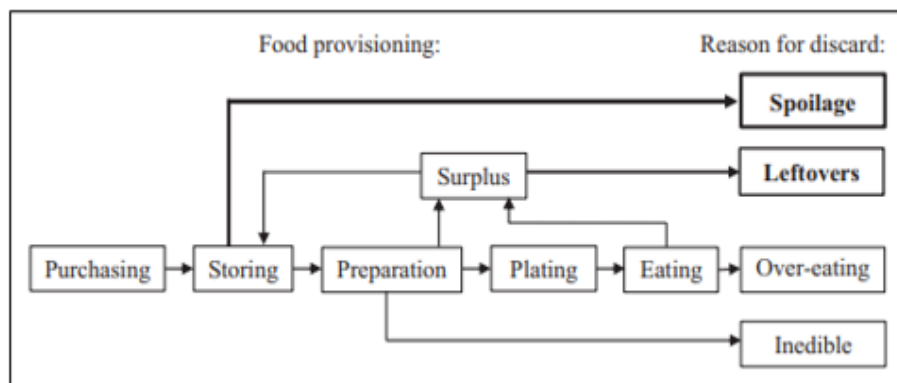


Figure 2-2 Food flows in waste adapted from Pearson et al. (2017).

Accordingly, factors like time and location might affect how much waste food is safe to eat. To paraphrase (Gómez-Carrasco et al., 2021), only consumable things are counted as part of the food group. Something is considered edible if it can be safely consumed by humans in its current form or has not lost any of the qualities that make it suitable for human consumption (Gómez-Carrasco et al., 2021). When discussing the origin of a product, it is important to distinguish between those that are plant-based and those that are animal-based (Gómez-Carrasco et al., 2021).

2.1.4 Food waste behaviours and perceptions

Reducing food waste is considered the "correct" thing to do because people feel awful about wasting food and it is socially frowned upon (Graham-Rowe et al., 2014; Visschers et al., 2016). Social norms suggest avoiding wasting less food. People have strong opinions on the need for minimising waste, yet their behaviour does not reflect these opinions (Quested et al., 2013). Studies also report a discrepancy between individuals' stated waste-prevention and

reduction goals and their actual behaviour in these areas. Unfortunately, this divide persists despite widespread consumer thriftiness (Evans, 2012). People generally agree that reducing food waste is a good idea and that it should be encouraged by society, but they do not always take steps to do so. However, it seems that people are oblivious to the amount of food that they discard. When asked how much food they throw away, most people respond 'none' or 'very little', according to a study by Stefan et al. (2013). Similarly, Neff et al. (2015) discovered that people tend to believe they waste less food than the average person. It is likely, according to the study's authors, that consumers exaggerate the extent to which they work to reduce food waste. Possible causes include unintentional ignorance and willful ignorance. Resolving this information gap could be useful and successful in encouraging people to alter their behaviour.

Age, gender, and income can give some general insights into a person's behaviour, but these cannot capture the nuances and variations within those groups. Instead, behavioural profiling analyses more effectively individual's actions, attitudes, and values to predict and understand their behaviour (Ajzen et al., 2018). Furthermore, behavioural profiling helps identify key motivators by revealing preferences and decision-making processes. The effectiveness of media delivery combinations, and the message-framing design for a campaign, can be improved by including all the relevant variables concerning wasted food, as well as a willingness to engage in behavioural change. Customising campaigns in accordance with individuals' readiness to bring about changes in their behaviour also leads to an increase in its overall impact. For example, it may be necessary to highlight social justice, economic benefits, and how to save the environment for people in the contemplation phase, and encourage trialling and reinforcing maintenance for people in the preparation and action stages, respectively. Recognising the effectiveness of an integrated social media campaign in terms of changing knowledge is also important. Although this is an important requirement, it is not a complete one when it comes to changing behaviour.

To be consistent with the individual's context, and where they perform their behaviours is also important to make a campaign effective. In addition to identifying enablers, future research should also highlight the barriers that exist and are far beyond the scope of the current thesis. For example, communities and organisations (midstream influences), regulatory factors and policy (upstream influences), social networks (parallel influences), and infrastructure are some of the most common barriers and enablers. It is suggested that such

future research could benefit from the contributions of different academic disciplines (e.g., behavioural economics) (Pliner & Mann, 2004) and could include the investigation of opportunities for changing social norms (Lappalainen & Epstein, 1990). A physical environment wherein people enact their routines is called the enabling infrastructure, and the provision of such infrastructure has strong contextual influences on people (Garnett, 2011). The inclusion of takeaway bags in such a convenient and supportive infrastructure will lead to a decrease in plate waste while eating out (Miroso et al., 2016). Similarly, innovations such as smart labelling could attract the attention of people towards products produced as a result of spoiling (Vanderroost et al., 2014). Composting is another key contributor in this regard and includes the provision of composting bins and kitchen caddies, or courtesy compilations of organic or green waste that may contain food waste.

Food waste, as an unintentional outcome of disseminated behaviours connected with provisioning, is simply resistant to interventions. For people with low motivation levels to minimise food waste, it is important to inform them about the valued benefits, along with making behaviour change adoption an attractive mechanism for them. In addition to providing immediate and easy behaviour changes in accordance with the individuals' context in which they enact their behaviours, it is also important to make their busy routines easier so that the likelihood of engaging in change behaviour can be increased. According to the most recent research on food waste, effective communications make people feel better about themselves by making a positive, albeit small change in the ways they avoid food wastage, and through the inclusion of timely reminders regarding the things they can do on daily basis to minimise such waste (FoodAgricultureOrganization, 2011).

2.1.5 Food waste in KSA

Due to its lack of water, high temperatures, and low rainfall, the Kingdom of Saudi Arabia is one of the driest countries on the Arabian Peninsula, limiting the potential for agricultural expansion see Figure 2-3. Conflicts in the area have risen, traditionally, over natural resources, particularly water (International Food Policy Research Institute, 2016). KSA refocussed its efforts in the 2000s on sustainable agriculture by, among other things, putting more of an emphasis on low-water-use crops and adopting new irrigation methods like drip irrigation (Al-Shayaa et al., 2012). The country's food self-sufficiency declined as a result of

these changes, making it necessary to investigate other methods of securing food. Total expenditures on food imports in 2010 increased to SR75 billion (\$17 billion) (Mirza B Baig et al., 2019). Since domestic production offers no comparative advantage, reliance on imports is expected to remain high, especially for commodities like cereal grains (Lampietti et al., 2011; Pradhan, 2010).



Figure 2-3 Saudi Arabia Map. Source: Wikimedia commons.

The country's agricultural extension service has had to cut back significantly as imports have risen and high-water-use crops have fallen out of favour (Mirza Barjees Baig et al., 2019). In most countries, agricultural extension services consist of adult education programmes designed to improve agricultural practices. In a similar way, research-based information on improving crop yields, conserving land and water, and other sustainable agriculture principles and practices have been the main areas of focus in KSA (Mirza B Baig et al., 2019; Baig & Straquadine, 2014). Bringing staff expertise in community/adult education to bear on the problem of food waste in the country is one potential mechanism to meet the country's food security needs.

According to Mirza B Baig et al. (2019), the Kingdom of Saudi Arabia is among the top producers of wasted food in the world, with an average of 427 kg per person per year. Cultural and economic factors contribute to this problem, including the government's food policies that support producers and distributors to make their products accessible and affordable to citizens. Social and cultural values also play a significant role, as extravagant food tables are

a common practice at social events, and saving food is considered "stingy". The consequences of food waste in KSA include a strain on the country's food supply, wasteful imports, and increased dependence on other nations. The increase in population exacerbates the issue, making it critical for KSA to address food waste to ensure food security. The study of media research, specifically using social media like Twitter, could be a valuable solution to raise awareness and change behaviour regarding food waste in KSA.

Food waste in KSA is influenced by cultural and social factors such as religiosity, personal beliefs, and traditions (Elshaer et al., 2021). Generosity towards guests and the custom of hospitality contribute to the waste of food at social events and daily activities like shopping, cooking, and dining. The lack of assessment and education on the issue of food waste, both at the policy and individual levels, contributes to high levels of food waste in KSA. In response, the Ministry of Food and Agriculture has formed a committee to investigate ways to reduce food waste, campaigns highlighting the importance of food waste prevention will be launched, and advisory groups will investigate ways to reduce food waste in society. To reduce the amount of food waste in KSA, campaigns and extension education programmes to raise public awareness, and a shift in personal and commercial perspectives are necessary. The influence of Islamic beliefs on KSA society may be used to reduce food waste by reading relevant passages from the Quran.

The high levels of food waste in KSA can be attributed to social and cultural factors such as the tradition of hospitality, social norms, and religious beliefs. Food banks can play a crucial role in reducing food waste by conducting seminars and conferences to raise awareness and promote responsible food consumption. Social media, particularly Twitter, has gained significant popularity in KSA, and food banks can use it to engage with the public and promote their activities. However, there is a need for effective social media strategies that are tailored to the cultural values and norms of KSA and other Arab cultures. The potential of social media to enable charitable organisations to reach a wider audience and increase public awareness of their mission and activities is significant. Food banks must study the method of dealing with their audience on social media to ensure that their message is delivered in the required manner.

2.2 PROMOTING SOCIAL AWARENESS THROUGH SOCIAL MEDIA AND TWITTER

Social media's ability to reach a large number of people across a variety of platforms has made it a powerful method for encouraging people to adopt more healthy practices (Gallivan et al., 2005; Naslund et al., 2017; Soboleva, 2018; Warren et al., 2015). Social media is a powerful predictor of future behaviour. It has been used to promote awareness of environmental issues and facilitate two-way communication (Kaur & Chahal, 2018; Wright & Hinson, 2009). Images and stories relating to societal issues can be shared instantly by social media users. Traditional media (e.g., television) has been the subject of countless empirical studies, despite a relatively modest number of studies on the digital media's impact on people's sentiments and beliefs (Holbert et al., 2003). However, some theories such as The Theory of Cultivation (Gerbner et al., 2002) and the Theory of Social Cognition (Bandura, 1986) have emphasised the function that communication plays in spreading specific norms among various social groupings. A similar lack of research on social media's influence on human behaviour was found by Warren et al. (2015) who pointed out that, given social media's prominence as a tool for raising awareness of social issues, more research is needed.

Waters and Feneley (2013) research on virtual stewardship suggests that NGOs lose control of their message system and construction when they use social media platforms rather than their organisational websites. Researchers in the United Kingdom conducted in-depth interviews with nonprofit representatives and found that many of them were worried about losing power in an increasingly transparent online environment brought about by social media (Quinton & Fennemore, 2013). How organisations have addressed these worries varied widely. While some NGOs have chosen to embrace the open and transparent nature of social media, others have decided to closely monitor their presence and micro-manage dialogues by deleting any bad comments about the organisation. It is interesting to note that organisations who embraced the transparency of social media saw larger measurable benefits, such as improved volunteer recruitment and fundraising, from their social media efforts (Quinton & Fennemore, 2013). Similarly, NGOs that invested in social media management with both time and money were most likely to see results.

While many academics extol the benefits of social media, others have warned businesses to examine the impact of these sites on their operations cautiously (Kent, 2008). Social media accounts themselves may be free, managing such accounts, however, may not

be cheap (consultation, management, ongoing monitoring, etc.). A representative of a digital marketing business noted in a recent qualitative study that the misconception that social media marketing is free may be one of the reasons why NGOs are not investing more financial resources toward its use (Quinton & Fennemore, 2013). Similarly, Hausmann (2012) acknowledged the potential role of social media for German nonprofit art organisations, but argued that merely adopting these platforms does not result in tangible outcomes; rather, successful use of social media requires valuable content, ongoing updates, and organisational resources for managing the organisation's accounts.

Social media sites like Twitter, Facebook, and YouTube are meeting places for people to talk about and exchange information and experiences (Baruah, 2012). Twitter, like many other SNS, is a multiplatform that may be accessed by users through their mobile devices or a website interface, so it can be accessed anywhere. However, the emphasis of Twitter is constructing users' opinions around specific topics, identified by hashtags. Twitter started as a blog in 2006, but it transitioned to a microblogging format in 2009. Twitter has gained the attention of a variety of organisations and NGOs that see its potential for raising awareness. The following section discusses the history of Twitter as well as the various functions that it possesses. It addresses the continuing controversy around the utilisation of Twitter for raising awareness.

2.2.1 Twitter as a tool for social interaction and raising social awareness

Twitter Inc. was founded in 2006 and quickly became one of the most successful social media platforms in the world, with a current estimated net worth of \$44 billion (Dixon, 2022). However, following the departure of CEO Jack Dorsey, there has been increased speculation around the future of Twitter and its financial success. In November 2021, Elon Musk, the founder and CEO of SpaceX and Tesla sold his Twitter poll as a non-fungible token (NFT) for \$2.5 million and has expressed his interest in using Twitter to interact with his followers and promote his businesses. Some experts believe that Musk's involvement could help drive user growth and engagement on the platform. Despite these recent developments, it is still too early to predict with certainty how they will impact Twitter's financial success. While the company has had some challenges in recent years, it remains one of the most popular social media platforms in the world, with over 192 million daily active users as of September 2021

(Dixon, 2022). The platform continues to be a key source of news and information for many people, and it remains an important tool for businesses and individuals to connect with their audience.

Twitter is a useful tool for connecting with the general population, independent of their age, ethnic group, or socioeconomical status. Twitter is actively used by a growing number of people all around the world. A wide range of issues are discussed on Twitter by participants in various communities. A variety of previous studies have indicated that Twitter has evolved into a platform for debating a wide range of topics, including politics, sociology, journalism, novels, and environmental concerns (Jungherr, 2015). Another reason to employ Twitter in this research lies in the fact that the information posted on Twitter is open to the public and can be retrieved at any time. Because of their availability, researchers can mine data from tweets to better understand and evaluate human behaviour and activities.

Additionally, people's interactions with each other and with societal phenomena are indicated by Twitter engagement (Freelon et al., 2018). The use of Twitter in response to any given topic or social phenomenon by a particular community is reflected in the large amount of available data. It is possible to observe a wide range of viewpoints on any particular subject with this great number of people involved. On a given issue, a high volume of tweets suggests a high level of social involvement. Unlike traditional media, where editorial control exists, Twitter is largely uncensored and unfiltered. Therefore, Twitter users have more freedom and autonomy when it comes to expressing themselves. As a result, researchers have direct access to a person's thoughts and feelings without the interference of an editor.

It is also possible to study the digital data trail that Twitter generates by using data mining techniques (Howison et al., 2011). This helps to identify behavioural patterns and trends from user's activity and involvement. For instance, it can be used to track the evolution of a topic over time and to identify influential individual and communities which are involved in the discussion. It can also provide valuable insights into how a topic is perceived, how it is evolving, and how it is being discussed. Eventually this can be helpful to inform future strategies for stimulating engagement with a topic among specific segments of the population.

2.2.2 Features of Twitter

Tweeting, retweeting or quote tweeting, creating a poll utilising on Twitter poll function (see Figure 2-4), and sending a private message (also known as a direct message), are all methods by which users engage with one another on the social media platform.

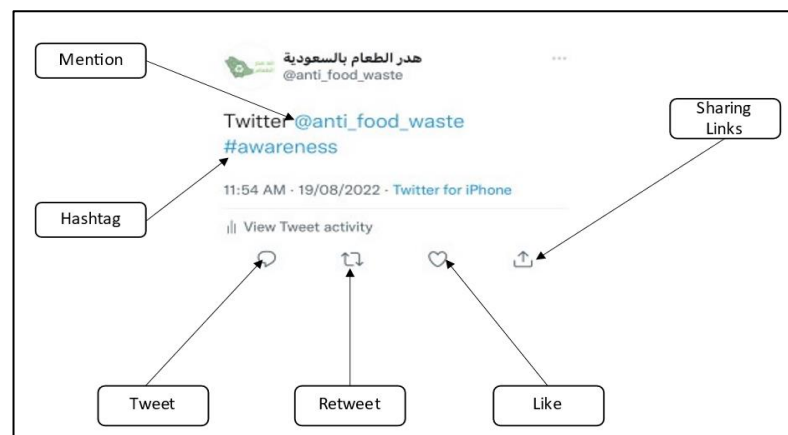


Figure 2-4 Twitter features. Mock-up of typical Twitter interface captured in August 2022.

Twitter users can publish their tweets in specified tracks using hashtags, which use the octothorpe (#). Additionally, Twitter records trending topics, such as the phrases, words and hashtags that are used most often or discussed at a given time. Each aspect is discussed in greater detail in this section, as well as some possible awareness-related applications.

Tweet: When a Twitter user posts a message using their account, it is known as a 'tweet'. For Gleason (2016), the motivations for sending a unique tweet are numerous. He suggests that the most common reason for using social media is to connect with people you know whether they are in your social network or not. Twitter can be used to keep a journal of one's thoughts and experiences which one can then pass on to others. As Gleason (2016) points out, many young people like using Twitter to express themselves, communicate, and document their daily lives, in other words, they use it to preserve their memories.

Retweet: The act of copying and pasting the tweet of another user into one's own Twitter feed is referred to as 'retweeting'. The followers of the user who retweets will see the tweet as a result. By retweeting, two options are presented: one of these options permits the user to simply rewrite the tweet in its original format, and another lets them quote the tweet and add their own comments. Multiple purposes may be employed by the retweet feature,

according to Boyd et al. (2010). When a user sees a tweet, they agree with it, or one they think better reflects their views than what they might communicate in an original tweet, and they may choose to retweet it. It is called a retweet when shown to their public followers. This is a fantastic way to spread the word on Twitter about fresh and exciting findings. Before hitting the 'retweet' button, one can also modify the tweet by adding one's thoughts and/or media. If the user uses Twitter's retweet or quote tweet buttons, the original tweet will be linked to in your post. Even if the user includes the quote in a tweet and someone reacts to it, the original poster will not be included in the thread. The user should provide the username of the original tweet's author if they want to credit them. Users can retweet and quote tweet other people's messages in addition to publishing their own on Twitter. Users can use retweet feature to ensure that all of their followers see their comments to other users or to repost one of their previous Tweets that has just become relevant again.

The retweet also serves as a way to show support for friends and keep them close. It is also possible to retweet to enlighten or entertain followers with breaking news, new information, or any other relevant specifics. Another benefit of using the feature is that it allows users to share their interests with other Twitter users, which could help them connect with others who have the same or related interests (Gleason, 2016). There are many more reasons for using Twitter, such as obtaining new followers through retweeting and saving tweets for later reading or to use as a reference. According to Boyd et al. (2010), it has been shown that Twitter can be used as a 'crowdsourcing' tool to stimulate social change by encouraging people to forward a certain message on a particular issue to establish a trend.

According to Boyd et al. (2010), a tweet's chances of becoming viral and inspiring people to take action on a social issue increase when it is retweeted by influential users. Retweets can also help users spread their message to a wider audience. Whenever one of their followers' retweets one of their tweets, it is considered a retweet, which is viewed by more people and gets retweeted more often. Because of retweets, a tweet might reach many more people than the original author's actual followers (Brynge et al., 2015). This can be especially useful when, for example, organisations share influential content that could be of benefit to their social media followers via retweets. Tweets and comments on a certain text can be retweeted to encourage others to read it and join the conversation, as described by Brynge et al. (2015).

The @ Symbol When a user's Twitter account is followed by the @ sign, it serves two purposes: the mention and the reply. If you're replying immediately to a tweet from someone you've just met, you can use the @ symbol to introduce or tag them in your post. Gleason (2016) suggests the @ symbol can be utilised when a user wishes to communicate directly with different users on Twitter. A user may use the @ sign to draw attention to their tweet or to draw other users' attention to someone else referenced in the tweet, as suggested by Boyd et al. (2010). This is because the reply is linked back to the original tweet, which centralises the conversation thread and makes it simple to follow (Brynge et al., 2015). Additionally, the @ sign can start a conversation between two users, inviting others to join the discussion (Gleason, 2016).

Like The 'like' button is a red heart that appears beneath each tweet. According to Gorrell and Bontcheva (2016), the like button on Twitter serves five roles. Commonly used to express agreement with or admiration for a post, the like button on Facebook is used in the same way as it is on Twitter. A second reason why some people like their own tweets is to put them on their own 'like' lists. As a result, other users can see what the user likes, read tweets, and get a general idea of what the user is interested in. Third, rather than replying, some people simply click the like button to show their appreciation for the other person's post. A tweet's author may be thanked by the user by clicking the Like button on the tweet (Gorrell & Bontcheva, 2016).

Using the Like button is one way some Twitter users express their gratitude to, or solidarity with, the tweet's creator. According to (Gorrell & Bontcheva, 2016), a tweet that you find particularly interesting or useful can be bookmarked using the Like button and accessed at a later time. Brynge et al. (2015); Gleason (2016), and O'Reilly and Milstein (2011) analysed how people utilise the like button to store tweets for future review. As a result, this function might aid in raising awareness by showing agreement with the tweets.

Direct Message Users can send private messages on Twitter using the direct message (DM) mechanism (Murthy, 2018). No one but the sender and recipient can see a private message (O'Reilly & Milstein, 2011). Both sender and recipient must both follow each other to use this method. A user's direct messages are private by default; therefore, they cannot be sent to an unfollowed user until the unfollowed user makes their messages public. Any user, including those he or she does not follow, can send them a DM in this circumstance. To create and strengthen connections, Logghe et al. (2016) found DMs to be an effective method of

reaching out to people. One definition of collaborative writing is when many authors work together on a single piece of writing by communicating with each other using Twitter direct messages (DMs) to have conversations with one another or with a larger community.

Twitter Spaces In an attempt to compete with and ultimately beat (Clubhouse), a the new app, Twitter launched Spaces in November 2020, with an emphasis on audio-only conversations. However, the ability to host a Space was restricted to individuals who had 600 or more followers on Twitter at the time. Now, nearly one year later, Twitter is finally granting all of its users the option to host a Space, a privilege that should have been provided a long time ago (Roth, 2021). In addition, 'Twitter Spaces - A Great Opportunity For Your Brand in 2022', which was published in the year 2022, says that Twitter spaces might be a helpful instrument for increasing awareness levels. Furthermore, Twitter Spaces performs efficiently as a radio show. Contests or promotions that encourage active involvement are the perfect fit for this format, which is suitable for holding such events. People are more likely to tell their friends about contests and promotions if they feel they have a chance to win them. This is a fantastic approach to boosting visibility. This has the potential to significantly contribute to increased brand recognition.

Hashtags (#) As a hashtag, the # symbol is used in conjunction with words to categorise conversations into specific topics. When it comes to computer programming, # and * identify the fundamental elements of a language used for computer programming. As stated by (Chang & Iyer, 2012), hashtags are a way to organise content on Twitter by giving each piece of content a distinct title. Using hashtags allows the user to keep track of tweets that are connected, discover new resources that are labelled as being part of a certain category, and Engage with those who share the user's interests by browsing hashtags used by other users (Chang & Iyer, 2012). When two strangers join a chat with the same hashtag, they may discover a shared interest. It is possible that using hashtags may help people find others who share their passions and interests, or that it will allow a private dialogue between a small group of people to become a more public event where many more people can take part in the discussion at the same time (Brynge et al., 2015). By using the same hashtag in their tweets or replies to others' tweets, users may join in on active discussions involving thousands, even millions of other users (Brynge et al., 2015).

When a hashtag becomes popular on Twitter, millions of tweets may build a thread in a short amount of time. As (Evans et al., 2011) points out, participation in hashtag debates

may be a smart strategy to gain new followers. Hashtags can also be used as a repository for news and resources that are pertinent to a certain trend, as more individuals begin using the hashtag (Brynge et al. (2015); Chang and Iyer (2012)). Initially, organisations used hashtags to establish their personas and reach many audiences with similar interests. The hashtags were also utilised as a means of sharing information with other people or informing others of updates. The usage of hashtags by foodbanks can help them create relationships with Twitter users and local communities, which will in turn might help them gain more support.

Twitter Poll Twitter users now can communicate with their followers and gain insight into the perspectives of their audience through the use of polls, a function which was added recently by the platform. With the help of this function, a user can build their very own poll, which, once it has been active for twenty-four hours, will automatically close (Sherman, 2015). Users also have the option to participate in polls in a private capacity, which conceals their responses from other users (Sherman, 2015). Using Twitter to conduct surveys is an idea inspired by user behaviour (Boyd, 2017). Users often cast their votes for various issues by using either the retweet or the like buttons as methods for feedback. Twitter's poll tool, however, allows users to systematise this.

2.2.3 Meaning of engagement on Twitter

In order to assess adequately the potential use and efficiency of Twitter in raising awareness, it is important to consider its role in raising users' engagement with a topic. Engagement is a multifaceted concept that has been articulated in various ways when it comes to Twitter (Dhanesh, 2017; Johnston & Taylor, 2018). For instance, according to Johnston and Taylor (2018), public involvement is a dynamic process that involves the psychological and behavioural linkages and exchanges between individuals and organisations.

Engagement is a multimodal process. The audience can be engaged in three ways: emotionally, intellectually, and behaviourally (Dessart, 2017; Johnston & Taylor, 2018; Kim et al., 2018). Saxton and Wang (2014) research similarly framed public participation in terms of instantaneous, real-time behaviour responses that could be quantified through metrics like likes, comments, and shares. Most recent studies on public involvement on social media have concentrated on the behavioural side (Goyanes & Skoric, 2021; Seitsonen, 2017). Nonprofits' skill in handling their online publics can be evaluated through concrete indicators like public

engagement behaviour metrics (Saxton & Wang, 2014). Men and Tsai (2014) notion of public engagement serves as our starting point, outlining a behavioural construct with hierarchical activity levels, from passive message consumption to active two-way dialogue, involvement, and online endorsement. The number of likes and retweets a tweet receives is a good gauge of its popularity (Dhanesh, 2017; Watkins & Lewis, 2014).

For a clearer explanation of the hierarchical levels of public participation,(Jiang et al., 2019) utilised the number of likes, shares, and comments as three levels of public engagement, ranging from low to high. Sharing anything requires people to become unpaid advocates for the organisation, whereas liking something is a simple method to express approval (Cho et al., 2017). The number of likes and the number of retweets are two separate types of feedback that the public can give to NPOs, according to Guo and Saxton (2014). People use retweets to give and obtain attention, while they use likes to save useful tweets for future reference (Guo & Saxton, 2014). That ‘engaged audiences desire to share the content with others, either online or offline, or both’ is further evidenced by retweets (Hopp & Gallicano, 2016).

Previous studies have demonstrated that retweeting generates more engagement than liking or commenting on a tweet (Goggins & Petakovic, 2014; Kim et al., 2018). The like button is the most direct way for social media users to express their approval of corporate social media posts. It is a minor, pointless gesture, though (Humphreys, 2018). Unlike sharing or commenting, liking a post is much more common on social media, with Pelletier and Horky (2015) finding that users are eight times more likely to like a post than to share or remark on it. When someone retweets something, it gets posted to their own profile (Huang & Yeo, 2018). When a user retweets a company's tweet, they are indicating that they agree with the message the firm originally tweeted (Saffer et al., 2019). People and businesses are more inclined to retweet content that is relevant to them and their goals (Huang & Yeo, 2018). Therefore, this research extracted Twitter data from selected organisations that will be helpful to understand how Twitter has been used by organisation who are fighting food wastage and how the KSA public responds to shared content.

2.2.4 Evaluations on performance, impact, and tweet content

In the literature, there are several ways to measure Twitter activity and success (Bruns & Stieglitz, 2013; Burton et al., 2013; Neiger et al., 2013). As can be seen in Figure 2-5, Twitter analytics may be divided into four distinct groups. Four factors are taken into account when evaluating a message's success: 1) activities, 2) engagement from followers, 3) account network participation, and 4) message content quality.

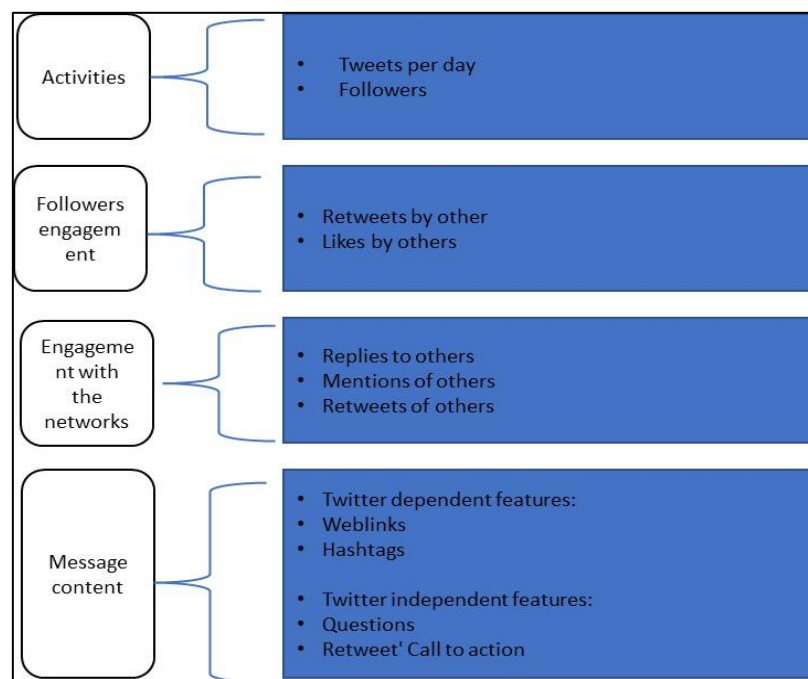


Figure 2-5 (Ways to measure Twitter activity and success)

1. **Brand activity:** It is possible to get an estimate of how much time is spent on Twitter and how efficient a user is at attracting new followers by looking at their follower count and the number of tweets they post.
2. **Tweets per day:** There is a correlation between the number of tweets and the amount of time a company devotes to Twitter, even if that time is only a few minutes a day (Burton et al., 2013). Through statistical analysis of the correlation between one's number of followers and their Twitter output, one may find the optimal amount of tweets to send out each day (Burton et al., 2013).

3. **Follower Engagement:** The level of engagement a brand receives from its Twitter followers is an important indicator because of the difficulties of using the number of followers as a measure of Twitter performance. To have a significant impact on Twitter, a company needs more than simply a sizable following; it has to encourage people to interact with its posts (Romero et al., 2011). Retweets, favourites, and list frequency are three ways to assess user interest in a tweet.

4. **Others' Retweets:** A tweet's level of engagement may be measured most accurately by counting how often it gets retweeted because retweeting demonstrates that a follower has seen a tweet and suggests that the follower personally endorses the post (except for the very unlikely event that a follower adds a comment containing critical remark). When users retweet content, it shows they are interested in the brand, have positive feelings about the company, are loyal to the community, and are interested in becoming more involved with the community (Kim et al., 2014). For several reasons, including spreading brand awareness through the followers' networks, retweeting is crucial (Zhang et al., 2011). This increases the potential audience for a brand's tweet inside the networks of the brand's followers. When gauging Twitter success, retweets are preferable to follower counts, which might be exaggerated by inactive users or robot followers but more accurately represent true interest. However, stories have surfaced recently claiming that automated Twitter accounts may be made to retweet (Ferrara et al., 2016).

5. **Favouriting by Others:** Followers (or other users who see a tweet) have the option of showing engagement by favouriting the tweet instead of, or in addition to, retweeting it, by clicking the star icon that is located underneath the tweet. There are many different motivations for favouriting tweets, but in general, doing so indicates that the individual endorses the content of the tweet or is demonstrating a favourable attitude toward the author of the tweet (Meier et al., 2014). The act of favouriting a tweet, then, is a reflection of the user's interest in that tweet. While both allow users to show their appreciation for a tweet, favouriting is different from retweeting in that it does not broadcast the tweet to the user's followers.

2.2.5 Social media and Twitter in cooperative communication

Organisations can use Twitter to add to their other social media efforts by sending out a link to their business blog and having their Twitter updates go straight to their Facebook page. As a social media platform, Twitter puts the entrepreneur front and centre, making it a natural fit for the study of effectuation, which is also a very personal process (Sarasvathy, 2001).

Established companies are finding new and creative ways to use Twitter for things like sales, customer service, and branding. Coupons are being used on Twitter to increase sales at places like Dell and Starbucks (Miller & Brunner, 2008). Because of this increase in social activity, the way things have been done needs to change. Some companies, like Comcast (which now has a team of staffers who review what people say about the company on Twitter and talk to customers through Twitter accounts for the company (Siegler (2009))), have put these kinds of systems in place (Miller & Brunner, 2008).

Micro-blogging sites, such as Twitter and Tumblr, where users publish short messages, have grown in popularity in recent years (Kaplan & Haenlein, 2010). Given the current climate of fierce rivalry for funding sources, nonprofits are allegedly adjusting their methods of public outreach in an effort to gain the trust of their constituents (Zorn et al., 2011). Despite the interactive nature of social media and opportunities for evoking engagement among followers, previous research indicates a large discrepancy between practitioners' perceived and actual use of social media for facilitating two-way communication with stakeholders (Guo & Saxton, 2014; Lovejoy & Saxton, 2012; Waters & Jamal, 2011). Briones et al. (2011), for instance, found that despite Twitter's character constraint and the availability of alternative tools for engaging stakeholders in conversation, organisations rarely make use of hashtags, retweets, and the like (Lovejoy et al., 2012). Actively cultivating interaction appears to influence followers' impressions of the organisation and the organisation's relationship with the public, therefore nonprofits looking to make use of social media's relationship-building potential should engage accordingly (Saffer et al., 2013).

By actively cultivating interaction on social media, nonprofits can raise awareness of food waste in KSA and improve their relationship with the public. Social media platforms allow for real-time communication and engagement, making them an effective tool for raising awareness about food waste and its impact on the environment and society. By using features

such as hashtags and retweets, nonprofits can start conversations and engage with the public on the topic of food waste. This can help build a sense of community and bring attention to the issue, encouraging people to take action and make a difference. Additionally, a positive relationship with the public can lead to increased support and collaboration, allowing nonprofits to effectively address food waste in Saudi Arabia.

2.2.6 Using Twitter for cooperative communication

A brand's Twitter account may show its engagement with its audience in several ways, such as by responding to, mentioning, and retweeting user-generated content.

- 1. Replying to others:** Tweets that start with an @ sign are replies to other users and can reflect a one-on-one conversation between a company and one of its followers. It has been argued that replies play a significant role in developing rapport with followers through mutual involvement (Yang & Counts, 2010). When one tweets someone a reply that begins with '@', only the person one is replying to will receive it. Both the sender and the recipient, as well as anybody who follows both of them, can view these tweets on the sender's Twitter profile. Because these responses are, in reality, primarily private, they are classified as private. However, 'less public' might be a more appropriate phrase. This is because private answers can be viewed by more than just the original message's sender and receiver, despite the designation. Tweets that begin with the @ symbol indicate that their answers are public and may be seen by anyone. All of the recipient's followers can see them. Public and private replies give insight into the brand's degree of interaction with its network by gauging how many people the brand can reach both one-on-one (through @ answers) and collectively (via @ replies).
- 2. Mentions of others:** A 'mention' is a method for a Twitter user to create a mention of another user. To gauge how active a user is on Twitter, this measure can be used in conjunction with other metrics such as retweets, replies, and mentions (Yang & Counts, 2010).
- 3. Retweets of others:** Retweeting other user's tweets is another way to participate in the Twitter community. Using this metric, it is possible to see which tweets are being

shared the most and which ones are not, based on the name of the indicator (Ehrlich & Shami, 2010).

4. **Message content:** It is also possible to evaluate tweet content through the inclusion of characteristics that encourage user interaction. There are two types of features: those that do not require Twitter and those that do (Castillo et al., 2011). Weblinks and hashtags are examples of Twitter-dependent features, while Twitter-independent elements include punctuation (such as question and exclamation marks) and language cues that indicate the sentiment or substance of a tweet. For example, Castillo et al. (2011); Misopoulos et al. (2014) coded a significant number of tweet attributes, but these research studies did not focus on brand tweets. Inquiries, a call to action (retweet), and apologies are likely to be especially effective for businesses seeking to stimulate a user reaction (for questions and a call to action) and handle customer complaints (for apologies) on Twitter since they have been shown to encourage retweeting.
5. **Using of weblinks:** Research shows that tweets with links are more likely to be shared than those without (Suh et al., 2010), yet the capabilities that a user has with web links are undergoing significant change. Previously, a person's browser would instantly load the linked page when they clicked on a weblink (and thus leave Twitter). Despite this, some tweets still contain links that take readers away from Twitter. However, this research focusses on the analysis of tweets sent by organisations and distinguishes between content that links to their accounts with embedded material and those that can influence the user.
6. **Use of hashtags:** Having a hashtag in a tweet, like including a web link in a tweet, has been found to increase the likelihood of the tweet being retweeted (Suh et al., 2010). Tweets using the hashtag can be seen by anybody, not only the user's followers if they search for it. This is another method by which tweets with relevant hashtags might be found outside the original audience.
7. **Questions:** There is also the possibility of encoding the linguistic characteristics of a tweet to determine whether they increase its chances of being retweeted. It is fascinating to see questions posed in tweets since they are formatted to encourage interaction (Naveed et al., 2011). The research found that tweets containing questions in them received more retweets (Naveed et al., 2011), in contrast, another study

indicated that tweets containing question marks were associated with lower credibility, which in turn was projected to lead to fewer retweets (Castillo et al., 2011). The influence of inquiries in brand tweets was not evaluated by either study.

8. **Retweet call to action:** It has been found that asking people to retweet content is one of the elements that can influence their decision whether or not to do so (Boyd et al., 2010). A variety of studies have shown increases in engagement from requesting retweets, however, these results are inconsistent, falling anywhere from 34% (Malhotra et al., 2012). For promotional tweets, direct calls to action like requests to retweet may have less of an impact if more Twitter users become accustomed to doing so. As a result, studies have investigated how a retweet call to action impacted the performance of some market-leading brands. As discussed above, Twitter is useful for public communication; therefore, it is important to also understand how Twitter would be helpful for social campaigns to reduce the food wastage as a social campaign. The next section will discuss the feature of the Twitter or social media in general can be used to reduce the food wastage at a national level.

2.2.7 Twitter communication in the NGO context

Previous studies have focussed mostly on the ways in which businesses might engage their target audiences using social media. In the same way, not only corporations but also NGOs of all sizes are increasingly using social media to connect with volunteers, donors, and the general public.

Raising money, sharing information, and lobbying are just some of the ways social media has been put to use for a social cause (Guo & Saxton, 2018). Content analysis research was conducted by (Lovejoy et al., 2012) on the use of Twitter by the top 100 nonprofit organisations. They identified three primary methods of communicating with stakeholders: 1) providing updates on the organisation's news and activities; 2) fostering a sense of belonging and community among stakeholders; and 3) promoting action by urging supporters to give money, volunteer time, or attend events. This categorisation has been utilised in numerous recent research to understand the role of social media in fostering donor and volunteer engagement for organisations (Taylor, 2021). According to Zhang et al. (2022), who studied the tweets of NGO Women Who Code, informational tweets were more likely to

inspire participation than community and action tweets. Additionally, Taylor (2021) analysed 626 tweets from the Twitter chat of a grassroots NPO. Taylor (2021) discovered that the majority of tweets focussed on collaborative problem-solving and knowledge dissemination. According to Campbell and Lambright (2020) analysis of nonprofits' use of Facebook and Twitter, the former platform is mostly employed for information dissemination, while the latter is utilised for mobilisation efforts. Content analysis and hand-coded categories were employed to examine information, community, and action engagement in the NPOs' social media content. However, these studies often only examined tiny datasets. Despite the fact that these studies provided insight into the methods nonprofits use to engage the public, they rarely assessed the efficacy of these strategies or the results they produced.

2.3 CLASSICAL THEORIES AND MODELS FOR SOCIAL MEDIA

Personal and social behaviour theories and models have been employed in studies of social media to construct application systems. Existing research has used a variety of theories and models to analyse socio-psychological factors affecting the behaviour of social media users, marketing professionals, and customers. These studies were usually conducted in different levels. While some studies examine the links between social media structure and human behaviour, others explore the influence of mass communication and social media functionalities directly on individual user behaviour. And, despite this, some similarities exist between theories of individual behaviour, theories of group behaviour, and ideas of mass communication (Nagi et al., 2021). These issues are explored in the remainder of this chapter and lead to the development of a resulting framework. For example, the Uses and Gratifications Theory, which originated in the 1940s and 1950s, is a psychological theory that explains why people consume media and the needs and motives that drive their consumption (Shade et al., 2015). In contrast, Social Impact Theory focusses on the social dimensions of media effects, such as how media content can shape attitudes, beliefs, and behaviours in a social context (Latané, 1981). While the Uses and Gratifications theory examines individual behaviour and motivations, Social Impact Theory examine how media can affect society as a whole.

2.3.1 Uses and Gratification Theory (UGT)

Uses and Gratification Theory (UGT) was developed by scholars to help understand the different purposes for which people consume media and the value and benefits that they gain from this activity. This theory aims to understand the purpose behind the usage of media by people and the role of this media in society. UGT also explores individuals' deliberate efforts to meet specific goals and needs, such as relaxation, entertainment, and socialising. According to this theory, consumers tend to use media to satisfy specific desires or needs (Florenthal, 2015).

UGT is commonly used in media studies, and is becoming increasingly relevant to understanding the way people connect with different types of technologies. These technologies can be comprised of video games, smartphones, computers, and the internet. The research into smartphone usage through the lens of UGT shows that people seek to derive different gratifications by using their smartphones, including entertainment, socialising, and mobility (Fortner & Fackler, 2014). Similarly, the UGT-oriented research into social media usage shows that people use social media to gain recognition from friends and family, vent their emotions, and meet cognitive needs. Every one of these usages gratifies a specific need, and these needs determine how media is being used. Researchers can identify the motivations and purposes behind media usage through users' media choice factors (Stacks et al., 2009). In general terms, the internet is being used as a source of entertainment and a tool for keeping in touch with family and friends. Other reasons may include social interaction, arousal, escape, entertainment, relaxation, and a host of social and interpersonal needs (Ko & Yu, 2019; Ma et al., 2019).

Researchers have stated that UGT is helpful in terms of understanding the communication behaviour of social media when it comes to sharing food-related information such as sharing photos of food on social media (Pember et al., 2018). However, this theory is not helpful as a means of developing approaches towards specific food behaviour, which is the primary aim of this research. This theory primarily aims to focus on the audience or consumers, rather than the original message, by questioning what the individuals do with

media instead of what the media does to individuals, and how they influence users through different content shared on social media. Perception about media and shared content consumption varies from individual to individual and is socially constructed in terms of the social context.

The question remains about how different individuals become engaged or influenced concerning specific content on social media. In this regard, Littlejohn and Foss (2010) highlighted two forms of belief in UGT: (1) belief regarding a thing, and (2) belief within a thing. At the same time, neither of these forms includes the social context because, as (Naeem, 2020c) stated, social context is key to understanding how context creates the belief within things based on social proof and social influence over social media. Moreover, Choi et al. (2016) viewed the uses by which people consume social media as quite different because social media gives opportunities for users to interact with each other beyond the limits of time and distance. In the current era, gratification is defined as the pleasing of the mind and senses in terms of the needs and desires of people. This theory does not include how people are influenced once they satisfy their media needs by using social media in everyday life. This theory suggests that the audience is free to decide how to use a particular medium, and is limited in terms of explaining how the medium will influence them. This theory is not useful as a means of understanding how social actors are influenced by each other through the medium of social media. Amongst the various drawbacks of UGT, Whiting and Williams (2013) stated that media cannot address the absence or presence of different public content and how it influences the audience. Rather than an audience's actual responses, the media relies heavily on assumption-based surveys, while social media users rely on public opinion on social media rather than the official context of social media (Kamboj, 2019; Kujur & Singh, 2020).

There are certain limitations concerning UGT, as the nature of the theory is mainly individualistic (Zimdars & McLeod, 2020). Furthermore, it only considers those psychological factors that are personal to an individual and which are derived for personal media use. By contrast, this research is focussed on the social influence created through the interaction of social media users (SMUs) in their everyday lives. The theory also ignores the social context of the media (i.e., the user's environment where they share and exchange information in a way that is different from traditional media), which is why UGT is not being considered for this research. Moreover, even though the user has several choices related to media usage and content sharing on social media, they do not have control over the production of the content

on social media. Consequently, people can influence their interaction with others. According to UGT, the audience is not the gatekeeper, and this is an aspect which is not being used for this research. The gatekeeper is someone other than the audience, and the gatekeeper chooses which content will reach the audience. This means that the perception of the gatekeeper matters more than that of the audience (Orlik, 2008). Therefore, even though attempts have been made to produce a comprehensive and rigorous theory, there are some flaws which affect the applicability of UGT for this research.

Many researchers have continued to refine the reach of the theory to enable cross-comparisons through UGT as well. Still, critics such as Stanford (1983) argue that there are inherent deficiencies in the UGT, such as confusing the analytical aspects with operational aspects, a lack of consistency, and a lack of justification for the model developed by UGT. Stanford argues that the discussion around UGT concerning media is not results-oriented. White (1994) argued that UGT wrongly assumes that people are free to choose the media they want to consume and to derive their own interpretation. Anderson (1996) argues that UGT addresses sociological and psychological motivations and functions, but it does not address the reductionism, materialism, foundational empiricism, and determinism aspects. Thus, the main criticism of UGT is based on the fact that it wrongly presumes that the individual initiates the selection of media; the individual's environment, social interaction, and predisposition produce expectations concerning media usage, and the media audience is goal-directed (White, 1994).

Traditional media is typically used as a barrier between people (Pember et al., 2018), while social media creates networking among people (Kamboj, 2019). Social media plays a vital role in making viral content, which in turn creates social influence on social media users, and general public engagement. People's perception of the media simply as a means to satisfy specific needs cannot fully identify the extent of media power (Al-Jabri et al., 2015; Dhir et al., 2017; Lin & Chen, 2017). UGT only encompasses media influence on the audience rather than audience influence's on each other through their views and interpretation of the media content.

2.3.2 Social Influence Theory

Social media helps engage groups that share similar ideas and values, independent of their physical proximity to one another, even though the reachability and convenience which these platforms enable in absorbing, assimilating, or acculturating are not always uniform (Naeem, 2020b). Björk and Magnusson (2009) found that a person's openness to new ideas, perspectives, and methods increases as their network grows. This can be also an effect of the diversity of social media forums. With the advent of social media, it is easier than ever to make connections with people in different parts of the world (Naeem, 2020c).

The key element in Social Influence Theory is the identity, which in social media is represented by profiles and users' data. A person's profile on a social networking site serves as proof of that person's presence. Each user has a unique profile that represents them to the rest of the world (Naeem, 2020a). In addition, every user can publish a profile image for the rest of the world to see, along with any other information they want to publish. This not only includes a person's private information but also their favourite things and hobbies they do in their spare time (Boyd & Ellison, 2007). Because users are in charge of the material that they choose to share, users publish information that they feel presents them to the world and produces an impact that encourages SMUs to participate in a certain kind of behaviour. This signifies that an individual establishes an identity of his own via social networking sites. This identity is socially created on the basis of daily contact that takes place on the internet. A person's friends and comments or postings on social networks are also a component of their identity on such networks, and they have the potential to have a further impact on other SMUs. This is a feature that the theory of acculturation cannot account for and hence does not explain. As a result, the application of the idea of social influence is becoming more prevalent in this investigation.

When a person signs up for a social networking website, they are often urged to interact with other users and make new acquaintances via the social impact that others provide, either in the real world or online. This results in the formation of social networks, which in turn has an effect on the interactions that users have with others who are present on social media platforms. Once a person is connected with other individuals, they enter into a visual relationship whereby they can see each other's profile in terms of pages, details, pictures, and posts, which collectively create an influence on each other. This visual

relationship allows for communication between the individuals who are connected. However, the social environment in which one exists is a factor to be considered while attempting to obtain influence and when attempting to influence others.

In the classical formulation of this theory, Kelman (1958) states that there are several different levels on which social influence may bring about changes in an individual behaviours and attitudes:

Compliance: It is generally accepted that compliance takes place when individuals give in to social pressure and embrace behaviours that have been induced in them to avoid negative consequences (disapproval) and maximise positive outcomes (rewards, approval). The contentment attained through compliance is the source of the resultant positive social effect. For instance, a person may outwardly agree with a given group of people yet secretly disagree with the behaviour or opinions of the group; in this case, the individual is momentarily altering their point of view. It is generally accepted that identification takes place when individuals adopt the induced behaviours to establish or maintain a favourable and desirable connection with another group or individual. As such, arguably, compliance leads to some degree of enjoyment on the individual's part.

Internalisation is a process that is thought to take place when people allow themselves to be influenced by the perception that an induced behaviour includes rewarding content. This means that the behaviour in question reflects the actions and views of other persons. When induced behaviours seem to be in line with an individual's core beliefs, that person is more likely to adopt them. In the instance of internalisation, it can thus be argued that the substance of the induced behaviour is responsible for the generation of pleasure. This entails exhibiting both an outward (public) and an interior (private) change in behaviour, which may be thought of as an external (public) and an internal (private) agreement with the perspectives held by the group. When a person conforms to the views of a group to such a profound degree that those beliefs become their own, the conformity has reached its highest level. Internalisation may be best understood by considering the scenario in which a person decides to become a vegetarian after living in a university dormitory that prohibits the consumption of meat products. Another way for a person to become a follower of a religion is for them to adopt the perspective of a group of close friends.

While Social Influence Theory plays a key role in the investigation of the impact of social influence on an individual's beliefs, attitudes, and behaviours, it may not be the most suitable choice for food waste research. The focus of Social Influence Theory is primarily on understanding the ways in which individuals are impacted by the actions of others, which may not be directly relevant to the study of food waste. Other theories and frameworks that address the complex interplay of environmental, social, and behavioural factors involved in food waste may be better suited for this research.

2.3.3 'Influencers' from classical theory to social media

Companies looking to expand their customer base and academic institutions interested in new subjects have both taken notice of social media's impact on everyday life and its most prominent figures. Social media has not always been present, but the notion of "influencers" has roots in older theories of how public opinion is formed, such as Lazarsfeld's two-step flow model (Kemp et al., 2012). Similarly, studies have classified 'influencers' as those who are very well-connected or crucial to a certain (social) network (Bakshy et al., 2011). Despite this, (Kemp et al., 2012) believes that influential consumers would advertise a product for free by telling their friends about it if they tried and liked it.

However, the current idea of an influencer is rather different, especially when applied to the field of influencer marketing. Paid social media influencers work hard to maintain their "real" and "genuine" personas while pushing brands on platforms such as Twitter and Instagram (Newlands & Lutz, 2017). A formal agreement outlining the parameters of their cooperation with an advertising firm is prepared and signed. There are situations in which influencers may make up to \$20,000 from a single deal (Childers et al., 2019). Thus, the word "influencer" is now widely recognised as a legitimate occupation, rather than just an academic designation for accounts with a significant number of followers. For people on social media who want to make a living as an influencer, books (Welch, 2018) and conferences (Stoldt et al., 2019) promise to teach would-be influencers how to become one. Here, we emphasise the persuasive writing of those who are both well-connected with other users and who are paid to advocate for a brand. These people are sometimes referred to as 'professional influencers'.

Common metrics for measuring the impact of material in digital discourse include the prevalence of a certain hashtag, the number of mentions, the links included, the emoticons used, and the total quantity of words (Cossu et al., 2015). Miller and Brunner (2008) found that the length of a participant's textual contribution is inversely proportional to their perceived social standing in anonymous, collaborative online communications. Though it is difficult to anticipate which websites will become viral, research suggests that links to pages that make people happy or find intriguing are more likely to be shared (Bakshy et al., 2011). Hashtags are a symbol of the so-called "neighbourhood effect", which is an indication of the power of social networks. It suggests that the use of content-related hashtags by members of a network might influence and recruit new members to the community (Backstrom et al., 2006). According to popular belief, referencing other users (mentions) on social media may increase the poster's impact on recipients' emotions (Ma et al., 2019). According to various studies, the use of emojis in text messages increases the impression that the message is light-hearted, which has a significant impact on online word-of-mouth and is strongly connected with online influence (Hsieh & Tseng, 2017).

An alternative strategy for analysing the textual contributions made on social networking sites is the analysis of communication styles. Communication styles, which have been linked to personality factors, may shed light on the author's persistent personal preferences in social interactions (Page et al., 2013). Inconsistent results have been found in studies examining the link between personality and influence (Winter et al., 2021). However, Words like 'I', 'me', 'we', and 'them' are pronouns that have been connected to characteristics like one's personality, social abilities, leadership potential, and the calibre of one's interpersonal relationships (Winter et al., 2021). Quercia et al. (2011) analysed popular tweets by classifying them in ways that mirror actual language use. Consistently using 'I', 'me', and 'my' in conversation is a sign of neuroticism and egocentrism (Quercia et al., 2011; Stirman & Pennebaker, 2001). A comparison of second and third-person pronouns reveals how they depict interaction with others (Rude et al., 2004). Quercia et al. (2011) also used sentiment analysis to examine how different Twitter communication methods affect the tone of the original tweets. They found that popular users often use pejorative language and indirect forms of address to convey ideas of solidarity and unpleasant feelings.

2.3.4 Social Impact Theory

Awareness is a term used by Latané (1981, p. 343) in his Social Impact Theory (SIT) to refer to an individual's level of perception of the presence and influence of others in a given social situation. Latané argued that the level of awareness influences the extent to which an individual is likely to be influenced by others in a group. The greater the awareness of others, the greater the potential for social impact. His Social Impact Theory (SIT), defines influence as

any of the enormous range of interventions in physiological states and subjective sensations, intents and thoughts, perceptions and beliefs, behavioural patterns, that happen in a person, as a result of the real, suggested, or imagined presence or actions of other people.

In other words, influence may affect not just a person's objective mental and emotional states, but also their physical ones. SIT organises different types of impact based on their relative intensity, the clarity with which they make themselves known, and the regularity with which they occur. The power of an influence comes from the features that make up the source of that effect, whereas the immediacy of an impact relates to the degree to which the source is physically and temporally close to its target. In this context, immediacy refers to the degree to which one is physically close to the intended recipient. According to Latané (1981), the number dimension indicates the number of sources that factor into the phenomenon being studied.

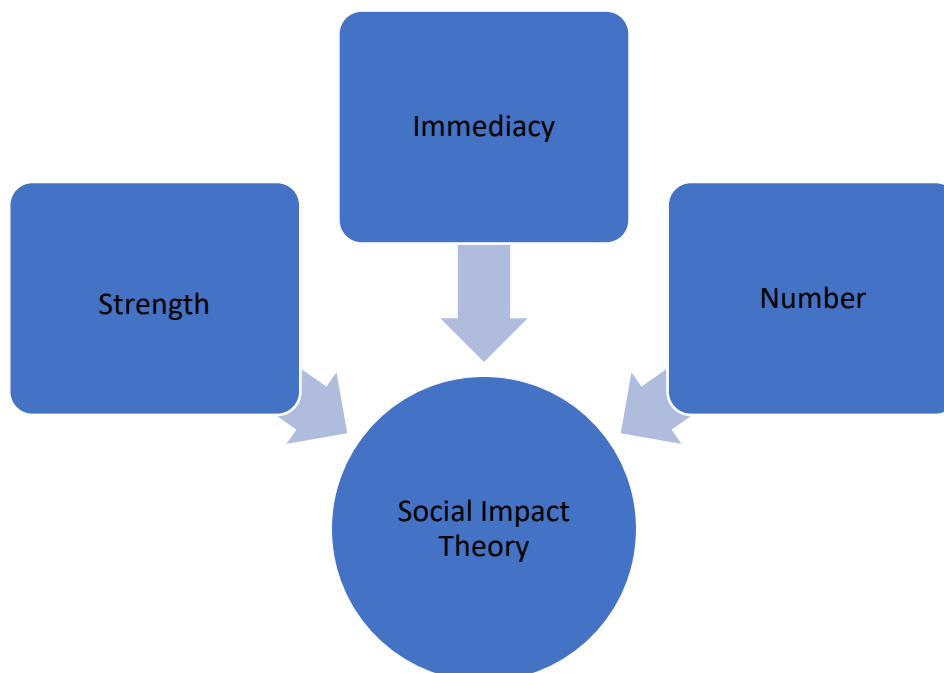


Figure 2-6 (Adapted from Latané, 1981)

In 1981, long before the advent of social media, Ohio State University psychologist Bibb Latané created SIT as a result of a series of studies meant to prove his concept regarding the nature of influence. His idea of social change is based on three pillars (see Figure 2-6). The idea was conceived before the advent of the widespread use of social networking sites like Twitter and Facebook. In the realm of social media, the concepts take on a far more potent form. Consider the relevance of Latané's theory to social media networks like Twitter and Facebook. Social media makes it easier to stay connected with friends, co-workers, and family members whose views matter may be a pillar of support in times of need. The individuals you are linked to on social media are no farther away than your mobile device, providing you with a sense of both temporal and virtual immediacy. The potential for expansion of the circle of influence via social media is considerable. As a field of study, SIT attempts to clarify how people's interactions with others shape their thoughts, feelings, and actions (Cialdini & Goldstein, 2004). Table 2-1 presents an overview of how theory within social psychology addresses each sub-type. This shows that SIT addresses the influence of conformity.

Social Impact Theory (SIT) suggests that the impact of social influence is determined by the strength, immediacy, and number of sources presenting a particular message. In the context of Twitter, these concepts can be used to raise awareness about a specific issue among a large number of people.

Strength: The strength of the sources on Twitter can be increased by amplifying the voices of influential figures and organisations that are passionate about the issue. For example, partnering with celebrities, government officials, and NGOs with a large following can help to increase the visibility and credibility of the message.

Immediacy: The immediacy of the message can be increased by using Twitter's real-time nature to share timely and relevant information about an issue. For example, using live tweets and videos to share updates on a developing situation can help to create a sense of urgency and keep people engaged.

Number: The number of sources presenting the message can be increased by encouraging others to share the message on their own Twitter accounts. For example, using hashtags, retweets, and direct messaging to encourage others to participate can help to expand the reach of the message and create a groundswell of support. By employing these

concepts from SIT, organisations and individuals can use Twitter as a powerful tool to raise awareness about a specific issue and create a significant impact among a large number of people.

Table 2-1 Social Impact Theory

Social force	Description	Illustration
Strength	<p>Salience, importance or intensity of the influencing source.</p> <p>Can be related to the source itself (Transituational strength) or related to the context-specific roles that the influence and the influenced occupy (Situational strength)</p>	<p>Transituational Strength: age, gender, physical characteristics, and perceived intelligence, physical appearance. Situation-Specific Strength: Actor and audience, teacher and class, peer pressure and alcohol consumption.</p>
Immediacy	<p>The proximity of the influencing source and the individual who is the target of the influence.</p> <p>Can be physical, temporal or social</p>	<p>Physical Immediacy: Geographic location, seat spacing, crowding. Temporal Immediacy: time between and announcements, duration of the announcement. Social Immediacy: perceptions that others are "like us." Sharing thoughts, like-minded,</p>
Number	<p>The number of influencing sources directed towards the individual</p>	<p>Numbers in a crowd, numbers in class, numbers in an online community,</p>

It is a widely held belief that the presence of brands and influencers on social media, as well as their behaviour on these platforms, will change the attitudes or behaviours of the people who consume their content or use social media. This belief is based on the observation that people are more likely to engage with a brand or an influencer if that brand or influencer is present on social media (Woods, 2016). In the context of the online environment, it has been discovered that traits such as exaggeration and assertiveness are indicative of users who

have a significant amount of influence. This finding pertains to the robustness aspect of the model (Miller & Brunner, 2008). On the other hand, the presence of published content is what Miller and Brunner meant when they said that immediacy is a defining characteristic. It is possible to use both the total number of textual contributions as well as the word count of each contribution when attempting to describe the presence of textual contributions. It was discovered that the former was a predictor of influence in online communication that was synchronous, collaborative, and anonymous. This research anticipates that the immediacy characteristics, along with other aspects of Social Impact Theory, will also have an impact in the business context. As a result, this research places an emphasis on strength, immediacy, and number by conducting in-depth analyses of the characteristics associated with text presence (see Figure 2-7). The length of the contribution, as well as the use of common words or components such as emojis, are examples of these characteristics. (Perez-Vega et al., 2016) argue that Social Impact Theory is an appropriate approach to explain changes in communication behaviour, attitudes, and cognition as a result of the presence of others.

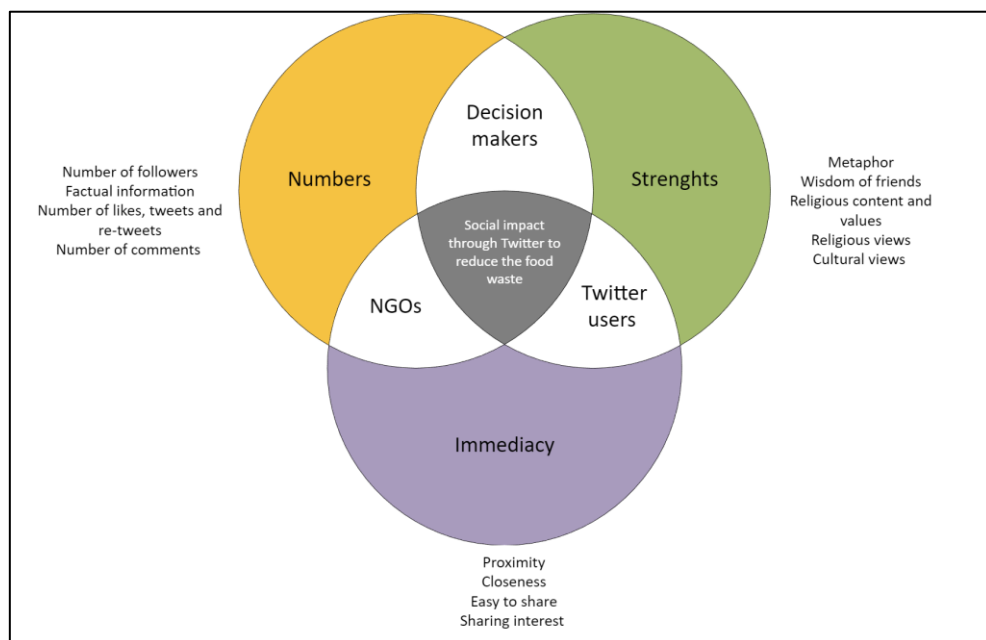


Figure 2-7 Proposed theoretical summary adapted from several sources, including Latané (1981)

The use of social media has been found to play a crucial role in changing food waste behaviour among the public. According to a study by Jenkins et al. (2022), social media platforms such as Twitter, Facebook, and Instagram can be used to raise awareness about food waste and promote behavioural change. The study found that social media campaigns

that incorporate educational messages and interactive components, such as quizzes and games, were effective in increasing public awareness of food waste and changing behaviours related to food waste. In addition, social media can also be used to promote the sharing of information and best practices related to reducing food waste. For example, a study by Teoh et al. (2021) found that social media platforms can be used to promote the sharing of recipes and tips for reducing food waste in the home, as well as to raise awareness about food waste reduction initiatives and events. In addition to the points mentioned above, social media campaigns can also leverage the power of peer influence and social norms to change food waste behaviour. According to a study by White et al. (2019) social media can be used to create a sense of social pressure and accountability, which can motivate individuals to adopt more sustainable behaviours, including reducing food waste. This is because people are often more likely to follow the actions and behaviours of those around them, especially those in their social networks.

Additionally, social media campaigns can also provide organisations with the opportunity to reach a wider audience and engage with a diverse group of stakeholders. According to a study by Osaili et al. (2022), social media can be used to target specific groups and demographics, such as young people and low-income communities, who may be particularly vulnerable to food waste. By targeting these groups and engaging with them through social media, organisations can help to raise awareness, promote education, and encourage action on food waste. Furthermore, social media can also be used to create a sense of community and encourage collective action on food waste. A study by Sutinen and Närvänen (2022) found that social media platforms can be used to bring together individuals, organisations, and communities with a shared interest in reducing food waste, and to mobilise collective action on this issue. In short, the use of social media has been found to be an effective tool for raising awareness about food waste and promoting behavioural change among the public.

Social media campaigns can also be used to gather feedback and insights from the public, which can inform the development of more effective strategies for reducing food waste. For example, a study by Kim et al. (2020) found that social media platforms can be used to gather feedback from the public on their attitudes and behaviours related to food waste, and to identify opportunities for improvement. By using social media to gather feedback and insights, organisations can better understand the needs and motivations of

their target audience and tailor their campaigns accordingly. So, arguably social media campaigns play a crucial role in changing food waste behaviour at the public level by raising awareness, promoting education, encouraging collective action, leveraging the power of peer influence and social norms, reaching a wider audience, gathering feedback and insights, and providing organisations with the opportunity to engage with diverse stakeholders. .

Attitude and behaviour are both important aspects of human psychology, and both can play a role in shaping behaviour. However, it is generally easier to change behaviour than attitude. Attitudes are enduring beliefs and evaluations about a particular object, person, or issue, while behaviour refers to observable actions or activities. Attitudes are often deeply rooted and can be difficult to change because they are influenced by a person's beliefs, values, and experiences. On the other hand, behaviour is more easily changed because it is influenced by a variety of situational and environmental factors, such as incentives, norms, and social pressure. This is because attitudes are often deeply ingrained and influenced by a multitude of factors, including past experiences, social norms, and values. In contrast, behaviour is more malleable and can be changed more easily through direct manipulation of environmental and situational factors.

In his theory of planned behaviour, Ajzen et al. (2018) suggests that attitudes and intentions play a significant role in predicting behaviour, but behaviour can also be influenced by perceived behavioural control and social norms. Ajzen et al. (2018) also suggest that attitudes play a role in predicting behaviour, but they note that behaviour is often influenced by social and situational factors, even in the absence of a corresponding attitude change. Cialdini (2007) discusses the concept of social influence, including the impact of social norms on behaviour. They suggest that individuals are more likely to comply with the expectations of others, even if their attitudes do not align with the expected behaviour. This provides further evidence that behaviour can be changed more easily than attitudes.

With the years, the focus of academic research has shifted from characterising or describing public participation on social media to adequately assessing the efficacy of public involvement in a more quantitative manner (Ihm, 2019; Lam & Nie, 2020). The focus of academic research on public participation on social media has evolved over time. Initially, the focus was on understanding and describing the experiences and perspectives of individuals and communities who used social media for public discussions and decision-making. Previous

research aimed to gain insight into how people used these platforms, what motivated them to participate, and how their participation differed from traditional forms.

More recently, as the importance of social media as a tool for public participation has become more apparent, researchers have shifted their focus to evaluating its efficacy. They aim to understand the impact of social media on public participation, decision-making and policy-making processes by studying the interactions, experiences, and perceptions of various groups of people such as marginalised communities, public officials, and citizens. Qualitative methods such as interviews, focus groups, and ethnographic observation are used to gain a deeper understanding of the social, cultural, and political factors that shape public participation on social media. Social Impact Theory represents a conceptual framework utilised in the domains of communication and media research for representing and analysing the relationship between different variables such as social groups, communication media and interaction (Perez-Vega et al., 2016). Its advocates argue that Social Impact Theory is proposed as an appropriate approach to explaining changes in behaviour, attitudes, and cognition because of the presence of others.

Social Impact Theory is used to explore the social context in terms of strength, immediacy, and numbers of the interpretation of social media users (see Figure 2-7). As discussed above, eating and drinking are symbolic social practises which are deeply rooted in the locality of the society; therefore, each group's culture is dynamic because it is always being shaped and reshaped by the actions of its individual members. The act of consuming reimagines not only cultural and social meanings, but also the values and practises that underpin those meanings and routines. Problems can be discussed constantly in online communities. Online interpretations and innovations connected to social media also contribute to individuals' levels of originality. Therefore, Social Impact Theory would be helpful in this research to explore the whole immediacy of social media's impact on the social interpretation of food wastage in the context of the encouragement and discouragement of social actors on social media. Additionally Social Impact Theory would also be helpful to understand the role of numbers in the context of the number of users, number of tweet retweets, number of organisations and the number of people who are talking about food wastage as a social issue. Additionally, this theory would also be helpful in understanding the role of the strength of the content that is being shared by organisations or by users, which

can create social impact on others as these numbers are indicative of the immediacy of the interaction on Twitter.

The aesthetic value of social media content increases significantly when one factors in people's natural tendency to share only the best of their work. According to Hand (2017), numerous social media platforms provide a wealth of alternatives for visual presentations that can expand, intensify, and transform visual assistance. Hawkins (2001) provided case studies of waste education initiatives that highlighted the aesthetic potential of compostable materials. In addition, McDonnell (2016) argued that the social values attached with food waste are also associated with digital media and the idea of food consumption as a type of artistic reproduction. Sharing photographs of food on personal and professional blogs is one way in which Kozinets et al. (2017) demonstrated the impact of social media on the food industry. Therefore, Social Impact Theory would be helpful to understand the social practises of encouragement and discouragement as a social value in the context of food wastage in KSA. Whereas the strength of an influence stems from the characteristics that compose its source, the swiftness with which it reaches its destination is related to how close that source is both in space and time.

This view is grounded in the discovery that social media presence correlates with increased brand and influencer engagement. In order to explain how people's actions, beliefs, and knowledge might shift in response to being in the company of others, Social Impact Theory has been advocated by scientists. This research synthesises social interactions on an individual's outlook, temperament, and behaviour towards food waste through the lens of local sociocultural and religious values through the interaction of social media users. Additionally, numbers would help us to understand the number of tweets and retweets to measure the importance of shared content on social media. For example, discussing the number of years of shared content by a selected organisation that is working to reduce the wastage of food would help us to understand the importance and intentions of the public with regard to the wastage of food in Saudi Arabia.

Social Impact Theory, as described by Latané (1981), suggests that an individual's behaviour is influenced by the behaviour of those around them, and that the strength of the source, immediacy of the source, and the number of sources exerting influence are all factors that affect the degree to which an individual is influenced. This theory has proven useful in data collection and analysis in regards to reducing food waste in Saudi Arabia. In the context

of reducing food waste, the Social Impact Theory suggests that the cumulative impact of multiple sources is greater than that of any one source acting alone (Kapoor et al., 2018). This idea is supported by research that has shown the greater impact of a group compared to an individual delivering the same message. The number and diversity of sources, such as organisations and NGOs like food banks, that are talking about an issue are important in creating a successful awareness campaign. The sources must present convincing evidence and appeal to the target audience in a distinct manner.

The use of religious experts, sharing factual information, and incorporating humour through engaging content can help create a social impact and change the behaviour of the public regarding food waste in Saudi Arabia. The increase in the quantity and quality of food waste content on social media can help bring about change in values, beliefs, and behaviours. Celebrities, media, NGOs, individuals, and the government can work together to increase the quantity and quality of food waste content on social media. This will lead to a reduction of food waste at a national level by increasing the immediacy of social media interaction. The strength of the source and immediacy of the message are also important factors in creating a successful social impact. The source must be credible and authoritative, and the message must be close and immediate to the target audience to have a significant impact. In short, Social Impact Theory has proven to be useful in data collection and analysis in regards to reducing food waste in Saudi Arabia. By considering the strength of the source, the immediacy of the message, and the number of sources, effective social media campaigns can be developed to create a social impact and change behaviour towards reducing food waste.

2.4 CONCLUSION:

In conclusion, the issue of food waste in KSA is a significant problem that needs to be addressed. The use of social media platforms such as Twitter can play a critical role in raising awareness, promoting education, and encouraging collective action towards reducing food waste. Social Impact Theory, which considers the strength of the source, the immediacy of the message, and the number of sources, can be used as a conceptual framework to create effective social media campaigns that can change behaviour towards reducing food waste. The social impact theory suggests that the cumulative impact of multiple sources is greater than that of any one source acting alone, and this can be applied to reducing food waste in

KSA by bringing together various organisations, NGOs, individuals, and the government to increase the quantity and quality of food waste content on social media.

By considering the social and cultural values of the society in KSA, the aesthetic value of food waste content, and the role of peer influence and social norms, effective social media campaigns can be developed that can create a social impact and change behaviour towards reducing food waste. The use of Twitter in this context can provide an opportunity to reach a wider audience, gather feedback and insights, and engage with diverse stakeholders. The synthesis of Latané's Social Impact Theory can be used to understand the impact of social media on individuals' outlook, temperament, and behaviour towards food waste. Effective social media campaigns that leverage the power of social impact theory can help create social impact and change behaviour towards reducing food waste in KSA. This can be achieved by bringing together various NGOs, food banks and governments to increase the quantity and quality of food waste content on social media.

CHAPTER 3: METHODOLOGY: MIXED METHODS TO STUDY SOCIAL MEDIA CAMPAIGNS ON KSA FOOD WASTE

Overview

The goal of this chapter is to give a full and clear explanation of how the research design for this study was made and how it was used. It will clarify the basis for the choice of research approach and justify the utilisation of the chosen data collection tools and analytical methods to fulfil the goals and objectives of the research and to respond to the questions posed by the study. Also, it will explain the steps that were taken to make sure that the collected data and their analysis were correct. Also, any ethical concerns raised by the research will be discussed and how they have been dealt with will be explained.

The research strategies and techniques employed in this investigation are detailed here. The difference between methodologies and methods is important to establish first. Methods are the tools to be employed for the research. For instance, Interviews are an example of a qualitative method, while questionnaires are an example of a quantitative method, as stated by Clough and Nutbrown (2012). In contrast, the methodology provides an understanding of why and how certain techniques were applied; for instance, why a researcher decided to conduct interviews and how they were chosen are both methodological concerns. Conversely, methodologies are the approaches or procedures utilised to obtain and analyse data relevant to some study issue or hypothesis. As defined by as defined by Crotty (1998, p. 3), this will be

"the strategy, plan of action, procedure, or design lying behind the choice and use of certain methods and tying the choice and use of methods to the desired outcomes."

This chapter begins by outlining the research paradigm that serves as the guiding light for this investigation. Methods employed in this study are then presented and discussed in detail. This section also explains why and how the research used Twitter data analysis as a first method and why and how the researcher used interviews as a second method. This chapter finishes with a discussion of the ethical considerations that arose during implementation of the methodologies and a description of the quality assurance procedures that were implemented.

3.1 RESEARCHER'S POSITION

Decisions about methodology are heavily influenced by the epistemological and ontological assumptions of the researcher (Gray, 2014). Due to the significant gaps identified in the literature review, the researcher decided that a qualitative approach could be the most appropriate approach to gain an understanding of the research subject that is both in-depth and comprehensive. It is common for qualitative research to focus on participants' experiences and feelings. This bring significant data that can drive future explorations of the topic and make sense of other methods (i.e., quantitative). Therefore, my research will use thematical and content analysis, to analyse textual data (see Figure 3-1). However, they differ in their focus and approach. Thematical analysis is a method used to identify patterns or themes that emerge from the data, while content analysis is a method used to identify specific features or elements of the data. Content analysis may include the use of quantitative data after coding. However, both methods can be used to analyse a variety of text data, such as interviews, focus group transcripts, and written documents. The choice between these methods will depend on the research question, the type of data available, and the goals of the study.



Figure 3-1: The research design employed for the data collection which combines qualitative and quantitative methods.

This study will be designed in descriptive terms, performing an exploration of the social awareness campaigns run by Saudi food banks and their use of social media. Although the results are expected to be prescriptive, they may guide future social awareness strategies on food waste prevention. The inductive method is more suited to this investigation since it is grounded in experience and observation rather than rules or laws. Inductive data is the best way to present arguments based on observations (Soiferman, 2010).

Inductive reasoning is a research approach that focusses on observation and experience to build new theories and explanations. It is particularly useful in exploratory studies where the researcher is trying to gain a deeper understanding of a phenomenon. In the context of my study on food waste and awareness, inductive reasoning would allow the gathering of data from various sources, such as interviews and Twitter, and analysis to draw conclusions and identify patterns or relationships. This approach would provide a more nuanced and in-depth understanding of the subject matter, which can then be used to develop new insights and theories. On the other hand, deductive reasoning starts with a set of premises and then moves towards a conclusion, which can sometimes limit the scope and depth of the research. Therefore, inductive reasoning would be the best way to present a study on food waste and awareness. This research position and philosophy informs the different decisions undertaken in the project research design (see Figure 3-2) which are explored in detail below.

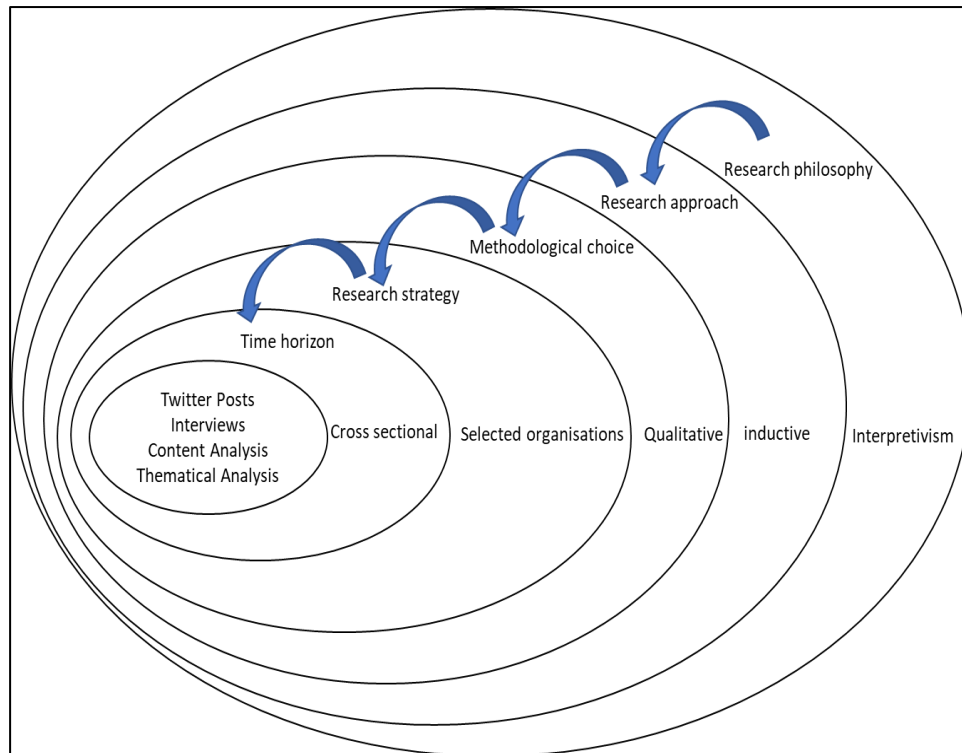


Figure 3-2 Research strategy adapted from (Saunders et al., 2015).

3.2 THE AIM AND APPROACH

- 1- How are Saudi food banks using Twitter to increase food awareness?
- 2- What the perspectives of Saudi Food bank actors regarding the determining the potential factors of using Twitter to raise awareness of food waste?
- 3- How can a framework be developed to inform policymakers in food bank organisations in order to develop strategies that would promote food waste awareness among the Saudi public?

AIM AND OBJECTIVES.

The aim:

- To investigate how Saudi food banks may benefit from using Twitter to improve food waste awareness campaigns.

The objectives:

1. To review theoretical and critical understandings of the use of social media to change the public behaviour.
2. To analyse the use of Twitter in reducing food wastage in KSA.
3. To identify key themes and trends in food waste discussions on Twitter to understand organisational communication with target audience.
4. To propose an effective public communication social media approach to raise public awareness and change behaviour regarding food waste reduction in Saudi Arabia.

3.3 RESEARCH DESIGN

The study will focus on using qualitative methods to examine the use of Twitter by food banks in the Kingdom of Saudi Arabia for their awareness campaigns and communication strategies. The methods employed include a Twitter data analysis to identify patterns and themes in their tweets, as well as semi-structured interviews with decision-makers at the food banks to gather their perspectives and experiences. The results of this study will provide valuable insights into the role of social media in the food bank sector and its potential for creating positive change in the community. The desire to learn more about this social issue motivates these techniques as well (Saldana, 2011), especially in relation to the use of qualitative methods. In addition, triangulation is used to improve the quality of the data used in this study (Eisner, 2017).

Triangulation is a research method that involves using multiple data sources or methods to improve the reliability and validity of research findings. In the context of researching organisations that work to reduce food waste and semi-structured interviews with professionals in the field, triangulation can enhance the credibility and reliability of the research. Using multiple data sources, such as Twitter data from multiple organisations and semi-structured interviews, can reduce potential biases and errors in a single data source. Additionally, triangulation provides a more comprehensive understanding of the phenomenon being studied by providing multiple perspectives. Each data source or method has its own strengths and limitations, so combining methods can offset these limitations and provide a rich picture of the issue. Combining Twitter data analysis with interviews in this specific case would allow for evidence triangulation and a deeper understanding of food waste reduction strategies to be developed.

The collection of procedures utilised by the two methods is shown in Figure (3-3). The process was not always sequential, and the researcher had to revisit some of the steps already taken. Afterwards, detailed explanations for each of these measures will be provided.

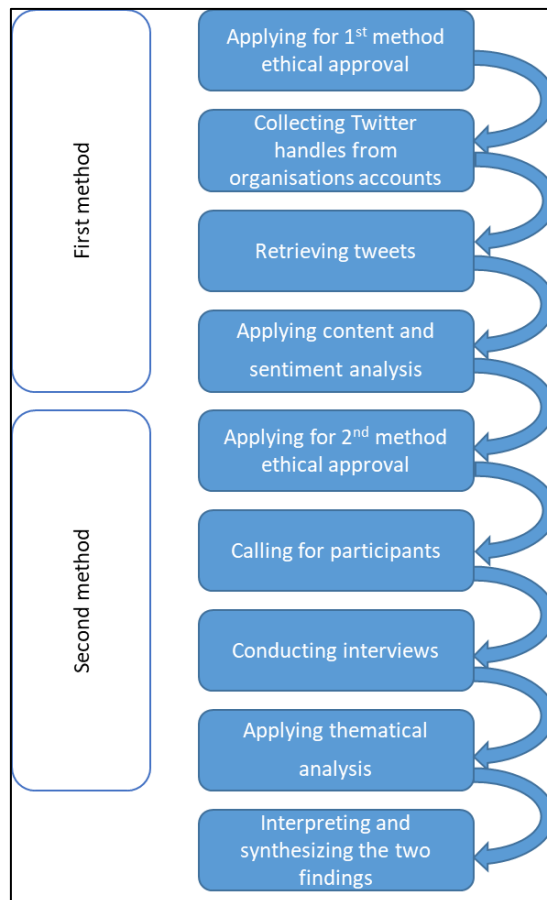


Figure 3-3 Data collection for this research using two approaches

3.4 METHODS AND PROCEDURES

Overview

The first approach for data collection involves utilising Twitter as a source and is comprised of three main steps: contacting stakeholders, gathering data, and conducting analysis. These steps ensured that the data obtained from Twitter was relevant and valuable by first reaching out to stakeholders, then collecting and processing the data, and finally analysing it to draw meaningful insights. This systematic process was critical to the success of the data collection (see Figure 3-4).

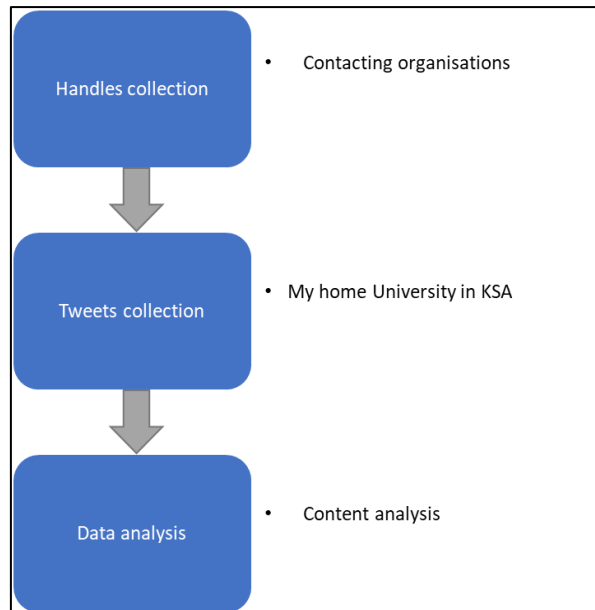


Figure 3-4 Three primary processes

The Twitter accounts of the respective organisations (food banks in KSA) were used to initiate contact. This approach was developed in part to examine the dynamics of Twitter-based awareness campaigns (and to observe some practical examples of these campaigns on social media). After that, the researcher compiled all of the organisation’s tweets and their information (time posted, the language used, etc.). The tweets were then processed by applying content analysis. Information regarding each step of this process is expanded upon below.

3.4.1 (Study 1) Content analysis

In both quantitative and qualitative research, content analysis has proven to be a useful analytical tool (Krippendorff, 2018; Payne & Payne, 2004). Specifically, content analysis is a research technique for establishing reproducible and accurate inferences from texts (or other meaningful matter) on the contexts of their use, as defined by Krippendorff (2018). Researchers can analyse the contents of documents using quantitative measures of the frequency of appearance of various items in the text, as defined by Jupp (2006). The frequency with which a word or phrase is used and the variety of sentences in which it appears are both indicators of how important a given notion or meaning is in the document. Quantitative and qualitative approaches to content analysis are equally possible (Krippendorff, 2018; Payne & Payne, 2004). Quantitative applications include tracking how frequently words or topics were

included, how much space or time was given to themes, and how much attention was drawn to them (Payne & Payne, 2004). Quantitatively, it can be applied to deduce the content's meaning and social values (Payne & Payne, 2004). In qualitative content analysis, subjective interpretation of the content of text data is achieved through a systematic categorisation process of coding and detecting themes or patterns, as defined by the authors of the original study (Hsieh & Shannon, 2015). Qualitative content analyses pay attention to unique themes that demonstrate the diversity of meanings of the phenomena, rather than only relying on frequency counts of terms or passages (Mayring, 2015).

This is why a qualitative content analysis was used in the first approach; the researcher wanted to learn more about the awareness-raising process and the role of Twitter. The content analysis in this approach was aided by the timing of data collection. Hsieh and Shannon (2015) state that content analysis is useful when a researcher wants to analyse how patterns have changed through time.

Hsieh and Shannon (2015) outlined three methods for conducting content analysis: directed, conventional, and summative. Each has a similar structure to the others but was developed using a unique set of codes. In a more traditional study, the coding system naturally develops as a result of the data being analysed. Summative content analysis is a research method used to summarise and quantify the presence of certain themes or characteristics within a body of text. Directed content analysis is a more specific type of content analysis that is guided by a set of predetermined categories or codes for analysing the text. Conventional content analysis is a traditional approach to content analysis that involves manually reading and coding the text according to a set of predetermined categories or codes. This research uses summative content analysis because in summative content analysis, researchers aim to provide a general summary of the content, often focussing on the frequency or presence of certain themes or characteristics within the text. This type of content analysis is often used to identify patterns or trends within a body of text, such as in media studies where researchers might analyse the frequency of certain topics or themes from Twitter data.

To develop the study's coding frame, the directed method looks to pre-existing theory or previous research. When conducting summative content analysis, the researcher counts the occurrences of specific keywords gleaned from prior information and the aforementioned readings. This research followed these tried and true methods. Data is allowed to do the

talking, and the codes reflect that. Results from the initial method were still helpful, though. The intellectual, social, cultural, and linguistic themes identified in the first method provided valuable insights into the types of codes to be expected in the second. The need for being methodical while conducting a content analysis was discussed above (Payne & Payne, 2004). For this content analysis, this study used Wildemuth (2016) eight-step process. The first method also uses these procedures, which are similar to those recommended by Braun and Clarke (2006). According to Paulus et al. (2013), social networking websites may be considered as sources of qualitative data and/or a way by which to communicate with study participants. According to Mishra and Singh (2018), conducting a content analysis of tweets has the potential to unearth vital information that would not be accessible through more conventional means of data collection, such as questionnaires or in-person interviews. According to the findings of their research, Linvill et al. (2018) discovered that the Twitter analytics method could be used for a longer period of time.

For the purposes of this research, Twitter was a highly useful source of information. The data from Twitter provided support for the data from the interviews, and it enabled me to closely watch how food banks use Twitter for raising awareness and participating in the dialogue regarding food waste. Twitter posts were collected from the selected organisations' Twitter accounts. This collection includes the four selected organisations' tweets, retweets, quotes, and likes. The collected posts on Twitter spanned two years of posts (from February 2019 to February 2021).

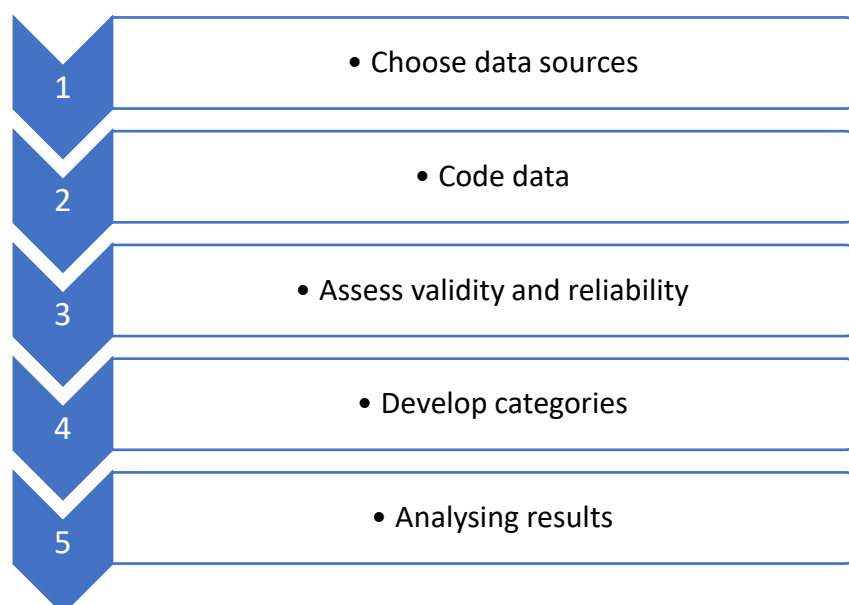


Figure 3-5 Content Analysis Phases (adapted from Paulus, 2013)

Analysing qualitative data can be done using a process called content analysis (see Figure 3-5). Putting the data into meaningful context requires organising it according to categories or themes (Patton, 2002). This investigation made use of content analysis (CA) since it is simple and adaptable for researchers who are not accustomed to performing qualitative data analysis and who are working with enormous data sets that are ambiguous and difficult to understand (Patton, 2002). This research covers all five stages of CA that are outlined by Patton (2002). First, data sources were chosen and the analysis of the Twitter data was executed. In addition, Twitter data was reviewed a number of times first to increase familiarity with the data. Descriptive coding was used throughout the second stage of content analysis, which entailed making the first codes. This type of coding "summarises in a word or brief phrase—most commonly as a noun—the core topic of a passage of qualitative data" (Saldaña & Omasta, 2016, p. 102). As a result, the initial codes were devised based on initial thoughts on the data. On rare occasions, a single code was sufficient to summarise an entire extract, whereas for others multiple codes were required. During this phase Patton (2002) suggests that researchers provide as many codes as possible. For the first cycle of the coding process (see Figure 3-6).

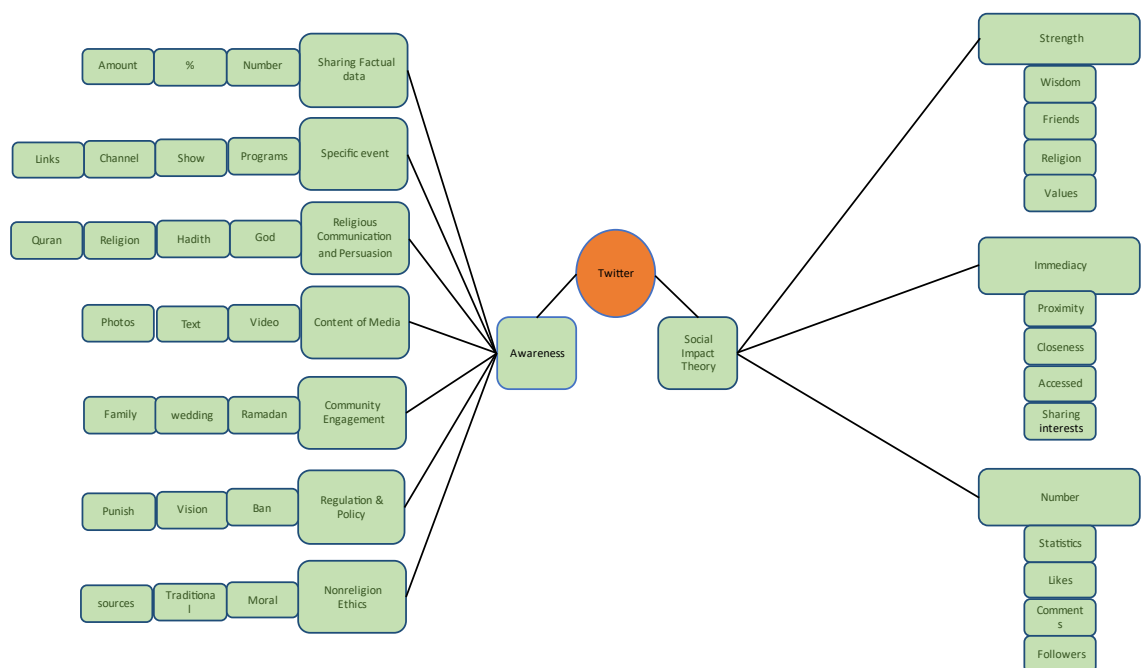


Figure 3-6 The first cycle of the coding process

3.4.1.1 Participants involved in the study

The participation of the four food banks in KSA (see Table 3-1), which are the focus of this study, is significant in terms of their location. They are spread out in different regions of the country to ensure that they are easily accessible to those in need. Two of the food banks are located in the capital city of Riyadh, providing support to individuals living in the city. The food bank in the holy city of Mecca serves those in need in this religious and tourism hub. Additionally, there is one food bank located in the southern region of the country, catering to individuals in that area. Food banks play an important role in providing food and support to those in need and their participation in this study highlights their significance in addressing food waste awareness in the KSA.

Table 3-1 Selected organisations

Food Banks (NGOs)	Number of the Followers	Accounts on Twitter	% of total
Ettam	79,000	@SaudiFoodBank	59.85
Ekram	34,000	@ekram_makkah	25.76
ShukreAseer	11,000	@shukaseer	8.33
Flw	9,000	@Flw_saudia	6.82
Total	132,000		100.00

3.4.1.2 Tweets data mining

Researchers primarily use the Twitter API to extract tweets (Ahmed et al., 2017). Tweets can be gathered using Twitter's API in one of two ways: either the Representational State Transfer (REST)-API or the Streaming-API (Jungherr, 2015). In the first method, which deals with historical data, the researcher specifies a set of parameters that Twitter uses to obtain tweets that have previously been posted about the same topic. Any combination of a user's handle, keywords, and hashtags can be used as these parameters. The second method enables researchers to acquire real-time data streams by streaming tweets and using parameters

relevant to the tweets that were retrieved (Jungherr, 2015). Both strategies necessitate the researcher to build a Twitter developer app (Jungherr, 2015; TwitterDocs, 2021).

This research used Algodom Media, a project at the researcher's local university in Saudi Arabia that allows and provides free service for their employees to collect data from any platforms. In total, 5,705 posts were collected. They were then converted to a comma-separated values file (CSV) format, which Excel can read. After being modified, they were cleaned and sampled, which meant that extraneous metadata was removed and tweets from outside the specified time period for each participant were omitted.

3.5 (STUDY 2) THEMATIC ANALYSIS

Thematic analysis is a method of qualitative research that allows the researcher to find meaningful patterns or themes that emerge from the data and provide light on the topic being studied (Braun & Clarke, 2006). A theme may be characterised in terms of patterns that are seen in the data that is being analysed, such as those that originate from directly observed behaviours or from comments made by interviewees (Braun & Clarke, 2006). In addition to providing a framework for organising and analysing data, thematic analysis also makes it possible for researchers to either proactively design and use themes for their data or to discover these themes as they are being uncovered (Braun & Clarke, 2006).

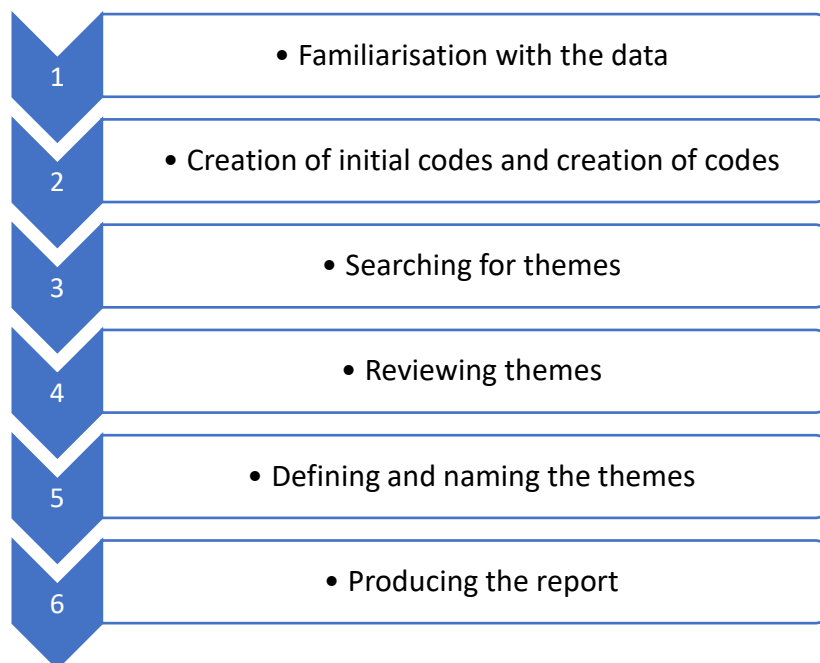


Figure 3-7 Phases of thematic analysis in interviews (adapted from Braun and Clarke, 2006).

The steps of the thematic analysis shown in Figure 3-7 and defined by Braun and Clarke (2006) were chosen as the approach to delve into the audio-visual data gathered throughout the pilot and primary studies. The following steps from Braun and Clarke's methodology were implemented as follows. After that, Microsoft Word was used to transcribe the previously recorded interviews. Most of the interviews had Arabic transcriptions done on the same day or within a few days. In addition, few different approaches were determined for data analysis throughout this stage. An approach called a theme analysis (TA) was selected during the analysis. Second, it was determined that the analysis would be conducted using NVivo and Excel as the respective software applications.

In this stage of the research process, the researcher interprets the data they have collected (Creswell, 2009). This study analysed the interview data thematically. According to Alhojailan (2012), thematic analysis should be used while studying qualitative data with the intent of finding useful interpretations. According to Boyatzis (1998), the most popular sort of analysis for qualitative approaches is thematic analysis, which can be defined as a process utilised for encoding qualitative information (Boyatzis, 1998; Creswell, 2009). Thematic analysis has gained widespread popularity due to its apparent ease of use, its capacity to provide plausible explanations for the data, and its capability of outlining the data's most salient characteristics (Braun & Clarke, 2006). Boyatzis (1998) defines a theme as a pattern found in the material that at minimum summarises and organises the possible observations and at maximum interprets features of the phenomenon. The transcript is coded into categories based on the meaning it conveys, which is how thematic analysis is often carried out. Then, connections between codes are found, and codes that are similar are grouped together to form themes. In order to make sense of the data classification, the process should be carried out with the research questions in mind throughout (Boyatzis, 1998; Braun & Clarke, 2006). When conducting thematic analysis, codes can be generated in one of two ways: inductively, where they are generated from scratch by the data itself; or deductively, where they are generated more by theories or past studies than by the data itself. At the conclusion of the analysis, a codebook will be constructed by combining codes and themes identified during the categorisation process (Boyatzis, 1998).

To get a second opinion on the coding, two full interviews conducted at the start of data collection were translated and shared with the research supervisors. In addition to preparing publications, the researcher was able to discuss his findings with other academics and receive constructive criticism, both of which served to reduce the likelihood of bias in the final analysis.

Using a mix of manual coding and automated tools, the researcher analysed the Twitter data for selected organisations. The interviews were analysed after coding the data. Interview responses confirmed Twitter's data, and revealed how food banks utilise the platform and how they saw its potential for raising awareness. Initially, the researcher analysed the interview based on the codes found in the Twitter data. Several factors contributed to this outcome. To begin with, the vast majority of tweets were analysed before the interviews were recorded. In addition, the quantity of information available on Twitter was substantial in comparison to that obtained via the interview. The Twitter data was also more precise than the interview data generated by the food banks' accounts, and it had a direct bearing on the research topics. A large portion of the Twitter data was relevant to the study's questions and aims. On the other hand, the researcher was motivated to re-examine the interviews in search of comparable codes after seeing a few codes in the Twitter data.

Overall, themes developed from both the interviews and the Twitter data answer the study's questions. By using NVivo and Excel, the researcher was able to examine data from both Twitter and interviews, make comparisons, and progressively categorise the information using appropriate codes and themes. The researcher coded all of the real data extracts in the first round, even if they did not appear to have anything to do with the study's topics (in case they were important later) (Saldaña & Omasta, 2016). After the first round of coding, the results were reviewed and any relevant themes were merged (Saldaña & Omasta, 2016). In this method, the CA steps of topic discovery and evaluation were combined (Paulus et al., 2013). At this phase, the researcher double-checked the extracted portions of each code for accurate encoding. Meanwhile, the researcher was trying to find patterns in the codes. Therefore, some codes were renamed, similar codes were combined, some codes were connected to others by forming families of codes, and codes that did not appear to correspond to the research questions were rejected. Saldaña and Omasta (2016) claim that researchers typically find the second coding cycle difficult, since categorising data and

developing themes calls for sophisticated analytical abilities. The research questions guided the organisation of the topics.

Taking the codes from the first coding cycle and shaping them into themes required a long time and a lot of effort. The researcher started considering the connections between codes and how they might be grouped into broader. NVivo was beneficial for constructing multi-code themes, transferring codes across themes, and deconstructing larger themes into smaller ones. The first codes only had a few words and were quite general and disorganised. However, the final themes and subthemes provided in Chapter 4 were more explicit, connected to one another and to the study objectives, and expressed as whole, understandable sentences. These ideas emerged as the researcher read and reviewed the data for the research and writing processes. The fifth CA stage included articulating the essential ideas. Paulus et al. (2013) states that to assess whether the researcher has succeeded at establishing the themes, the researcher may attempt to give a brief description of each theme's scope and substance in only a few phrases. Writing the results and discussion chapter will be the culmination of the CA phase of generating a report.

3.5.1 Interviews

According to Bryman (2016), interviewees are seen as a valuable resource for gaining a deep understanding of the topic under study. After conducting in-depth interviews with relevant stakeholders, the researcher looked at Twitter data to corroborate their findings and glean insights from practitioners' first-hand accounts. Interviews, focus groups, and participant observations are the three most common approaches to gathering qualitative data (Mack (2005). There are a few reasons why interviews were used for this study. King et al. (2010) state that interviews are widely used as a means of collecting qualitative data because they allow participants to speak in their own words about how they feel about a topic and the experiences that have shaped their perspectives. Interviews also provide researchers with a rich picture of the phenomenon under study (Lune & Berg, 2017). Researchers can glean a wealth of information from participants through interviews (Bryman, 2016; Saunders et al., 2015). The interviewees may become more invested in the study if they feel that they have a personal stake in the conversation and if relationships develop during the interview (Symon & Cassell, 2004). The second strategy in this study is focussed on interviewing subject-

matter experts to learn more about the phenomenon and to collect first-hand information. For this reason, interviews with subject matter experts are optimal since they allow for the expression of these factors in the interviewees' own words (Lune & Berg, 2017). Furthermore, through face-to-face discussion during interviews, the social dimension of the research can be taken into account (Gray, 2014). The selection of interviews was also influenced by the specificity of the research questions being asked. How Saudi food banks made use of Twitter to increase public awareness is the focus of this research (King et al., 2010). This justifies the decision to conduct interviews as a means of gathering the qualitative information required.

In this section of the research, the data collection procedures that were employed are provided and discussed. Semi-structured interviews were the most productive in addressing the study's questions and achieving its aims. In order to obtain information for the second method, interviews were conducted for this study. Typically, interviews fall into one of three categories: structured, semi-structured, or unstructured. Sometimes called "quantitative research interviews", structured interviews are conducted under the sole direction of the interviewer, with the respondent merely providing answers to a predetermined list of questions (Saunders et al., 2009). These can produce quantifiable results that can be displayed in tables (Alshenqeeti, 2014). To a greater extent, the interviewee can participate in semi-structured interviews. The interviewer is not required to stick to a set of predetermined questions known as an "interview guide" (Bryman, 2016; Saunders et al., 2015). Interviewees' responses should be used to generate new questions for expanding on certain issues, and the interview's question sequence should be fluid based on their responses (Belina, 2022). Unstructured interviews, often known as "informal" interviews, are conducted when the interviewer has a general notion of what they want to investigate with the interviewee but has not prepared any follow-up questions. The interviewee has a crucial role in setting the tone and directing the conversation, and is free to openly discuss the topic under scrutiny (Bryman, 2016; Saunders et al., 2015). Interviewees are typically well-versed in the topic being probed, so the investigator can gain valuable insight from their perspective (Mack, 2005).

3.5.1.1 Interviewee recruitment and sampling

Systematic sampling techniques were employed to choose 16 experts who were thought to possess the most relevant and detailed information that might be used to address the research questions. This was accomplished by combining the results of the two types of sampling (Etikan et al., 2016). This involves utilizing or making a contact with a specific aim in mind, which is the definition of a purposive sample, which is a sample that is chosen on purpose to serve the purposes of the study. Figure 3-8 illustrates the selection procedure.

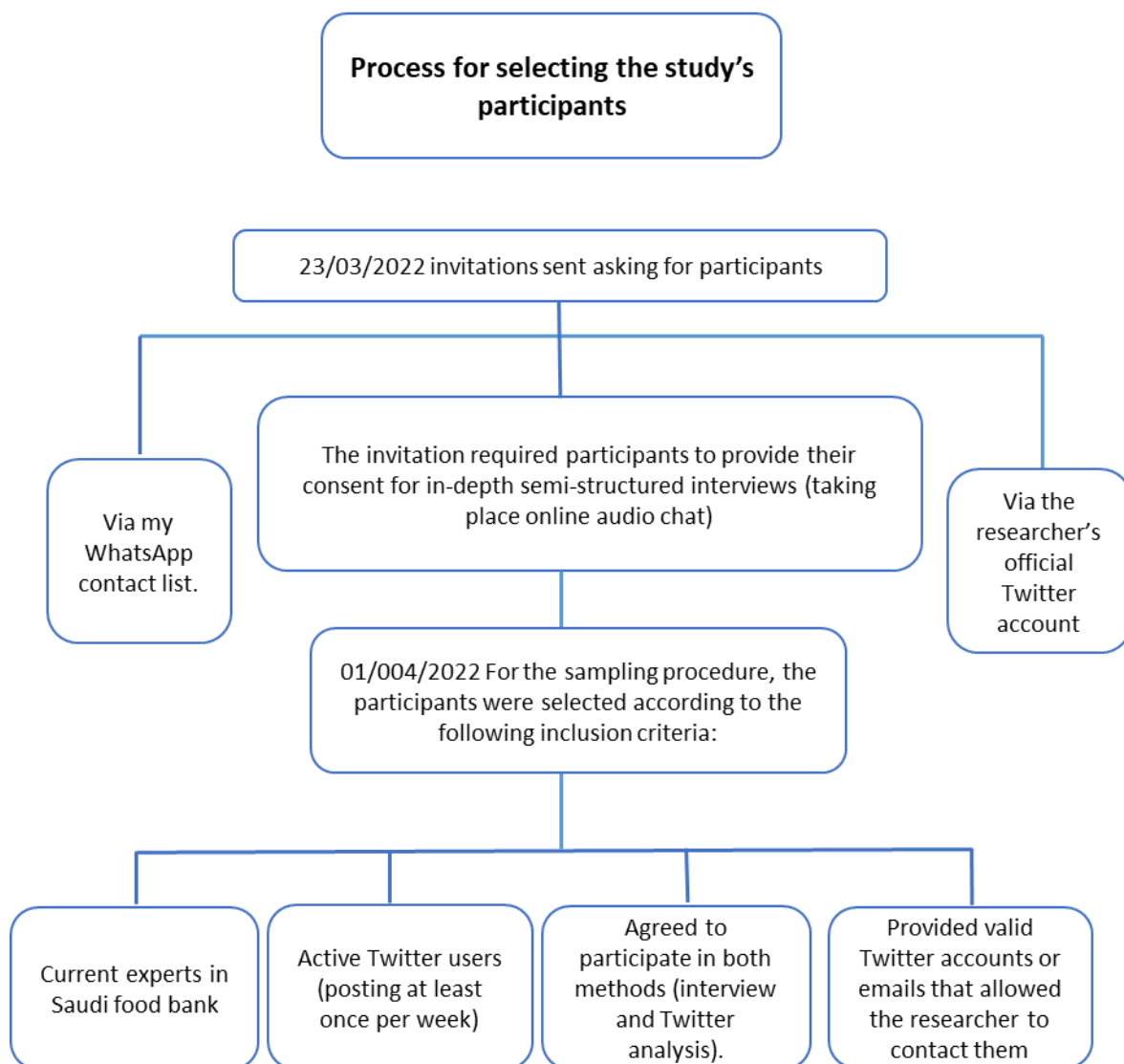


Figure 3-8 Selecting the participants

Thematic analysis is a commonly used data analysis method in qualitative studies, where the researcher determines when there is sufficient data to address the research

questions. This is referred to as the "saturation point", beyond which additional participants are unlikely to contribute new information. Longer interviews tend to generate more data, potentially requiring fewer participants. Nevertheless, the chosen sample size should be adequate to meet the requirements of the research (Hartley, 2004; Wilmot, 2005). In this study, it was considered that sixteen professionals met these criteria (see Table 3-2), despite the fact that this particular number may be relatively low. According to (Creswell & Poth, 2016) the size of this particular sample was sufficient to act as a valuable information resource. The participants' background information is summarised in Table 3-2.

Table 3-2 The background of participants

N	Pseudonyms Created by the Participants	Type of the position	The organisation	Meeting Tool
1	Z	Leader	Flw_saudia	Face Time
2	A	Social media accounts manager	Flw_saudia	Mobile Phone
3	I	Leader	Ekram	Line
4	A-1	Social media accounts manager	Ekram	Line
5	A-2	Leader	ShukAsser	Webex
6	A-3	Social media accounts manager	ShukAsser	Webex
7	F	Leader	Ettam	Mobile Phone
8	O	Social media accounts manager	Ettam	Mobile Phone
9	M	Volunteer member	Gca_org	Line
10	M-1	Campaign organiser	Gca_org	Line
11	A-3	Vice leader	Fayedonaizah	Imo
12	A-5	Former leader	Fayedonaizah	Mobile Phone
13	A-6	Social Media accounts manager	Hifzaflaj	Google Duo
14	M-2	Volunteer member	Hifzaflaj	Face Time
15	M-3	Leader	Arzaqorg	Face Time
16	M-4	Social Media account manager	Arzaqorg	Face Time

Researchers may find it challenging to estimate how many interviews will be needed when using empirical qualitative methodologies (Belina, 2022). Patton (2002) argues that the

sample size should be based on the study's aims and issues. In qualitative research, the number of participants can be kept low because of a lack of concern about generalisation, as noted by Matthews and Ross (2010). In interviews, it is typically more important to go into great detail than to cover a lot of ground (Bryman, 2016). As a result, it is not as crucial to have a large sample size as it is to thoroughly investigate the issue with participants and collect as much information as possible (Ritchie et al., 2013). It has been recommended that qualitative researchers follow the steps outlined by Bowen (2008), Mack (2005), and Mason (2017) to conduct interviews until data saturation is reached. It was suggested by Corbin and Strauss (2014, p. 5) that "saturation is important" to qualitative sampling. However, researchers need to perform sampling, data gathering, and data analysis simultaneously in order to find the data saturation point (Bryman, 2016). The researcher in this study felt he had reached saturation after conducting nine interviews. Nonetheless, the researcher went on to conduct two additional interviews after that to make sure no new codes or themes emerged.

The researcher used this method to pick participants who would be ideal for the study (Daniel, 2011). To get a more well-rounded perspective, the researcher sent invitations to people in several cities across KSA. Interviewing people in their native tongue, as suggested by Rowlands (2021), enables them to more freely share their thoughts and feelings. These interviews were recorded in Arabic and quotations were translated prior to analysis which is defined in this chapter later. In-person meetings and interviews were scheduled. However, in certain situations, this proved challenging due to the dispersed locations of all respondents. As a result, each interview was conducted either through telephone or FaceTime, depending on the respondent's desire. A total of between 15 minutes and 42 minutes were spent on each interview.

3.5.1.2 Pilot interviews

To ensure the interviews were practical and consistent with the study's objectives, the researcher consulted with his supervisors prior to the data collecting stage to go through interview guides, question clarity and order, question focus and expected time for each question, and demographic information. During this time, the researcher also worked to update and fine-tune the interview instructions. This is due to the progressive nature of

qualitative data collecting and interpretation (Van Teijlingen et al., 2001). In other words, as the interview process progresses, the researcher learns new things and has new ideas on how to further develop their study. The researcher sent a synopsis of each interview to his supervisors afterward for any necessary adjustments before proceeding with future interviews. On a number of occasions, interview questions and procedures were fine-tuned in this way. Several meetings were held with supervisors to discuss the outcomes of the interviews. When conducting interviews for data gathering, it was extremely useful to make adjustments to the interview guides as needed (Krauss et al., 2009).

3.5.1.3 Interview transcription and translation

Transcribing the interviews is necessary before they can be analysed (Saunders et al., 2015). Transcription, as defined by Bryman (2016), is the process of taking an audio recording of an interview or focus group and turning it into text for the purposes of research. In order to analyse the qualitative data and keep it from being lost, voice-to-text conversion is necessary (Goes and Simon (2017). Although interview transcription is a time-consuming process (Saunders et al., 2015), the researcher has completed it himself, which has helped him gain a better grasp of the interview content and jog his memory about the "visual observations" that occurred during the interviews (Goes & Simon, 2017). The researcher, who was also the interviewer, was able to avoid losing the non-verbal cues thanks to transcription (Oliver et al., 2005). The material has been annotated by the researcher with notes, conventions, and a record of the participants' pauses in conversation (e.g., uh, um, you know). With this additional information, the analysis was simplified, and the writing gained depth. When conducting interviews, Green and Thorogood (2018) advise that researchers transcribe the recordings as soon as possible. Interview transcriptions also later helped in determining whether enough information had been collected to draw conclusions (Hennink et al., 2020).

Interviews were transcribed into Arabic to ensure the accuracy of the translation. In any case, the findings feature only quotations that have been translated. To improve the accuracy and precision of the translation, previous works on the subject were studied (Denzin, 1989; Regmi et al., 2010; Temple, 1997). These authors stressed the importance of the translator having fluency in both languages as well as an understanding of the cultural context of the original material. So, the researcher opted to do his own translation of the transcripts.

Denzin emphasises how important it is for researchers to maintain the integrity of their data through translations (1989). The effort spent on translation was worthwhile since it helped the researcher become invested in the data.

3.6 ETHICAL CONSIDERATIONS

Gray (2014) defines research ethics as being about protecting the participants from any risk of the research and also much more about the effective interpretation and presentation of the research results in qualitative research. People who might be affected by the research are a concern for social scientific research, despite the fact that it is less harmful to participants than, say, medical science (Gray, 2014). For this reason, it is crucial to establish guidelines that will safeguard participants. The recommendations of the British Educational Research Association (BERA, 2011) and the Association of Internet Researchers (AoIR) served as the guidelines for this research. The University of Salford awarded ethics clearance on 15/02/2022 (see Appendix). Gray (2014) categorises ethical principles in research into four groups that provide an understanding of the various components of ethics: protecting participant privacy, assuring informed consent, minimising danger, and avoiding deceit. These concerns are addressed in the following sections.

3.6.1.1 Preserving participants' privacy

It is essential that everyone have the right to privacy. For example (Gray, 2014), the subjects' informed consent was obtained prior to the start of the investigation. Each participant had the option of not answering any questions or withdrawing from the study at any moment during the research process. Pseudonyms suggested by these individuals were used throughout the study. Aside from that, they gave the research permission to publish portions of the research in a peer-reviewed journal or at a conference. The participants' Twitter posts were archived and stored for two months; after this time, the researcher stopped tracking and archiving messages. Using a laptop's hard drive and Google Cloud Platform (powered by Google Drive from the University of Salford), to the researcher was able to safely store the collected data. One issue arose due to the fact that the data analysis required that a paper

copy be printed out. These copies were safely locked up in a personal locker, where no one else had access to them at any point.

3.6.1.2 Informed Consent

It is crucial to inform participants about the research goals, the time required, the voluntary nature of their participation, and their ensured anonymity. Essentially, the researcher must provide participants with enough information about the study (Gray, 2014). First, the researcher contacted those who would be interested in participating in the study via Twitter and sent them an information sheet as well as a consent form. Before beginning the research process, they were required to complete these consent forms. The researcher broke out the objectives of the study in clear and understandable Arabic, as well as the anticipated length of time it would take. The researcher did not inquire about their true names in order to protect their identity. In addition to that, the researcher informed them that they could withdraw from the study at any moment, and that if they did, any data that they had contributed would be retracted by the researchers. Despite this, not a single participant declined to answer any of the questions, and all participants successfully completed their participation in the research.

3.6.1.3 Ensuring trustworthiness

Instead of positivist theories of validity and reliability, the term "trustworthiness" is employed (Hignett & McDermott, 2015). An inquirer must convince his or her audience (including oneself) that the findings of an inquiry are worth paying attention to and taking into account if they want to be considered reliable (Lincoln & Guba, 1985). There were a number of methods employed to make certain that the research was reliable and that the conclusions and interpretations were solid. One method can compensate for the shortcomings of another method, therefore combining methods can improve research (Shenton, 2004). As an additional measure of quality control, the researcher compared the findings to those of other researchers and the existing literature (Gray, 2014; Shenton, 2004). The research design, data collection, analysis, and reporting were all documented in detail. Recordings of the study's techniques and data, such as transcripts of interviews or PDF files including organisations'

Twitter data and the researcher's own notes, were all meticulously documented. Because of this documentation, the study's findings and conclusions are more precise and easier to understand for the study's patrons (Shenton, 2004). The research supervisors provided valuable input that helped improve the work and reinforce its arguments (Shenton, 2004). The researcher also discussed raw data, themes, and data analysis processes with peers and co-workers in order to conduct peer scrutiny of the research project.

In summary, the researcher examined why a qualitative research technique was suitable for the research goals in this chapter. In addition, the researcher explained the semi-structured interview method as well as the content analysis of the Twitter tweets in depth. The researcher also discussed how the sample was chosen and how the pilot research was conducted prior to commencing data collection. Ethical concerns were also raised. Finally, the researcher outlined a process through the data analysis and highlighted how they personally reacted to problems. The results and discussion of the research are presented in the next chapter.

3.6.1.4 Avoiding risk

Risk can refer to a psychological or emotional threat, or both simultaneously (Gray, 2014). Throughout the study, the researcher made it a point to look for ways to boost the study's positive outcomes while also lowering its potential adverse effects. Therefore, in order to guarantee that the participants were aware of how long the interviews would take, they signed consent papers beforehand so that they were aware of the projected timeline. In addition, efforts were made to conduct the research in a manner that was pleasant while maintaining the conversation's focus on the objective of the research and avoiding any tangential topics of conversation. The researcher anticipated that no participants would be reluctant to join because they all wished to contribute to the broadening of general information regarding Saudi food banks' experiences using Twitter.

3.6.1.5 Avoiding deception

The practise of misrepresenting research is referred to as deception (Gray, 2014). Participants who agreed to take part in this investigation were informed in advance that the interviews

would last from forty to sixty minutes. Each participant was informed that their interviews would be recorded unless they gave their express permission otherwise. They were reassured that their information would be kept confidential and that only their anonymized identifiers would be used in the research. These measures were intended to avoid using approaches in the research that could have been harmful to either the researcher or the respondents, following similar methodologies (Gray, 2014).

3.6.1.6 Research quality

Scholars do not agree on a common method for evaluating the quality of qualitative studies (Creswell & Poth, 2016). Different researchers in this area have proposed several strategies for ensuring the validity of qualitative studies. Validation of the veracity of research results is crucial to establishing their trustworthiness (Guba & Lincoln, 1994; Lietz et al., 2006). Therefore, credibility aids academics in making sure their study questions have been satisfactorily answered (Saunders et al., 2015). According to Patton (2002), the researcher should play a pivotal role in defining the quality of their work. The credibility of a qualitative study can be improved by the researcher's level of attention to detail, care, and expertise. According to Neuman (2014), the more comprehensive the data set, the higher the reliability and validity. The credibility, transferability, dependability, and confirmability of qualitative research are four methods proposed by (Lincoln & Guba, 1985). This section will discuss how each of these methods was employed throughout the course of this research.

Credibility is established by checking the validity of previous research (Lincoln & Guba, 1985). Multiple methods of data collection and the application of the triangulation technique were used to ensure the credibility of the study. The researcher was able to guarantee the validity and plausibility of the conclusions thanks to the information gathered through interviews and Twitter data. The researcher was able to observe the events under study from multiple angles thanks to the use of these two methods (Creswell & Poth, 2016; Denzin & Lincoln, 2011)

Transferability (generalisability) refers to whether the study's results can be applied to other situations similar to the research's context (Polit & Beck, 2010). Case-to-case transferability is an important criterion for evaluating the quality of qualitative research, even if generalisation is not the primary goal of this type of study (Given, 2008; Lincoln & Guba,

1985). What this means is that it is possible to apply the knowledge gained from one topic to another. Providing a detailed description that includes extensive information on the study's setting and the phenomena being studied is one technique to guarantee the research's generalisability in qualitative studies (Polit & Beck, 2010). This method was used to describe the research's methodology, including how data was collected, who participated, and what participants were like. Researchers should provide detailed descriptions so that readers can draw their own conclusions about the research's significance by drawing parallels between this study and others with comparable objectives, as suggested by Holloway (1997). Misco (2007) uses the term context development to describe this phenomenon. For this research, food wastage has been described in the context of cultures and social and religious values that are attached and misinterpreted in terms of serving of the food KSA..

Dependability seeks to check if the results of a study can be expected to be the same if conducted again using the same conditions. To accomplish this, researchers should keep careful records of all the sources of information and considerations that went into making any judgments or taking any activities that were part of their study. Keeping track of all the choices taken throughout research and explaining why they were chosen them helps make the study more introspective (Lincoln & Guba, 1985). The researcher made sure of this by keeping detailed records of everything that went into the study, including interview questions, audio recordings, transcripts, ethical approvals, Twitter data, analysis notes, intercoder reliability results, and difficulties encountered.

Confirmability aims to exclude the researcher's bias from the results of the study by relying solely on data collected from participants (Lincoln & Guba, 1985). Researchers should try to be as objective as possible, despite the fact that their personal prejudices will inevitably seep into their work (Misco, 2007). The researcher has taken precautions to ensure the confirmability of this study by putting aside personal ideas and beliefs as much as possible during the analysis. As Miles and Huberman (1994) argue, researchers can increase confirmability by being honest about their own biases. The activities and techniques used in this study, as well as the methodologies for analysing the collected data, were meticulously recorded. The aforementioned audit trail played a critical role in ensuring the study could be replicated.

3.7 CONCLUSIONS

This chapter has set out the research design for the thesis, which employs a multi-phase design with qualitative data collection techniques. The methods for collecting, processing, and analysing data from semi-structured interviews and Twitter were described. The reliability, validity, and ethical concerns of these research methods were examined, and approaches for ensuring high-quality data throughout the research project were discussed.

The data was collected in two phases: Twitter data was extracted from organisations fighting food waste in KSA and analysed through content analysis, and semi-structured interviews were conducted with professionals working in these organisations, and interviews were analysed through thematic analysis. Ethical approval was obtained from the University of Salford to ensure ethical considerations. Chapter 4 presents and discusses the results of the Twitter data analysis and interview analysis.

CHAPTER 4 RESULTS & DISCUSSION: STRATEGIC COMMUNICATION POSITION OF TWITTER TO INCREASE FOOD WASTE AWARENESS IN THE KINGDOM OF SAUDI ARABIA

The chapter provides a comprehensive analysis of the different studies conducted, including content analysis and thematic analysis. Content analysis includes a discussion of the strategies and tactics employed by Saudi food banks to increase food awareness of food behaviours through Twitter. The thematic analysis of the interviews with actors working in food banks in KSA provided valuable insights into their perspectives on reducing food waste through Twitter and the challenges faced by food banks in using Twitter effectively.

The purpose of this chapter is to present a comprehensive examination of the results of the study and to provide a discussion of the findings in the context of the research questions. The chapter concludes by presenting a comprehensive framework that can be utilised by organisations and individuals to effectively address the issue of food waste through Twitter campaigns. This framework provides a step-by-step approach for reducing food waste at the public level by changing behaviour through the use of Twitter.

4.1 CONTENT ANALYSIS OF TWITTER DATA FROM KSA FOOD BANKS

Content analysis is a method is being used in this research to learn about the context, meaning, and impact of Tweets shared by the selected organisations (Bengtsson (2016). The processes of analysis may be performed in a different order to answer the first research questions. Four major phases have been identified: decontextualisation, recontextualisation, categorisation, and compilation (Figure 4-1). There must be multiple iterations of each step before the analysis can be considered reliable and of high quality. Since the stages of analysis are mostly the same regardless of interpretation, there is no reason to employ different primary stages for manifest and latent analysis (Berg & Lune, 2012; Downe-Wamboldt, 1992).

To guarantee the accuracy of the study, nevertheless, the above figure was produced to show the categories being selected where the researcher tried to show how the data was transformed from its raw form into the final results. See Figure 4-1 and Table 4-3 for an illustration. Still, weariness, faulty interpretation, and bias can all play a role in obscuring the

accuracy of an analysis. The following stages were performed to conduct the content analysis of the data, which was being extracted from the Twitter pages of selected organisations. The major purpose of the content analysis was to answer the research question of how Twitter is being used by Saudi food NGOs to increase food awareness. The second question was also answered partially through the detection of the most influencing content that was shared by the selected organisations. Consequently, it would be helpful to answer the second research question which could not be fully answered through content analysis because an in-depth understanding is required to uncover why specific types of content are more influential compared to others. Therefore, the efforts of content analysis was limited to identifying the most influencing content that was shared by the organisations, but why these types of content are more influential will be answered through the semi-structured interviews at the later stage of this research.

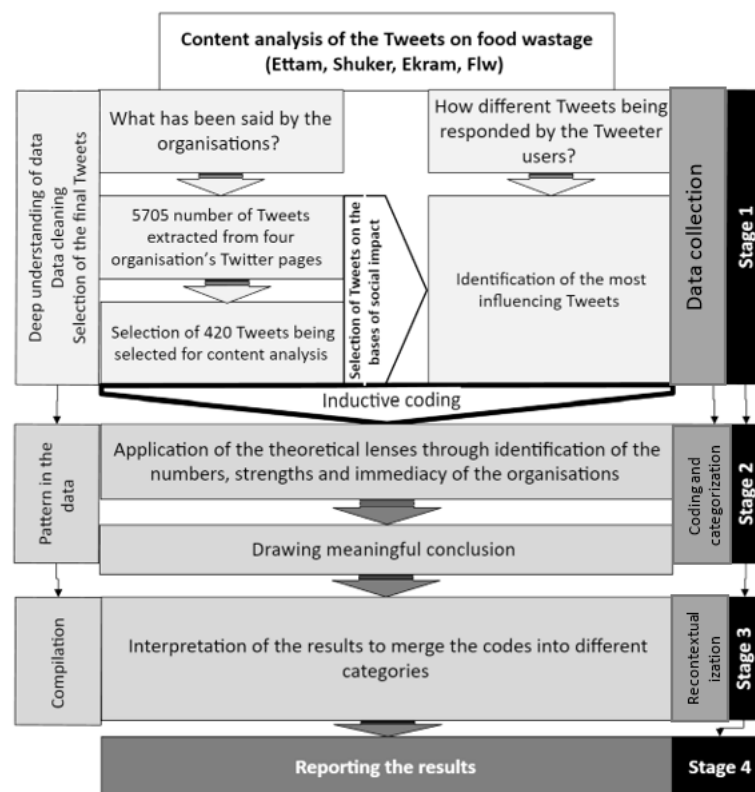


Figure 4-1 Process of content analysis. Adapted from several sources within the literature review (developed on based on Bengtsson (2016)).

Stage 1: Data collection

Content analysis was mainly used to answer the first research question (RQ1) around the use of Twitter accounts by food banks in KSA and their content. Considering relevant data collection in relation to the research question is key in order to appropriately set the sample size (Krippendorff, 2018; Patton, 2002). The sample covered two years of data from March 2019 to March 2021. It is important to consider that the COVID-19 pandemic affected all Middle Eastern countries in a similar way and period of time to other Western countries, so March 2020 to March 2021 is a period affected by those circumstances.

All data regarding the activity of the four organisations Twitter accounts was extracted from the Twitter server through the Twitter API (see Table 4-1). Alghedem, a stakeholder of Sattam University, was employed for the process of data mining. There was a total of 5,705 (N=5,705) of tweets. From this sample, only the relevant tweets were selected, those communications that were not directly related to the topic of food waste (i.e., personal communications, celebrations, etc.) were discarded, resulting in a total of 420 selected items. Food banks, as explained in the introductory chapter, cover different social activities that are not always directly related to the awareness of, discussion about, or commentary on food waste.

From this stage, it seems clear that there are significant differences in the production of tweet-based communication. Ettam (41%) is the largest producer followed by Ekram (28%) and ShukreAseer (25%). The reason for these numbers may be found in the differences between organisations. Ettam is an organisation with significant funding resources, is more professionalised, and has a national if not an international focus. Less important in terms of production are the ratherly local focussed Ekram (Makkah city) and ShukreAseer (Asser city). The significance of small producers was inverted after filtering relevant content, as the largest producer, FLW, accounted for 63% of the sample. This suggests that the focus on food waste awareness has altered the perception of the importance of small producers. A content analysis of food banks can contribute to a more nuanced and comprehensive understanding of this important sector and can inform efforts to improve food security and reduce food waste in communities around the world.

Table 4-1 Selected tweets with relation to the categories developed to perform content analysis.

Food Banks (NGOs)	Number of Followers	Account	N Tweets	%	Selected Tweets	%
Ettam	79,000	https://twitter.com/saudifoodbank?lang=en	2,344	41%	41	8%
Ekram	34,000	https://twitter.com/ekram_makkah	1,598	28%	63	12%
ShukreAseer	11,000	https://twitter.com/shukraseer	1,443	25%	79	16%
Flw	9,000	https://twitter.com/Flw_saudia	320	6%	320	63%
TOTAL	12,3000		5,705	100%	503	100%

Stage 2: Coding and categorisation

Meaningful units or categories were abstracted from the tweets database employing manual coding and an inductive strategy, resulting in the following content categories:

- **Behaviours related to food wastage:** This view or lens included tweets that describe actions taken to reduce food waste, such as tweets about composting, meal planning, or sharing food with others.
- **Causes of food wastage:** This view or lenses included tweets that describe the reasons for food waste, such as tweets about over-purchasing, poor planning, or lack of education about reducing food waste.
- **Consequences of food wastage:** This view or lens included tweets that describe the negative impacts of food waste, such as tweets about environmental damage, economic loss, or societal inequality.
- **Solutions for food wastage:** This view or lens included tweets that suggest solutions for reducing food waste, such as tweets about reducing portion sizes, donating surplus food, or implementing policies to reduce food waste.

In order to improve the consistency and dependability of units of meaning, the categorisation process was performed multiple times with each attempt beginning on a new page of the text. Nvivo was used to develop the categories. Nvivo help speed things up by organising the information into groups. Overall attitudes towards food wastage category would include tweets that express opinions, beliefs, and attitudes towards food wastage, such as tweets

that express support for reducing food waste or tweets that express frustration with the amount of food wasted. One example of a study that used content analysis of tweets to understand user behaviour is “Crowdsourcing Change: An Analysis of Twitter Discourse on Food Waste and Reduction Strategies” by (Specht & Buck, 2019). The study used a sample of tweets containing the hashtag #foodwaste and categorized the tweets into four main themes: awareness, attitudes, behaviours, and solutions.

Transforming the data by reducing it to simpler units of analysis, or coding, and employing meaningful categories, is a mandatory step in content analysis (Catanzaro, 1988; Graneheim et al., 2017). The below Table 4-2 shows the number of tweets that has been selected on the bases on the relevance of the tweets in relation to the research questions. The table indicates that the biggest categories used by the food banks are religious communication, community engagement, and regulation and policy: governmental contribution, respectively. Whereas the smallest category used is the use of media contents, which shows that the food banks are missing the opportunity provided by media content; as mentioned by NEWS (2022) about 88% of Twitter users in KSA use Twitter to watch videos.

Table 4-2 Selected tweets with relation to the categories developed to perform content analysis.

Categories	No. of tweets	%	No. of Likes Received	%
Use of Media contents	31	7.38	15,943	1.13
Presenting Factual Information	42	10.00	7,185	0.51
Specific Events: programs & activities	47	11.19	697	0.05
Using Religious Communication	84	20.00	597,021	42.21
Community Engagement	52	12.38	432,992	30.62
Regulation & Policy: Governmental Contribution	84	20.00	374,026	26.45
Unethical Sensibility	80	19.05	2,321	0.16
TOTAL	420	100	1,414,242	100

Stage 3: Recontextualisation and categorisation

Contextualisation (Belkaroui & Faiz, 2015) involves interpreting the meaning of the tweets in their social and cultural context. This includes understanding the language and terminology used in the tweets, as well as the broader context in which they were written, such as the specific event or trend that may have prompted the tweets. By contextualising tweets, researchers can better understand the motivations and attitudes of the tweeters and the

social and cultural factors that may influence food waste behaviour at the public level in KSA. Understanding the context in which tweets about food waste were shared can provide valuable insight into the social and cultural factors that may be driving food waste behaviour. This is because tweets about food waste reflect the concerns and interests of the individuals sharing them, as well as the wider community to which they belong. For instance, the prevalence of tweets about food waste may vary depending on current events and cultural practises. For example, during the month of Ramadan, tweets about food waste may increase as individuals become more conscious of food waste during this period of fasting and increased food consumption. By considering the broader context in which tweets were shared, researchers can gain a better understanding of the social and cultural factors that may shape food waste behaviour and use this information to inform future efforts to reduce food waste.

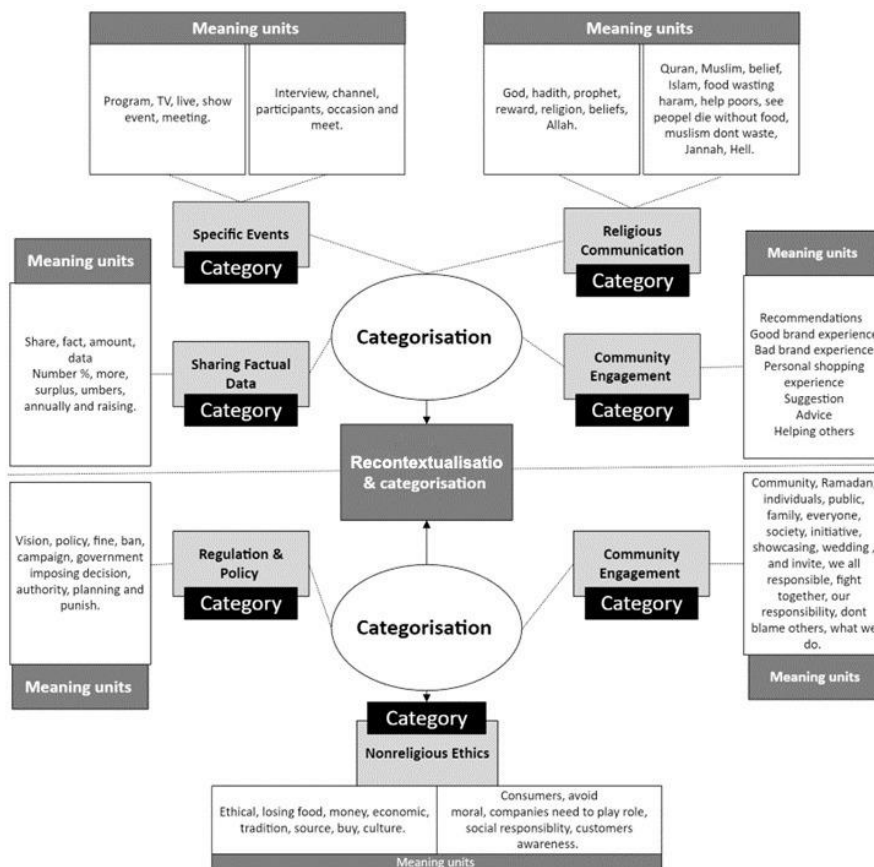


Figure 4-2 Categorisation and recontextualisation of the selected tweets (developed on the bases of Naeem and Ozuem (2022))

Tweets about reducing food waste content being shared with specific information like factual information may be grouped together into one category. However, it is important that

every classification system is grounded in the fact that it was developed to describe, so multiple categories are frequently established at the outset, only to have some of them eliminated later (see Figure 4-2).

Stage 4: Visualisation and discussion of results

The researcher produced a visual summary (see Figure 4-2). of categories and units of meaning to give the reader an instantaneous overview of the results regardless of the kind of analysis used in the categorisation and recontextualisation of the selected tweets (developed on the bases of Naeem and Ozuem (2022)). Gephi software (0.9) was employed to identify the most used hashtags by the selected organisations.

4.1.1 Hashtags and mentions in food communication

Food banks can use mentions to engage with other organisations, experts, or influencers in the food community, and to amplify their own messages. By effectively using hashtags and mentions, banks can increase the visibility and reach of their food-related communication on Twitter and engage with a wider audience of users who are interested in these topics.

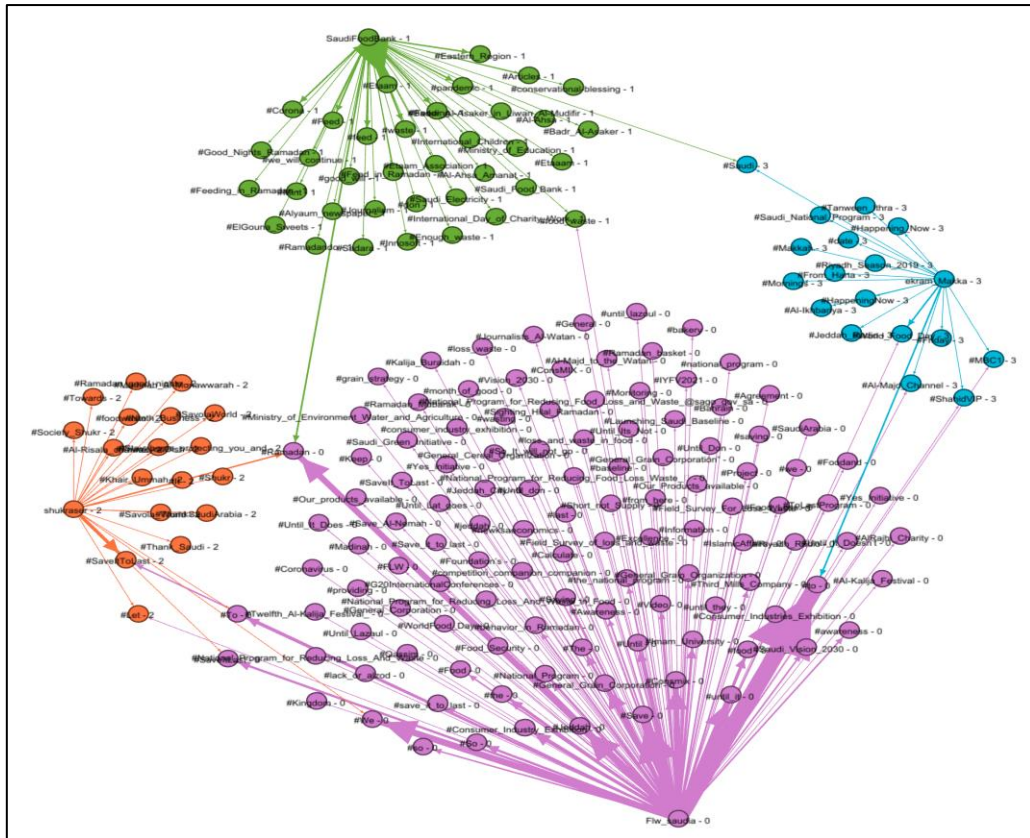


Figure 4-3 Hashtags by selected organisations. Frequency of hashtags is represented by the width of arrows.

Figure 4-3 shows that FLW dominates the conversation about food waste on Twitter. This is evident in several ways. Firstly, FLW has more hashtags associated with their name, which indicates a higher level of visibility and branding within the food waste community. Secondly, FLW is the only organisation connecting hashtags with other food banks, demonstrating their unique position as a leader in the field. Finally, FLW dominates the conversation with a higher frequency and volume of hashtags compared to other food banks in the food waste conversation. These factors combine to create a dominant presence for FLW in conversations about food waste on Twitter. By leveraging their strong position, FLW has the potential to shape the discourse and drive the conversation around food waste in new and innovative directions. These insights highlight the importance of effective of strategic engagement with Twitter in shaping the conversation about important issues such as food waste.

Moreover, although recent social media frame studies have tended to compare frames created by multiple players (corporations, news media, and publics) to reveal to what extent these frames are aligned or interplayed over time (Gerken et al., 2016; van den Broek

et al., 2017), they still fail to take co-creational processes into account. Co-creational processes refer to the ways in which multiple actors actively collaborate and participate in shaping a shared frame or narrative. This means that frames are not only created by individual actors, but also emerge from the interactions and negotiations between them. Incorporating co-creational processes into a frame analysis can provide a more comprehensive understanding of how frames are constructed and transformed over time, as well as highlight the roles that different actors play in this process. It also emphasises the importance of considering the dynamic and collaborative nature of frame-building on social media, rather than solely focussing on the content of individual frames. This study addresses this gap in the literature by showing how SMOs (Social Movement Organizations) and the public work together to produce new concepts like “hashtag frames” and “words of meaning” in order to seek or oppose social change. This current research found that mentions (see Figure 4-4) are also being used by the selected organisations, including some common words like Saudi food bank, Saudi FDA, KSA, and Ikram-nemah (see above Figure), to attract public attention to the matter, which could also lead to retweets and likes on Twitter. A user’s ability to get retweets may depend on factors beyond the substance of their tweets. On the basis of the above network analysis, which includes hashtags (see Figure 4-3) and mentions (see Figure 4-4) being used to share the content on Twitter, it has been identified that there are seven categories that have been developed. Additionally, relevant mentions have also been presented in Table 4-3 below.

It is very clear in the above figure that more efforts are being made by Flw-Saudi, because the above figure shows that more hashtags are being used and shared by this organisation, while the other three organisations were not as active on Twitter. Additionally, it can also be seen that there are some common hashtags being used, which include #Saudi-3 (used by Ekram Makkah and Ettam) while Ramadan as a hashtag was used by the Flw-Saudia and Shukraseer. Additionally, waste as a hashtag was used by Flw-Saudia. Consequently, through understanding the differences and similarities of these hashtags used by these four organisations, it is clear that there is no marked collaboration between these organisations to lead in the social issue of food waste in KSA because different hashtags are being used by different organisations.

Based on the evidence gathered from the content analysis of Twitter data from various organisations fighting food waste in KSA, it appears that different organisations tend to use

distinct types of language and terminology when discussing the issue of food waste on social media. In addition, some of the hashtags used by these organisations may not be entirely clear or meaningful, such as #To, waste, Kalij list-Buradaha, and #let. This finding suggests that there may be a lack of consistency or standardisation in the language and terminology used by different organisations working towards a common goal, which could potentially hinder effective communication and collaboration. Moreover, the presence of ambiguous or nonsensical hashtags may lead to confusion or misinterpretation of the intended message by social media users. This highlights the importance of carefully considering the language and terminology used in social media communications, particularly for organisations working towards a shared objective. Clear and meaningful language can help to ensure that messages are effectively communicated and understood, and can facilitate collaboration and coordination among different stakeholders

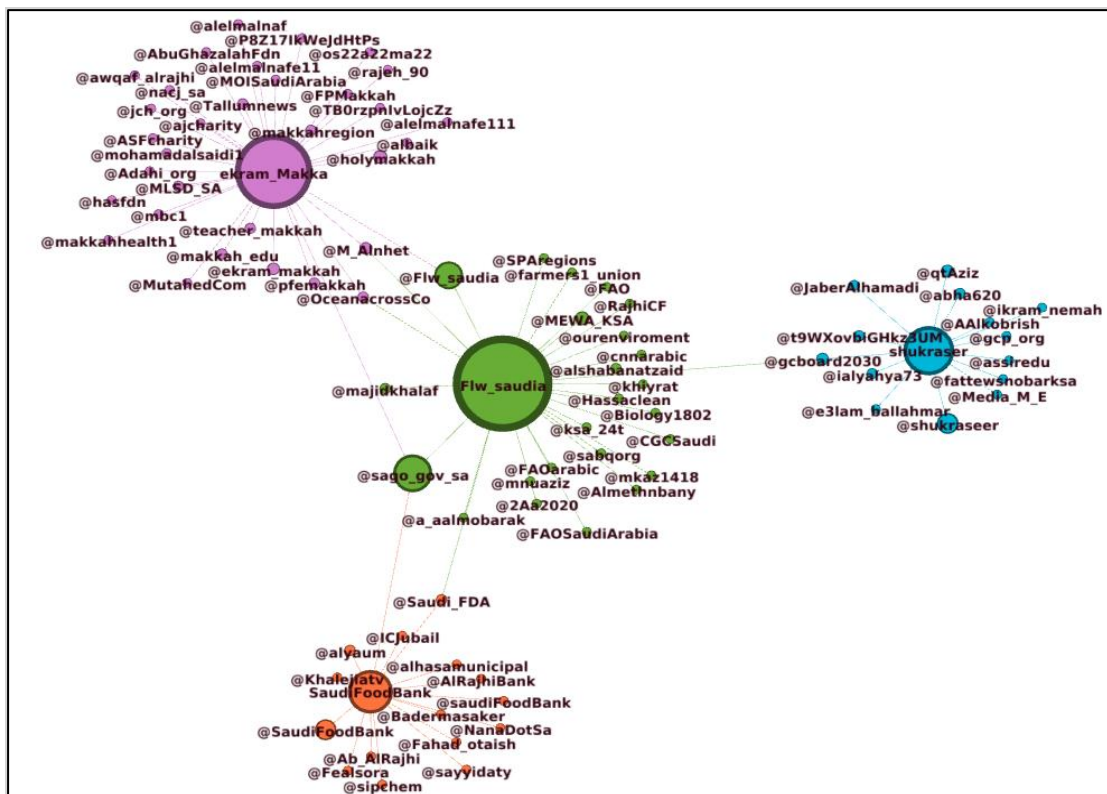


Figure 4-4 Mentions by selected organisations

4.1.2 Discussion of Twitter results in relation to the research questions

As stated above, seven categories have been identified through content analysis. As the names of the categories are dependent on the researcher's own understanding about the data, the researcher endeavoured to name the categories by providing meaning units, and these meaning units were picked from the tweets shared by the selected organisations. Table 4-3 shows the categories and relevant tweets.

Table 4-3 Emergent generating Themes Among SM Saudi foodbanks Hashtag.

Categories	Description	Organisation	Related Hashtag	Sample Tweets
Building awareness of ethical implication	This mean the selected organisations aim to create awareness of the ethical implications related to poverty and social justice issues and foster a sense of community on Twitter where individuals can come together to address these food waste issues.	Flw_saudia	#National_Program_for_Reducing_Loss_And_Waste البرنامج الوطني للحد من الهدر في الغذاء #Save احفظها	"We are participating with you in the #National_Program_for_Reducing_Loss_And_Waste_in_Food" "Peace, mercy and blessings of God be upon you #Save it so that it lasts. Thanksgiving for the blessings, .actions, not wasting... I thank the bestower, may He be glorified, He increases them" "Buying more than needed is irresponsible because it may deprive others of the opportunity to truly benefit from this product. #Save it to last, we are all responsible"
		Flw_saudia	#national_program البرنامج الوطني #Thank_Saudi شكرا السعودية	"We seek, through the #National_Program, to preserve the current quantities of production by taking care of farmers and raising crop productivity to comply with international standards" "Globally, every second a person dies of hunger #Thank_Saudi"
Presenting factual information	Some specific types of the information have been shared to get the immediate attention of the public towards food waste	Flw_saudia	#We_all_responsible كلنا مسؤول #lack_or_alzod النقص ولا الزود #until_they حتى لاتزول #save_it_to_last احفظها لتدوم	"Food waste exceeds 33% annually in the Kingdom of Saudi Arabia. We need more awareness in directing the family's consumption pattern to counter this waste #We_all_responsible " "We don't cook more than we need! 🍳 #lack_or_alzod" "To change habits and behaviours #until_they don't goaway"

	#conservational_blessing #Madinah””			“Agricultural movement and increased production using modern technologies, which we enjoy in our kingdom #Save_it_to_last”
		SaudiFoodBank	#food_waste” إهدار_طعام #Feeding إطعام	Essam Al-Mulla launched today an initiative to oblige restaurants and wedding palaces to contract with Grace Preservation Associations, which aims to reduce #food_waste in partnership between the private and nonprofit sectors.”
Community Engagement	Specific type of hashtags used to create awareness among the public about the severity of the food waste issue in KSA.	Flw_saudia	#food_waste إهدار_طعام #loss_waste فقدن_الطعام	<p>“Writer Fahad Al-Khalidi writes in @alyaum: Foolaste... Saudi Arabia first #Feeding”</p> <hr/> <p>“One of the negative habits of bakery producers is the production of random quantities to be available when the consumer comes at any time. Yes, the money is yours, but the resources are for everyone. #food_waste”</p> <p>“Part of the participation of community members in raising awareness of #loss_waste in food”</p>
Using Religious Communication	Religious content and hashtags used through consideration of the local cultural and religious values of the country.	SaudiFoodBank		

ekram_Makka #Makkah
#مكة
#المدین المنورة "With God's help, then with your cooperation, we preserve and preserve the food #conservational_blessing"

("Oh God, save it as a blessing) Waste and loss for each product. #Madinah"

"Soon, at exactly four thirty in the evening, #Makkah Al-Mukarramah time, the #Al-Ikhbariya channel will host the director of the association, Sheikh Ahmed Al-Matrafi, to talk about the annual report of the association for the process of preserving the surplus. The size of the surplus, which exceeded 500 tons."

Regulation & Policy In these cases, organisations that tried to use information to show that the government is also interested in dealing with the issue through collaboration with public and private organisations.

Flw_saudia #General_Grain_Organization
#الهيئة العامة للحبوب
#Saudi_Green_Initiative
#المبادرة السعودية الخ
ضراء
#Vision_2030
#رؤية السعودية 2030

"The Chairman of the Board of Directors of the Society for the Preservation of Grace in Asir (thank you) Abdullah Abdul Mohsen Al-Thumairy and the members of the Council thank Prince Turki Bin Talal for his historic decisions to prevent extravagance and his apology for prohibiting any occasion in which there is extravagance and waste and preventing sacrifices in government agencies. #General_Grain_Organization "

"The General Organization for Grains, through the National Program for Reducing Food Loss and Waste, supports the #Saudi_Green_Initiative"

"Behind ambitious visions and drawn plans, we are moving to achieve one of the goals of #Vision_2030 to preserve food resources"

ekram_Makka #Saudi_National_Program
#البرنامج الوطني

"\$10.7 billion. This is the volume of food waste in Saudi Arabia, according to a study #Saudi_National_Program for Reducing Food Loss and Waste @Flw_saudia The Ikram Association has succeeded, thanks to God, in preserving more than 423 tons of surplus food, valued at more than 6 million riyals, during the past year."

Specific Events: Programmes & Activities	In these cases, organisations that tried to share information about events they are planning to reduce the food waste in Saudi Arabia.	Flw_saudia	#behaviour_in_Ramadan سلوكنا_في_رمضان #Ramadan رمضان #G20InternationalConferences الدالية" G20 مؤتمرات	“Let's make #Ramadan the beginning of change #Ramadan is the month of change in worship and our #behaviour_in_Ramadan is the beginning...to change habits and behaviours” “Under the presidency of the Kingdom of Saudi Arabia for the G20, the Ministry of Environment, Water and Agriculture, in cooperation with the German Theunen Institute, is organizing a regional workshop to reduce food loss and waste for the GCC countries, which will be held tomorrow at 12:30 pm. #FLW #G20InternationalConferences”
		SaudiFoodBank	#International_Day_of_Charity_Work الدولي_اليوم_العمل الخيري	“#International_Day_of_Charity_Work His Excellency the Secretary of #Al-Ahsa_Amanat M. Essam Al-Mulla launched today an initiative to oblige restaurants and wedding palaces to contract with Grace Preservation Associations, which aims to reduce food waste”

The next step of the content analysis was documentation and communication of the results of the content analysis, which requires a definition of core categories. Latent analysis, as explained in the methodology, required the researcher to spend some time immersed in the data in order to unearth hidden meanings. For example, *Jannah* (lit. 'Heaven') or *Nar* ('Hell') are constantly used in communications. In the context of the Arabic language and culture, which are deeply influenced by the Muslim religion, actions can be assessed in moral terms by their association to the right way, the correct path, or directed towards 'Heaven'. In contrast, bad actions can be sanctioned, suggesting they are going the wrong way or directed towards 'Hell'.

Category 1: Raising awareness of ethical implications

The first category, which was developed through content analysis, is building awareness of ethical implications through Twitter communication (see below Table 4-4 for the examples of relevant tweets). A number of retweets from Twitter users shows that the public is also interested in talking about the food waste issue in Saudi Arabia. Therefore, Twitter can be used as a call creation tool to create and build awareness and community to deal with the issue. Social media stresses the importance of collaboration, the benefits to both parties, awareness of unethical food behaviour, and shared interests among users.

There are few studies in the literature that investigate the link between collaborative knowledge generation and a shared sense of community, despite the importance of a shared sense of community in the initiation of collaborative efforts. By working together, people are able to better grasp complex topics, obtain new perspectives, and adapt to shifting conditions in the world. This process, known as collaborative knowledge production, is defined as the generation of new information through the joint effort of its participants (Alshanty et al., 2019). Collaborative knowledge creation refers to the process in which individuals or groups work together to produce new information and understanding, as defined by Faraj et al. (2011). One of the core tenets of the social media philosophy and a primary driver of the success of online communities is the emphasis placed on knowledge generation through group effort (Sweet et al., 2020; Zhang et al., 2019). However, social media's potential for group-based knowledge production during times of crisis has received scant attention in the area of increasing the ethical knowledge on Twitter. Tweet samples from some food banks are provided in Table 4-4 below.

Table 4-4 List of selected tweets about the ethical communication of food wastage

Name of Awareness Strategy	Definition	Selected Tweets	Links
Building awareness of ethical senses	It is very clear from these Tweets that the organisations are trying to create a sense of awareness through taking ownership of the issue. They try to address the behaviour, which includes buying behaviour and food wastage within the country, and they try to empower employees to take ownership to deal with the issue in Saudi Arabia. Additionally, it can also be seen in the tweets that the organisations are trying to explain the meaning of food wastage and the difference between food loss and waste.	"Methods of preserving surplus food by cooling, canning, drying and freezing. So that it does not go away"	https://twitter.com/flw_saudia/status/1124311957832650752
		"Buying more than needed is an irresponsible behaviour because it may deprive others of the opportunity to truly benefit from this product # Save it to last # We are all responsible # Food Security"	https://t.co/lIimrBq6aj
		"Your responsibility and awareness is the best way to reduce food waste...# Save it to last"	https://t.co/PLiULjeAGL
		"👍 Do not eat more than you need .. # Ikram_Food_Preservation Association"	https://t.co/AwOSz5rdhx
		"Even the leftover rice that falls from you wasted. Watch the shocking numbers for that # Thank you Saudi Arabia"	https://t.co/120NLuk1kl
		"# We are all responsible for the sake of the nation # Feeding # Saudi Arabia"	https://t.co/Brh0IMDQRR
		"What is the difference between food loss and waste?"	
Social relevance of the problem	It can be seen from the shared views that the organisations trying to bring the attention of people by providing information about the severity and impact of food wastage on people who are dying from hunger, and also to bring a communal sense to avoid the food wastage to help other people as good Muslims. It can also be seen that they are trying to create awareness among people to reduce food wastage, to manage their buying in a way that could be helpful for people who are dying without food in poor families or other countries.	"Let us always remember that millions of people around the world sleep without food. Stop #wasting others in dire need #so that they don't go away #General_Grain_Organisation #loss_and_waste_in_food #national_program #Imam_University "	https://twitter.com/flw_saudia/status/1113411046604201984
		"Globally, every second a person dies of hunger #Thank_Saudi Arabia"	https://t.co/SUWluzius0
		"(Shukr) Thank you... Preserving and protecting grace is everyone's responsibility..."	https://t.co/kLxs4vKtNG
		"Let us improve the neighbourhood of blessings, for if they leave, they will never return # Thanksgiving Association # Thursday # Asir"	https://t.co/SM9wx7p8Q5
		"For the sake of your family and your community, avoid wasting food and economic resources and only have what you need! #SaveItToLast"	https://t.co/fvIDv6Nz18
		"Goodwill and generosity are things and values that we have lived for years and years, and on National Day SA we appreciate the blessings # to last # It_ is for us_ the abode of good and the source of good # The General_ Grain Corporation"	https://t.co/nbl20f73UU
		"My consumer brother!!!! ... love for others what you love for yourself ... and do not be a cause of waste "	https://t.co/5apXIEdN72

		"Storing food in a safe way protects it from # food loss and waste"	https://twitter.com/flw_saudia/status/1115307678371328003
		"#Information from Al-Arfaj A shocking report on the extent of food waste in Saudi Arabia"	https://t.co/2e2d66Vvst
		"Most food companies resort to destroying their products after they cannot be sold in outlets and their expiration date has expired. This is a model of painful #waste, and #Etaam is working with its partners to treat it and reduce its annual rates as much as possible"	https://t.co/80tgGcrrOO
		"Yesterday we used to say: #Enough_waste and #don't_extend it, and today we should feel the blessing of food that #we_will_continue. Rationalize by shopping, and rest assured #good_will"	https://t.co/J6OTOIB2R0
Taking ownership	It is very clear from the tweets that the organisations are trying to give ownership and responsibility to the public, that people are responsible for food wastage, and they are responsible for the hunger of people in poor families and society. For example, one tweet, which is very simple, says that we are responsible and to save it to the last, meaning they are putting the responsibility on the people for the hunger of poor families because this type of wastage can feed families who are poor. Additionally, there are some tweets that provide additional information from the authorities that provide some awareness to people about reducing food wastage through their buying process when buying food from the supermarket. Consequently, the taking ownership awareness strategy is being used by organisations to create awareness among the people, so that people may believe that they are the responsible for the matter of food wastage in Saudi Arabia.	"Food waste after #Corona should not be the same as it was before this #pandemic. It is an opportunity to change our behaviour towards our tables and food purchases. An opportunity through which we create consumer awareness that reduces food waste habits. #feed "	https://t.co/tzf0t7NrKJ
		"Every day, the state checks on the stockpiles that they are available, and it is enough #Save it to last. Imagine the amount of waste we have this period. You know how much we spend on this situation, and we waste without production # We are all responsible"	https://t.co/5rVkybl2JQ
		"We are all responsible #Save it to last ❤️❤️❤️❤️❤️❤️"	https://t.co/aJOsg6QLVC
		"Food waste is a major cause of draining the economic resources of the family and society # save it to last # we are all responsible# food security"	https://t.co/oaTFT3viSJ
		"Plan and calculate before you shop. #SaveItLast #Foodand Drug #We are all responsible"	https://t.co/3l2wevjyeR
		"Wasting is your decision # Save it to last # Food and Medicine # We are all responsible"	https://t.co/nvHLeJRdL9
		"Let's cooperate to reduce waste, and raise awareness of the importance of rationalizing the consumption of blessings # save it to last # we are all responsible _x000D_ # food security"	https://t.co/iun57S36YT
		"In response to the increasing demand for table eggs, and to ensure a surplus in the local market, in addition to local production that covers market needs, the Ministry worked to coordinate with the Food and Drug Authority and the private sector to import additional quantities of eggs that will arrive in the Kingdom in the coming days."	https://t.co/cqMkw9NUh
		"Buying more than needed is irresponsible because it may deprive others of the opportunity to truly benefit from this product. #Save it to last #We are all responsible #Food_Security"	https://t.co/r4FZ3BiQd5

The first category extracted from the Twitter data is called building awareness of ethical implications among the public, which has been reduced to sharing the required information by attracting the public's attention towards the matter. It can be seen in the above table that selected organisations are trying to create an ethical sense to reduce food wastage in KSA. The first strategy which is being used to create an ethical sense is providing information on how serious food wastage issue is for society. The second strategy being used is asking people to participate in addressing the issue. The third strategy is getting people's attention towards the ethics of the matter and convincing them to take ownership for this issue in the country otherwise, it will be too late to address it.

Vasalou et al. (2010) states that is the ultimate goal of social networking service (SNS) designers to promote a sense of actual commitment in their users. According to Gronroos (1994), the purpose of any relationship is threefold: first, to attract the public toward ethical behaviour; second, to establish a connection with followers; and finally, to realise the economic goals of that relationship. Despite the exponential growth of SNSs (e.g., 960 million active visitors on Facebook; December 1, 2011) and the growing importance of affective member-member interactions that affect the breadth and success of community strategies, research on identifying the psychological (and relational) process of using SNSs is still in its infancy (Kwon & Wen, 2010). The tweets above, which attract people's attention through sharing shocking information about food wastage in Saudi Arabia, illustrate why members value the community support offered by one SNS over another. Therefore, arguably, the unethical sensibility approach that is being adopted through different hashtags shows that a collaborative approach is being taken by organisations to deal with the issue and create a sense of community on Twitter.

Category 2: Presenting factual information

By presenting factual information about the negative impacts of food waste, organisations and individuals can encourage the public to take action to reduce food waste and make informed decisions about their own behaviour (Young et al., 2017). So, presenting factual information on Twitter can be helpful in reducing food waste at the public level for several reasons (Specht & Buck, 2019). The first reason is debunking misinformation because platforms like Twitter can be breeding grounds for misinformation about food waste, such as

false claims about the risks of food wastage and misunderstood cultural information around certain food preservation methods. By presenting factual information on Twitter, organisations and individuals can help to debunk misinformation and ensure that the public has access to accurate and reliable information about food waste. The second reason is that providing practical information on Twitter can be used to share about ways to reduce food waste, such as tips for meal planning, food storage, and composting. By providing this information, organisations and individuals can empower the public to take action to reduce their own food waste. The third reason is encouraging behaviour change, because by presenting factual information in a clear and compelling way, organisations and individuals can encourage the public to adopt more sustainable food consumption and disposal behaviours. The fourth reason is highlighting the consequences of food waste: by presenting factual information about the environmental, and the economic and social consequences of food waste, organisations and individuals can raise awareness and concern among the public, which can encourage them to take action to reduce food waste. This enables people to make informed decisions about food waste reduction and make changes in their own behaviour.

Consequently, the second category that has been developed is getting the public's attention towards the issue of food wastage in Saudi Arabia. The current literature is limited to the time and types of hashtags that have more influence, but this research found that factual information has more impact in creating awareness among the public. For example, (Stephen, 2016) stated that, when compared to any other time of day, retweets are most common between 8 a.m. and 4 p.m., as also found by Fernando et al. (2014). Others have noticed that tweets posted on the day of a major event (such as a protest or music festival) tend to receive more retweets than posts made before or after the event (Stephen, 2016). Tweets with more words in them have a higher chance of being retweeted because of their higher word count (Xu & Zhang, 2018). One can increase the likelihood of one's tweet being retweeted by ending it with a question mark rather than an exclamation point (Naveed et al., 2011). However, the results of using hashtags are not always clear. Using hashtags has been shown to increase retweets by some researchers (Stefanone et al., 2015; Van der Meer et al., 2014), yet other research has found the opposite to be true (Lopez-Vargas et al., 2014; Tsoi et al., 2018). According to Suh et al. (2010), some specific hashtags are more likely to be retweeted than others, so it is vital to take into account not only the total quantity of hashtags but also their individual content. In addition, including a thank you or an explicit request to

share (e.g., 'please RT') (Lopez-Vargas et al., 2014) and a hyperlink/URL also appears to have an impact (Van Dalen, 2012; Xu & Zhang, 2018). Presenting factual information on Twitter can play a crucial role in reducing food waste by debunking misinformation, providing practical information, encouraging behaviour change, and raising awareness. By using Twitter to present accurate and reliable information about food waste, organisations and individuals can help to create a social impact and reduce food waste at the public level.

Xu and Zhang (2018) found that the number of followers and the number of retweets have a positive impact, whereas they found a negative correlation between the age of an account and the number of retweets (Suh et al., 2010; Van Dalen, 2012). Retweet counts have contradictory results depending on the study: some found no correlation between the number of tweets and retweets (Suh et al., 2010), others linked higher post counts to lower retweet odds (Van De Velde et al., 2015), and still others linked higher post counts to more followers and thus more retweets (Crump, 2011). This research found that factual information creates awareness through the sharing of facts around the efforts being made and the severity of the issues, which gained the attention of Twitter or other social media users. Tweet samples from some food banks are provided in Table 4-5 below.

Table 4-5 Table of tweets containing factual information

Name of Awareness Strategy	Explanation	Selected Tweets	Links
Presenting information to show the intensity of the matter "	Presentation of the factual data that is based on factual information strategy can be divided into 2 subparts. The first part of the strategy is to create awareness among people about the severity of the issue. This strategy also highlights how much food, how many people, and whatpercentage of food is being wasted in Saudi Arabia. Additionally, it can be seen in the sample tweets how much KSA versus the rest of the world in terms of food wastage, and how much food is being wasted annually. Further, some tweets also shared some information about the size of food wastage overall compared to Saudi Arabia.	"Four million sixty-six thousand (4,066,000) tons of food waste annually in Saudi Arabia!"	https://twitter.com/mewa_ksa/status/1380556620007157764
		"To preserve the environment, we aim to reduce food loss and waste by 50%."	https://twitter.com/flw_saudia/status/1452273773353349120
		"The 870 million hungry people around the world could be fed by saving a quarter of the food waste."	https://twitter.com/sago_gov_sa/status/1385574134474760196
		"The rate of food waste in the Kingdom reached 18.9% annually, with a value of up to 40 billion riyals."	https://twitter.com/sago_gov_sa/status/1382055201050353665
		"The weight of the surplus for the past year amounted to more than 542 thousand kilos, and in this hosting from Al-Ikhbariya channel, the director of the association reviewed the efforts, plans and programs of the association"	https://t.co/7vtBObTNlQ
		"We waste more than 33% of our food annually, amounting to 40 billion riyals. # We are all responsible for this waste and its effects on health, the environment and the economy, and everyone's awareness of the importance of preserving grace and rational consumption of food is obedience to God and His Messenger, and in response to the directives of the rulers. # Save it to last."	https://twitter.com/alfadleva/status/1246134723824570368
		"# The Voice of Rain... Be positive about grace... Defending grace and striving to protect it is a religious, strategic and value goal, and it is a duty for everyone without exception."	https://t.co/H1gdzCgYve
		"The Kingdom annually loses more than 14% of its food resources before reaching the final consumer 🧡 #to last"	https://t.co/f11Uus1TgM
		"The weight of the surplus for the past year amounted to more than 542 thousand kilos, and in this hosting from Al-Ikhbariya channel, the director of the association reviewed the efforts, plans and programs of the association"	https://t.co/7vtBObTNlQ
		"We waste more than 33% of our food annually, amounting to 40 billion riyals. # We are all responsible for this waste and its effects on health, the environment and the economy, and everyone's awareness of the importance of preserving grace and rational consumption of food is obedience to God and His Messenger, and in response to the directives of the rulers. # Save it to last."	https://twitter.com/alfadleva/status/1246134723824570368
		"10.7 billion dollars... This is the size of food waste in Saudi Arabia"	https://t.co/e1bPPpIlle via @cnnarabic
		"Eat and drink and do not be extravagant, for He does not like the wasteful" when thousands of tons of food are wasted around the world."	https://t.co/78eoUjID0h
"Overconsumption of food wastes a third of our food annually."	https://twitter.com/sago_gov_sa/status/1246223125383122944		

		"The rate of food waste exceeds 33% annually in the Kingdom of Saudi Arabia. We need more awareness in directing the family's consumption pattern to counter this waste. #SaveltLast"	https://twitter.com/faam222771/status/1246224121324847104
		"Those numbers that reveal the number of wasted meals bother you, 🍌🍷, as the value of food loss and waste in the Kingdom SA is estimated at "49.833" billion riyals annually, according to the paper submitted by the Ministry of Agriculture (2016) in the workshop on reducing poverty and food waste. For more click here. 📌"	https://t.co/Zuygma7t85
		"At the disposal of the General Organization for Grains: The average food loss and waste in the Kingdom amounted to 33.1%, with a total amount estimated at about 4 million tons distributed with a loss rate of 14.2% and a waste rate of 18.9%, with a total value of 13 billion riyals for 19 commodities and 40.5 One billion on all commodities..and do not be extravagant. We used to lick the plate in our childhood."	https://twitter.com/raihicf/status/1179609382075670528
Information about the efforts being made	It can be seen in the selected tweets that the organisation are trying to share factual information to create the awareness among the public about what they are planning to do and how much is being done to save food in Saudi Arabia. This can be seen in the tweet that said 300 dinner meals were saved and God added this to the balance of their good deeds. While this is factual information, this information is being provided to let people know how many efforts are being done by the different government authorities and by the people to save the food in the country. This illustrates the factual information Twitter communication strategy.	"\$10.7 billion.. This is the volume of food waste in #Saudi Arabia, according to a study #Saudi_National_Program for Reducing Food Loss and Waste @Flw_saudia # The Ikram Association has succeeded, thanks to God, in preserving more than 423 tons of surplus food, valued at more than 6 million riyals, during the past year. # By preserving blessings # Nations will last"	https://t.co/uh5LJFL2ax
		"Secretary General and Executive Director Faisal Al Shushan through a symposium #Alyaum_newspaper: The #Etaam Association saved 4 million meals in a year @alyaum"	https://t.co/aNEG03PqPJ
		"Consumer Protection Society: Two billion riyals per month are wasted in leftovers #Ninth_Business"	https://t.co/qSi3mbSTMQ
		"Preserving our food resources, by maximizing their utilization, rationalizing their consumption, and reducing waste, which amounts to 33%, is the responsibility of all of us, hand in hand to make it last. #We are all responsible #Save it to last."	https://twitter.com/mansourmushaiti/status/1246054724127899654
		"As part of the efforts of the Ministry of Environment, Water and Agriculture to support the local market and maintain price stability... the arrival of more than 4,900 heads of sheep coming from Sudan."	https://t.co/YIb5yrneIY
		"Yesterday, we held a dinner, and for fear of wasting our blessings, we contacted @SaudiFoodBank. They were young Saudi volunteers and professionals in their work. Thanks to them, 300 dinner meals were saved, God put them in the balance of their good deeds, and God raised their status and status."	https://twitter.com/dr_alajaji/status/1120647464934170625
		"Secretary General and Executive Director Faisal Al Shushan through a symposium #Alyaum_newspaper: The #Etaam Association saved 4 million meals in a year @alyaum"	https://t.co/aNEG03PqPJ

People are more likely to retweet information they feel comes from a reputable source on Twitter, or if the account belongs to someone in a position of authority (Tapia et al., 2011). Tweets are more likely to be shared and believed when their authors are people already known and trusted (Juncu & Glorney, 2019). Considering tweets from organisational accounts is important because of the significance of police distribution of appeals (Tsoi et al., 2018). Therefore, on the basis of the mentions being used by selected organisations, it has been established that not only hashtags but the mention feature of Twitter is also being used by selected organisations to get the attention of the public (see Table 4-5). Presenting factual data has been created as a category on the basis of information being shared in tweets. Presenting factual data means the organisation provides some facts in terms of how much the wastage of food costs, how much is being decreased, and how much is increasing every day in Saudi Arabia. Additionally, as can also be seen in the above table, future targets have also been discussed in terms of percentage and in the context of the monetary cost in the form of food wastage in Saudi Arabia. Therefore, it has been established that factual information is also being used as a public communication tool through Twitter. Looking at the table, it is clear that factual information includes the cost of food wastage, food wastage in tonnes, food wastage at the home and individual levels, the cost to society of food wasted, the required food for society, and the total food wastage trends in the country. Therefore, arguably these types of factual information attract the attention of the public towards the matter, which can be considered to be a common strategy of factual information sharing through Twitter to increase the public's awareness.

Category 3: Community engagement

Organisations use Twitter to build a community around their food surplus management efforts. They can share information about upcoming events, opportunities for volunteering, and connect with other organisations and groups working on food waste reduction (Young et al., 2017). By building this community, organisations can increase collaboration and cooperation in the fight against food waste and create a larger impact on the issue. Evidence suggests that the selected organisations use Twitter to engage the community and reduce food waste at the public level in different ways, like sharing information about their own food

management efforts and the impact they are having on reducing food waste. Additionally, organisations use Twitter to share practical information about ways that individuals and groups can reduce their own food waste. For example, they share information about food donation programmes and opportunities for volunteering for the organisation. Moreover, the organisations use Twitter to encourage behavioural change by sharing success stories and highlighting the positive impact that individuals and groups can have by reducing their food waste.

More specifically, organisations use Twitter to build communities around their food surplus management efforts. They share information about upcoming events and opportunities for volunteering and use Twitter to connect with other organisations and groups working on food waste reduction. In short, food management and distribution organisations use Twitter to engage the community and reduce food waste at the public level by raising awareness, providing practical information, encouraging behavioural change, and building community. By using these strategies, organisations can educate, motivate and empower people to take action on food waste reduction and make a tangible impact on the issue (Svensson et al. (2015).

Food banks in KSA contribute to the content on social networking sites by making use of the fact that they are able to fulfil certain psychological demands (such as the need for acceptance or the need to project a certain image of themselves) through these platforms (Nadkarni & Hofmann, 2012). Consumption lifestyles are increasingly represented in the vast amounts of food content shared on social media. Photos of delicious food presented on pretty plates have been posted on social media by hundreds of millions, and they are widely considered to reveal people's behaviours and boost users' self-esteem (Atanasova, 2016). One way in which social media can inhibit healthy debate is through influencing cultural norms that are counter to more environmentally responsible practises, such as reducing food waste (Turkle, 2015). Tweet samples from some food banks are provided in Table 4-6 below.

Table 4-6 Community engagement through sharing Tweets

Name of Awareness Strategy	Explanation	Selected Tweets	Link
<p>Encouraging society to participate by attracting people’s attention</p>	<p>There is much evidence in the selected tweets that show that organisations tried to attract participation by letting people know that they can be part of the organisations’ efforts to solve the issue. One Tweet states that for the benefit of one’s family and community, avoid food waste and conserve resources. There is another tweet that says “to my brother consumer, you need to be part of us to deal with the food wastage in KSA otherwise it will be too late”.</p>	<p>“In the @sago_gov_sa report, very large amounts of food are lost or ended up being wasted, which requires us to seriously reconsider our concept of food security, supply chain management and consumer behaviour”</p>	<p>https://t.co/Gwy7gyVck0</p>
		<p>"My brother, the consumer..." Waste your food.. waste your money "#Food_Security #Keep it to last"</p>	<p>https://twitter.com/flw_saudi/status/1252720237671301121</p>
		<p>"We attach great importance to harnessing our social initiatives and programs to achieve a positive impact on the communities in which we operate #SavolaWorld"</p>	<p>https://t.co/anowCbOysF</p>
		<p>"Let's cooperate to reduce the phenomenon of wasteful food and educate our families about the importance of the family economy and the rationalization of the consumption of blessings. # Save it to last"</p>	<p>https://t.co/ionHGq6rly</p>
		<p>"As part of its community participation, #Innosoft participated in preserving grace by collecting 240 meals in cooperation with the @SaudiFoodBank Feeding Association after the annual iftar of the company's work team."</p>	<p>https://t.co/vLCsO49QIN</p>
		<p>"#Save it to last, my brother citizen / resident: For the benefit of your family and your community; avoid wasting food and economic resources and be content with only what you need!"</p>	<p>https://twitter.com/subaihawah/status/1246223675596079107</p>
		<p>"@shukraseer @AAlkobrish Attending extravagant occasions is not approved by Prince Turki and gets annoyed by them. I hope Brother Abdullah Al-Thumairy and the association’s employees activate the preventive role and change the name of the Association for the Preservation of Grace, to the Association for Combating Extravagance, may God grant you success SA"</p>	<p>https://twitter.com/bandarmu1/status/1245532539521060864</p>
<p>Raising awareness about the importance of the issue</p>	<p>These tweets are evidence that organisations approach communities to raise awareness about the importance of the issue. Additionally, there are some tributes that communicate with the public how many educational programmes are being launched by the organisations and</p>	<p>"Because we care about our society and we want awareness to be the basis of this society, we received today at the association's headquarters a delegation of teachers and students from @alelmalnaf school to introduce the association's work, so everyone interacted with the association's idea and emphasized its importance. In the midst of this visit, we signed an awareness partnership with the school to implement community awareness initiatives"</p>	<p>https://t.co/AkS8Zd6T09</p>
		<p>"We have no idea tomorrow! Do something for people @SaudiFoodBank"</p>	<p>https://t.co/qJTiiM0vrDQ</p>

<p>how keen they are to solve the issues. Additionally, they also provided some information to gain awareness from the public to involve them as a Muslim community. These types of tweets ' are evidence that they are trying to challenge the public that it is important at the the religious, social, and national levels to deal with the issue of food waste in Saudi Arabia.</p>	<p>"For your safety in #Ramadan..do not mix foods, and donate surplus banquets without touching to charitable organisations to preserve food and distribute it to the needy, such as: @SaudiFoodBank</p>	<p>https://t.co/2b5irmE51x</p>
	<p>"Etaaam has set up an educational program in its branch in Al-Ahsa for students of Al-Ahsa Private School, with the aim of educating students about the importance of preserving grace from waste."</p>	<p>https://t.co/lVb4kW75Ws</p>
	<p>"#World_Food_Day On this day, we renew the reminder that wasting grace in general is a threat to food security and community security, so our keenness on it is evidence of our awareness and awareness of gratitude."</p>	<p>https://twitter.com/ekram_makkah/status/1184392610208796672</p>
	<p>"Reducing food loss and waste contributes to enhancing food security and preserving and sustaining natural resources # Food Security # General Grain Corporation"</p>	<p>https://t.co/m3YsqtTYM</p>
	<p>"The vision of #Shukr lies in raising the level of community awareness and spreading the culture of preserving grace. Our weekly statistics, with your cooperation and partnership, continue to thank 🌹 "</p>	<p>https://t.co/Pl46yiXnBK</p>
	<p>"The Social Activity Center in Tihama in Balasmar and Balahmar affiliated to the National Social Development Committee in Muhayil and in cooperation with the Association for Preserving Grace in Asir (Shukr) educated the community to preserve grace from waste, by distributing posters for the Society for Preserving Grace (Shukr) on Khamis Mutir restaurants"</p>	<p>https://t.co/salblraoap</p>
	<p>"A/ Zaid Al-Shabanat to the consumer. We are a Muslim community, and we must set an example for others in buying and not hoarding products"</p>	<p>https://t.co/uPEJ966omF</p>
	<p>" 🌟 Loss of food is our biggest challenge, in depleting the resources of our homeland together we cooperate to reduce it # to last"</p>	<p>https://t.co/zDduh0MpLP</p>

If we consider the current literature on the importance of community involvement in addressing public issues, the available literature on food waste in KSA is limited to how online communities can be developed to contribute to addressing the issue. However, there is literature from other countries that suggests the potential of social media platforms such as Instagram to raise awareness and promote action related to food waste. For instance, in 2016, Sainsbury's, the largest independent grocery chain in the UK, conducted a study that linked Instagram to food waste (Teoh et al., 2021). The notion was that people would waste money on exotic ingredients they did not know how to use because they only bought them to impress their Instagram followers with novel dishes. The increased use of social media due to transportation restrictions associated with the COVID-19 pandemic (Snyder, 2020) may also have contributed to an increase in food waste, as users were exposed to more food-related content, leading them to make excessive use of meal delivery services (Snyder, 2020). As seen in the above table, these food organisations also tried to educate the public through hashtags around food security, the lack of food, and the shortage of food in Saudi Arabia. Therefore, arguably, these four selected organisations are also trying to educate the public about the consequences of the food waste in KSA.

Evans (2014) argues that food becoming waste arises as a more or less ordinary consequence of the ways in which everyday practises and domestic life are currently carried out and the numerous elements that determine the dominant organisation of food consumption. Domestic food waste has been linked to things like consumers' ability to perceive and negotiate information about food safety (Watson & Meah, 2012) and their own organisation and knowledge when shopping for and storing food (Farr-Wharton et al., 2014). The seven elements that Southerton and Yates (2015) identify as connecting consumption behaviours and food waste are food safety and health, variety and plenty, care, convenience, economy, extravagance, and indulgence which required a collaborative approach between individual, organisations, and the government. The above tweets in Table 4-5 provide clear evidence of the public education strategy that is being used by the selected organisations (see Table 4-5). As established in the above table, the selected organisations are trying to develop a sense of community among the public to deal with the issue, which is why community engagement has been included as a category in the content analysis. This strategy is being used by organisations to get the attention of the community and give them a sense of

ownership and instil a sense that everyone is responsible. The second strategy being used by organisations is to involve the community through the recruitment of volunteers and involvement of other organisations at the government and public levels to deal with the issue. The third strategy that is being used at the community level is to involve individuals at the family and individual levels to take responsibility to reduce food wastage at the family level, and to participate in food collection and production activities. Additionally, the selected organisations also involve the online community in talking about food wastage, and try to engage the community through using words like 'for the sake of God', 'for the sake of community' and 'for the sake of future children'.

Category 4: Using religious communication

The utilisation of religious communication has been found to be an effective strategy for reducing food waste in KSA (Elshaer et al., 2021). By partnering with religious leaders, creating religious-themed educational materials, organizing religious-themed events, utilising religious texts and teachings, incorporating religious messages into social media, and collaborating with religious institutions and organisations, food banks have been able to raise awareness about the importance of reducing food waste and caring for those in need (Elshaer et al., 2021). These strategies have allowed food banks to educate, motivate, and empower the public to take action on food waste reduction and make a tangible impact on the issue (Stirman & Pennebaker, 2001).

The religious aspect of food waste and donation has been found to be particularly effective in KSA due to the strong cultural and religious ties in the region (Elshaer et al., 2021). By incorporating religious messages into their communication efforts, food banks have been able to tap into the religious beliefs and values of the public, and create a stronger connection with the community (Salonen, 2016). This has helped to increase the effectiveness of their campaigns and improve the impact of their efforts to reduce food waste (Salonen, 2016). For example, one study found that food banks that partnered with religious leaders and utilised religious-themed educational materials were able to increase public awareness about the importance of reducing food waste and increase food donations (Maynard, 2017). Another study found that incorporating religious messages into social media campaigns helped to increase engagement and mobilise the public to take action on food waste reduction. These

findings highlight the importance of religious communication in reducing food waste and the potential for food banks to make a positive impact through their efforts.

Food banks in KSA used religious communication as a way to raise awareness of food waste by implementing the following strategies. First, partnering with religious leaders: food banks can work with religious leaders and scholars from different faiths to promote the importance of charity and helping those in need. These leaders can share messages about food waste and the impact of food donation through sermons, speeches, and other religious gatherings, and use their influence to encourage the community to donate to food banks. Second, creating religious-themed educational materials: food banks can develop religious-themed educational materials such as brochures, posters, and videos that highlight the religious significance of reducing food waste and donating excess food to those in need. These materials can be distributed in mosques, churches, and other religious institutions to educate the public on the importance of reducing food waste and caring for those in need. Third, organising religious-themed events: food banks can organise religious-themed events such as fasting and breaking fast events to raise awareness about food waste and the importance of food donation. These events can be organised in partnership with religious organisations and charities and can be used as an opportunity for food drives and donations.

Moreover, food banks can utilise religious texts and teachings to educate the public about the importance of reducing food waste and caring for those in need. These teachings can be shared through religious classes, lectures, and other educational programmes. Food banks can incorporate religious messages and themes into their social media and other communications efforts, such as on Twitter. This can include sharing quotes from religious texts and messages from religious leaders about food waste and the importance of donating to food banks.

In addition, food banks can collaborate with religious institutions and organisations on charity activities, such as feeding the homeless and the poor. This can include organising joint volunteer programs and donation drives. Creating awareness campaigns that use religious language, symbols, and motifs enable food banks motifs to convey the message about food waste, poverty and the importance of food donation. In short, the utilisation of religious communication has been found to be an effective strategy for reducing food waste in Saudi Arabia. By incorporating religious messages into their communication efforts, food banks have been able to raise awareness, educate, motivate, and empower the public to take

action on food waste reduction. Further research is needed to better understand the impact of religious communication on food waste reduction and to develop best practises for utilising religious communication in this context (Elshaer et al., 2021).

Food banks can also align their communication with the cultural and social context of KSA by considering the different religious traditions within the country and working with religious leaders and organisations from different backgrounds. The regulations of God can be considered a key issue in shaping the behaviours of individuals. The basis for this argument is that all heavenly religions, e.g., Christianity and Islam, imply that the environment was created by God and hence all communities should encourage others to protect it and save resources, including food. These religions also stress the fact that God hears, sees, and knows everything an individual does, and he or she will be held accountable for his or her actions. Therefore, individuals who consider God to be a chief reference for their actions will be concerned about whether their actions follow the orders of God. In addition, religion helps to meet the needs of people for affiliation (Ysseldyk et al., 2010). Consequently, by achieving religious requirements and/or imitating the behaviours patterns of religious people, religious people can be motivated to reduce wasted food from a compliance perspective (Elhoushy & Jang, 2021). As a result, it is reasonable to conclude that these four selected organisations are also attempting to influence the public's perception of the consequences of food waste in Saudi Arabia. The following tweets provide evidence of the religion strategy employed by the chosen organisations (see Table 4-7).

Table 4-7 Religious communication related Tweets

Name of Awareness Strategy	Explanation	Selected Tweets	Links
Using religious communication	<p>These tweets are evidence of using religious communication as a strategic tool. Religious information is being used in two ways; first, to improve awareness among the public about the negative consequences of food waste from a religious perspective and how much they will be punished for food wastage. Additionally, they also tried to raise awareness among the public that they will be responsible for answering to God about food wastage.</p> <p>Second is to raise awareness among the public about the benefits they will receive at the day of judgement once they distribute food or collect surplus food for distribution among poor people. Additionally, they also communicated some religious information during religious events, for example during Ramadan, about what the public can do to save food and how to change their behaviour around food wastage during the holy month of Ramadan.</p>	<p>"# It_Our_Dar My country has many great blessings, so let's preserve it and put an end to waste so that it lasts. The National Program for Waste Reduction #To Last shares the country's joys. @Flw_saudia"</p>	<p>https://t.co/C28tUQmPKm</p>
		<p>"#Save it to last (33%) of our food is wasted. The cooperation of the citizen and the resident to preserve the nation's nutritional capabilities, and not waste them, is clear evidence of the highness and sophistication of the sons and residents of this great country. May God reward you."</p>	<p>https://twitter.com/ssek99/status/1246054648118751232</p>
		<p>"With such actions, blessings last, may God reward you a thousand good "</p>	<p>https://t.co/Bkc1p3gzPd</p>
		<p>"May God's peace, mercy, and blessings be upon you. One of the etiquettes is preserving the grace... so that it does not disappear... The money is yours and the resources are for the community. "So be the society, and the society will be you." @sago_gov_sa @Flw_saudia @MEWA_KSA @majidkhalaf @2Aa2020 #save_it_to_last"</p>	<p>https://t.co/roxclinQht</p>
		<p>"# The General_Grain_Organisation is unloading (7) ships in the various ports of the Kingdom with an amount of about (450) thousand tons of fodder barley. # Food_Security #Our_products_available"</p>	<p>https://t.co/UFx2ptD93Q</p>
		<p>"@shukraseer @ikram_nemah We are responsible for preserving blessings and limiting extravagance (Eat and drink, but do not be extravagant. Indeed, Allah is not the extravagant.)"</p>	<p>https://t.co/Lc9YZZX3xv</p>
		<p>"Thanks to God first and the efforts of all those in charge and workers in #Etaam, Eta'am has become an icon for charitable and community work, and is steadily moving towards achieving its mission, not only in preserving food, but also in spreading a culture of preventing waste in food and supporting the #Ministry_of_Education confirms that success can only come with integration and cooperation."</p>	<p>https://t.co/6l4CQwtFRH</p>
		<p>"God Almighty said (If you are grateful, I will give you more) and gratitude for the blessings is by not wasting and extravagance and keeping pace with the national campaign to reduce food waste and wasteful food # save it to last, it is assumed that we are all responsible by educating our people and society by rationing our needs and consumption to the extent that meets the need in compliance with our religion and support for our country SA."</p>	<p>https://twitter.com/mewa_ksa/status/1246222924547325953</p>
		<p>"Yesterday, we held a dinner, and for fear of wasting our blessings, we contacted @SaudiFoodBank. They were young Saudi volunteers and professionals in their work. Thanks to them, 300 dinner meals were saved, God put them in the balance of their good deeds, and God raised their status and status."</p>	<p>https://twitter.com/dr_alajaji/status/1120647464934170625</p>
		<p>"Feed_in_Ramadan: 1240 food products were saved from waste in cooperation with #ElGouna_Sweets throughout the holy month of #Ramadan."</p>	<p>https://twitter.com/saudifoodbank/status/1140190998712266752</p>
<p>"#Your Zakat_for its people is a soft service launched by #Etaam and #Mint to disburse Zakat Al-Fitr, away from the waste of rice. https://t.co/2Cit1Bhrvb @NanaDotSa"</p>	<p>https://t.co/HWz3H1VRSQ</p>		

		<p>"Let's make #Ramadan the beginning of change #Ramadan is the month of change in worship and our #behaviour_in_Ramadan is the beginning...to change habits and behaviours #until_they don't go away #General_Grain_Corporation #Third_Mills_Company"</p>	<p>https://t.co/Fx5N8y8D5</p>
		<p>"Previously During Shawwal in Makkah. The surplus of food exceeds 49 tons, and the estimated value touches one million Oh God, we ask you for everyone who contributed to preserving food to enter Paradise in peace."</p>	<p>https://t.co/0vuu9QeGw7</p>

Policymakers in KSA need to adopt media campaigns to raise the awareness in their communities about the value of food saving from both religious and societal perspectives. Policymakers should work closely with restaurant owners/managers to reduce their food waste. This could include writing verses from the Quran, also romanised Qur'an or Koran, is the central religious text of Islam, believed by Muslims to be a revelation from God. It is organised into 114 chapters, which consist of verses or Hadith (sayings) of Prophet Muhammad to encourage them to save food and reduce their waste. These motivational messages should be placed in the dining room and on food boxes prepared for home delivery.

Category 5: Regulation and policy

Food banks in KSA use Twitter to update followers about upcoming events and activities, to tweet about the impact of government policies and regulations, and to encourage advocacy for policies that support food waste reduction and food donation efforts. By doing so, food banks in KSA play a significant role in addressing the issue of food waste and promoting sustainable food consumption and disposal behaviours (Mirza B Baig et al., 2019). Food banks in KSA used Twitter as a platform to raise awareness around food waste, while also working with government regulations and policies to support their efforts.

Some specific ways they do this include tweeting about government funding and tax incentives available for food donation, in order to encourage individuals and businesses to participate in food drives and donation programmes And informing the public about food recovery laws and regulations enacted by the government to encourage the recovery and donation of excess food from businesses. Partnering with government agencies and organisations on Twitter can help promote public-private partnerships in reducing food waste and increasing food donation. Tweeting about educational resources and programmes provided by the government can raise awareness about food waste and the importance of food donation among the public. Collaborating with national food bank organisations in the country can help them with coordinating and supporting the efforts of regional and local food banks. Twitter can also be used to update followers about upcoming events and activities organised by food banks in partnership with the government. Additionally, food banks can tweet about the impact of government policies and regulations on food waste reduction and food donation, and to encourage followers to advocate for policies that support these efforts.

Public wasteful acts contribute to environmental degradation (Hawkins, 2005), and we also know that technical advancements in trash removal and processing have eradicated any further thinking of waste within people's regular habits. This gradual depreciation of consumer goods into trash is described in detail by Thompson (1979). This process from surplus to excess occurs rapidly in the food industry (Evans, 2014). Evans has done extensive work examining this shift from the perspective of the home, drawing attention to consumer worries about food safety and over provisioning and the temporalities that cause surplus food to "slide" into excess (Evans & Campos, 2013; Evans, 2012; Evans et al., 2012). Evans and Campos (2013) suggests that a collaborative approach is required to create a partnership among different private and public organisations to decrease food waste at the national level. Therefore, this category of the institutional-level approach has been developed in the existing literature and is being used by the selected organisations. Hashtags including #Vision2030ofthecountry and other hashtags have been shared along with the names of the organisations, which can be considered an organisational- and institutional-level strategy to deal with food waste in KSA (see Table 4-8.)

Table 4-8 Tweets related to regulation and policies

Name of Awareness Strategy	Explanation	Selected Tweets	Links
Communicating the efforts of government policies	These tweets are sufficient evidence that organisations are sharing about government efforts and also national policies for food wastage in the country. As seen in the tweets, they are sharing information about different ministries' efforts to reduce food wastage in the country.	"In my name and on behalf of all the employees of the Corporation, we extend our thanks and gratitude to the Custodian of the Two Holy Mosques King Salman bin Abdulaziz and His Highness the Crown Prince, Prince Muhammad bin Salman bin Abdulaziz - may God protect them - on the occasion of the Council of Ministers' approval in its session today of the strategy of the General Organisation for Grains."	https://twitter.com/ahmadalfares/status/1173997681401880576
		"One of the pioneers of the pavilion of the National Program for the Reduction of Food Loss and Waste says: "A heartbreaking statistic, and I wish everyone to see it" #Until it does not go away"	https://t.co/ptrUOZxA09
		"#Al-Majhar_Program Director of the National Program for Reducing Food Loss and Waste A. Zaid Al-Shabanat: The larger the city, the greater the waste, and customs and traditions have an impact on it"	https://t.co/jNhuAchRA6
		"# It_Ours_Dar SA We preserve its resources without loss and waste # So that its blessings last # Saudi_National_Day_91 # General_Grain_Corporation"	https://t.co/plAdUfrPZl
		"#The National Program for Loss and Waste Reduction participates in an awareness corner in the festival "	https://t.co/yauICIL453
		"Part of the interaction of citizens and residents in the corner of the National Program for the Reduction of Loss and Waste at the Kilija Buraidah Festival, the General Grain Corporation, the Field Survey of Loss and Waste, the Imam University, so that it does not go away"	https://t.co/ffYMQjVKDi
		"Behind ambitious visions and drawn plans, we are moving to achieve one of the goals of # Saudi_Vision_2030 to preserve food resources # to last # General_Grain_Corporation "	https://t.co/Gay4oqeWgp
		"#Agreement His Excellency Eng. Ahmed Al-Faris, Governor of the General Grain Corporation, signed a memorandum of understanding with the Rushd Management Consulting Company, with the aim of cooperation in activating the outputs of the national program to reduce food loss and waste in the Kingdom"	https://t.co/6ugRUckVOq
		"Photos from the inauguration of the new identity of the National Food Loss and Waste Reduction Program #to last, sponsored by His Excellency the Minister of Environment, Water and Agriculture, Eng. Abdul Rahman Al-Fadhli"	https://t.co/gAlK3vrQDn
		"#Al-Majhar_Program The causes of #food_waste in the #Kingdom and its negative effects. Prof. Zaid Al-Shabanat - Director of the National Program for Reducing Food Waste and Loss. #Riyadh_Radio"	https://t.co/o3hxWIC2Nj
		"Under the auspices of His Excellency the Minister of Environment, Water and Agriculture, Chairman of the Board of Directors of the Corporation, Engineer Abdul Rahman Al-Fadhli, a contract was signed today for the implementation of the awareness campaign to reduce food loss and waste in the Kingdom. /teQZFwQkd"	https://twitter.com/sago_gov_sa/status/1427990248705900548
		"His Excellency the Minister signs a cooperation agreement with the Specialized Sub-Council of Societies for Preserving Grace in the Kingdom, to develop and implement initiatives that contribute to reducing food loss and waste. # Shortage_Nor_AIZoud"	https://t.co/mP1GOrckf
		"I highly value civil associations for their active presence and distinguished efforts in various fields of social development and in this crisis. We have a high rate of compliance with the Ministry's regulations and legislation, and I stress the importance of community contribution to support and support them. We seek, in partnership with civil associations and institutions, to achieve sustainable community development."	https://twitter.com/ahmed_s_alrajhi/status/1255986783575248899

Government targets to be achieved and what has already been achieved	This part of the strategy focussed on the efforts being made and the future objectives of the government to reduce food wastage. As is very clear from one tweet, the government wants to reduce food waste by 2030 as part of the vision of the country, and the organisation also shared about Vision 2030 in a later tweet about food wastage.	“(The National Program for Reducing Food Loss and Waste) issues a book on the Food Loss and Waste Index - Baseline, where the most prominent results of the field survey indicate that the percentage of food loss and waste amounted to 33.1%, and the per capita contribution to that was 184 kg/year. And 40.5 billion annually is the value of waste based on spending”	https://t.co/Vfoa5UCieU
		“Participation from the program page to meet the director of the National Program for Loss and Waste Reduction in the Yahla program on the Gulf Rotana channel”	https://t.co/Y0bBKVJFSz
		“After setting the baseline for food loss and waste at 33.1%, the General Grain Corporation is preparing to start the awareness phase to target its reduction by 50% by 2030, so that it does not go away. National Transformation 2020”	https://t.co/lvr3myAsSD
		“Please visit the pavilion of the National Food Loss and Waste Reduction Program, booth No. 527, from the period 21 Shaaban to 29 Shaaban #Consumer_Industries_Exhibition #Consmix #Until_It_Doesn't_Go”	https://t.co/NJBLwtQTaD
		“Do you support imposing fines on restaurants, hotels and cafes that waste food?”	https://twitter.com/saudifoodbank/status/1142069234035560449
		"In pursuit of achieving #Saudi_Vision_2030, the #ToLastProgram was launched, which is one of the initiatives of the General Grain Corporation that aims to reduce the quantities lost and wasted in food by following the latest international standards and experiences"	https://t.co/CPREk6lrKj
		"# For blessings to last, we embarked on a journey to reduce food loss and waste by 50% by 2030 in order to preserve the nation's food wealth and achieve the highest # food security”	https://t.co/1hMY9SjuR

As identified through content analysis, organisations also try to communicate new regulations and policies from government and private organisations that are being created as steps towards the reduction of food wastage. For example, one organisation asks the common question: Do you agree that restaurants should be fined if they throw away edible food? Additionally, as the director of the National Programme to Reduce Food Loss and Waste discussed, the larger the city, the more garbage there is, and local customs and habits play a role in that. A. Zaid Al-Shabanat said in a tweet, “Without waste or loss, we keep resources intact so that its benefits might remain forever. Celebrate the 91st Anniversary of the Declaration of Saudi Independence with the General Grain Company”, and included the hashtag #SaudiNationalDay.

Festival goers can learn more about the National Programme for Loss and Waste Reduction at an information booth. Imam University plays a role in keeping the National Programme for the Reduction of Loss and Waste active and relevant in the minds of the people who live there. Additionally, it has also been shared that one of the goals of Saudi Arabia’s 2030 Vision is to ensure the sustainability of the country’s food supply, and, ‘behind bold aspirations and drafted plans’, the General Grain Corporation is making progress toward this end. The #ToLastProgram, a project of the General Grain Corporation, seeks to eliminate food loss and waste in accordance with best practises from around the world. This is in support of the Saudi Vision 2030. To ensure the nation's food supply is preserved and the maximum level of food security is attained, the government has launched a path to cut food loss and waste in half by 2030. Moreover, the Rushd Management Consulting Company has established the goal of cooperating in the activation of the outputs of the national programme to decrease food waste and loss in the Kingdom.

Photos from the launch of the National Food Loss and Waste Reduction Programme were shared as a new brand, which His Excellency the Minister of Environment, Water, and Agriculture Eng. Abdul Rahman Al-Fadhli sponsored "Causes and consequences of food waste in the Kingdom of Saudi Arabia on the Al-Majhar Programme were discussed in the context of policy making. Food waste and loss expert, Professor Zaid Al-Shabanat, talked to Riyadh Radio over Twitter. For the purpose of reducing food waste and loss in the Kingdom, a contract was signed, was which shared under the auspices of His Excellency the Minister of Environment, Water, and Agriculture, the Chairman of the Board of Directors of the Corporation. For the purpose of decreasing food loss and waste, His Excellency the Minister

has signed a cooperation agreement with the Specialised Sub-Council of Societies for Preserving Grace in the Kingdom, which was shared as a tweet. With hashtags like #ShortageNorAlZoud, which was shared, indicate that the organisations greatly respect non-governmental organisations for being present and making notable contributions in many areas of social development and in this crisis. The Ministry's rules and laws are generally followed, and they urge everyone to do what they can to continue to do so. Through collaboration with other organisations serving the public good, these organizations hope to foster lasting change in their local neighbourhoods.

Category 6: Special events

The specific event-related category was developed on the basis of tweets posted by the selected organisations. Specific event-based tweets are related to activities being done; for example, the recruitment of volunteers, contract agreements with government or public organisations, community programmes to improve public awareness, and any other kind of activities being done by organisations that are being shared on Twitter (Hu et al., 2012)

Table 4-9 Tweets related to specific events.

Name of Awareness Strategy	Explanation	Selected Tweets	Links
Keep the public updated on activities	There is evidence of two types of strategies that fall under the umbrella of event communication. As can be seen in the tweets by organisations, they are sharing any type of interaction with the ministry as an event. Additionally, they are also sharing information about whether they are arranging any efforts to reduce food wastage, or any other kind of activity arranged by the organisation.	"Yesterday, the Ikram Association for Food Preservation was a guest at the diwaniya of Dr. Muhammad Al-Saeedi @mohamadalsaidi1 to talk about waste and loss of food and the role of the association in achieving food security"	https://t.co/OrzePKFpuW / Twitter
		"What is the fate of surplus food in hotels, banquets or restaurants? A question we answered in a program from here on @mbc1 With the brilliant @M_Alneh as part of our community outreach efforts This great work that you see with great and generous support from the endowment of Sheikh Muhammad bin Abdulaziz Al-Rajhi @awqaf_alrajhi they have our thanks and gratitude"	https://t.co/lBTtkX6jmH / Twitter
		"The visit of the delegation of the National Program for the Reduction of Food Loss and Waste to the headquarters of the #Project to Save Grace in #Madinah Al-Munawara to view the project's work and discuss ways of joint cooperation . @alshabanatzaid @OceanacrossCo"	https://t.co/B6Pg1zWbz4
		"Today's #Etaam is a guest on @sayyidaty, who is broadcasting on @Khalejiatv, to talk about the association's #conservational-blessing alliance with sustainability partners. @sipchem @AlRajhiBank"	https://t.co/ui73QWh1dh
		"The General Grain Corporation and in community partnership @sago_gov_sa With Prince Bandar bin Abdulaziz School, the National Program for Loss and Waste Reduction @Flw_saudia implemented a visit to deliver the message of the program to our students. Distinguished participants were honoured"	https://twitter.com/moe_jdh_151013/status/1320811958254424068
		"The weight of the surplus for the past year amounted to more than 542 thousand kilos, and in this hosting from Al-Ikhbariya channel, the director of the association reviewed the efforts, plans and programs of the association"	https://t.co/7vtBObTJNQ
		"For your safety in #Ramadan.do not mix foods, and donate surplus banquets without touching to charitable organisations to preserve food and distribute it to the needy, such as: @SaudiFoodBank"	https://t.co/2b5jrmE51x
Specific event communication	This part of the strategy covers different Islamic national and global events coverage and communication with the public. For example, celebrations of World Food Day have been shared on the 75th anniversary of the establishment of the United Nations. Additionally, some specific types of communication are made during the month of Ramadan. Furthermore, there	"@shukraseer @ikram_nemah We are responsible for preserving blessings and limiting extravagance (Eat and drink, but do not be extravagant. Indeed, Allah is not the extravagant.)"	https://twitter.com/saudifoodbank/status/1140190998712266752
		"@ekram_makkah launched its awareness campaign to reduce food waste and extravagance and achieve food security in the community, through a series of exhibitions that are held in large gatherings of Makkah residents and visitors. #Charitable Media"	https://t.co/9epCLQ4kTd
		"In interaction with the #World_Food_Day, the Ikram Association participated with the female students of Umm Al-Quran University in the Department of Social Service, the trainees in the Social Security Office, in educating people and making them aware of the importance of food security and the association's efforts to preserve the surplus and distribute it to the needy. The event was in the presence of insurance employees and beneficiaries"	https://t.co/6uiq1isgkD

	is plentiful evidence of communications on other national days.	“As part of its community participation, #Innosoft participated in preserving grace by collecting 240 meals in cooperation with the @SaudiFoodBank Feeding Association after the annual iftar of the company's work team.”	https://t.co/yLCsO49QIN
		“What are your plans to reduce waste during the month of Ramadan?? #Ramadan”	https://twitter.com/shukraseer/status/1124815994571112448
		“The environment celebrates World Food Day and the 75th anniversary of the establishment of the United Nations”	@sabqorg">https://t.co/oQkVUibbho @sabqorg

This category has been developed on the basis of tweets by the selected organisations in which they share event-related activities they are doing to reduce food wastage at organisational levels. As it can be seen in Table 4-9 above and in the below tweets from the Twitter accounts of these organisations, there is evidence enough to show that the event-based communication strategy can also be used at organisational levels to create collaborative efforts and to educate the public about the food wastage in KSA (see Table 4-8). Different events have been communicated among the public; for example, Dr Muhammad Al-Saeedi (@mohamadalsaidi1) invited the Ikram Association for Food Preservation to his diwaniya to discuss the association's part in preventing food loss and waste and its impact on the goal of securing a steady food supply.

Additionally, organisations also attempt to gain the public's attention to raise awareness around how food is being wasted at different events, asking the public to consider where leftover food from events like weddings, parties, and banquets goes. A programme on @mbc1 addressed this issue on Twitter, saying, "Together with the wonderful (@M Alnhet), we're doing amazing things for the local community to reduce food wastage on our social events". They communicated in the tweets that the public owes a debt of gratitude to the endowment of Sheikh Muhammad bin Abdulaziz Al-Rajhi (@awqaf alraj) for his efforts in food waste reduction. Other projects that were shared include "The #Project to Save Grace headquarters in #Madinah Al-Munawara was recently visited by a group from the National Programme for the Reduction of Food Loss and Waste to learn more about their work and explore potential avenues for collaboration" (tweets by @alshabanatzaid @OceanacrossCo).

as Another example tweet is, "This morning's #Etaam appears on @sayyiday's @Khalejiatv show to discuss the organisation's #conservational-blessing partnership with sustainability organisations" (tweets by @sipchem to @AlRajhiBank). Moreover, a joint effort between the General Grain Company and the South African Government Agency for Grain Marketing and Supply (@sago gov sa) was highlighted on Twitter to spread the word about the National Programme for Loss and Waste. Recognition was given to those who have made significant contributions.

There are some global events that are also being communicated on Twitter, like World Food Day and the UN's 75th anniversary, which are celebrations of environmental causes and were communicated by the Al-Ikhbariya channel. The director of the association discussed the association's efforts, plans, and programmes, and revealed that the surplus for the past

year weighed more than 542 thousand kilos. Additionally, some specific communication was made around religious events. For example, "During #Ramadan, it is important to keep all foods apart from one another for the sake of hygiene, and any leftovers from your feasts should be given to charities that will store and distribute the food to those in need", (liked @SaudiFoodBank @shukraseer @ikram nemah). Another example is, "It's up to us to keep the good times rolling and keep waste to a minimum (Eat and drink, but do not be lavish. Allah, after all, is not one to waste money which is also communicated during Ramadan. Through a series of exhibitions at big gatherings of Makkah's residents and visitors" (by @ekram Makkah). These tweets are part of awareness campaigns to reduce food waste and extravagance and achieve food security in the community. Any events being arranged by the organisations are communicated across communicate on different religious, non-religious, national and global events. For example, the Ikram Association collaborated with female student trainees in the Social Security Office from Umm Al-Qura University's Department of Social Service to raise awareness about the need for food security and the association's efforts to store and distribute excess food to those in need in honour of World Food Day. Participants included insurance company workers and those who might ultimately benefit from their efforts therefore, demonstrating that they share these World Food Day events at the university.

Category 7: Using impactful media content

Impactful content on social media refers to content that is capable of creating a significant effect on its intended audience. It is content that has the ability to influence the beliefs, attitudes, and behaviours of its viewers and create a lasting impact. The definition of impactful content can vary depending on the context and the goals of the content creator. For example, impactful content in the context of a marketing campaign may be defined as content that successfully promotes a product or brand and leads to increased sales. In the context of a political campaign, impactful content may be defined as content that influences the voting behaviour of its intended audience. There is no one-size-fits-all definition of impactful content, as it can vary depending on the goals of the content creator and the context in which it is being used. However, research has shown that impactful content is often

characterised by its ability to evoke strong emotions, be shareable, and have a clear call-to-action (Berger & Milkman, 2013).

The use of impactful content on Twitter can be a powerful tool in reducing food waste and changing public behaviour. According to a study by Schreiner et al. (2021), impactful content on social media can create a sense of urgency and evoke an emotional response, leading to more engagement and action among users. This is particularly true for content related to food waste, which can be a highly emotional and polarising issue. By using impactful images, videos, and stories, organisations and individuals can create a sense of urgency and encourage the public to take action to reduce their food waste. Additionally, impactful content on Twitter can be used to educate the public about the consequences of food waste and encourage them to adopt more sustainable food consumption and disposal behaviours. Furthermore, research has shown that the use of visual content, such as images and videos, can be particularly effective in promoting behavioural change (Kim et al., 2014). For example, images of overflowing landfills or videos of food waste being composted can help to raise awareness about the environmental consequences of food waste. Similarly, stories about people who have successfully reduced their food waste can serve as inspiration and encourage others to follow in their footsteps.

Food waste is a significant issue, and surplus food management organisations play a crucial role in reducing it. Utilising impactful media content can be an effective way for these organisations to achieve their goal. By using photos, infographics, videos, and other forms of multimedia on Twitter, organisations can captivate the audience, educate them about food waste, and inspire them to change their behaviour as seen in Table 4-10. In Saudi Arabia, food banks have taken a proactive approach to raise awareness of food waste by creating videos that showcase its scale and impact. These videos are shared on social media platforms and with media companies to reach a wider audience. Additionally, infographics visually represent statistics on food waste and poverty, which are shared on Twitter and used in presentations and other outreach efforts. Food banks have also partnered with local celebrities and influencers to amplify their message, creating social media campaigns and public service announcements. Finally, they have established websites, blogs, and social media accounts to keep the public updated on the current situation, events and activities, and the impact of their donations (Immel et al., 2021).

Table 4-10 Tweets related to the Using Impactful media content.

Name of Awareness Strategy	Explanation	Selected Tweets	Links
<p>Twitter content is being used as an impactful strategy for surplus food management organisations to reduce food waste behaviour because of its reach, engagement, flexibility, cost-effectiveness, and ability to connect with other organisations and experts. This can help organisations to raise awareness, educate the public, encourage behavioural change and stay updated on the latest developments in the field.</p>	<p>Twitter content is being used as an impactful strategy for surplus food management organisations to reduce food waste behaviour for several reasons:</p> <p>Reach: Twitter is a widely used social media platform with a large user base. This means that organisations reach a large audience with their food waste reduction messages at national level in KSA, which can help to raise awareness and educate the public about food waste.</p> <p>Engagement: Twitter is a highly interactive platform that allows organisations to engage with their audience in real-time. This can be particularly useful for organisations looking to encourage behavioural change, as they can respond to questions, provide feedback, and share real-time updates about their efforts to reduce food waste.</p> <p>Flexibility: Twitter allows organisations to share a wide range of content types, including text, photos, videos, and infographics. This flexibility allows organisations to tailor their content to their audience and to use the most appropriate medium to convey their message.</p> <p>Cost-effective: Twitter is a relatively low-cost platform, which makes it an accessible option for organisations with limited resources.</p> <p>Connecting with other organisations and experts: Twitter can be used to connect with other organisations for example public organisations in KSA and experts working on food waste reduction efforts, which can help to ensure that the organisation has access to the most up-to-date and accurate information about food waste.</p>	Image	https://twitter.com/ekram_makkah/status/1452904155627016197
		Infographic	https://twitter.com/flw_saudia/status/1460549380042338306
		Live Videos	https://twitter.com/ekram_makkah/status/1118115469402226689
		Video	https://twitter.com/flw_saudia/status/1124680052543770624
		Video	https://twitter.com/almarai/status/1126220352449855488
		Image	https://twitter.com/ekram_makkah/status/1449981702219182082
		Video	https://twitter.com/ekram_makkah/status/1118478313943646208
		Video	https://twitter.com/shukraseer/status/1282700763773448195
		Image	https://twitter.com/shukraseer/status/1220583349175103493
		Image	https://twitter.com/saudifoodbank/status/1101759275511279616
		Infographic	https://twitter.com/azzamaldakhil/status/1246223090394284033
		Video	https://twitter.com/Flw_saudia/status/1134558715170963457
		Video	https://twitter.com/flw_saudia/status/1224709089361584128
		Infographic	https://twitter.com/sago_gov_sa/status/1241722310152851456
Infographic	https://twitter.com/sago_gov_sa/status/1336610293384929280		
Images stories	https://twitter.com/shukraseer/status/1220583082769747974		
Infographic	https://twitter.com/sparegions/status/1246223932568592386		

The Saudi food banks did not use media content properly to raise awareness of food waste. However, there could be various reasons why this might have been the case. Some possible reasons include a lack of resources, the limited reach of social media channels, a lack of understanding of the target audience and their preferences, insufficient funding for creating high-quality multimedia content, or a lack of strategic planning and execution in terms of social media outreach efforts. Without additional information, it is challenging to determine the exact reason why the Saudi food banks may not have used media content properly to raise awareness of food waste. However, it is important to carefully consider all potential factors and continue to strive for improvement in the future.

Conclusion

the major categories identified above are based on content analyses of the tweets by the selected organisations. The primary purpose of the content analysis was to determine whether Twitter is being used by organisations to communicate the need to reduce the food wastage in Saudi Arabia. It has been established that Twitter is being used to communicate with the public through the sharing of factual data, to deal with ethical sensibilities, share religious communications, regulations, and policies, and to share and communicate specific events being arranged by the organisations. But as the content analysis is limited to what is being shared by the organisations, there is a need to understand the impact on Twitter users. This requires an in-depth interaction with Twitter users to understand the impact of these type of information on the public in terms of gaining their attention and creating awareness that could lead to a change in behaviour towards food wastage in Saudi Arabia. Consequently, the next section focusses on qualitative data that was collected through the semi-structured interviews, which will give a rich picture of overall attitudes towards food wastage communications. Therefore, the focus of the interviews was to determine the effectiveness of communications to achieve food waste reduction objectives at the organisational level. Additionally, the interviews also focussed on identifying whether organisational communication is useful in changing public behaviour. This was explored only through the experience of the professionals who are working in these organisations. Consequently, the results of the analysis are be helpful in answering the second and third research questions.

4.2 THEMATIC ANALYSIS OF THE INTERVIEWS

The participants who took part in the semi-structured interviews are detailed in the following Table 4-11, according to their demographic characteristics; all of them have previous experience working for each selected organisation. The primary reason for providing this information is for readers to learn about the experience of the participants as well as where they are employed in these particular organisations.

Table 4-11 Participants' information

N	Pseudonyms Created by the Participants	Type of the Position	The Organisation	Meeting Tool
1	Z	Leader	Flw_saudia	Face Time
2	A	Social media accounts manager	Flw_saudia	Mobile Phone
3	I	Leader	Ekram	Line
4	A-1	Social media accounts manager	Ekram	Line
5	A-2	Leader	ShukAsser	Webex
6	A-3	Social media accounts manager	ShukAsser	Webex
7	F	Leader	Ettam	Mobile Phone
8	O	Social media accounts manager	Ettam	Mobile Phone
9	M	Volunteer member	Gca_org	Line
10	M-1	Campaign organiser	Gca_org	Line
11	A-3	Vice leader	Fayedonaizah	Imo
12	A-5	Former leader	Fayedonaizah	Mobile Phone
13	A-6	Social Media accounts manager	Hifzaflaj	Google Duo
14	M-2	Volunteer member	Hifzaflaj	Face Time
15	M-3	Leader	Arzaqorg	Face Time
16	M-4	Social Media account manager	Arzaqorg	Face Time

4.2.1 RQ1: How are Saudi food NGOs using Twitter to increase food awareness?

Food banks use Twitter to raise awareness about food through two primary means: "presenting factual information" and "using specific events: programmes & activities". Each main theme has two related sub-ideas illustrated in Figure 4-5.

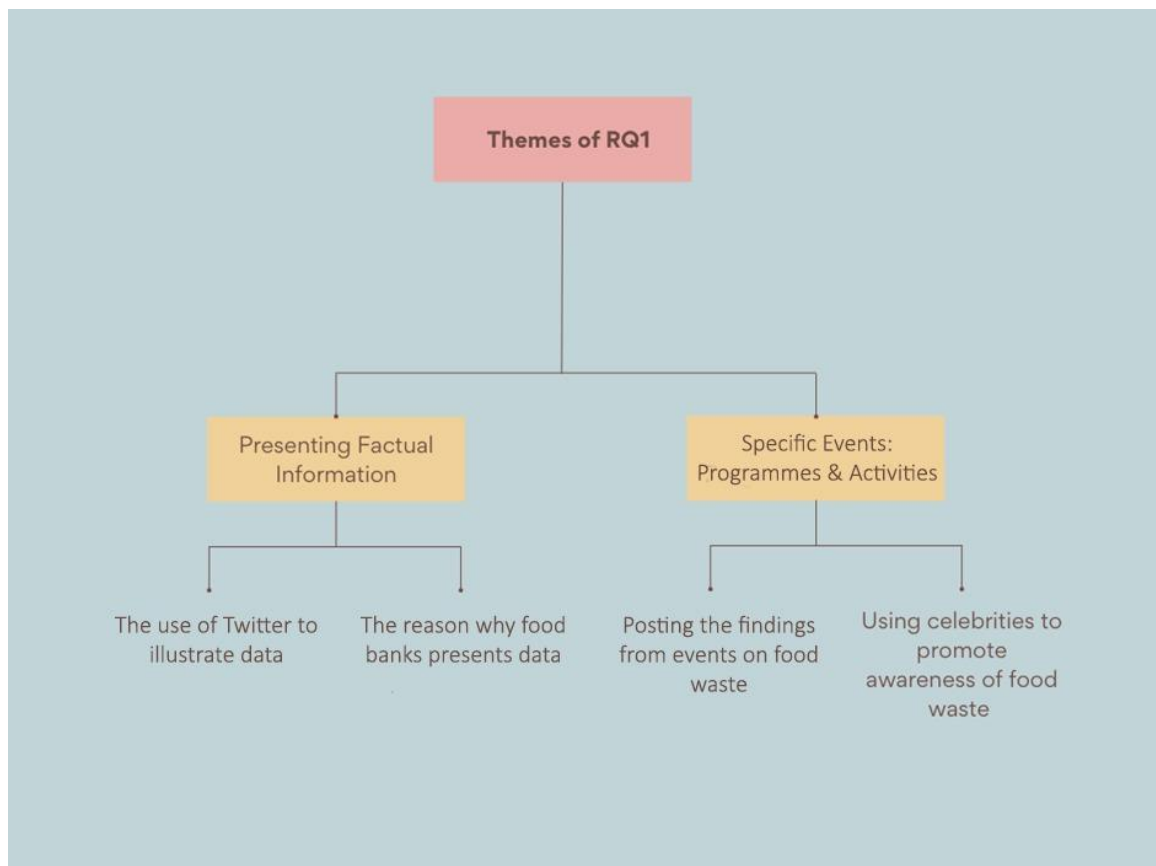


Figure 4-5 The themes and subthemes of the first research question

4.2.1.1 Presenting factual information on Twitter

The findings of the research provide evidence of important information sharing among social media organisations like food banks in KSA. The strategy of presenting factual information is expected when a social media user asserts an argument on the basis of facts and figures, and all selected food bank organisations share statics about food wastage in Saudi Arabia. Upon comparing data across social media platforms that engage social media users, it was observed that there is a significant level of involvement and participation. Further, information sharing

provided insight into the way in which user engagement and content on Twitter aims to raise awareness about this issue. The first interaction that food banks had on Twitter consisted of posting a large number of statistics in an effort to raise people's awareness about the issue of food waste. Take for instance what Participant 7 (P7) from the Ettam food bank noted:

“Huge numbers of food waste tweets resulted in magnificent interactions with the people on Twitter, users engaged into conversations under the tweets and some of them blame society or schools while some of them blamed parents.”

Another illustration of this is from P2, who works at the FLW food bank. He stated,

“We have set a strategy that every two days, we post a report from a reliable source that contains horrible data regarding food waste in Saudi Arabia. I think this type of tweet can be one of the best ways to influence the way people think about the issue of food waste.”

Based on these examples, it would appear that the decision to post significant data on public platforms like Twitter is very important in raising awareness. The participants of this study used statistical data as a means of reaching their intended audience and publicly engaged with other users who interacted with the data. The concept of sharing data is broken down into two subthemes, both of which are illustrated in Figure 4-5. These subthemes are “using Twitter in showing statistics” and “using Twitter in posting the results of food waste annually”. While “using Twitter in posting the results of food waste” occurred when the food banks posted content related to food waste, “using Twitter in showing statistics” occurred when food banks tweeted about food waste. Food banks chose what they wanted to post on Twitter. The below Figure 4-6 shows that the vision of the organisations under research is to reduce food wastage by 50% by 2030, which is also the goal of KSA itself. Therefore, arguably, some national policies with the organisational efforts of those who are fighting as nonprofit organisations to reduce the country’s food wastage.



Figure 4-6 Post containing data

The way Twitter is used to illustrate data is a subtheme that was addressed both in the posts on Twitter and in the interviews that were conducted. The sections that follow discuss evidence of reasons why the participants used Twitter to present statistics related to food waste and how this factual information impacts social media users in KSA.

4.2.1.2 Specific events: programmes and activities

As indicated by participants in the study, factual information is important to drawing public attention to the severity of the food waste issue. Participants noted that Twitter can be used to communicate different events and efforts being made by organisations to reduce food waste in Saudi Arabia. This sharing of information can help raise awareness and motivate people to take action. Therefore, it can be considered an attention-seeking strategy in public communication, as stated by participants P10 and P3.

“The major purpose to share different events with the public is that it shows that how much government is interested to participate with the organisation to reduce the food wastage in Saudi Arabia.”

“We used to share different events, for example fundraising and recruitment of the volunteers to do work within the organisation, which has a specific objective, for example fund raising help us to raise more funds and volunteer recruitment event communications also help us to empower the public to do the volunteer work within the organisations.”

Another participant mentioned that when they share any event that is arranged by the government it also has a social impact on the public to raise awareness of the food wastage in Saudi Arabia. As P3 said,

"Whenever we arrange any agreement or commitment with a public organisation we always share this information, which attracts more public and private organisations to participate to achieve the required objective of the reduction of food wastage. Therefore, the sharing of these types of events also help us to create legitimacy around the efforts we are doing."

In calling on experts and expertise to get audience attention and raise awareness, specific organisations used specific events for different purposes. Additionally, these types of events included the organisations' own expansion of services and achievements of the organisational goals, like recruiting volunteers, improving awareness and attracting public and private organisations to participate in food wastage reduction efforts in the country. For example, it has been indicated by the participants during the interviews that food waste is haram, that is, they have to face punishment from God, so the organisations arrange some events involving Islamic and religious persons. Subsequently, these type of conversations on Twitter lead to changes in behaviour. Therefore, arguably, Twitter plays a significant role in raising awareness about the issue of food waste in Saudi Arabia. However, it is also necessary to gain an understanding of the contextual factors that play a part in raising awareness among the Saudi Arabian public. The next theme analyses the contextual factors that play a role in creating awareness among the Saudi public, which lead to social influence among the public in the subsequent stages.

Six out of fifteen reviews on Twitter displayed data and the majority of contributors used Twitter during the campaign. Zaid, for one, made an effort to increase awareness and induce emotions among his audience by posting more detailed information about food waste every day. Others began conversations with their Twitter followers in an open, synchronous forum. Faisal, for instance, discussed his use of Twitter as a means to warn the public of:

"The danger of economic worldliness: Food waste is a form of waste of the country's resources, as Saudi Arabia imports many basic food products from outside the country, in order to provide for Saudi citizens and residents. Waste, whether in legitimate or illegal ways, is an exhaustion of the Saudi economy because its resources are not used in the proper way, leading the state to bear the costs of importing it from abroad. This is irresponsible behaviours from consumers, but we in the organisation are optimistic that the level of awareness will rise among consumers in order to eliminate this negative phenomenon, which harms the country's resources both productively and from a consumer standpoint."

When considering how the findings of their investigations into food waste are posted on twitter, the researcher probed into how they usually share, interact, consume, and create

food-related content on Twitter. All of these tactics were discussed at length during interviews, and on the participants' own Twitter feeds. Participants proposed three distinct applications for Twitter in this context, one of which is to raise awareness about food waste through increased online discussion. Furthermore, the participants made effective use of several elements of Twitter, including the live feature and pertinent hashtags, to achieve the aforementioned goals. The primary purpose of food banks' participation on Twitter was to educate the Saudi public about the issue of food waste and to increase the latter group's level of awareness. For example, P7 from Ekram food bank said:

“National impact: The state pays a significant amount of money to food organisations. For example, the value of wheat flour can exceed 100 riyals and increases from the state account, because the state has borne its cost in order to reduce the citizen's beneficiary from its high value and to reduce its value by 22 riyals for flour, the state has absorbed more than 70 riyals, and in return finds that the citizens are wasting this flour by leaving bread and pastries in surplus food containers. This is not permissible because it is the state's capabilities that we must preserve.”

(P3) from (Ettam foodbank) consented, saying that

“Publishing horrifying data on Twitter may be a useful strategy for swaying people's opinions.”

He stated that he sees benefits when he tweets about food waste and sees that there is a lot of interest with people

(P2), who is working with Khairat food bank, said:

“We post specific data about food waste in Saudi Arabia, and I can confirm that these tweets affect people when they see these shocking statistics that show how food waste comes from them and the choices they make daily.”

It appears that the participants influenced their audience through Twitter, as evidenced by the examples given. They share details that are unavailable in any other format. They believe that the element of sharing data can motivate people to reduce food waste, which is why they have been trying to learn more about other topics through Twitter. P1 indicated,

“If foodbanks had access to this additional information, they may have been able to refine their formal strategies, boost the effectiveness of their campaigns, and increase their influence in regard to the issue of food waste.”

Ekram is using the Twitter platform to post tweets that contain shocking numbers around how much food waste costs KSA annually. This kind of tweet can generate influence or garner public attention to raise awareness of this issue (see Figure 4-7).

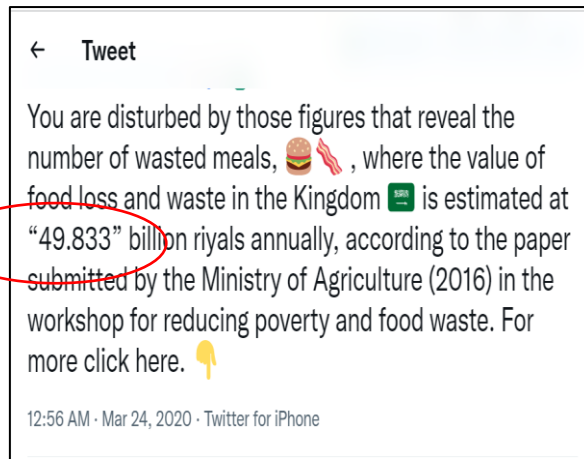


Figure 4-7 Tweet liked by followers that included factual data

4.2.2 RQ2: The themes of the second research question

This section addresses the second research question: what are the perspectives of Saudi food bank actors regarding determining the potential factors of using Twitter to raise awareness of food waste? Evidence suggests that the following kinds of content posted by food banks on Twitter proved influential because of the nature of religious communication; impactful media graphics that dramatise and increase the urgency of the situation; impact immediacy drama; community engagement; regulation and policy; and nonreligious ethics. Figure 4-8 provides visual representation of the overarching themes as well as their subthemes.

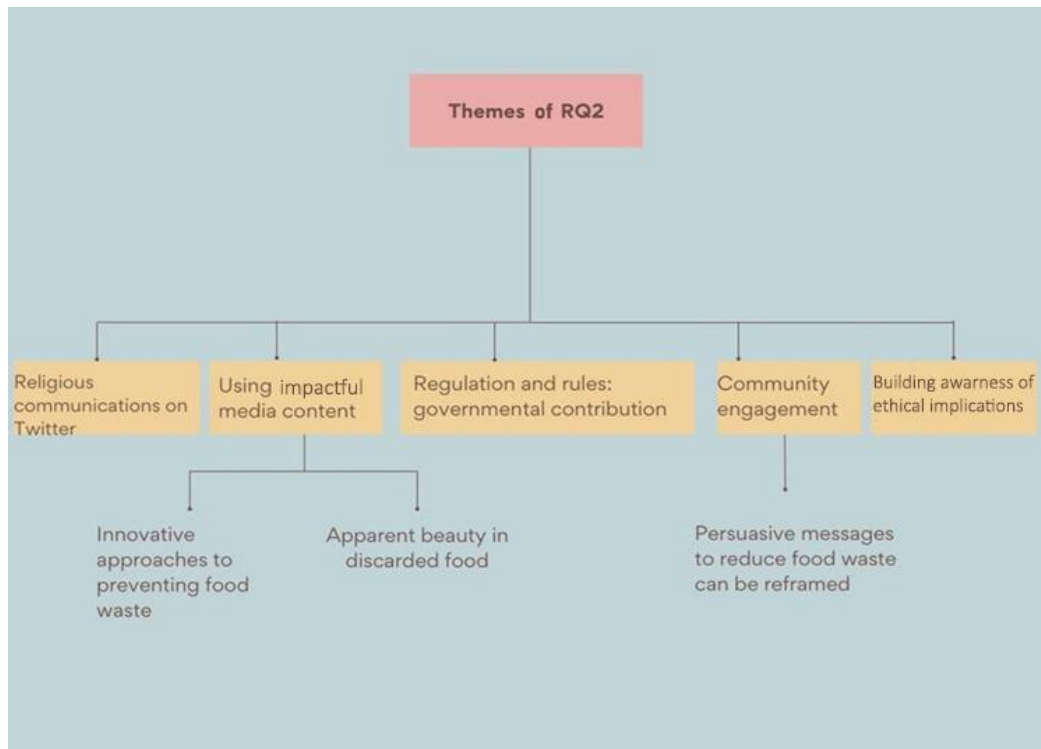


Figure 4-8 The themes and subthemes of the second research question

The research shows that people who have a strong commitment to a religion are more likely to disregard rules and regulations if they feel that they go against the teachings of their faith. This claim is supported by the evidence presented in this section. This effect can be seen in the context of the individual's use of the platform. As discussed by many participants, religious quotations and religious content should be shared on social media to create awareness among the public that it is haram³ to waste food.

Religion exerts a significant impact on human life, as it is an important factor in the development of both behaviours and attitudes (Essoo & Dibb, 2004). Religion plays a causal

³ Haram is an Arabic word that means "forbidden" or "prohibited". It is used in Islamic religious contexts to refer to actions or things that are considered sinful or against the teachings of Islam. In Islam, haram refers to those things that are explicitly prohibited by Allah in the Quran or by the Prophet Muhammad in his teachings and actions. Examples of haram actions include theft, murder, lying, and consumption of alcohol and pork. The concept of haram is an important one in Islam and is used to guide the faithful in their daily lives and to help them avoid actions that would lead to sin or harm to themselves or others.

role in various aspects of social behaviour. Delener (1994) contends that followers of a religion look to their faith for moral guidance and direction. To a certain extent, an individual's religious beliefs can assist in the formation of their personality, moral standards, social norms, and behaviours. In addition, religious beliefs and practices have a major impact on people's daily lives and worldviews (Essoo & Dibb, 2004). Religion, an individual's level of religiosity, and the type of religion practised all affect the limits of morality, thought, judgement, attitude, and behaviour, according to Cohen and Hill (2007). Further, Delener (1994) shows that people's beliefs and values are what form religious tenants, and these beliefs and values serve as guidance for how people should act. Muslims, in the largely Islamic nation of Saudi Arabia, for instance, perform the daily ritual of praying five times. All local businesses close for these prayers, even though four of them occur during normal business hours. It has become an accepted practice in society to close all businesses and postpone social gatherings, meetings, and other activities during times of prayer.

4.2.2.1 Religious communications on Twitter

Initially, certain codes from Twitter data emerged prompting a re-examination of the interviews in search of codes that were similar to those that had already been discussed by the literature in which Twitter can play a vital role because of the immediacy of the interaction of Twitter users. This study found religious communications to be a recurring theme in both the data collected from Twitter and the interviews. Further, the theme was relevant to RQ1 and RQ2.

This theme includes organisational communication through religious tweets which encouraged the public towards participating in the organisation's food saving activities. The participants of this study tweeted in a variety of different ways. For instance, some of the participants quoted the Hadith, which are sayings attributed to the Prophet Muhammad. They also included verses from the Holy Book, the Quran, in their daily tweets. Seven of the fifteen participants consistently included Quranic and Hadith passages in their posts. For example, the following religious post that FIW Saudi tweeted received 59 likes and 54 retweets (see Figure 4-9).



Figure 4-9 A profile that posts religious content

During their interview, P1 said:

“Religious danger: Allah Almighty mentioned in His holy book that a city which was safe and secure with provision coming to it in abundance from every location denied the favours of Allah. As a result, Allah made them experience hunger and fear for what they had been doing (Surat al-Bee: 16). Because of this example, we in the institution see wasting food similar to the actions of the city Allah punished in his book. Therefore, we seek to educate the people of Saudi Arabia in order to ward off punishment and gain the satisfaction of God Almighty by preserving His grace.”

Food banks in KSA posted on Twitter in two ways related to food waste. P5 from Ekram food bank explained the first method:

“We posted religious images daily because we tried to create awareness among our audience. Because this method can be affective in persuading people to change their behaviour about food waste, I always encourage my organisation to do more posts of religious content”

Furthermore, P8 from Shukr food bank explained the second method:

“We look for the most popular and beloved (Imam) religious person, among Saudi society and produce effective videos featuring him expressing how food waste is a very bad thing in Islamic religion.”

Based on the above tweets and semi-structured interviews data, arguably religious communication is considered as the most appropriate way to change public behaviour towards food, where in the public can change their behaviour around food wastage because of religious motivations. It would appear from these examples that participants utilised a variety of strategies in order to influence people on Twitter. Several participants frequently posted direct translations and excerpts from the Quran, the sacred text of Muslims. This kind

of post consistently attracted a large amount of interaction from followers. For example, the number of likes, tweets, and retweets can be counted on Twitter, which is not possible in physical interactions with people. Subsequently the number of tweets and retweets can be quantified. In addition, some participants posted tweets that cited influential religious leaders (Imam), who have the potential to influence the general public, particularly the average Saudi person.

4.2.2.2 Using impactful media content

Using impactful media content beyond words is possible because Twitter users can also share symbols, signs, pictures, and videos on Twitter, which impact others by dramatising and increasing the urgency of the situation. With impact immediacy drama, this theme specifically focusses on the type of content tweeted by organisations to engage the public in efforts to reduce food wastage in Saudi Arabia. Therefore, the focus of this theme is to analyse data that is related to content characteristics of shared information on twitter (see Figure 4-10).



Figure 4-10 Image posted by a food bank (Ekram)

It is evident from the figure above that the message is clearly communicating the issue of food waste in the country. The abundance of fresh fruit shown in the picture effectively draws the public's attention to the extent of the problem. The result was a significant response from the public. Users commonly turn to Twitter for access to a variety of multimedia materials on social topics, including tweets, website links, videos, photographs, and images. A number of respondents said that the visual images tweeted from their organisation's account raised more awareness and got more engagement from their followers. For instance, Ahmad stated that his organisation (Shukr) posted images containing

information regarding food waste. Interactions such as retweets and likes for those tweets were notably high. Similarly, Faisal stated that his organisation (Ettam) also successfully tweeted pictures demonstrating how to preserve food and avoid food waste. Doncas (2017) found that information audiences receive from images and videos enhances their understanding of important social issues. P10 provided an example, saying:

"In my organisation, we post helpful videos related to food waste."

The results of public awareness campaigns can be improved by using Twitter to share images and videos. Multimedia content, including videos, site links, and images are often shared on Twitter to comment on social issues (Lovejoy et al., 2012). Figure 4-11 shows an example of this type of video content where a person is trying to justify that how food wastage is unethical and unreligious in Islamic country. There is another element that should be considered: that this video is being shared on Twitter. So, arguably, sharing videos where the personalities of individuals are shown through dialog can make impactful changes on the behaviour of the viewers because of their shared social identity. The information shared in videos could be effective in different ways, as compared to static image content or written content shared on Twitter.



Figure 4-11 Video posted by a food bank (Flw)

The majority of organisations involved in this study took part in hashtag trends about the problems caused by food waste. For instance, Ettam food bank took part in the hashtag campaign "#Dont_Waste_Save_It", which sparked a larger conversation about ways to avoid wasting food. Another food bank (Ekram) took part in a hashtag campaign to raise awareness of the most common events at which people waste food. The month of

#StopWasteFoodInWeddings begins in the summer in Saudi Arabia, which is also the time of year when a large number of people get married.

Ahmad from Shukr food bank used the same hashtag in the following tweet: *"#Stop_Waste_Food_In_Wedding and count your guests before preparing food."*

In addition, P9 from Ettam food bank took part in a few hashtags campaigns relating to food waste. For instance, they tweeted, *"reduce the price to help poor people and be blessed by God"*, emphasising how saving food is important to the Saudi economy. The above tweet shows how Twitter is being used to discuss the food wastage as social events, for example, marriages, and at food halls where most of the food is wasted. Based on these examples, it would appear that food banks are using hashtags related to food waste in order to discuss these issues more widely and raise awareness across audiences. According to Lovejoy and Saxton (2012); Lovejoy et al. (2012) one of the reasons that non-governmental organisations (NGOs) use Twitter hashtags to discuss social issues is to engage in specific discourse and raise awareness among the Saudi public.

This public hashtag can be seen by and shared with others in a broader social setting. People make use of the hashtag in part to save and arrange digital information in preparation for its retrieval at a later time. It can also be used as a search term for data that has been filed away in particular categories. Further, perusing the most popular tags can expand audience bases and lead new users to content that is especially useful to them. As seen in the Twitter data, and also as discussed by participants, the number of tweets and retweets can attract users to read a tweet's content or watch the whole video. Additionally, participants also indicated that the metrics on social media also create a sense of reliability for the content can lead to social impact on others to adopt certain behaviour towards food waste in KSA.

Hashtags, which have recently gained popularity, are useful and powerful in sharing informative content in that it increases people's awareness of social issues and guides the way in which they interpret the information that has been tagged.

In conclusion, this section has reviewed the various methods by which Saudi Arabian food banks use Twitter to promote awareness of food waste. These methods have been broken down into three distinct classes: utilising related images, utilising effective videos, and utilising hashtags. As evidenced, food banks are employing a variety of Twitter strategies, including (but not limited to) raising awareness, presenting opinions and emotions, and promoting action. According to Bibb Latané's 1981 pre-internet Social Impact Theory, these

methods can explain the dynamics of social influence and, in the social media era focused upon in this research, can illustrate key elements of social media campaigns to reduce food waste in Saudi Arabia.

One of the earliest campaigns focussed on the value of blessings (save) in the fight against food waste, and the data showcased a wide range of inventive food preparation and storage methods, from new recipes to the use of unusual ingredients. Although recipes serve as the cornerstone of contemporary cooking, they can also lead to waste if they are strictly adhered to because they can require specialised ingredients. Leftover ingredients often go to waste when the original plan is scrapped or if the ingredient quantity exceeds the amount needed for the planned recipe. For this reason, it is recommended by the participants that consumers be less regimented in the kitchen in order to reduce food waste.

For instance, food banks like Shukre are pioneers in the development of recipes to demonstrate how food waste can be used as valuable ingredients. The group From Waste to Delicacy promoted their knowledge about disregarding specific details of a recipe and being innovative in the kitchen. P11 from Flw food bank said:

“I urge that a lack of knowledge is the primary cause of wasted food [...] Not needing to rely on recipes but, instead, being flexible can be a huge help in minimising food waste.”

Arguably, considering the above quotations, the food bank also tried to educate the public by introducing new ingredients and recipes that can lead to food wastage reduction in the country. Therefore, Twitter can arguably also be used for knowledge sharing and development among communities that could lead to food wastage reduction by increasing in knowledge about food processing. In this way, Twitter was used to promote making use of food waste. From Waste to Delicacy representatives’ ability to be inventive with food stemmed from their own history of trying new things and making do with what was available in the kitchen (McCabe & de Waal Malefyt, 2015). Because of the high level of interest in food and cooking in Saudi Arabia, this was more common in food banks there. A person's food waste could be transformed into something artistic, delicious, and practical (Fernandez et al., 2011). Bloggers not only acted as artists, but they also inspired their viewers to repurpose leftovers and come up with their own unique takes on old recipes. In addition to vlogs, links on Twitter were used to format recipe alternatives in order to inform readers on how they could save money and food by following the guidelines provided rather than following the

recipe exactly. As stated by one participant, vlogs create a very professional way for people to amplify their appearance or to commit their attention to the social matter of food waste. Some Food banks companies suggested food substitutions in tweets to inspire public to make do with what they already had rather than buying more ingredients. P3 said:

"Ignore the instructions. If you don't have to weigh, measure, or count, you don't have to. For as long as it's reasonably close. When you do, you'll know. You just go with the flow. You make do with what you can find in the cupboards. Whatever strikes your fancy. The food tastes great."

The campaign also utilised individual creativity in the media promoted on social media. For instance, followers were encouraged to invent their own waste-reduction pledge and post it on their personal Twitter accounts. Users made promises such as to not blindly obey expiration dates, making new dishes from leftovers, and using up all the ingredients they bought. These pledges were made by ordinary consumers but also by celebrities and politicians. While the pledges were personal, the pledge content was inspired by provided information provided relating to the main causes of household food waste. Thus, the content created by the campaign was in line with the causes of food waste identified in the research (Hebrok & Boks, 2017). In addition to pictures of food, people posted images containing hints for reducing food waste through innovative and creative storage solutions. In one image, for instance, a consumer bought transparent food containers, explaining that they were new "weapons" in the war against food waste. P13 mentioned that

"For example, my picture has been shared where people can see how other people are dying from hunger, I have seen that how much impact has been created by these type of pictures through creating a sense of social responsibility to create a balance of food among the people especially among people abroad, most specifically in Africa where the people are suffering and dying without food."

Sharing pictures of people suffering from hunger can create a sense of social responsibility and motivate people to work towards creating a balance of food, particularly in regions like Africa where people are experiencing starvation. Additionally, organisations that highlight the importance of food and share information about the number of people dying from hunger can evoke sympathy in people and encourage them to take action to reduce food waste and share resources with others. This increased sense of sympathy and social responsibility may extend to Twitter users, who may be inspired to reduce food waste and work towards creating

a more equitable distribution of resources. However, the original paragraph was somewhat unclear, so it is possible that there are other points that the author was trying to make.

The Waste Challenge campaign was almost entirely based on creative meanings. The campaign, organised by the foodbank FLW, aimed to challenge users to find innovative uses for food waste. Followers presented ideas on how they could use food waste as material for homemade cosmetic products such as exfoliators, body scrubs, and cover-up products for grey hair. This campaign also asked consumers to send the best tips and hints for reducing food waste.

As a result of the many visual presentation options available on social media platforms, food waste has been able to achieve a more aesthetically pleasing form. This aestheticisation in the studied campaigns was similar to “food porn” (Kozinets et al., 2017; McDonnell, 2016). It served to change people's perceptions of food waste from something that looks and tastes bad to something that can be used to feed people. According to Kozinets et al. (2017), the proliferation of online "food porn" has increased consumers' hunger because it has changed from surrendering to gluttony to something that is collectively celebrated. However, in the context of reducing food waste, it could be used, for example, to increase consumers' desire to use leftovers.

All the campaigns showcased delicious-looking dishes that were actually made from scraps or wasted ingredients. The photographs were brightly coloured, artfully staged, and the food was presented with great care. In Figure 4-12 below, we see a collection of images that were retweeted by the Ettam food bank:

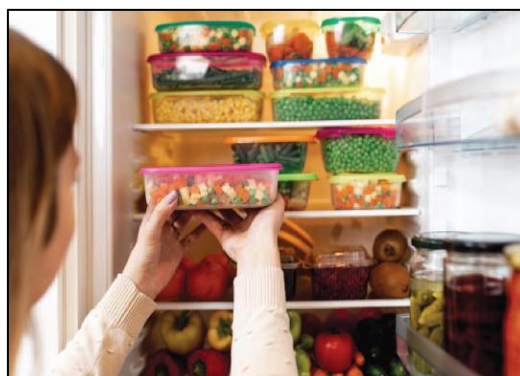


Figure 4-12 Collage of example pictures related to food waste, shared on social media

“Ugly things”, or items that are discarded, were also presented and purposefully depicted in campaigns. These could be enhanced for aesthetic purposes, but even the

common practice of presenting 'waste' on Twitter is worthy of praise. The public is accustomed to finding meaning and expressing themselves through their purchases. As a result, consumers typically use social media in order to represent themselves publicly, including their identities and tastes (Kozinets et al., 2008; McQuarrie et al., 2013). Viewed through this lens, posting a picture of one's bio-waste container online, for example, might be seen as radical. Some Twitter users shared photos of wilted or otherwise spoiled ingredients alongside photos of finished dishes. These were frequently shared as "before" and "after" images to illustrate the dramatic shift in conversation from food being considered a "waste" to a "delicacy".

For example, in the visual data, food waste, such as fruit smoothies and vegetable soup, is frequently depicted in vivid hues, communicating that, contrary to popular belief, food waste is not always drab and grey like the contents of biodegradable waste containers. In one image published by Waste Week, brown spots on damaged fruit gave way to a vibrant pink colour. This image demonstrated how waste can be transformed into something appetising. It gave a visual representation of the conceptual divide between "food" and "waste," which has been shown to play a significant role in people's decisions to throw away food, edible or not (Evans, 2012; Watson & Meah, 2012).

Due to the multisensory nature of aesthetic experiences, factors other than sight must be considered when assigning aesthetic significance to food scraps (Joy & Sherry Jr, 2003). Thus, these campaigns also made use of imagery relating to smell and taste. P15 said:

"I find that tweeting a colourful image of food waste is the most effective way to engage with other users. This kind of tweet always gets a lot of attention [...] The incredible and useful potential of people's food scraps should not go unnoticed. The technological platform, however, hampered the development of sensory experiences and meanings, as it is not currently possible to convey the tastes and smells of food directly in social media."

It is very clear from the above quotation that the organisations are trying to showcase the efforts of food preservation as very hygienic. Consequently, these types of campaigns can raise awareness and also encourage people to participate in food preservation by showing how food is being preserved and how useful it could be for people who are dying without food in other parts of the world or in the country. Therefore, it has been established that organisations are also trying to show their efforts as well as the standards and quality of the

procedures being used to preserve food which, can encourage the public to save food for organisations that are collecting surplus food.

4.2.2.3 Regulation and policy

This section specifically focusses on institutions' and organisations' roles in food waste, to help understand how regulations can also play a significant role in dealing with the issue of food reduction in KSA through Twitter content from organisations and responses from social media users. For example, P11 said the following:

“Attending extravagant events that Prince Turki does not approve of and get upset about. I wish brother Abdullah Al-Thumairy and the association's employees would act in their preventive role and change the name of the Association for Preserving Food to the Association for Combating Extravagance and consider issuing fines to the wasters. May God bless you.”

The majority of participants were of the opinion that Twitter was the leading motivator for people in KSA choosing to follow the new regulation where one Twitter user talked about the implementation of regulations and policies to reduce food wastage in KSA (see Figure 4-13). The participants' primary focus was on publishing certain policies and calling for authorities to consider banishments for wasters. Several participants reported that these posts received a significant amount of interaction from users. For instance, P1 said the following:

“We always retweet the governments tweets that relate to food waste and warn people about fines or banishments for wasters.”

In his explanation, Ibrahim, who works for the Shukre food bank, said that the organisation's Twitter feed demonstrated that they communicate on a regular basis with Saudi Arabian government officials regarding policies and regulations aimed at reducing food waste. Twitter thus broadened the scope of awareness from and discourse with the food bank, because they used Twitter as a means of communication with the general public in order to engage with and reach specific audiences (see Figure 4-13).

In addition, participants discussed how Twitter helped to amplify their voices in light of the fact that social issues have an effect on every facet of Saudi society. They also discussed the ways in which Twitter influenced behaviour, the impact of Islam and Saudi culture had an impact on them, and how Twitter, in turn, had an impact on Islam and Saudi culture.



Figure 4-13 Post from a food bank (Ettam)

It can be seen in the above tweet that the chairman of the board of directors is taking responsibility for dealing with food wastage issue in the country, and agreeing to take significant initiatives from the government side to reduce food wastage in the country. Food banks have discussed on Twitter the use of suggested communication strategies such as table cards or wall posters, to raise public awareness of options for waste reduction while still having a satisfying meal. A restaurant's menu card could include a serving size indicator, as is common practice in pizza joints, and taking leftovers home could become a more widely accepted practice. The interviews demonstrated that some individuals are hesitant to claim their leftovers, despite the fact that restaurants encourage people to pack and take home uneaten portions, including obvious waste. It was thus determined that awareness campaigns could be more effective if they ran over the course of a longer event, such as a week-long retreat or conference.

About half of the organisations that were interviewed cited raising awareness and training as two of their most important measures. The interview responses collected for this study also suggested that, in addition to internal training, public awareness creation, such as through social media, is a necessary catalyst for changing the attitudes and behaviours of stakeholders across the food sector. Organisational component or factors can also play a vital role to deal with the food waste issue. For example, participants have suggested that food-related organisations can play a role in increasing public knowledge and awareness about food waste. This can be achieved by educating the public on the shelf life of food and appropriate portion sizes. By doing so, individuals can make more informed decisions about the quantity of food they purchase, reducing the risk of excess waste.

In other words, participants believe that food-related organisations have the power to influence people's behaviour and attitudes towards food waste, and that increased awareness about food waste can lead to more responsible and sustainable food consumption habits. By working to reduce food waste, these organisations can help to create a more equitable and sustainable food system for everyone. Additionally, it has also been indicated by the participants that NGOs can play a role in changing the local social and cultural values that could lead to changes at the societal level, which is also related to the organisational factor through the involvement of the local community and religious scholars, which is being recommended by participants. While classroom instruction was rated poorly, incentives for cutting back on food waste, like awards and motivational posters by the organisation were well-received. It was proposed that regional bodies play a more significant role in engaging the public and raising awareness about the importance of reducing food waste. Because of the influence they have, there is a need for action in the form of support from authorities with resources.

As opposed to composting, anaerobic digestion and landfill disposal, which use food waste for animal feed, are more valuable options for food waste disposal with fewer negative environmental impacts than composting. Four out of the sixteen interviewed participants regularly work with livestock farms to collect food scraps, including commercially unsuitable food, to feed to animals rather than composting it. The availability of animal feed, especially from businesses that cater to tourists, tends to fluctuate with the seasons. A further difficulty is that the marketed food is not always high quality (e.g., it may be mixed with packaging materials) which can lead to increased labour costs for organic waste segregation and additionally could harm the animals.

Providers of animal feed stand to benefit from a daily, reliable, and free service for the disposal of food scraps and other refuse. Transporting goods is a costly and time-consuming endeavour, so most farmers prefer to deal with a small number of major suppliers. As indicated by participants, food suppliers can also play a role at both the organisational and individual levels. For instance, a participant suggested that restaurants should indicate portion sizes along with the calorie count for the number of people being served.

In order to guarantee the cleanliness and safety of surplus food used as animal feed, several nations have enacted rules and regulations. After the 2001 foot-and-mouth disease outbreak in the UK, which was linked to the feeding of uncooked food waste to swine, the

European Union banned the use of catering waste in animal feed as a precautionary measure in 2002.

4.2.2.4 Community engagement

Collaboration between food organisations can create a sense of community to address food waste issues in an online environment, as social media is one of the best sources of engaging a community of followers. Therefore, these organisations can also engage their followers to adopt the sustainable food behaviours in different countries (Rahmat, 2018). Companies that wish to succeed in the social media realm would do well to familiarise themselves with the most popular "influencers," or well-known figures in popular culture (such as vloggers and bloggers) who tend to resonate with and be followed by interested individuals and companies. By bringing individuals together in a dynamic environment where they can communicate with one another, social media can be an invaluable tool for receiving timely updates and collecting responses (Priya et al., 2019). Without a doubt, influencers are vital to the creation of this information flood. According to Arnaboldi et al. (2017), studying online social behaviour can help classify basic aspects of human behaviour gleaned from huge volumes of data and, in turn, create services and applications that function within this understanding. Social media data analytics is one major type of digital trace data, or a record of online digital activity (Howison et al., 2011), which represents a valuable source of data that can be collected, unobtrusively, in the same manner that city transportation cards, Fitbits, and smartphone apps are able to track and trace information. Opportunities to learn "interesting patterns about how individuals communicate online" and to "take a closer look at aspects of human behaviour accompanied by the use of digital tools" are both within reach as a result of the data left behind by digital traces (Freelon et al., 2018). Many of the quirks and intricacies of mass human behaviour can be revealed through these recurring patterns or themes (Backstrom et al., 2006).

To fully grasp the intricacies of today's technological and social systems, one must adopt a 'network mindset', which is a methodological framework for social science research that emphasises connections between variables rather than variables themselves (Senn et al., 2013). As a means of recognising the tipping points and nonlinear qualities that typically underpin the most fascinating characteristics of a techno-social system's behaviour, it is

helpful to think of society as a network and to conceptualise it as such (Vespignani, 2009). When one considers the connections between people in a network through this lens, actors and their acts are understood as interdependent rather than independent (Senn et al., 2013). Opinion creation in online discourse is an example of a system or collective phenomenon that may be studied using network thinking because of its emphasis on the relationships among its elements.

As one participant indicated, Twitter can enable communication with others more effectively and reach a wider audience. As an illustration, Ahmad from Khairat food bank noted, "I can't get in touch with as many people as I want to without using Twitter". In addition to this, Faisal from food bank (Ettam) stated, "Twitter enabled me to reach people who do not hear me in normal society". P5 described how Twitter made it possible for them to communicate with the public:

"Twitter helped us convey organisations' opinions to the public; it is a platform to the whole world."

Additionally, a number of the participants brought up the usefulness of hashtags in terms of reaching a larger audience. As an illustration, P3 stated that:

"Organisations may use Twitter to share their content with the world by using a trending hashtag in their tweets. One of Twitter's greatest strengths is that it can be used to effectively spread the word and increase visibility. It has a significant impact."

P1 explained how a Twitter hashtag helped her reach her target audience:

"Our team provided extensive material on the topic of food waste in Saudi Arabia using trending hashtags. When I learned that Saudi Arabians waste the most food in the world, it hurt. We made an effort to alter the direction of a few popular hashtags. Some of these actions, I believe, have been inspired by the prevalence of certain hashtags."

According to the evidence presented here, the use of Twitter made it possible for Saudi Arabian food banks to communicate with members of the public who would otherwise have been difficult or impossible to reach through other means. Reading posts on Twitter is possible for anyone, even those who do not have a Twitter account; these posts are called tweets. According to O'Reilly and Milstein (2011) registered users have the ability to read, retweet, and reply to the tweets of other users, regardless of whether or not they follow those users. Because of these features, individuals are able to communicate with audiences all over the world (Murthy, 2018). Murthy also highlights the fact that Twitter has the capability to

connect disparate groups from all over the world (see Figure 4.-4). Evidence from the below Twitter exchange suggests that organisations are trying to create a community to fight food wastage and to collect surplus food from the public. Additionally, there is ample evidence, as discussed above, in the content analysis that directly use the words “community” and “sense of community” to address the issue. There is evidence that organisations are trying to communicate the message that everyone is responsible for dealing with the issue, and they are trying to collaborate at the organisational, visual, family, and government levels to fight the issue as a society.



Figure 4-14 Post from a food bank (Ekram)

Recent efforts to reduce food waste through communication campaigns, such as Flw are addressing the problems pinpointed by experts and providing suggestions made to alter people's habits. As indicated by participants, and also by the data from Twitter, despite discussions about food wastage issue in Saudi Arabia, there are still increasing trends in food wastage in Saudi Arabia, which requires attention at the organisational and individual levels. Additionally, there is a lack understanding of how food waste affects society. Other studies (Jörissen et al., 2015; Quested et al., 2013) corroborate this low degree of awareness. Another recurring theme in the literature is that people consistently underestimate the quantity of edible food they throw away due to cultural norms (Evans et al., 2012). In New Zealand, for instance, over half of those considered "high food wasters" believe they throw away "little" or "very little" food (Pearson et al., 2017). Therefore, more study is needed to determine the precise impact of this ignorance.

While the empirical study supports a diverse range of motivational strategies for reducing food waste, such as "save money", "save the planet", and "save hungry people", it does not provide evidence as to the relative effectiveness of such motivations in changing

behaviour. Furthermore, many people are put in positions in which food waste may be one of the unintended consequences of important aims and choices they make (Aschemann-Witzel et al., 2015). Additionally, there is often information that is lost in translation in multilingual information campaigns. For example, the term "food waste" is more effective in campaign messages because it is fraught with ethical implications and contradicts how most people think about food and how food is consumed at the societal level. Additionally, when communicating about environmental sustainability, framing the conversation around values rather than facts has been proven to be more effective because a discussion of values appeals to peoples' emotions and avoids jargon and technical terms (Lakoff, 2010).

Individuals' mental processes are organised by unconscious frames or schemas. They aid in one's ability to process information and organise their world. As such, linking a message to the audience member's values and other familiar issues has been shown to increase the message's impact (Weathers & Kendall, 2016). The news media plays a significant role in disseminating information and shaping the public's perception of an issue's significance. Research on audiences acknowledge that the media is only one of many potential information sources from which people draw information when trying to make sense of the world around them. Social Impact Theory in particular offers a helpful framework for understanding the data in this context.

The primary challenge of instigating change when it comes to food waste lies in effectively relaying the appeal to the intended audience. Because people should not be treated as objects of manipulation if they are to be mobilised to support social change, public dialogue should instead be encouraged to allow for the emergence of potent engagement across a community (Brulle, 2010). Current food waste communication campaigns, according to the results of this study, largely consist of one-way communication generated by websites, which limits the scope of dialogue. While one-way communication provides a fantastic low-cost option for distributing a wide variety of media, proactive integration with social media platforms, such as Twitter, allows for more active engagement from viewers (as fans or followers) through content sharing, user-generated content (Flew & Wildman, 2015). As a result of similar two-way conversation methods, more complex and engaging conversations, arguments, and casual communication can take place (Picard & Sandi, 2021), leading to a more effective shift in behaviour.

People currently reside in an era of rapidly evolving information and communication technologies, which includes the digitisation of content and the convergence of traditional and emerging platforms and services (Flew & Wildman, 2015). As a result, it is important to learn how specific communities prefer to get their news and other information, taking into account whether they use wired or wireless computers, tablets, smartphones, or other devices. According to this research, not everyone is equally interested in the data that companies make available to them (Andrews et al., 2013). High food waste and those open to making a change can be identified using the food discard pathway. This will help organisations and campaigns reach the intended audience with a message that will have the greatest possible impact. People who tend to overbuy may be influenced by the idea that they will feel bad if they let perishables like fruits and vegetables go to waste. In turn, they may be receptive to the idea of enhancing their food literacy by using apps on their mobile devices, such as Big Oven, which provides recipes based on the ingredients input. In order to tailor messages to specific demographic subsets, more in-depth demographic profiles are needed, which can only be attained through continued study.

In conversations during the interviews with those involved in the food service industry, it was found that they are generally interested in implementing strategies to increase the efficiency of their campaigns (such as using economic factors to raise public awareness). As discussed by participants involved in organisations dealing with food wastage, there is less attention being paid by the organisations to developing effective campaigns to encourage the public to reduce food wastage at the national level.

Food waste is seen as a management challenge that needs to be addressed when applied to larger establishments (hotels, supermarket chains, restaurants serving international cuisine). International standards, certificates, and green awards should be given by the government to organisations to encourage the organisations to undertake more efforts. Additionally, participants have indicated that food-related organisations should be rated by sustainability efforts to create a competitive advantage for organisations that are fighting food wastage in KSA. The reported amount of food waste is directly correlated with how urgently people feel the need for a shift. Consequently, in organisations where no significant amounts of surplus food are discarded, participants did not show much potential for implementing specific strategies. While it was difficult to know where to start tackling this

issue, helpful insight from European examples proved transferrable to apply to the case of KSA.

There are a variety of interventions that can be used to help people waste less food (Abrahamse & Matthies, 2018; Stöckli et al., 2018). These strategies are not as concerned with boosting people's enthusiasm as with both keeping their goal top of mind and making it easier to achieve their goal. They range from prompts to setting an intention. Further, some strategies are more procedural in nature and provide guided steps to effectively minimise food waste (instructions), facilitate the performance of behaviours (making it easy), or monitor the impact of the behaviours to assess whether or not they are effective (feedback). The following section will assess each of these strategies.

As a helpful strategy in the movement to reduce food waste, prompts, such as signs and messages, serve as gentle nudges, urging people to change their habits. The most effective prompts are respectfully written (Stöckli et al., 2018), address a behaviour that is simple to execute, and are located close to the scene of the behaviour (Abrahamse & Matthies, 2018; Osbaldiston & Schott, 2012). Because only habits rather than overall attitudes change in response to prompts (Whitehair et al., 2013), those who have an existing intention to reduce waste will benefit the most.

The process of setting an intention to do something is similar to making a commitment, but with more specifics. By deciding when, where, and how they will put their plans into action, people set an intention to implement change (Gallo & Gollwitzer, 2007). Not everyone responds positively to the suggestion of making an "if-then" plan (Sniehotta, 2009), but for those who do, the intervention is successful (Abrahamse & Matthies, 2018; Bamberg, 2013). The strength of one's habits determines the effectiveness of implementing new intentions (Webb et al., 2009), and such intentions are more likely to succeed when accompanied by strategies designed to boost one's motivation and confidence to carry them out (Hagger et al., 2014).

In general, people appreciate being shown how to better use food so they can expand their proficiency and understanding (Von Kameke & Fischer, 2018). As a result, guidelines emphasise developing skillsets and knowledge bases that allow individuals to not only decrease food waste but also pursue other food-related goals (Stöckli et al., 2018). Meal planning (Romani et al., 2018) and food safety (Hebrok & Boks, 2017) (Närvänen et al., 2018) are just a few of the topics that can be addressed by these types of interventions. Such

instruction has been found effective when utilised alone (Romani et al., 2018) but is even more successful when paired with a variety of other treatments like commitment and prompts (Osbaldiston & Schott, 2012; Schmidt, 2016).

Altering environmental factors can help reduce food waste by making waste-reducing practises and eco-friendly actions simpler and more efficient for consumers (Osbaldiston & Schott, 2012). Although it can be difficult to implement changes in the privacy of people's homes, technological interventions like meal-planning apps, measuring cups, smart refrigerators, and other forms of improved storage equipment and packaging may help reduce food waste caused by individuals (Bucci et al., 2010; Hebrok & Boks, 2017). Further, individuals can implement small adjustments in their homes to enact a desired behaviour without dramatically altering their lives and habits. Remarkably, people can be influenced to act in this way even when they are not specifically motivated to make large changes (Von Kameke & Fischer, 2018). Changes by retail establishments, on the other hand, such as providing products in the right sizes and at the right prices, extending the freshness of perishable goods, or making larger packages more accessible, could aid in reducing food waste on a larger scale (Reisch & Zhao, 2017). According to Von Kameke and Fischer (2018) these altered treatments for food waste have not yet been thoroughly studied. Even so, suggesting simple methods for food waste avoidance may already assist in reducing food waste without such technical adjustments (Birau & Faure, 2018).

4.2.2.5 Building awareness of ethical implications

This section includes information posted by the organisations on social media focussing on raising awareness of the ethical implications around food wastage. Participants have indicated that most of the organisations that offer food, like restaurants, should also be responsible for social issues. Food banks play an important role in reducing food waste and providing meals to those in need. However, the issue of food waste at food banks remains a concern and requires attention. Raising public awareness about this issue through social media platforms such as Twitter can help to bring attention to the issue and encourage action to address it. Figure 4-15 provides further evidence of the need for attention around this issue and highlights the importance of addressing food waste at food banks in KSA. However, the

focus of this content is not on religious ethics; instead, this type of ethical content is very universal in nature.



Figure 4-15 Post from a food bank (ShukrAseer)

As is very clear from the above figure, the organisation is trying to take a global approach that is more ethical to encourage the public to reduce food wastage. The tweet shares how many people globally have died because of hunger which is a more ethical approach. Sharing the number of people who have died from hunger is considered a more ethical approach because it brings attention to the human toll of food waste. Hunger is a serious issue that affects millions of people globally, and food waste exacerbates the problem by reducing the amount of food available to those in need. By highlighting the number of people who have died from hunger, the figure emphasises the ethical implications of food waste and the need for action to reduce it. An ethical approach to reducing food waste not only addresses the environmental impact of food waste but also takes into consideration the social impact of food waste. By bringing attention to the human toll of food waste, the figure encourages the public to take action to reduce food waste and to ensure that food is available to those who need it. This type of approach is more likely to inspire action and to create a sense of shared responsibility for addressing the issue of food waste.

It has also been discussed in the content analysis that some organisations suggest that people buy preserved and stored food to help food wastage reduction in the country and

also aid other people in the world who are dying from hunger. Additionally, participants have also attempted to communicate with food-selling organisations. They created incentives at the organisational level to send messages and raise awareness among followers to purchase the correct quantity and quality of food, which can lead to a reduction of waste in Saudi Arabia. The data revealed a pressing concern regarding the morality of wasting food. According to Zaid at FLW food bank, most people got involved in the campaign because they felt enacting change around food waste and its environmental consequences was the morally right thing to do.

A number of researchers have proposed that Instead of imposing a moral nature on consumer behaviour and invoking guilt (see Figure 4-16). campaigns should focus on more positive ethical connotations (Aschemann-Witzel et al., 2017; Gjerris & Gaiani, 2013; Hawkins, 2001). As a result, commercials' ethical undertones were linked to greater enjoyment of food. Members of From Waste to Delicacy shared their experiences of how producing and cooking their own food heightened their love for it.



Figure 4-16 Post from a food bank (FLW)

The above tweets are ethical in nature and show children who are happy and grateful for the food they have received, as a result of surplus food being saved in different countries. This highlights the importance of reducing food waste and the positive impact it can have on children and communities. The tweets depict children who are joyful and appreciative of the food they have received, which is a result of efforts to save surplus food in different countries. This serves to emphasise the significance of reducing food waste and the positive impact it

can have on communities and children. The ethical nature of the tweets helps to bring attention to the human toll of food waste and to inspire action to reduce it.

Three of the interviewees reached an unexpected consensus, citing the same religious source. They stated that the Prophet Muhammad (peace be upon him) promoted the distribution of surplus food as a solution to both food waste and hunger. This agreement highlights the religious significance of reducing food waste and the importance of addressing this issue. Further research could be conducted to explore the historical and religious context of this citation and its relevance to current efforts to address food waste and hunger. This type of research could provide valuable insights into the religious and cultural aspects of food waste and help to inform efforts to reduce it. In the course of the interview, P7, P8, and P10 stated:

“If you have an extra amount, give it to someone who doesn't, and if you have extra food, share it with someone who goes hungry. He listed many forms of property until we started to feel that we were not entitled to anything extra.”

The above quotation highlights the importance of incorporating religious values in efforts to address food waste. It suggests that the Prophet Muhammad encouraged the saving of surplus food to feed the hungry and reduce food waste. The quotation refers to the importance of considering religious values in efforts to reduce food waste. The citation suggests that the Prophet Muhammad encouraged the distribution of surplus food as a way to address both food waste and hunger. Food waste could be addressed with more seriousness through religious aspects that could work well as compared to the education aspect; this cannot be ignored, as every aspect of dealing with food wastage in KSA is vital due to the fact that food wastage is deeply rooted in social and cultural values. Therefore, religious aspects could be the most appropriate to encourage people towards food sustainability in KSA, not only due to tangible, practical reasons but also because of the deeply unethical implications. Food waste is a product of much of the environmental destruction prevalent in society. It is also a fundamental injustice that so much food is wasted while so many people go hungry. Organisations running food banks in KSA have stated in interviews and in their own strategy outlines that the moral and ethical concerns related to sustainability issues resulting from food waste are the primary drivers of volunteerism. P3 said:

“Food waste is a problem that needs to be addressed on a global scale; we simply cannot afford to spend so much money producing food that no one ends up

eating. In the end, all the time, effort and resources invested in its production amount to nothing. As far as I'm concerned, lighter needs to be shed on this subject."

The Waste Challenge campaign's initial call to action included an appeal to consumers' morals, specifically referencing habits of not wasting food that were instilled in them from a young age. For example, P6 said

"Earlier on in my life, I learned the hard way that it's not acceptable to waste food. You had to eat whatever you put on your plate. Did you know that every year, we Saudis throw away about 400 million tonnes of perfectly good food? It means that roughly 15% of all food produced is wasted."

The above quotation suggests that promoting an ethical approach to food consumption can reduce food waste. This approach could encourage people to only buy and consume the amount of food that they need, rather than wasting food due to excessive resources. By creating a sense of ethics around food consumption, this approach can help to reduce food waste and promote more sustainable and responsible use of resources.

Several scholars, however, argue that campaigns should focus on more positive ethical meanings rather than moralising consumer behaviour and exploiting consumers' sense of guilt (Aschemann-Witzel et al., 2017; Gjerris & Gaiani, 2013). As a result, campaigns' ethical connotations have been intertwined with morally neutral messages about appreciating food. During their advertising campaigns, KSA food banks stressed the importance of teaching people how to grow and prepare their own food. P2 said:

"I believe that preparing meals at home is a great way to save money and avoid wasting food. And by this, I mean that the value of food increases if you go to some trouble to prepare it or if the food itself has some intrinsic worth."

One participant from a food bank (Ettam) explained that the ability to buy directly from farmers gave the food a higher perceived value than "orange protein-filled food packaged in protective gas from a huge supermarket". This demonstrates an obvious scale of moral value from "lesser" to "greater" foods. Another P3 characterised the family's outlook as "positive toward using up waste". He said:

"As a family, we have a very pro-waste-reduction outlook on food. We are extremely thrifty with our money, and we also hate to waste food or time in the kitchen. In a similar vein, we find practical applications for the animal's internal organs and other less obvious parts. To us, it only makes sense to get the most use out of the animal that has been slaughtered specifically for our consumption. Even though meals made from scraps don't always taste like gourmet fare, they can still be quite tasty."

Additionally, Porpino et al. (2016) proposed that campaigns to reduce food waste could appeal more to consumers in caregiver roles if they emphasise the financial benefits of doing so. P6 from a food bank (Ekram) said:

“To offset this, I eat out much less and am very careful to not waste food, but I have no problem spending more money on higher-quality ingredients. With the money they throw away each year, a family of four could go to the movies eight times, go to an amusement park three times, or take a spa vacation once.”

As demonstrated in the previous quote, consumers who took part in the study often explained their resolve to reduce food waste by saying that it was something they had been taught in their families growing up. For example, P8 said:

“My mom is the best food waste killer ever; no, really. She is a huge inspiration to me and has a special place in my heart because of all the good she has done for me and the world. In my circle of friends, there is no one else quite like that. She's so amazing that it's almost funny how she carries herself. When she boils carrots, she uses the water to make bread rolls. All praise to her! [...] When the ‘From Waste to Delicacy Campaign’ was introduced, the topic of waste reduction was not novel to me. I can't remember a time in my life when it wasn't a problem, I was aware of.”

The above quotation offers ideas for saving money and preventing food waste; another participant suggested that it is a good idea to make meals at home. The effort put into preparing food, or the value of the meal itself, both contribute to its overall value. A volunteer with Ettam food bank said that the chance to buy directly from the farmers increased the value of the food compared to "orange protein-filled food sealed in protective gas from a giant shop". There is a clear gradient of moral worthiness from "lesser" to "higher" foods here. As a family. As another member put it, the public mindset is positive towards utilising waste. People try not to spend time or money in the kitchen, and are notoriously frugal. In a similar vein, functional roles for animal's anatomy were discovered. It can be seen that there is no reason not to make the most of the animal that has been killed for a meal. Meals prepared from leftovers are not always as delectable as restaurant-quality meals, but they still taste good.

The above quotations also highlight that the monetary benefits of reducing food waste in public awareness efforts can pique the interest of consumers with caregiver responsibilities. As one food bank client (Ekram) representative explained, he minimises food waste by eating in more often and throwing away less, but he has no difficulty paying more for fresher, higher-quality items. A family of four could see eight movies, make three visits to an amusement park, or take one trip to the spa with the money they waste every year (Zheng

& Zhang, 2013). The data also revealed an intriguing trend. Ethical aspects were not always obvious in the online textual or visual data. The symbolic meaning of appreciation or the ethics of food was often overlooked in pictures and captions that focussed on the food waste itself. However, interviewees' willingness to combat food waste was heavily influenced by ethics, food appreciation, and a sense of "doing right", as reflected in the interview data. These ideas propelled the movement to reduce food waste, and it was disseminated in a non-confrontational manner through uplifting messaging, such as tasty recipe recommendations that make efficient use of ingredients. In the words of P9:

"My impression is that people are becoming more concerned about this issue [lessening food waste]. [...] Because I take a pragmatic approach to problems, I don't think it will help to keep recording the fact that 'now X kilos of food goes to waste' every year. Then I had the idea that we could take a more constructive tack by actively seeking out realistic ways to cut down on wasted food."

The study revealed that reducing food waste has many positive impacts on society, creating positive values that promote healthy lifestyles and reducing the social burden on people to provide food for various events. As a result, campaigns to reduce food waste should focus on positive reinforcement, such as expressions of appreciation and respect, instead of solely relying on guilt.

Waste materials are rarely featured or discussed in online media (cf. Comber and Thieme, 2013). The internet may open up new spaces for environmental discussion, leading to more responsible consumer habits and civic engagement (Rokka and Moisander, 2009). These studies argue that social media could be the best choice for organisations fighting to reduce food wastage at the national level. Consequently, an effective campaign would be a powerful tool to create awareness among the public to reduce food wastage. Creative consumption practices that aestheticise⁴ waste and prioritise more positive moral considerations could inspire people to reduce their own food waste.

Sharing images of daily life on social media is one way in which private habits and behaviours become publicised and what was otherwise invisible becomes noticed. As such,

⁴ Aestheticise refers to making food waste reduction practices and habits more aesthetically pleasing and appealing. This might involve using creative methods to reduce food waste, such as repurposing leftovers into new and visually appealing dishes, or using aesthetically pleasing storage containers to keep food fresh for longer. The goal of these practices is to encourage people to be more mindful and responsible in their use of food resources, by making it enjoyable and aesthetically pleasing to do so. Making food waste reduction practices more aesthetically appealing can help to encourage more widespread adoption of these habits and lead to a reduction in food waste.

prior studies have theorised how blogs help consumers gain social and cultural capital, establishing them as opinion leaders (McQuarrie et al., 2013). In the context of food waste, this phenomenon opens up the possibility that bloggers and other opinion leaders could act as consumer-citizens inspiring others to adopt more sustainable consumption practises. In addition, Rettie et al. (2014) suggested that normalising sustainable consumption practises by showing celebrities and authority figures engaging in such practises could be effective for instigating change among the wider public.

In all of the campaigns that were analysed, consumers consistently took part in dialogue. This shift from experts, who have represented the traditional campaign leaders, to consumers exemplifies a bottom-up rather than top-down approach to changing people's consumption habits. Instead of a one-sided lecture about the importance of reducing food waste, people could share their own thoughts and experiences on the topic, providing a visual representation of how they practically and realistically dealt with the issue in their daily lives.

New symbols, such as campaign hashtags on Twitter or tags in blogs, represent positive connotations about food waste in online spaces. According to Haider (2016), hashtags could connect content made on various social media sites, making it simpler to discover and build a community around the issue of sustainability. Similarly, the use of hashtags in campaigns allows a broader scope of people to participate. In addition, participants can decide for themselves on what platforms and in which spaces they want to join the conversation, such as on companies' or campaigns' websites, their favourite food blog, or their own Instagram accounts. The end result is an effective means of joint communication between team members.

In order to change their eating habits, people must first be persuaded that their habits are unhealthy. As a result, several experts have launched initiatives to raise public understanding of the actual cost of food waste. It is important to set goals, but there are other ways to motivate people to do so (Abrahamse & Matthies, 2018; Stöckli et al., 2018). Efforts to reduce food waste can appeal to people's emotions (emotional appeal), change the social norms that govern people's food waste behaviours (social influences), or otherwise raise awareness of the problem (commitment). There is also regulatory reform, which is a different type of intervention to affect behaviour (prevention).

The use of informational strategies in particular campaigns is common among practitioners who are trying to get people to waste less food (Stöckli et al., 2018). These

efforts aim to educate the public about both the costs of food waste (such as the negative effects on the environment) and the advantages of taking preventative measures. Waste reduction is a secondary goal of the education programmes that raise public awareness of the issue. While knowing about a problem and caring about it are crucial components of altering one's behaviour (Klößner & Blöbaum, 2010); they rarely suffice in isolation to instigate change (Abrahamse et al., 2005; Osbaldiston & Schott, 2012). Because informed people are already worried about the consequences of food waste, focussing only on spreading further knowledge about the situation is unlikely to make much of a practical impact. Combining informational campaigns with other interventions, including commitment and prompts, can boost their efficacy (Stöckli et al., 2018). These supplementary measures encourage individuals to prioritise reducing food waste over competing objectives. Customising the message for a particular demographic can further boost its efficacy (van den Broek et al., 2017). Those who place a high value on environmental sustainability are more receptive to hearing about the environmental benefits of reducing food waste than those who emphasise the financial benefits (van den Broek et al., 2017).

Instead of presenting facts about a topic to persuade people to care and act, campaigns often appeal to significant topics to persuade people to care and appeal to people's emotions to move them to act (Peter & Honea, 2012). One study suggests that feelings of guilt or embarrassment may serve as a motivator for reducing waste (van Geffen et al., 2016). While motivating individuals to stop wasting food by appealing to their sense of right and wrong may seem like a viable strategy, this strategy should be used with caution not only due to the risk of retribution but also because hope and pride are equal or perhaps stronger motivators for change (Russell et al., 2017; Wonneberger, 2018). However, appealing to one's sense of guilt can be useful in cases where an individual who cares about the issue (Wonneberger, 2018) has not yet adopted the desired behaviour or among people who do not care about the issue (Peter & Honea, 2012). Guilt appeals tend to be ineffective once the behaviour has been executed (Russell et al., 2017). In these cases, optimistic appeals tend to have a greater impact (Peter & Honea, 2012). It is possible that the lack of empathy shown by those who waste food is a result of psychologic self-protective mechanisms (Agrawal & Duhachek, 2010). When faced with distressing feelings, people often take immediate action to calm themselves (Birau & Faure, 2018). Concerning food waste, Birau and Faure (2018) recently confirmed this by showing that guilt appeals proved ineffective for

people who expressed minimal concern about food waste. In fact, placing the blame on the consumer conversely reduced emotions of guilt and decreased waste reduction efforts, leading to higher overall waste levels (Birau & Faure, 2018).

Increasing goal setting through social influences is one method of intervention that has shown promising results. On the whole, people can be encouraged to engage in environmentally friendly practises if they believe that those standards are consistent with the actions of others (i.e., descriptive norms) (Osbaldiston & Schott, 2012). Since people tend to conform to social norms determined and practised by those around them, it stands to reason that they would be more motivated to limit their waste production if they believed that their peer group was also doing so (van Geffen et al., 2016). In this case, social influences can be particularly important in normalising waste-prevention practises and reinforcing certain positive behaviours. This normalisation can be accomplished by the use of words, pictures, or examples by role models (Klöckner & Blöbaum, 2010). While practitioners have begun using this intervention method, there have been no evaluations to determine its efficacy in reducing food waste in homes (Canali et al., 2016).

A commitment is a (public) promise to alter one's behaviour. In particular, when commitments are public and specific (Klöckner & Blöbaum, 2010), this intervention has been proven to be relatively successful in modifying behaviour due to the sense of accountability from those who witnessed the commitment (Abrahamse & Matthies, 2018). Food waste can be reduced through a combination of dedication and informative interventions (Schmidt, 2016). As each person must make individual and personal commitments, this type of intervention can be particularly expensive, explaining why so few clinicians have adopted this approach to date (Stöckli et al., 2018).

Trying to alter the existing set of risks and benefits associated with food waste and food waste prevention through institutionalised regulations is another option for improving motivation to lower food waste levels (Hebrok & Boks, 2017). This tactic has the potential to raise awareness about the issue of food waste, which may lead to more individuals prioritising their own waste reducing efforts. For example, separate food waste (organic waste) collection can alter the benefits and drawbacks of food waste prevention, Separate food waste collection, which involves the dedicated collection of organic waste, can have various effects on the benefits and drawbacks of food waste prevention. On the positive side, it allows for efficient resource recovery, such as the production of compost and biogas. It also reduces the

burden on landfills and helps conserve valuable resources. However, implementing separate food waste collection systems may pose challenges in terms of infrastructure and cost, and ensuring the collected waste is free from contamination can be difficult. The specific impacts of separate food waste collection can vary depending on the context and specific considerations of each situation.

Additionally, implementing (monetary) sanctions for excessive food waste might amplify the negative effects (Jereme et al., 2018). Further, subsidies, special privileges, and recognition are all mandated ways to maximise the benefits of decreasing food waste (Reisch et al., 2013).

4.3 FRAMEWORK FOR PROMOTING FOOD WASTE AWARENESS AMONG THE SAUDI PUBLIC

The development of the Alkorbi framework for the use of Twitter in reducing food waste in KSA provides a practical and evidence-based approach for organisations and individuals looking to address this important issue. By leveraging the strength of credible sources, the immediacy of the message, and the numbers of individuals promoting the message, this framework can create a social impact on the public to reduce food waste and change their behaviour. The Alkorbi framework takes into account the cultural, social, and family factors that contribute to food wastage in Saudi Arabia, and provides specific strategies for social media campaigns targeting food waste behaviour. This framework can be a significant contribution to the field of food waste reduction, and can assist in the development of more effective strategies to combat food waste in the future. It is a valuable tool for organisations and individuals to effectively implement Twitter-based food waste awareness campaigns, and has the potential to influence social attitudes and behaviours among the Saudi public towards the issue of food wastage in the country.

The outcome of this study is to connect awareness research with the concepts of strength and immediacy in social impact. By examining the role of strength and immediacy in changing individuals' food waste behaviours, this research seeks to provide insights into best practices for reducing food waste through social media campaigns. Strength is typically associated with the credibility of the source, with more prestigious individuals or organisations seen as more authoritative and thus more likely to influence behaviours. Immediacy, on the other hand, refers to the proximity or closeness of the source to the target

audience. A source that is close or present to the target audience is seen as more immediate and thus more impactful. The study also takes into account the role of routines in explaining food waste behaviours. It is proposed that food waste is not just a result of external stimuli but is also influenced by food-related routines that are embedded in the household food provisioning process. By changing individuals' routines, this research aims to reduce food waste and promote waste-reducing behaviours. Finally, the study recognises the influence of self-efficacy on food waste behaviour. Consumers' self-confidence and competence in food-related tasks have a direct impact on their likelihood of reducing food waste. By considering these factors, the study aims to provide a comprehensive understanding of the role of strength, immediacy, routines, and self-efficacy in reducing food waste.

The framework could be used by food banks and other organisations working to reduce food waste in Saudi Arabia, providing them with a roadmap for developing and implementing effective social media campaigns. This could help organisations to more effectively engage with the public, raise awareness of food waste, and encourage behaviour change. The framework could also be used by other organisations in other countries looking to address food waste, providing them with a starting point for developing their own social media campaigns and strategies. The significance of the contextual framework lies in its ability to provide a tailored approach to reducing food waste through social media, based on the specific context of Saudi Arabia. By taking into account the unique cultural, political, and social factors at play in the country, the framework is likely to be more effective than generic approaches that may not be well-suited to the local context. By providing a clear, step-by-step approach for organisations and individuals looking to address food waste, the framework has the potential to make a tangible impact on the issue, both in KSA and beyond.

The use of a systematic or contextual framework in research can provide a step-by-step guideline for selected organisations to develop an effective Twitter campaign to reduce food waste in Saudi Arabia. However, the research can also go beyond this by exploring and analysing the effectiveness of existing Twitter campaigns related to food waste in Saudi Arabia, identifying their strengths and weaknesses, and proposing recommendations for improving future campaigns. Additionally, the research can examine the cultural and social factors that contribute to food waste in KSA and explore the potential impact of these factors on the success of Twitter campaigns. By taking a broader approach, the research can contribute to a better understanding of the complex nature of food waste and the role that

social media can play in addressing this issue. Consequently, using the aforementioned Social Impact Theory and the findings of this research, a contextual framework will be created to help answer the third research question.

Social Impact Theory suggests that a change in behaviour can be brought about by the influence of others in a person's social network (Latané & Darley, 1970). This theory highlights three important factors that can contribute to the strength of social influence: strength, immediacy, and numbers. Strength refers to the power of the influencer, such as the credibility and expertise of the source. Immediacy refers to the proximity of the influencer, such as the physical proximity of the influencer to the individual being influenced. Numbers refer to the number of influencers, as a larger number of influencers can increase the perceived social norm and pressure to conform (Latané & Darley, 1970).

Social Impact Theory posits that the strength, immediacy, and numbers of the sources of influence impact an individual's behaviour change. In the context of this research, Social Impact Theory is relevant in that the communication strategies of Saudi food banks on Twitter can be designed to utilise these three principles to create a social impact and change public behaviour regarding food waste. By presenting factual information, specific event information, religious communication, community engagement, communication of regulations and government policies, the sources of influence become stronger, more immediate, and numerous, increasing the likelihood of behaviour change.

For example, by partnering with religious leaders and creating religious-themed educational materials, the source of influence becomes stronger as the religious leaders hold power in the community. By using Twitter to share information about food donation programmes and events, the source of influence becomes more immediate as it is directly accessible to the public. By collaborating with multiple organisations and using Twitter to build a community around food waste reduction, the number of sources advocating for change increases. In this context, Social Impact Theory provides a useful framework for understanding the potential effectiveness of using Twitter as a tool for reducing food waste. By considering the strength, immediacy, and numbers of the sources of influence, the communication strategies of Saudi food banks can be designed to create social impact and change public behaviour. The significance of this contextual framework lies in its potential to provide a roadmap for effectively reducing food waste in KSA through behavioural change.

This model firstly shows the features of Social Impact Theory, which are strength, immediacy, and number, and then indicates how these elements are influenced by the seven themes outlined in the qualitative interviews (i.e., presenting factual information; community engagement; religious communication; highlighting regulation and policy; promotion of special events; and the raising of ethical issues). The model demonstrates how the Saudi public has interacted with the various themes on Twitter. As discussed, Social Impact Theory suggests that social influence, or the extent to which an individual's behaviour is affected by others, is a function of three elements: strength, immediacy, and numbers (Latané, 1981). In the context of this research, the strength of the influence on the Saudi public's behaviour towards reducing food waste can be measured by the credibility and expertise of the sources promoting the message, such as food banks, religious leaders, government agencies, and organisations working on food waste reduction. The immediacy of the influence can be measured by the proximity and urgency of the message, such as educational materials, religious events, and community activities related to food waste reduction. The numbers of individuals promoting the message can be measured by the reach and visibility of the messages on Twitter, such as the number of followers, retweets, and likes.

The contextual framework developed based on the research results will be helpful for food banks and organisations in KSA to effectively implement Twitter-based food waste awareness campaigns by utilising these three elements of Social Impact Theory. By leveraging the strength of credible sources, the immediacy of the message, and the numbers of individuals promoting the message, organisations can have a social impact on the public to reduce food waste and change their behaviour. The significance of this contextual framework is that it provides a practical and evidence-based approach for organisations to use Twitter as a tool to create social impact and make a tangible difference in reducing food waste in Saudi Arabia.

The contextual model can be used as a tool for guiding future efforts to reduce food wastage in Saudi Arabia. By identifying the most effective communication strategies and the factors that contribute to food waste, organisations can tailor their campaigns to target specific populations and create lasting change. Furthermore, the model can be used to track the impact of these efforts over time and make necessary adjustments to ensure that the goals of reducing food wastage are met. So, arguably, the contextual model provides a valuable resource for organisations and stakeholders to address the food wastage crisis in

Saudi Arabia. By considering local factors and the impact of communication strategies, the model can help change people's daily habits and choices, ultimately leading to a reduction in food waste and the creation of a more sustainable future.

To develop an effective social media campaign, one must first understand the local, cultural, social, familial, and external factors that influence food wastage. Therefore, the research found that normalised patterns and shared attitudes inform the social practices of food wastage. For example, in Saudi culture, certain foods have a prestigious status, acting as a social symbol and a way of communicating (Al-Faris, 2017). It was previously discussed, how different types of content is shared on Twitter and how people respond to different types of content on Twitter. Furthermore, familial factors, including the number of people in the family unit, what they eat, how they eat, and who does the shopping, are all key factors in forming personal food wasting habits. In conclusion, external cultural and social factors influence food wastage patterns in the country and can conversely shift to normalise social behaviours that reduce food waste (Zainal & Hassan, 2019). As demonstrated by the following quotations, participants identified that the local culture in the country is deeply rooted in food waste, with events such as weddings and religious events promoting food waste as a social value. For example, the common practice of excessive food preparation and waste at weddings and social events such as Eids (the Islamic festival of Eid al-Fitr, which marks the end of the holy month of Ramadan, and Eid al-Adha, which celebrates the willingness of the prophet Ibrahim to sacrifice his son as an act of obedience to God which were frequently discussed by participants).

As discussed by P1:

"I believe that food wastage is deeply rooted with our culture because we offer different types of food to different types of guest, in respect of the guest."

P5 said:

"There are different types of dishes and people become addicted to having different dishes on different occasions that lead to food wastage in Saudi Arabia."

Figure 4-17 is a result of the researcher's own analysis and interpretation of the contextual framework. It serves to provide a clearer and more organised understanding of the framework's components and their relationships to each other.

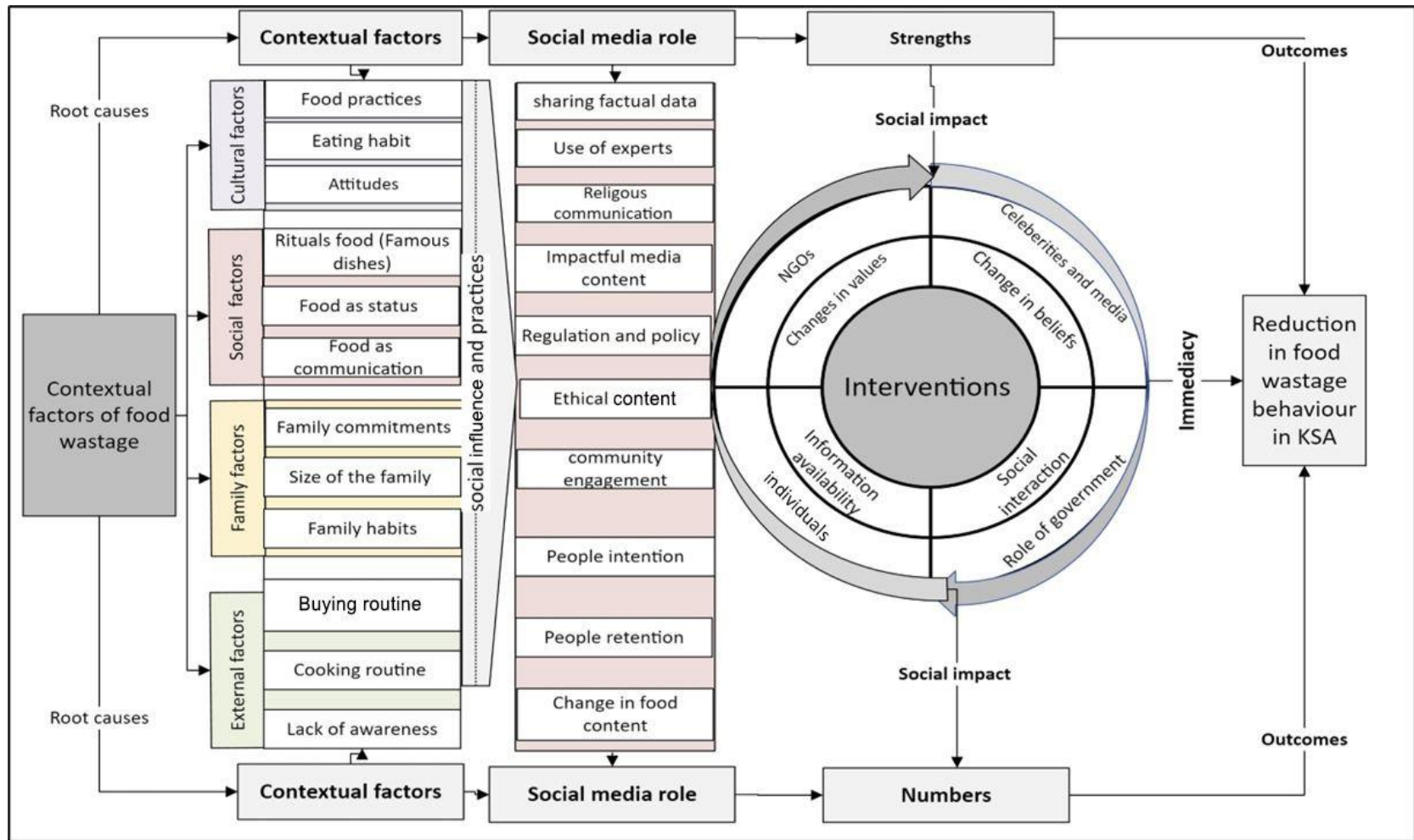


Figure 4-17 Alkorbi's conceptual framework (2023)

The framework that has been developed is a valuable tool for organisations working towards reducing food waste in Saudi Arabia. It consists of four major stages that address the contextual factors of food waste. The first stage identifies the cultural, social, family, and external factors that contribute to food waste behaviour in Saudi Arabia. The second stage acknowledges the role of social media in dealing with these contextual factors, specifically through religious communication, factual information sharing, and humour. The third stage highlights the importance of strength and numbers in creating social impact on the public. By working together, celebrities, media, NGOs, individuals, and the government can increase the quantity and quality of content related to food waste on social media, which could lead to a reduction of food waste at the national level by increasing the immediacy of social media interaction. The fourth stage of the framework shows the immediate impact of social media interaction in reducing food waste.

As previously discussed, Social Impact Theory, developed by Latané (1981), explains how an individual's behaviour is influenced by the behaviours of those around them; this research argues that social media can play a role in this influence. The study also takes into account the role of routines, self-efficacy, and the involvement of stakeholders in reducing food waste. By considering these factors, the study provides a comprehensive understanding of the role of strength, immediacy, routines, and self-efficacy in reducing food waste. The framework provides a step-by-step approach to creating a social impact on the public and changing their behaviour towards food waste. By taking into account the cultural and social practices, family habits, and external factors that contribute to food waste, the framework provides a comprehensive understanding of the problem and the ways in which it can be addressed. The involvement of various stakeholders, including celebrities, media, NGOs, individuals, and the government, is crucial to its success.

The government can use its resources to increase the availability of food waste content on social media and create awareness campaigns to educate the public about the importance of reducing food waste. Studies have shown that the dissemination of information through multiple sources can increase social influence and credibility. Individuals can also play a role in reducing food waste by making small changes in their daily routines and sharing their experiences on social media. Celebrities and media can use their influence to spread awareness about food waste and promote sustainable practices. The availability of

information from multiple sources, the role of individuals on Twitter, and social interaction on the platform can create a change in values and beliefs to reduce food waste behaviour. The framework developed for reducing food waste in KSA takes into account the cultural and social factors that contribute to food waste and the role of social media in creating social impact on the public. The framework also recognises the importance of regulations and policies at the organisational level, such as training for employees and NGOs, and a nudge-based behavioural intervention to decrease food waste. Overall, the framework emphasizes the role of immediacy, strength, and numbers in creating a social impact on food waste reduction.

Regarding the connection between food, culture, and identity, food is not only a source of nutrition but also a reflection of people's ancestral background, cultural practices, and religious beliefs. In Saudi Arabia, for example, families play a significant role in shaping eating habits and the food they eat together is central to their cultural identity. The provision of food is a fundamental element of religious rites, and many cultures have dietary restrictions based on religious laws. Elshaer et al. (2021) suggests that religious beliefs and cultural practices have a strong impact on people's food choices and habits, which can influence their views on food waste. The study concludes that in order to reduce food waste, food organisations should take into account the cultural and religious significance of food and educate the public about the importance of reducing food waste. The impact of religious content on people's behaviour towards food waste is also noted, suggesting that religious messages could be a powerful tool in promoting food waste reduction (Elshaer et al. (2021).

Culture has a significant impact on food consumption and mealtime etiquette, including the type of utensils used, table manners, and meal presentation. Food culture is also central to social and religious rituals, and the symbolic value of food can vary greatly across different cultures and communities. In Saudi Arabia, offering a large meal is considered a symbol of social status, which contributes to the high levels of food waste in the country. The primary aim of a social media campaign on food waste is to generate social impact on local Saudi people towards reducing food waste by promoting awareness and education about food waste reduction methods, including tools and preparation, surplus and waste, cold storage, shelf life, and government policy. However, changing cultural values to give more importance to food saving over food waste as a symbol of social status may be necessary to effectively reduce food waste in the country.

In terms of the ways to reduce food waste in the home and its connection to Social Impact Theory, using technology such as intelligent refrigerators and modifying packaging can preserve food. Researchers have also noted that raising awareness through media campaigns and educational materials can play a crucial role in reducing food waste. Other interventions such as door-to-door visits and personalised information on food waste reduction have also been tested. A study by Jagau and Vyrastekova (2017) found that a nudge-based behavioural intervention, such as sharing data on food waste reduction actions, could help decrease food waste at university cafeterias. The study also highlights the importance of "signal triggers" and perceived behavioural control in changing behaviours. The authors suggest that social media can play a role in raising awareness about food waste and that regulations and policies are needed at the organisational level, including training for employees and NGOs.

The idea behind Social Impact Theory is that an individual can be influenced by a group as a whole through interaction on social media sites. Social media campaigns aimed at reducing food waste can be successful if they use influential sources like experts, celebrities, media, and NGOs to create awareness and change attitudes towards food waste. Social impact theory also recognises that influence is a two-way street, not just one-way. The focus should be on creating social impact to reduce food waste through a combination of information dissemination and collaboration among different stakeholders.

In the context of food waste reduction, Social Impact Theory suggests that the cumulative impact of multiple sources is greater than that of any one source acting alone. This idea is supported by various studies that have shown the greater impact of a group delivering the same message compared to an individual (Kapoor et al., 2018). The number and diversity of sources, such as organisations, NGOs, individuals, and celebrities, that are talking about the issue are important in creating a successful awareness campaign. However, the sources must present convincing evidence and appeal to the target audience in a distinct manner. The total number of sources also has diminishing returns after a certain point.

Awareness research can be justified and connected with the concept of strength and immediacy in the context of reducing food waste. Strength refers to the source's credibility and level of influence, while immediacy refers to the proximity and timing of the source's message. This study aimed to provide insight into best practices for reducing food waste through social media campaigns, taking into account the role of stakeholders, food-related routines, and self-efficacy in shaping food waste behaviours. The involvement of stakeholders

provides credibility to the study, and the focus on changing routines and self-efficacy can help refocus food waste reduction in everyday life. The likelihood of success in reducing food waste is increased when the source is close and immediate to the target audience and when it requests immediate action.

The explanatory model proposed in this study suggests that reducing food waste behaviour in KSA through Twitter requires a multi-stakeholder approach, which includes the involvement of influential sources such as NGOs, celebrities, media, individuals, and the government. The study highlights the role of strength, immediacy, routines, and self-efficacy in creating social impact on Twitter to reduce food waste behaviour. The evidence presented in this study suggests that by increasing the quantity and quality of content related to food waste on social media, the public will be more informed about the issue and the ways in which they can reduce food waste. The study suggests that a nudge-based behavioural intervention, such as sharing data on food waste reduction actions, can help decrease food waste. Moreover, the study recognises the cultural and religious significance of food and the impact it has on people's food choices and habits. Changing cultural values to give more importance to food saving over food waste as a symbol of social status may be necessary to effectively reduce food waste in Saudi Arabia.

As previously discussed, the proposed model suggests that influential sources like NGOs, celebrities, media, individuals, and the government can work together to increase the quantity and quality of food waste content on Twitter. By doing so, they can increase the visibility of the issue and raise awareness among the public. This study suggests that social interaction, such as comments and discussions, can also increase the involvement of the public and create a sense of community around the issue. The model also recognises the importance of changing individuals' routines in reducing food waste and promoting waste-reducing behaviours. By changing individuals' routines, the study aims to reduce food waste and promote waste-reducing behaviours. The model also highlights the role of self-efficacy in reducing food waste behaviour. Consumers' self-confidence and competence in food-related tasks have a direct impact on their likelihood of reducing food waste.

The evidence and the model proposed in this study can help future KSA food waste awareness activity on Twitter by providing insights into best practices for reducing food waste through social media campaigns. By following a multi-stakeholder approach, including the involvement of influential sources, changing cultural values, and promoting waste-reducing

behaviours, future awareness campaigns on Twitter can increase the quantity and quality of content related to food waste and have a powerful social impact on reducing food waste behaviour in Saudi Arabia. The explanatory model presented in the previous paragraphs suggests that social media campaigns targeting food waste behaviour in KSA should focus on the following factors:

- **Strength:** The credibility and authority of the source of the message should be considered. Messages coming from prestigious individuals or organisations are more likely to influence behaviour.
- **Immediacy:** The proximity or closeness of the message to the target audience should be considered. Messages that are more immediate and relevant to the audience are more impactful.
- **Number:** The number of sources exerting influence is also a factor that affects the degree to which an individual is influenced. Having multiple sources of information available on Twitter, including government agencies, NGOs, media outlets, and individuals, can increase the credibility and reliability of the information being shared.

By considering these factors, social media campaigns on Twitter can be designed to effectively raise awareness of food waste behaviour and promote waste-reducing behaviours in Saudi Arabia. For example, tweets from authoritative sources such as government agencies, NGOs, and celebrities can help establish the credibility of the message. Tweets that provide practical tips and advice on reducing food waste can be more immediate and relevant to the audience. Campaigns that involve multiple sources of information can increase the credibility and reliability of the message. Overall, the evidence presented in the previous paragraphs suggests that a social media campaign on Twitter targeting food waste behaviour in KSA should take into account the factors of strength, immediacy, and number to effectively raise awareness and promote waste-reducing behaviours.

Finally, the model shows how all the stages interact collectively in reciprocal directions, leading to the development of healthy behaviours among the Saudi public to help

reduce food waste. This model outlines the role of people's daily habits and choices in creating a locally constructed food wastage crisis. The contextual model, developed on the basis of the research results, provides a comprehensive understanding of the local factors that contribute to food wastage in Saudi Arabia. The model takes into account the seven themes that are discussed on Twitter, including the role of the government and regulatory bodies, the impact of religious and community engagement, and the public's own habits and choices. By considering these factors, the model provides a roadmap for organisations and stakeholders to effectively address food wastage in the country. Through the analysis of the data collected from Twitter, this contextual model highlights the importance of targeted and impactful communication strategies that can change people's daily habits and choices. For example, the model may suggest that religious communication and community engagement are crucial in promoting awareness and motivation for reducing food waste. Additionally, the model may highlight the importance of sharing practical information and success stories, as well as encouraging behaviour change through educational programmes and campaigns.

4.4 CONCLUSION

Based on the findings presented above, it is clear that food waste is a significant problem in Saudi Arabia, with deeply rooted social and cultural factors contributing to its prevalence. However, through the development of the Alkorbi framework, which emphasises the importance of strength, immediacy, and numbers in Twitter-based food waste awareness campaigns, there is potential to create social impact and reduce food waste in the country.

It is crucial to address the issue at a national level and engage in collaborative efforts among organisations and the government to combat food waste and maintain food security in the country. While religious values discourage food waste, the social and cultural values associated with food consumption and display have a significant influence on behaviour. Effective campaigns to reduce food waste must take into account sociocultural meanings and highlight the benefits of waste reduction. By shifting the conversation about food waste to a broader sociocultural context, individuals may be more likely to adopt waste-reducing behaviours. However, more research is needed to determine the efficacy of such campaigns and their impact on consumer behaviour, as well as to explore the use of social media to

tackle other sustainability issues. The development of the Alkorbi framework and the insights gained throughout this study provide a valuable contribution to the field of food waste reduction and offer a practical and evidence-based approach for organisations and individuals looking to use social media to create social impact and reduce food waste in Saudi Arabia.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

This chapter offers a summary of the study's most significant findings, its contributions to the existing literature, its implications, its limitations, and recommendations for further research. For this thesis, wastage is a problem for reasons including the loss of nutrients, the production of unnecessary greenhouse gases and other climate burdens, and, most importantly, the moral reprehensibility of wasting food when widespread and concentrated hunger is a reality around the world. The development of an explanatory framework was one of the core aims of this research to help to create social impact on reducing the food waste in KSA.

The research highlights the importance of strength, immediacy, and numbers in creating social impact and changing behaviour towards food waste through social media. Strength refers to the credibility of the source, with more influential individuals or organisations perceived as more authoritative and thus more likely to influence behaviour. Immediacy, on the other hand, pertains to the proximity or closeness of the source to the target audience. A source that is closer or more present to the target audience is seen as more immediate and thus more impactful. Lastly, numbers refers to the quantity and diversity of sources that exert influence on the target audience. Having multiple sources of information available, including NGOs, media outlets, government agencies, and individuals, can increase

the credibility and reliability of the information being shared, leading to a greater impact on behaviour. These three factors, strength, immediacy, and numbers, are crucial in creating social impact and reducing food waste behaviour through social media.

Wasted food poses a serious threat to the planet because it contributes resulting in energy and water shortages, helps to accelerate the development of climate change, and exacerbates inequalities on a worldwide scale (Närvänen et al., 2020). There have been recent estimations indicate that families account for 61 % of food waste, and the issue seems to be prevalent in nations with varying economic levels (UNEP, 2021). Several companies and food bank participants contribute to the issue of edible food loss and waste across the food chain, from farm to fork (Parfitt et al., 2010). Over the last several years, food waste has been important in multidisciplinary research (Porpino et al., 2016), as well as among several researchers such as marketing, social media and business (Närvänen et al., 2018). DThere is high potential for accelerating change in the context of food waste within the field of social media, which focusses on the potential use of sharing data, experts, religious content, and collaborative organisational efforts to reduce food wastage in KSA.

This study concludes that to address the issue of food waste, more research should focus on food waste-related behaviours at the awareness level. Here, the attention should not just be on the Saudi public as the primary drivers of change, but also on numerous other NGOs, and food banks. Sustainability concerns, such as food waste, are widely discussed and debated online, according to a previous study (Närvänen et al., 2018). Moreover, communication efforts on social media have the potential to involve a huge number of social media users by encouraging them to publish their information, such as comments and perspectives that shed light on current food waste behaviour. Thus, social media provides a conducive environment for examining the construction of meaning by various players. This study's objective was to explore how food banks contribute to the awareness of the food waste problem through social media (i.e., Twitter).

5.1 RE-EXAMINING RESEARCH QUESTIONS

5.1.1 What are the key messages of Saudi food banks on Twitter to increase food waste awareness?

The selected food banks used Twitter in two ways to promote their awareness campaign. They presented factual information about food waste in KSA and used specific events and activities to engage their audience. They had four main objectives for using Twitter, which were to increase awareness of food waste, reduce food waste, engage the Saudi public, and promote their services. To achieve these goals, the food banks employed various strategies, including using media content, religious communication, community engagement, regulation and policy, and building awareness of ethical implications. By utilising cutting-edge technologies, the food banks were successful in raising awareness among Saudi citizens. To further enhance their Twitter awareness campaign, food banks can focus on these seven themes, including media content, factual information, specific events and activities, religious communication, community engagement, regulation and policy, and ethical implications. By implementing these strategies effectively, food banks can successfully promote their awareness campaigns and engage their audience in meaningful ways.

Based on the evidence, it is clear that social and cultural factors play a crucial role in explaining the origins of food waste in KSA and offering suggestions for reducing food wastage, but much work is still needed to change behaviours. Participants from the selected organisations advised there is also a need to increase health literacy. Food organisations can provide information on calories and serving size. Additionally, they also indicated that they also trying to collaborate with food organisations to improve communication when delivering food, which would cut down on food waste by allowing people to order the appropriate amount of food for the actual number of people being served. People also often rely on traditions to consume food , holding on to their national and family identities, which are often linked with the consumption of food on different occasions therefore, the selected organisations also tried to communicate around different events to collect surplus food and reduce food waste on different events like Eid and national days. This study has also found that people of the same culture or locality tend to share similar eating habits, despite the wide variety of traditional foods and flavour preferences among countries and cultures. Food

is also prepared in a variety of ways that show respect for religious laws, making it an integral part of religious celebrations.

People serve specific dishes as a symbol of modern civilisation in KSA, which is still rooted in local sociocultural values of the society. According to the evidence from this research, food is complex because it is linked with cultural and social norms in the local society. The food being eaten has many distinct connotations in a given society. In any case, meaning shifts from one culture to the next; therefore, local organisations are adopting a local approach by involving health experts, religious personalities, and sharing factual information to bring people's attention to food wastage in KSA. Additionally, people's spiritual life and religious communities determine their individual connection to food and mealtime patterns. Observant Muslims fast from dawn until dark every day throughout the month of Ramadan, commemorating the time when God delivered the Quran to the Prophet Muhammad. Therefore, some religious content might be communicated during Ramadan to remind the religious community that wasting is being discouraged and Muslims will be punished if they do not adhere to Islamic values.

The preparation of elaborate meals for guests often results in excess food being thrown away. Despite religious food guidelines, there may be wide variations in eating habits even among people of the same faith, depending on factors such as the degree of orthodoxy or religious dedication of individuals or families, as well as regional and national disparities. This exemplifies the fact that people's religious convictions are mirrored in the foods they eat. However, this study discovered that even though KSA is an Islamic country, its citizens continue to waste food even though doing so goes against Islamic teachings. It has been determined that religious content can have a greater impact on individuals, because after any religious content was shared by the organisations, there were more tweets and retweets on this type of content that might lead to the development of new behaviour among the public towards food wastage in KSA. Therefore, organisations can use religious content to create awareness and a sense of responsibility for food wastage at the individual level.

How people behave at the dining table is influenced by cultural norms, not only what we eat but how much eat and how much is wasted. It is expected that diners in Western cultures will sit down at a table and follow established norms of behaviour when doing so. Some civilizations utilise cutlery like forks and spoons, although the vast majority use their fingers or chopsticks the table arrangements in KSA are more focussed on the quantity and

variety of the dishes, which led to food wastage. Not only that, but some people only utilise the first three fingers of their right hand, and in some cultures, the right hand is solely used for cutting and serving food and they use their hand because of their beliefs. Organisations are also raising awareness that eating with the hand is not only an Islamic value; indeed, it has much to do with food waste. Restriction during meals may be necessary for more formal settings, which were communicated by organisations. As stated above, common strategies for raising ethical awareness of food wastage could include content with relation to religious communication, factual information sharing, event communication, regulation and policies to deal with food wastage at the national level in KSA.

When compared to the level of engagement shown by audiences on Twitter, showing statistics on Twitter was more than just posting the results of food waste. The use of experts and expertise as well as reputation, authenticity, and trust were the second theme that emerged from the first research question. Within the context of this topic, food banks made use of Twitter to disseminate useful information about how important it is to conserve food by recruiting religious leaders and economics experts to persuade individuals.

5.1.2 How do Saudi food banks view the use of Twitter for food waste awareness campaigns?

The research conducted interviews with various actors, and the results were consistent with the content analysis. The Saudi food banks identified seven aspects of their most influential Twitter content. To use Twitter effectively for an awareness campaign, food banks should consider these seven themes, including using media content, presenting factual information, promoting specific events and activities, using religious communication, engaging the community, following regulations and policies, and building awareness of ethical implications. By implementing these strategies effectively, food banks can create a successful awareness campaign and engage their audience in meaningful ways.

It is clear that food wastage is deeply rooted in the local context, which is why social, cultural, and religious connotations must be taken into consideration by organisations to change behaviours simply through increased awareness and education via social media initiatives. It has been identified that, in Saudi Arabia, presenting a variety of foods is a sign of social status; as a result, there is a need to alter public perceptions of the importance of

food waste reduction rather than promoting a social symbol through the provision of an excessive quantity of food. It has been mentioned by the participants that they are trying to change cultural values around food wastage so that it is considered shameful rather than a sign of social status.

The literature describes food waste as a process where food converts to waste, inside a network of interrelated practises, tools, worries, skills, knowledge, and anxieties (Watson & Meah, 2012). Twitter has been used for educational and awareness purposes around equipment and preparation, surplus and waste, cold storage and packing, and shelf life, which can lead to the reduction of food wastage. Additionally, organisations have also tried to bring the government's attention to the matter, so government policy and regulation are all mentioned as potential points of intervention and/or change. Because of these NGOs efforts, the government has taken initiatives to reduce food wastage as part of their Vision 2030 and the government claimed that they would reduce up to 50% of food wastage through regulation policies and public awareness programmes that will be launched through the selected organisations that are fighting food wastage in Saudi Arabia. Consequently, participants also mentioned that they have shared about all of these activities on Twitter to create public awareness nationally to fight food wastage at the community, organisational, individual, and family levels.

Based on previous information, it has been identified that the richness of content, including expert opinion, organisational content, and participant perspectives, plays a significant role in creating social impact. Twitter data has indicated that the strength of the content is crucial in this process. Therefore, organisations dealing with food waste should utilise expert opinion, celebrities, media, and NGOs as a social network to build and modify people's beliefs about food. Speedy action is also necessary on the part of organisations and the government to address the food waste crisis and prevent food supplies from dwindling. Persuasive sources of influence can lead to an almost instantaneous shift in behaviour or viewpoint, and exposure to multiple sources increases the likelihood of paying attention to food waste.

It has also been found that when people are the centre of attention, they are more prone to cave to pressures to conform or comply. Instead, the effect weakens by half for each subsequent target is influenced. The "diffusion of accountability" describes how force will be dispersed more uniformly when there are more potential targets. Therefore, the selected

organisations should also try to communicate with other food-related organisations to take responsibility for helping with reducing food wastage and to participate in the collection and distribution of food. However, this study indicated that NGOs consider audience demographics when establishing strategies or composing messages to inform individuals that surplus food can be donated to those in need. Organisations are also trying to communicate with members of the public who have more buying power or who buy more because of cheaper prices. People are more inclined to buy quickly due to the low price than to purchase at some point when needed. Giving potential buyers too much time to consider lowers the likelihood that they will take any kind of immediate action; therefore, organisations are also trying to create a link with individuals who can buy and donate food that they buy on special offers. Thus, this action might be transformed into a regular practise of purchasing and distributing leftover food to those in need through increased communication and emulation of the services provided by other organisations.

An evaluation of the major food waste communication campaigns and an empirical study of the knowledge held by individuals with regard to minimising food waste emerging from households was missing from the existing literature. To successfully reduce food waste, it is crucial to first educate the public about the issue, eventually leading to awareness at the national level, which requires resources and collaboration. Therefore, the selected organisations have signed agreements with profit, nonprofit, private, and public organisations to improve communication infrastructure to collectively reduce food wastage and collect and distribute surplus food at the national level. But the major the challenge is getting people to make positive and long-lasting changes to their behaviour. More research into consumer science is required to classify people along each food waste pathway into similar groups and to understand which behaviours people are willing to change in order to achieve better results from public education efforts.

Subsequent outreach efforts should prioritise individuals and organisations. The selected organisations are also trying to change consumer behaviour by offering food charity options when they order food. Implementing this collaborative strategy has led to more individuals having useful conversations about how to minimise food waste at home, as well as at the individual and public levels. Participants mentioned that they want to get the most out of such a strategy, so they need to thoughtfully integrate the usage of both traditional media and cutting-edge innovations of interactive communication channels and social media

software. Finding the original sources of pertinent data, then reframing and targeting the information for certain audiences requires a thorough evaluation of the success of the campaign, which requires government-level intervention to change the social values of the society. However, bigger trends, such as the systemic and structural challenges that serve as both barriers and opportunities for individuals to change their behaviour for the better, must also be taken into consideration, which also requires government policies, so these initiatives have been taken communicated through Twitter. Additionally, food banks have engaged in three types of multimedia interactions with the public on Twitter. These included posting effective images related to food waste, creating innovative videos that can alter people's perceptions of food and prevent them from wasting it, and utilising trending hashtags related to food waste.

5.1.3 How can a social media framework on Twitter help food bank organisations in Saudi Arabia develop strategies to raise public awareness of food waste?

Social Impact Theory has been used in the context food wastage and as the final framework of this research to suggest a step-by-step process to create social impact on the public to change people's food wastage behaviour through Twitter. This rethinking of the concept of influence acknowledges that it works in both directions to create awareness and social impact to change the social values that are the source of food wastage. The concept of social effect is conceptualised for this study to reduce food waste reduction on social media in KSA.

There are three aspects of a group that contribute to how much of an impact it has on an individual: (a) its power or social standing; (b) its proximity; and (c) the number of people inside the group who are exerting social influence (i.e., number of sources). Because of this, an individual is more likely to be affected by a large, powerful group that is also close by and easy to interact with than by a smaller, less visible group that is further away. Therefore, in the presented conceptual framework, both the strength of the social group and the strength of the person being influenced by it are negatively correlated with one another. One is more likely to be swayed by the opinions of others close to them, such as friends, family, and co-workers that they are already connected with on Twitter. So, if they themselves are active social media users (strength and social immediacy) that could lead to a change in the values of these groups because they are getting and liking the same content on Twitter. Similarly,

when a large number of people share a particular opinion about food wastage, the number of views, retweets, and likes of food wastage videos can become social proof of a bad habit, an opinion that can gain traction among others who were undecided. Therefore, the organisations fighting food wastage can use Social Impact Theory as a conceptual framework to their advantage to increase social impact to reduce food waste. A celebrity endorsing a product or service can boost its visibility and ultimately its sales. When a famous person endorses a product, it gains cachet, credibility, and attention from the public. This type of content can be used by organisations rather than individual efforts so that this type of content can gain strength via the number of organisations involved and appreciation of the content at a public level. Social adoption and influenced actions are accelerated in proportion to the number of influencers advocating for an idea (strength, immediacy, and number). Therefore, use of the same content at a collaborative level can increase the numbers, immediacy, and strength of the content and can lead to strong social impact on society to reduce food wastage.

The first step in any persuasive argument is to provide evidence that supports the claims. While having multiple sources back up one's case can help, it will not work if the argument is weak to begin with. Second, each source ought to have its own unique attraction to the intended readers. When people hear a consistent tone or point of view from multiple sources, they may become sceptical of the validity of the argument as a whole. When this happens, working together has the same impact as working alone. Third, there will be diminishing returns from adding more sources and the total number of sources rises. The effect of four sources is much larger than the effect of a single source, whereas the effect of twelve sources is not noticeably larger than that of fifteen. Thus, in order to effectively assist the decrease of food waste in Saudi Arabia, it is crucial to include a variety of sources that give a diverse voice yet have the same unifying message.

If assumed that the ordinary social media or Twitter user who participates in a group conversation online has some familiarity with current events, they typically have a high level of awareness about these topics. Their unique sets of values, beliefs, and personalities will shape their unique perspectives on the world. This study found that people's hierarchical system of worldviews and their inclinations toward particular socio-economic ideas mediated their actions with respect to food intake at both the individual and communal levels. Beliefs can be developed or changed in reaction to particular situations. Accordingly, people's deeds

are the results of deliberations in which they factor in their own beliefs, as well as the goals and values they have already established for themselves. Everyday activities have a cumulative effect on one's worldview, values, and beliefs, reinforcing them as well as their external environment.

It has been argued by Sedikides and Jackson (1990) that Social Impact Theory is flawed, since it only takes into account the impact that the initiating party (the source) can have on the recipient (the target). Social Impact Theory has been renamed dynamic social impact theory to reflect the ability of the target to influence the source (Seltzer et al., 2013). This rethinking of the concept of influence acknowledges that it works in both directions. People can learn from and use Social Impact Theory to make a visible change, even though the concept of social effect is conceptualised for this study to reduce food waste through social media in KSA (see Figure 5-1). Food is more than just a way of life; it is a window into a different culture, where people's actions carry meaning and symbolism across the spectrum of their daily lives, from the domestic to the international. There are strong cultural origins and a form of communication in the choices we make about what we eat, where it comes from, who makes it, who sets the table, and who eats first. Most people's roles, norms, and rituals are defined by the foods they consume with their families, and this is especially true in Saudi society. By exposing hidden beliefs, traditions, and habits, food provides a window into a culture. The culinary traditions of various cultures have many things in common. Because of this, even a seemingly innocuous debate about food may become a site of negotiation for more complex issues related to our identities, communities, and ecosystems.

5.2 THE STUDY'S CONTRIBUTIONS

The theoretical contribution of this research is the conceptual framework that has been developed based on Social Impact Theory. It has been established based on research findings that strength, immediacy, and the number of users on Twitter directly impact the sharing of factual data related to food wastage and social media, which create social proof for people and also gains their attention so that they react to the shared content. Additionally, it has also been found that expertise, authenticity, and the religious background of Twitter users also directly create an impact on social media users because they provide logical content, highlighting the importance of the issue and its relation to religious studies. Furthermore, it

has also been established that religious communication and the number of responses on shared content also created trust among Twitter users, which garners the attention of policymakers. Additionally, the selected organisations can also use factual data and expert opinion to create social impact on local society to attract volunteers and develop new societal behaviours towards the reduction of food waste in Saudi Arabia. The contextual framework developed can be used to develop social impact and organisations can use different factors to create numbers, immediacy, and strength to impact people, leading towards the development of new social values in the context of food that can reduce food wastage in KSA.

Additionally, this study uses multiple data collection methods, including both Twitter data and interviews. The researcher has triangulated the findings from both methods to produce powerful results and a rich picture of the study of food waste. During the interviews, open-ended questions were asked with the purpose of learning how Saudi food banks used Twitter to support their strategies in awareness campaigns. The data collected from Twitter revealed some different methods that Saudi food banks used to achieve their objectives. As a result, the findings of the research contribute to the body of work that has investigated how Twitter can be used to support awareness. Furthermore, it broadens the scope of the existing body of research by bringing attention to how Twitter can be used in formal awareness campaigns. Food banks now have additional options to express their ideas and generate awareness thanks to Twitter and other social networking sites in general (Rui & Stefanone, 2013). The results of the study provide significant new insights into how Twitter is now being used for official awareness campaigns and how it may be utilised in the future for such purposes. The results emphasise the inventive methods that food banks used on Twitter to strengthen their awareness initiatives.

5.3 POLICY GAPS THAT ALLOW FOOD TO GO TO WASTE

In order to reduce food waste in Saudi Arabia, policymakers and planners must create a strategy, proposal laws, propose penalties for food wasters, and enact rules and regulations at the household and food industry levels. The (Shoura) Saudi Council's social affairs committee advocated for a national centre to educate the public and provide direction on the issue of food waste. Policymakers should work to improve their operational efficiency and

adaptability to societal demands. To strike a balance between food prices and the relationship between food waste and food prices, the Saudi government should re-evaluate the generous subsidies given for various food items.

As indicated by participants, some organisational- and government-level attention is required. For example, it has been indicated by the participants that organisational-level training is required for employees to offer the right amount of the food to the right number of people and to raise awareness among the people about food wastage. Additionally, it has also been indicated by participants that food organisations should be ranked by their sustainability efforts. This could generate competition among the organisation for food wastage reduction. A national strategy to combat food waste is urgently needed in KSA to address the food waste problem, as food waste poses a serious threat to the sustainability of the country's already stressed natural resources and results in food security challenges. For this strategy to be sustainable, it will require on-going, cross-departmental cooperation from government agencies, academic institutions, the food industry, thought leaders, and activists from the community. The coalition of stakeholders and their active participation will generate the momentum needed to spread the word about the dire effects of food waste and inspire the necessary changes in attitude and behaviour to curb the problem. Due to the lack of data on food waste, KSA must conduct scientific studies to quantify the magnitude of its food loss and waste (from farm to table) to implement effective, data-driven programmes to reduce food waste. To accomplish this, it must first be determined how much food is being wasted and what kinds of items make up this waste stream before the development of strategies to immediately address this problem can begin. It is also crucial to encourage academics to conduct fieldwork across the entire food supply chain, from farms to consumers' plates. Due to these considerations, this research can be classified as an applied rather than an empirical one. Environmental, economic, and social structures governing food supply, demand, and waste are very similar in Gulf Cooperation Council (GCC) countries. As a result, KSA can set an example for the rest of the Middle East by demonstrating how to effectively address the issue of food waste.

5.3.1 Implications for professionals

This knowledge may aid non-governmental organisations in making better use of Twitter. They may change their behaviour to appeal to their audience, gain more followers, or bring attention to a particular social issue. This research found that they used seven different tactics, including sharing notable data on food waste, recruiting experts via Twitter, and incorporating multimedia elements like hashtags into their campaigns. To better determine how to use Twitter concerning an awareness campaign, food banks could benefit from analysing public Twitter behaviour. They could, for instance, disseminate useful information to the general public and waste producers, thereby increasing the prevalence of safe food handling practices. The evidence of this research suggests that raising the level of awareness of food waste in KSA through the work of food banks can be enriched through the employment of the following strategies:

1. The number in terms of number of sources and number of comments create more social impact on the people; therefore, organisations should develop effective campaigns, and create a number of reviews, retweets, and tweets in response. Therefore, the amount of content can create more social impact at the national level.
2. Utilising popular hashtags can be more useful since hashtags help to make a video or other content viral on Twitter, which can also increase the impact on the public.
3. Use mentions when appropriate, but do not expect a short-term gain in retweets. However, this does not mean that relevant mentions cannot be useful, especially for lesser-known Twitter handles. They can help bring a business's Twitter handle to the notice of the people mentioned, increasing the likelihood that they will follow and retweet the brand in the future. Including mentions of interesting Twitter handles may also add value for a Twitter handle's followers.
4. The most important reason for the rise in retweets for NGOs and food banks organisations was the inclusion of weblinks, followed closely by the inclusion of images. By using media like photos and videos or providing external links, organisations can attract more people to their tweets.
5. It has been identified that immediacy of the response from organisations, individuals, and the government can create social impact on the public to address the food waste issue in Saudi Arabia. Therefore, there should be organisational-level training for all

NGOs and food organisations to immediately respond to the issue on social media and bring the public's attention to the matter.

6. Requesting retweets from one's audience can boost response rates temporarily. It is possible, though, that if this tactic is used in too many tweets, people will stop responding to it. It is likely that the results of a similar appeal, such as "Favorite if...", will be the same.

There are three aspects of a group that contribute to the professional launch of a collaborative campaign involving all stakeholders that can have an impact on an individual: (a) its power or social standing; (b) its proximity; and (c) the number of people inside the group who are exerting a social influence (i.e., number of sources). Because of this, an individual is more likely to be affected by a large, powerful group that is also close by and easy to interact with than by a smaller, less visible group that is further away.

5.3.2 Social implications

This study's findings have significant social implications for KSA and other developing nations that face significant food waste. By employing the categories discussed above in their social media campaigns, food banks and other surplus food management organisations can effectively raise awareness, educate the public, and inspire behavioural change to reduce food waste. Social media campaigns can create social awareness of food waste and its impact on the community at an individual level. The strength of impactful content on social media can have an immediate effect on the public, leading to increased engagement and action among users. Utilising social media platforms such as Twitter, food banks in KSA have been able to reach a wider audience and create a lasting impact on reducing food waste. This research provides an overview of effective social media campaign methods and example postings, highlighting what worked well and areas for improvement. Future studies and social campaigns can utilise these findings to create more efficient and effective social media campaigns to reduce food waste. The findings are consistent with Vedel et al. (2020) in indicating that a lack of strategy and clear objectives can reduce the impact of social media posts, underscoring the importance of utilising effective social media campaign methods.

The available literature on food waste research utilising social media has few insights into the traits of campaigns and interventions. Providing these details can help shape future

studies and lead to the creation of more efficient social media campaigns or interventions for reducing food waste. Practitioners and academics can work together to accomplish the Sustainable Development Goal of halving food waste, which is part of KSA's Vision 2030. By using social media as a tool for change, surplus food management organisations can help address global hunger and food security issues. This study's findings can aid in the development of impactful social media campaigns to reduce food waste and address food security issues, both at the individual and global level. By utilising effective social media campaign methods and strategies, surplus food management organisations can achieve their goals of reducing food waste and inspiring behavioural change.

5.4 THE STUDY'S LIMITATIONS AND FUTURE DIRECTION

The research was only able to gather tweets over two years, which also coincided with the COVID-19 Pandemic, which was the biggest restriction. The findings within the themes of "Use of experts and expertise, reputation, authenticity, and trust", and "Community engagement", both reflect this constraint. It is likely that the pandemic, during which the posts were collected, is to blame for this lack of details. Even more so, the entire country was on lockdown, so no community events could take place.

The second restriction resulted from the study's exclusive reliance on qualitative methods, which have been criticised for being too context- and sample-specific to be generally applicable (Gray, 2014). As explained in the methodology section, however, the main goal was to learn about the perspectives and dynamics of Saudi food banks, so generalisations were less important than exactly how Saudi food banks are using social media to raise awareness and sway opinion among the public. The third caveat was that the research focussed on Twitter, which is dynamic because it is a social networking service. For instance, Twitter now allows for 280 characters per tweet. The research could be rendered inconsequential if Twitter were to go out of business in the next few years.

It has been identified by this research that social media can be a useful tool for reducing food waste; nevertheless, this analysis includes two initiatives that revealed social media alone was not beneficial compared to other mediums. When compared to traditional marketing, (Young & Jordan, 2013) said that social media was useless because it lacked the personal touch that is essential to its success (Young & Jordan, 2013). Additionally, Grainger

and Stewart (2017) countered the findings of (Young & Jordan, 2013), arguing that the numbers were skewed and that the campaign under study was fundamentally faulty. (Grainger & Stewart, 2017) stress the need for additional studies like this one, as well as a stronger foundation of evidence, to fully grasp the power of social media and its possible future uses in reducing food waste. This research shows that social media (Twitter) has a crucial role to play in contributing to campaign objectives, especially when targeting audiences that already utilise social media as part of their everyday lives, but it may not be the sole driving force behind behavioural change. The study found that further investigation was needed into many of the topics considered. Among the results of this research was the correlation between cultural background and frequency of Twitter use. Several of the recurring themes in the research all reference this connection. The participants discussed, for instance, how Saudi culture and Islam affected their conversations about food waste, and what effect Twitter has on Saudi society, in reverse. Future research should focus on explaining the cultural setting in which food banks employ Twitter for campaigning. Anonymised interviews, the study of trending hashtags, or an ethnographic approach coupled with follow-up interviews and in-depth analysis of Twitter data gathered over extended periods, such as years, would be useful for such studies because of the complexities involved in mediating between entrenched social norms and the desire for change.

How various communities make use of Twitter to raise awareness could be the subject of future research. The study might be conducted in another country, with a different sample (such as households, housewives, or food suppliers), or with the same methods. It is possible that there could be a wide range of behaviour among the participants. Specifically, this research looks into how Twitter can be used to raise public consciousness. Future research could compare and contrast the efficacy of various social networking sites (such as Twitter, Facebook, Instagram, and Snapchat) for raising awareness, as well as examine how these sites are similar and different.

Since current empirical studies on the effect of social media on food waste behaviour are preliminary and still developing, a future research agenda might focus on, but not be limited to, the following issues to address the outstanding problems in this field of study: create social media initiatives and plans to expand the reach of existing intervention resources and tools at the local, regional, state, and federal levels; follow up on longer-term programmes to reduce food waste by observing whether or not they lead to lasting changes

in behaviour; and determine the most effective combination of intervention tactics by investigating a wide range of options beyond simple awareness-raising and literacy-training.

Given that research into how to lessen food waste is still in its infancy, it is not unexpected that the studies are scattered. Thus, within the scope of this review, this thesis is unable to extend or expand upon the pre-existing proposition. Because of its widespread availability and simple interface, social media is often seen as a silver bullet. Based on these results, it is clear that social media communication strategies are necessary for optimal performance. Incorporating the conceptual framework of this thesis to launch campaigns and interventions has improved our capacity for rigorous analysis. Based on the gaps in the literature, this research was able to formulate the following suggestions for future research questions could help shed light on the use of Twitter: what are the next steps and opportunities in using social media for food waste reduction? In order to reduce food waste and other forms of unnecessary consumption, habits need to be modified, and for that, clear instructions for practitioners on how to go about designing, creating, analysing, and measuring the efficacy of social media campaigns are needed. To find out what kind of food waste messaging and content the target demographic would find most successful, informative, and engaging on social media to minimise food waste, academics and practitioners should co-design content with consumers. In order to figure out how to make food waste a priority issue for people of varying backgrounds, it would be useful to collaborate with individuals who are not concerned about the problem. Additional research into social media's role in influencing behavioural change to reduce food waste is required, both on its own and in tandem with other approaches. The conceptual model for this research has potential in the field of food waste and could be used in the future to help build campaigns or interventions that more effectively attain goals and influence people's food waste habits on a national scale.

Future studies on food waste could benefit from incorporating an emotional analysis component, exploring the emotional aspects of food waste and its impact on individuals, communities, and the environment. This type of analysis could provide a deeper understanding of people's attitudes, beliefs, and motivations related to food waste and could inform the development of effective strategies to reduce food waste. For example, an emotional analysis could examine how people feel about throwing away food, the guilt or shame associated with waste, and the emotional factors that influence food waste

behaviours. Additionally, such an analysis could explore the emotional impact of food insecurity and the positive emotions associated with reducing waste and contributing to food security.

5.5 CONCLUSIONS

In light of the current focus of governments and international agencies on reducing food waste, there is a notable lack of research examining the issue from a consumer behaviour perspective. This study aimed to explore the ways in which Saudi food banks could benefit from using Twitter to enhance their awareness campaigns and communication strategies while also investigating the nature and extent of food waste in households. By applying the Alkorbi framework to this study, key strategies can be identified to effectively raise awareness of food waste and promote awareness around food waste.

Changing consumer habits, such as reducing purchases, consuming appropriate portion sizes, and reusing leftovers, can be an effective means of preventing food waste. Therefore, understanding the reasons and types of food waste is crucial to driving behavioural change. This study's findings provides insights into how individuals perceive and relate to food waste in their daily lives, which can inform legislative and commercial efforts to address domestic wastefulness.

By applying the Alkorbi framework, effective strategies can be identified to raise awareness of food waste on Twitter. This includes using clear and concise messaging that resonates with individuals' values and beliefs, engaging with social media influencers to amplify messages, and leveraging social norms to promote sustainable behaviours. Additionally, adopting a collaborative approach with food banks, businesses, and other stakeholders can help build momentum towards reducing food waste and promoting sustainability. Using the Alkorbi framework to enhance awareness-raising strategies can drive meaningful change in consumer behaviour and reduce food waste. This research contributes to a better understanding of pro-environmental and moral principles in the context of global sustainability issues, and provides a foundation for future research and policy initiatives.

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APPENDICES

7.1 APPENDIX A: INTERVIEW QUESTIONS

1. Can you tell me about the organisation you work for in terms of its function, policy, strategy regarding to raise awareness of food waste? **RQ**
2. From your point of view what is the most popular social media platform used amongst the Saudi public, and what do you think is the reason of prefer this platform? **RQ 2**
3. How significant is the waste food phenomenon in Saudi society and what are its consequences for individuals, society, and government? **RQ 2**
4. How often and in what ways do you use Twitter to post content regarding awareness of food waste? **RQ 1**
5. What is your point of view and your experience in using the Twitter platform? What do you think of its use in the context of food waste awareness campaigns? **RQ 2**
6. In what ways and to what extent do Saudi citizens engage with Twitter content related to food waste? **RQ 2**
7. What motivates Saudi society to participate in issues such as not wasting food through the Twitter platform? **RQ 2**
8. Can Saudi foodbanks use Twitter campaigns to to raise awareness of food waste among the Saudi public and thus boost donations to them? How can this be achieved in practice? **RQ 3**

Arabic Interview questions:

- 1 - هل يمكن أن تخبرني عن المنظمة التي تعمل بها من حيث وظيفتها وسياستها واستراتيجيتها فيما يتعلق برفع الوعي بهدر الطعام؟
- 2 - من وجهة نظرك ما هي أشهر منصات التواصل الاجتماعي المستخدمة بين الجمهور السعودي ، وما هو رأيك سبب تفضيل هذه المنصة؟
- 3 - ما مدى أهمية (خطورة) ظاهرة هدر الغذاء في المجتمع السعودي وما آثارها على الأفراد والمجتمع والحكومة؟
- 4 - كم مرة وبأي طرق تستخدم تويتر لنشر محتوى يتعلق بالتوعية بهدر الطعام؟
- 5 - ما هي وجهة نظرك وتجربتك في استخدام منصة تويتر؟ ما رأيك في استخدامه في سياق حملات التوعية بهدر الطعام؟
- 6 - ما هي طرق وإلى أي مدى يتفاعل المواطنون السعوديون مع محتوى تويتر المتعلق بهدر الطعام؟
- 7 - ما الذي يدفع المجتمع السعودي للمشاركة في قضايا مثل عدم إهدار الطعام عبر منصة تويتر؟
- 8- هل يمكن لبنوك الطعام (جمعيات حفظ النعمة) السعودية أن تستخدم حملات تويتر للتوعية بهدر الطعام في المجتمع السعودي وبالتالي المساهمة في زيادة التبرعات لهم؟ كيف يمكن تحقيق ذلك عمليا؟

Interview Sample

الباحث: هل من الممكن أن تخبرني عن المنظمة التي تعمل بها من ناحية: وظيفتها، سياستها، استراتيجيتها، فيما يتعلق برفع الوعي بهدر الطعام؟

الجواب: بسم الله الرحمن الرحيم، والصلاة والسلام على سيدنا محمد، شكراً لك أخ ناصر على اهتمامك بهذا الجانب، أسأل الله لك الخير. كما تعلم أن المؤسسة العامة للحبوب كجهة حكومية أنشأت في التسعينات الهجرية، ولها مهام كثيرة جداً، وأسند لها في الخمس سنوات السابقة تنفيذ: (البرنامج الوطني للحد من إهدار والفقد للغذاء)، ومن مهام المؤسسة تم تحديد خط الأساس، ومؤشر الفقد والهدر الغذائي في المملكة العربية السعودية، والحمد لله تم إصدار كتاب (___)، ومؤشر الأرقام الذي سبق وأطلعت عليه أخي ناصر. والمؤسسة بدأت في السنتين الماضيتين، بحملة توعوية من أجل رفع مستوى الوعي لدى جميع شرائح المجتمع بالمملكة العربية السعودية، بقضية هدر الطعام وتقليل من الفقد الغذائي، وخفض مؤشر الفقد في السنوات القادمة، بوضع هدف استراتيجي لخفض مستوى الهدر 50% بحلول عام 2030م، ونحن في المؤسسة نعمل على ذلك، ونسأل الله التوفيق والسداد.

الباحث ما أشهر منصات التواصل الاجتماعي التي يستخدمها الجمهور السعودي، وما السبب تفضيلهم لهذه المنصات؟
مشارك:

الإجابة تكون بحسب اطلاعي على وسائل التواصل الاجتماعي، من خلال الجمهور السعودي، تعد منصة تويتر ومنصة سناب شات، ومنصة تيك توك، من أشهر منصات التواصل المفضلة عند الجمهور السعودي؛ لكن من وجه نظر شخصية أرى أن منصة تويتر هي المنصة المفضلة لدى الجمهور السعودي، ونحن أيضاً نعتمد عليها في طرح ما لدينا من خلالها.
الباحث هل لديك سبب أستاذ زيد في تصنيف منصة تويتر من المنصات المفضلة لدى الجمهور السعودي؟
مشارك:

يرجع السبب الرئيس لشهرة المنصة على ما أظن هو سهولة استخدامها لأغلب فئات المجتمع.
الباحث:

ما خطورة هدر الطعام، وما أثارها على الفرد والمجتمع والحكومة السعودية؟
مشارك تنقسم الخطورة على الفرد والمجتمع والحكومة السعودية إلى قسمين:
أولاً: خطورة دينية: حيث إن الله سبحانه وتعالى ذكر في كتابه الكريم: (وَضَرَبَ اللَّهُ مَثَلًا قَرْيَةً كَانَتْ آمِنَةً مُّظْمِنَةً يَأْتِيهَا رِزْقُهَا رَغَدًا مِنْ كُلِّ مَكَانٍ فَكَفَرَتْ بِأَنْعُمِ اللَّهِ فَأَذَاقَهَا اللَّهُ لِبَاسَ الْجُوعِ وَالْخَوْفِ بِمَا كَانُوا يَصْنَعُونَ) (سورة النحل: 16)، فنحن في المؤسسة لا نر التذير في الطعام وهدره إلا صورة من الصور التي ذكرها الله في كتابه عن الإسراف، ونتائج التي تؤدي إلى زوال النعم، والمملكة العربية السعودية سعت إلى توعية المجتمع لدرء العقوبة عنا، والسعي لرضى الله سبحانه وتعالى من خلال الحفاظ على أنعمه.

ثانياً: خطورة دنيوية اقتصادية: فهدر الطعام يعتبر صورة من صور هدر موارد البلد، حيث إن المملكة العربية السعودية تستورد الكثير من منتجات الطعام الأساسية وغيرها من خارج البلاد؛ لكي تأمن الحياة الرغدة للمواطن السعودي، والمقيم فيها، وهدرها بطرق مشروعة أو غير مشروعة، يعد إنهاك للاقتصاد السعودي، وتحميله فوق طاقته؛ لأن لا يستخدم في موضعه الصحيح، ولا في الغاية التي دفعت الدولة إلى تحمل تكاليف استيراده من الخارج، وهذا يعد سلوك لا مسؤول من المستهلك؛ لكن نحن في المؤسسة متفائلين أن مستوى الوعي سوف يرتفع عند المستهلك، ونتخلص من هذه الظاهرة السيئة، التي تضر موارد البلد سواء من الناحية الإنتاجية أو الاستهلاكية.

الباحث: هل سبق لك أن رأيت أي محتوى يؤثر عليك في اليوم التالي للحد من هدر الطعام؟
مشارك: نعم يمكنني أن أعطيك مثالاً عملياً مثل 2 منذ عام ، رأيت صورة أطفال من إفريقيا كانوا يكافحون للعثور على الطعام وكانت أجسامهم ضعيفة جداً مما أخذ نبي في اللحظة التالية لتوفير الطعام أو توفير المال منه صورتنا ترسل للفقراء
الباحث: هل يمكن أن تشرح لي سبب لفت انتباهك هذه الصورة؟

المشارك: نعم أستطيع أن أقول شيئاً ما لقلبي عندما ترى شخصاً ما في ورطة بالتأكيد إنسان تود أن تدعم كل ما يمكنك فعله

الباحث: كما قلت إنسان عندما ترى شخصاً ما في ورطة ماذا تقصد بهذا؟

مشارك: أعني عندما ترى شخصاً ذا جسد ضعيف ما هو السبب وراء قلة الطعام هناك في إفريقيا وهو ما لفت انتباهي إلى الأمر لأننا نهدر الكثير من الطعام يوميًا

الباحث: من حديثك هل يمكنني القول أن المحتوى ذي الصلة بالموضوع على وسائل التواصل الاجتماعي أو الصور ذات الصلة يمكن أن يؤثر أيضاً على الجمهور لتقليل هدر الطعام في المملكة العربية السعودية؟
المشارك: نعم يجب أن أتفق معك هذا ما أعنيه

الباحث: إذن ما نوع المحتوى الذي تود أن تراه أو تود أن تنصح بمشاركته على وسائل التواصل الاجتماعي لتقليل الهدر الغذائي والسعودية؟

مشارك: إذا أخذنا المثال السابق الذي أعطيتك لك ، أعتقد أنه يجب علينا خلق وعي بين الجمهور بأننا نهدر الكثير ولكن في نفس الوقت هناك العديد من الأشخاص على الأرض لا يحصلون على طعام إضافي لإطلاق النار أطفال؟

الباحث: عند الحديث عن الأطفال هل تعتقد أنه من الضروري مشاركة صور الأطفال عن هدر الطعام؟

مشارك: نعم ، هذا هو سؤالك الجيد لماذا قلت الأطفال لأن معظم الناس لديهم تعاطف أكبر مع الأطفال كبار السن أو النساء ، لذلك إذا قمنا بتضمين هذا النوع من الصور في المحتوى سيكون أكثر تأثيراً على الناس لتقليلها هدر الغذاء في المملكة العربية السعودية.

الباحث: تعجيني حقًا فكرة شرحك لمشاركة المحتوى المحدد الذي يمكن أن يكون له تأثير أكبر ، على سبيل المثال قلتم الأطفال لأن معظمنا متعاطف مع الأطفال

المشارك: نعم ، ما نحن عليه لأننا نهتم أكثر بالأطفال ونكون أكثر تأثيرًا عندما نرى شيئًا عن الأطفال في العالم
الباحث: نعم أتفق معك ، ما هو رأيك إذا قام أحد الخبراء على تويتر بمشاركة بعض المحتوى ، هل شاهدت أي محتوى يتم مشاركته من قبل الخبراء على تويتر؟

مشارك: نعم لقد رأيت أن هناك بعض المنظمات الرياضية التي تمارس فكرة الحد من هدر الطعام وتقوم أيضًا بجمع بعض المواد الغذائية لتوزيعها على الفقراء. أستطيع أن أقول إن هذا النوع من الأشخاص الخبراء الذين لديهم بعض المعرفة للحد من هدر الطعام يمكنهم أيضًا إحداث بعض التأثير ولكن هذا النوع من المحتوى يجب أن يحظى بتقدير الجمهور والذي يمكن أن يكون له تأثير أكبر على الناس

الباحث: لقد ذكرت أن الأشخاص أحبوا المحتوى حقًا والذي يمكن أن يكون له تأثير على الناس ماذا تقصد عندما يجب الناس المحتوى؟

مشارك: أعني أنه إذا قام شخص ما بمشاركة المحتوى على وسائل التواصل الاجتماعي وكان الأشخاص يشاهدون مراجعة التغريدات وإعادة تغريدها ومشاركتها مع جميع الآخرين ، فإن ذلك يؤدي إلى إنشاء شريط إثبات اجتماعي ، يعجب الناس بمدى أهمية هذا التعامل ومدى خطورة ذلك عندما نهدر الطعام بالمناسبة ، أعتقد أننا في القمة في نفايات الطعام كأمة سعودية

الباحث: هل تعتقد أن الأشخاص الذين يؤمنون بهم أيضًا في المناطق يريدون التحدث عن هدر الطعام وما هو رأيك في الأشخاص المتدينين عندما يشاركون في المحتوى على وسائل التواصل الاجتماعي للحديث عن هدر الطعام؟

مشارك: أنا أتفق مع رأيك ولكن الأمر لا يتعلق بالدين فقط أنا متأكد من أنه لا يوجد أي دين في العالم يقدر هدر الطعام ولكن لدينا مشكلة في نظامنا الاجتماعي ونظامنا الثقافي مما يسهل علي القول بتشجيع هدر الطعام على المستوى الوطني؟

الباحث: أعجبتني فكرتك حقًا عندما أعددت لدينا مشكلة في الثقافة والنظام الاجتماعي تسهل هدر الطعام في المملكة العربية السعودية؟ ماذا تقصد بمشكلة النظام الاجتماعي في السعودية؟

مشارك: إذا ألقينا نظرة على أطباقنا فقط ، فنحن نقدم لأصدقائنا الممثلين في المنزل المليء بالهدر تمامًا لأننا نطلب الكثير مما يدل على احترام ضيفنا حتى لا نتمكن من تناول هذا القدر ولكن علينا أن نقدمه كقاعدة ثقافية لإعطاء الاحترام لضيفنا

الباحث: هل يمكن أن تعطيني بعض الأمثلة الأخرى التي تتعلق بالنظام الاجتماعي والقضايا الثقافية في المملكة العربية السعودية؟

مشارك: أنا متأكد من أنك تدرك جيدًا أيضًا العديد من الأمثلة ، فماذا عن حفلات الزفاف ، فنحن نقدم جملاً كاملاً للناس ليس فقط جمل واحد يعتمد على القيادة في المملكة العربية السعودية ، بعض القبائل تقدم العديد من الإبل كدليل على قبيلتهم لضيفهم لكنني متأكد من أن أكثر من نصف الطعام يُهدر

الباحث: شكرا جزيلًا على وقتك وتعاونك للمشاركة في بحثي ولا يساورني شك في المعلومات التي قدمتها لي هذه المعلومات ستكون مفيدة للغاية بالنسبة لي في أطروحتي

مشارك: يسعدني ويسعدني أن أعرف أن هناك من يقوم ببحث في هذا الموضوع وهو الموضوع الحقيقي في مجتمعنا لذلك أعتقد أنك ستحصل على أجر من الله

مع السلامة

Researcher: Can you tell me about the organisation you work for in terms of its function, policy, strategy regarding to raise awareness of food waste? RQ

Participant: Thank you, brother Nasser, for your interest in this aspect, I ask God for you the good. You know that the (General Grain Foundation) as a government body established in the 1990s hijri (Arabic calendar), with many tasks, and was assigned in the previous five years to implement: (the national program to reduce the waste and loss of food), and one of the functions of the foundation was to determine the baseline, the index of food loss and waste in Saudi Arabia, and thank God a book was issued (measurement of the food waste in Saudi Arabia), and the index of numbers that you have already seen my brother Nasser.

In the past two years, the Foundation has launched an awareness campaign to raise awareness among all segments of society in Saudi Arabia about the issue of food waste, reducing food loss, and reducing the loss index in the coming years, by setting a strategic goal of reducing the level of waste by 50% by 2030, and we at the Foundation are working on it, and we ask God for success.

Research: From your point of view what is the most popular social media platform used amongst the Saudi public, and what do you think is the reason of prefer this platform? RQ 2

Participant: The answer is from my knowledge of social media, through the Saudi public, twitter, Snapchat, and Tik Tok are among the most popular communication platforms of the Saudi public, but from a personal point of view I see Twitter as the preferred platform of the Saudi public,

and we also rely on it to put forward what we have through it. The main reason for the platform's fame, I think, is the ease with which it is used by most segments of society.

Research: How significant is the waste food phenomenon in Saudi society and what are its consequences for individuals, society, and government? RQ2

Participant: The risk to the individual, society and the Saudi government is divided into two parts: First: religious danger: Since Allah almighty mentioned in his holy book: (And Allah presents an example: a city which was safe and secure, its provision coming to it in abundance from every location, but it denied the favors of Allah. So Allah made it taste the envelopment of hunger and fear for what they had been doing) (Surat al-Bee: 16), we in the institution see wasting food behaviour one of the images that God mentioned in his book about waste, and its consequences to demise of graces, and Saudi Arabia has sought to educate society to ward off punishment from us, and to seek the satisfaction of God almighty by preserving his grace. Second: The danger of economic worldliness: food waste is a form of waste of the country's resources, as Saudi Arabia imports many basic food products and other from outside the country, in order to secure the life of the Saudi citizen, and its residents, and waste it in legitimate or illegal ways, is an exhaustion of the Saudi economy, and overloading it, because it is not used in its proper way, nor in the purpose that led the state to bear the costs of importing it from abroad. This is irresponsible behaviour from the consumers, but we in the organisation are optimistic that the level of awareness will rise among the consumers, and we get rid of this bad phenomenon, which harms the country's resources both productively and consumedly.

Researcher: have you ever seen any content which create influence on you on the next day to reduce the food wastage?

Participant: yes I can give you practical example like 2 year ago I have seen a picture kids from Africa they were struggling to find the food and their bodies was very weak which took my intention on the next moment to save the food or save money from our photo send for the poor people.

Researcher: could you explain me why this picture took your attention?

Participant: yes, I can say something for my heart when you see someone in trouble definitely as human being you would like to support whatever you can do.

Researcher: as you said as a human being when you see someone in trouble what do you mean by this?

Participant: I mean when you see someone with the weak body what is the reasoning behind because off the lack of food there in Africa which took my attention towards the matter because every day we waste too much food.

Researcher: from your talking can I say that relevant content to the matter on social media or relevant pictures can also impact on the public to reduce the food wastage in Saudi Arabia?

Participant: yes, he has to I agree with you that's what I mean.

Researcher: So, what type of the content would you like to see, or you would like to advise to share on the social media to reduce the food wastage and Saudi Arabia?

Participant: if we take the previous example, I give you I think we should create awareness among the public that we are wasting a lot but on the same time there are many people on the earth they're not getting then a food plus to fire the children?

Researcher: when you mention about the children do you think it's necessary to share the pictures of the children's regarding the food wastage?

Participant: yeah, this is your good question why I said children because most of the people they have more sympathy with the children's an old people or woman so if we include these types of pictures in the content it will be more influential on the people to reduce the food wastage in Saudi Arabia.

Researcher: I really like your explanation an idea to share the specific content which can create more influence for example you said children because most of us we are sympathetic about the children.

Participant: yes, what it is what we are because we are more caring about the children, and we are more influential once we see something about the children in the world.

Researcher: I agree with you what is your opinion if someone expert on the Twitter share some content have you seen any content being shared by the experts on the Twitter?

Participant: yes, I have seen there are some organisations they are sporting the idea to reduce the food wastage and they are also collecting some food to distribute it among the poor people. I can say that these types of expert people who has some knowledge to reduce the food waste re they can also create some impact but these type of the content should be appreciated by the public which can create more impact on the people.

Researcher: you have mentioned that van people they really liked the content which can create the impact on the people what do you mean by when the people like the content?

Participant: I mean if someone sharing content on the social media and people are viewing reviewing tweeting retweeting and sharing with all others it is creating a social proof bar the people like how much is this important to deal and how much is dangerous when we waste of food by the way we are I think on the top in food waste as a Saudi nation.

Researcher: do you think the people they also believe on the regions people want to talk about the food wastage and what is your opinion about the religious people when they involved in the content on social media to talk about the food wastage?

Participant: I agree with your opinion but it's not only about religion I'm sure there's not any religion in the world who appreciate the food wastage, but we have a problem in our social system and cultural system which facilitate I can say encourage the food waste at national level?

Researcher: I really like your idea when you set up, we have a problem in culture and social system which facilitate the food wastage in Saudi Arabia? what do you mean by the social system problem in Saudi Arabia?

Participant: if we just have a look on our dishes, we offer to our friends cast at home which is completely full of wastage because we order a lot which is a sign of respect for our guest so we cannot eat that much but we have to offer as a cultural norm to give respect to our guest.

Researcher: can you give me some other examples which are related to the social system and cultural issues in Saudi Arabia?

Participant: I am sure you also well aware about many examples how about the weddings one we offer whole camel to the people not only one camel is dependent on the drive in Saudi Arabia some tribes offer many camels as a sign of their tribe for their guest but I'm sure more than half of the food being wasted.

Researcher: thank you so much for your time and cooperation to participate in my research an I have no doubt about the information you gave me this information would be quite helpful for me for my thesis.

Participant: it's my pleasure and I am very happy to know that someone doing research on this topic which is the real issue in our society so I believe that you will get reward from God

Goodbye

7.2 APPENDIX B: INFORMATION SHEET TO THE PARTICIPANTS:

PARTICIPATION INFORMATION SHEET

Project: Citizen participation and Strategic communication through social media contribution to Food Waste awareness in Saudi Arabia – semi-structured Interviews

INVITATION

You are being invited to take part in a research project conducted by researchers from the University of Salford. Before you decide whether to take part, it is important for you to understand why the research is being done and what it will involve. Please take the time to read the following information carefully before you decide whether you wish to take part. You are welcome to discuss this project with others before you make your decision.

Please ask the researchers – contact details are provided below – if there is anything that needs clarification or if you would like more information.

Please note that participation in this study is entirely online or by telephone.

PURPOSE OF STUDY

The purpose of the study is to better understand experiences and perceptions of how they are currently using social media to achieve their organisational objective and how social media could improve stakeholder engagement to achieve their organisational goals. Consequently, the research results will present a context-specific model that will provide knowledge of how best to use social media for stakeholder engagement in the collection and redistribution of surplus food in KSA.

WHY HAVE I BEEN CHOSEN?

- You have been invited to take part in an online survey because you are a member of staff or a student at University of Salford and/or you have seen the opportunity through an email list or social media campaign.
- In addition, you may be asked to take part in an interview to follow up your questionnaire response. You do not have to do an interview.

WHAT AM I BEING ASKED TO DO?

- You may also be invited to take part in an interview about Citizen participation and Strategic communication through social media contribution to Food Waste awareness in Saudi Arabia

DO I HAVE TO TAKE PART?

It is up to you to decide whether to take part. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a consent form. You can still withdraw at any time without it affecting any benefits that you are entitled to in any way. You do not have to give a reason.

WILL I BE RECORDED AND HOW WILL THE RECORDED MEDIA BE USED?

[Interviews only] Audio recordings support the researcher in retaining as much information from research encounters as possible. You do not have to consent to audio recording to participate in this research. The audio recording will be transcribed and used for analysis. Transcription will be by a third-party, GDPR-compliant organisation. All information collected about you during the research will be kept strictly confidential, and any information about you that leaves the university will have your name and contact detailed removed so that you cannot be identified.

EXPENSES OR PAYMENTS

Potential participants are not offered any amount of money with regard to taking part in this study.

WHAT ARE THE POSSIBLE DISADVANTAGES/RISKS OF TAKING PART?

We do not anticipate any disadvantages or risks arising from your taking part in this research.

WHAT ARE THE POSSIBLE BENEFITS OF TAKING PART?

We cannot promise the study will help you directly but the information we get from the study will help to present a context-specific model that will provide knowledge of how best to use social media for stakeholder engagement to raise awareness about food waste in KSA and collection and redistribution of surplus food in KSA.

WHAT IF THERE IS A PROBLEM?

If you have a concern about any aspect of this study, you can contact the researchers by email N.alkorbi@salford.ac.uk and M.Hernandez-Perez@salford.ac.uk and S.Simpson@salford.ac.uk who will do their best to answer your questions. Following this, if you have any issues or complaints, you may contact Jack Wilson, Ethics Chair for the School of Arts and Media by email (j.j.wilson@salford.ac.uk) or by telephone (0161 295 4109).

WILL MY TAKING PART IN THE STUDY BE KEPT CONFIDENTIAL?

All information that is collected about you during this research will be kept strictly confidential, with all procedures for handling, processing, storage and destruction of data match General Data Protection Regulation (GDPR). All participant data, such as interviews, will be anonymous and given a participant ID code, known only to the researchers. A master list identifying participants to the research codes data will be held on a password protected computer accessed only by the lead researcher. Paper copies will be stored in a locked cabinet, within a locked office, accessed only by researcher and electronic data will be stored on password protected servers at University of Salford. Data will be retained for 5 years, after which it will be disposed of securely. Research will be used for analysis, report writing, academic journal articles and conference presentations. Any data used will be fully anonymised so that you cannot be recognised.

Please note that assurances on confidentiality will be strictly adhered to unless evidence of wrongdoing or potential harm is uncovered.

WHAT WILL HAPPEN IF I WANT TO STOP BEING PART OF THE STUDY?

It is important to assure the potential participant that participation in the research is absolutely voluntary and that he or she will be free to discontinue participation at any time. The information should indicate that refusal to participate or decision to withdraw will not result in any penalties or loss of benefits to which the participant is otherwise entitled.

WHAT WILL HAPPEN TO THE RESULTS OF THE RESEARCH STUDY?

Results from this research will be used for several research outputs including a general audience project report and an academic paper.

If you would like access to any written materials that result from this research, please select this box on the consent form. You will not be identified in any report/publication. The University may keep the data and use it in future studies. If we do this, it will only be in a completely anonymised form.

WHO IS ORGANISING OR SPONSORING THE RESEARCH?

This research is being conducted by researchers from the University of Salford. The research is funded by Saudi Embassy in London.

FURTHER INFORMATION AND CONTACT DETAILS?

For any further information or to ask questions or clarifications, please do not hesitate to contact the research team:

Nasser Alkorbi Email: N.Alkorbi@salford.ac.uk

Ph.D. student



Main Supervisor Dr. Manuel Hernández-Pérez Email: M.Hernandez-Perez@salford.ac.uk

Lecturer BA(Hons) Digital Media Interim Program Leader Digital Media and XR
School of Arts & Media, Media City UK

Second Supervisor Prof Seamus Simpson Email: S.Simpson@salford.ac.uk

Professor of Media Policy|
School of Arts, Media and Creative Technology| University of Salford| Media City UK Salford Quays
Manchester| M502HE.

As a participant, you will keep both a copy of this participant information sheet and a signed copy of the consent form.

**THANK YOU FOR TAKING THE TIME TO READ THIS
DOCUMENT (28/01/2022)**

7.3 APPENDIX C: PARTICIPANTS' CONSENT FORM



Contributor Consent Form

Details	Contributor's initials
I have been given a copy of the Project Information Sheet for the project titled <u>↳</u> Citizen participation and Strategic communication through social media contribution to Food Waste awareness in Saudi Arabia	
I have had the opportunity to ask questions about the production and have received satisfactory answers.	
I consent to be recorded/filmed for the named production and give my consent for the use of recordings/footage of my performance, voice, likeness, image, etc. to be used within this production.	
I understand that personal information and data relating to me will be kept in a safe and secure location and will be used purely for the purposes of the project. No-one other than production team members, module staff or examiners will have access to the data collected. (Further information on the University's Privacy policy can be found at https://www.salford.ac.uk/privacy).	
I understand that I can choose how I am identified within the production and any associated materials (<u>e.g.</u> real name/pseudonym/professional name).	
I understand that the completed project, or extracts of it, may be shown or broadcast publicly, and/or published, including online.	
I understand that my contribution is entirely voluntary and that I can withdraw from the production at any time.	

My preferred method of being contacted is:

- telephone
 email
 other



Contributor Name:		Student Name:	
Contributor Signature:		Student Signature	
Date		Date	



If you require any further information about this production project or have any concerns which arise during your participation in the production, please contact:

Project Supervisors (Dr. Manual Hernandez, Email: M.Hernandez-Perez@salford.ac.uk) (Prof Seamus Simpson, S.Simpson@salford.ac.uk) Module Leader (Carole O'Reilly, Email: V.Oreilly@salford.ac.uk).

7.4 APPENDIX D: CONFERENCE.

1. 4th World Conference on Social Sciences (WORLDCSS). On 3th of june 2022.



7.5 APPENDIX E: TRAINING AND WORKSHOPS I ATENDED

Date	Title of training, workshops	Key learning point
20/10/2021	Reading with critical eye	Assessment the relevant article
29/10/2021	Research development	Increase knowledge about the useful information, departments, and workshops in the university.
5/11/2021	Writing & thinking retreat on campus	Planning the research
11/11/2021	Guided Workshop in using NVivo	Increase knowledge about the useful NVivo software and how to analyse the statistic.
3/12/2021	Writing & thinking retreat on campus	Planning the research
19/01/2022	Developing coding structure and thematic analysis in NVivo.	Support in-depth data analysis
24/01/2022	Research Ethics	It's compulsory to attend. Increase knowledge about the useful information, how to

		submit the application on the Ethics app.
25/01/2022	Communication Week Workshop: Diary of a Ph.D. Candidate	Hearing from experienced Ph.D. candidate his doctoral journey.
26/01/2022	Publishing PaR: options, challenges, and future possibilities	Got useful information about publishing.
16/02/2022	Managing your Research data	To keep your data safe
16/02/2022	An introduction to Endnote 20	Endnote referencing software
01/03/2022	Theoretical Saturation Seminar	Explicating the role and concept of theoretical saturation in qualitative research
07/03/2022	Environmental media policy and practice: challenges for an emerging field	Explore the ecological footprint of media production and the policies and strategies developed in media sector.
09/03/2022	PGR student forum	Space for PGRs sharing information that is useful for future meetings and everything preparing more self-led training viva preparation.
26/05/2022	Research strategy/impact workshop	It provides a useful language to help researcher evidence their skills and competences
16/06/2022	Idea Puzzle webinar	How to design and defend your PhD
27/07/2022	Avoiding plagiarism	How to avoid plagiarism in your work
05/10/2022	Interpretive Phenomenological Analysis Group	To explore a wide range of topics I lived experience
12/10/2022	Interpretive Phenomenological Analysis Group	This induction is required for all students entering their 3rd/final year of study to outline the progression points
16/11/2022	Top Tips for writing success	Offer a very important suggestion as well as a method for writing in a way that is both intelligent and effective.
17/11/2022	Viva Preparation: From the student angle	Viva experience
25/02/2023	Developing your academic profil	Learn how to effectively promote yourself and your research online.
21/03/2023	PGR Work tribe Training	Work tribe is the new University platform for managing research. Through Work tribe you will deposit your thesis; create and

		manage an academic profile and deposit your outputs and publications.
24/03/2023	Vox Viva Training	training with PGR Directors and following on from the success of Vox's Viva sessions last year we are working with them again to offer Viva training sessions targeted to those in the final year of their PhD.

7.6 ETHICAL APPROVAL FOR THE STUDY

Ethics Application: Panel Decision



ethics <ethics@salford.ac.uk>

15/02/2022 10:40



To: Nasser Alkorbi Cc: Manuel Hernandez Perez

The Ethics Panel has reviewed your application: Citizen participation and Strategic communication through social media contribution to Food Waste awareness in Saudi Arabia
Application ID: 4269

The decision is: Application Approved.

If the Chair has provided comments, these are as follows:

Dear Nasser,

This is a very clear application and I would not have any problems approving it, but you have not included a participant information sheet. Guidance for what to include in your participant information sheet is available on the ethics hub.

If you would like any additional guidance or you have trouble finding the information you need, please do not hesitate to contact me. My email address is j.j.wilson@salford.ac.uk

Best,

Jack