Towards reducing food waste in a hotel breakfast buffet

- A case study of Profil Hotels Calmar Stadshotell

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Abstract

Food waste is a major environmental issue. It takes electricity, water, and energy to produce food, to store it, to refrigerate it, to transport it and to prepare it. If for some reason the food is then not consumed, it goes to landfill, where it produces greenhouse gases. The fact that food waste is a significant contributor to the tourism industry’s negative impact on the environment has not received as much attention from tourism academics as one could expect, given the magnitude of the problem in tourism, neither has it been given much attention on how to handle it.

This study therefore looks into ways to alter consumer food waste as well as identifying the opportunities of food service strategies that allow reducing food waste, while at the same time maintaining the quality of the service at a hotel in Kalmar. The research used social practice theory (SPT) and the concept of service quality as a theoretical framework to guide the collection as well as the analysis.

The empirical work of this study consists of two phases, where firstly an exploratory phase was conducted to measure food waste from the breakfast buffet and to conduct a customer survey to point out possible initiatives to reduce food waste. The responses and results were then further analyzed to find patterns and themes which formed the explanatory phase, focusing on assessing the interest of hotel management to adopt solutions reducing food wasted from the breakfast service.

The results and analysis proved that most participants, whether consumers or providers, already have a general idea of what sustainable food consumption means as well as engaging in sustainable practices and behaviors. The analysis of the results through the framework of SPT revealed that the factors that motivate participants to engage in sustainable behaviors resonate more to sustainable consumption rather than reducing the consumption, which can be a reason for the vast amount of food waste. However, the results revealed that though there is a growing movement towards reducing food waste as well as straightforward strategies that can be implemented to reduce food waste, there is still a need to try and change the fundamental behaviors to become more sustainable in that matter.

Keywords: Tourism, breakfast buffets, Social Practice Theory, Food Waste, sustainable development
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1. Introduction

In 2016 tourism contributed to 10% of the global GDB and provided one out of ten jobs worldwide (WTTC, 2017). This success, however, comes at a price. Tourism is unfortunately also a significant contributor to undesirable environmental changes, such as biodiversity loss and climate change (Hall, 2010) and produces up to 35 million tons of solid waste each year (Pirani & Arafat, 2014; Willmott & R GRACI, 2012). Food waste, in particular, has become an issue of numerous environmental policies such as the European Union's (EU) agenda, the 7th Environmental Action Plan (Papargyropoulou et al., 2016). At a global level, food sustainability and food waste have become a priority for the Sustainable Development Goals and Agenda 2030 (Hambrey, 2017). While different environmental programs have brought up the complexity of the global food waste problem, research on the drivers and patterns regarding food waste, as well as data regarding the economic considerations and the customers’ perspective is still to be studied to finally conclude what should be done.

While governments could regulate the tourism sector to ensure more environmentally sustainable development, such regulations will likely lead to the loss of revenue due to reduced demand for tourism service (Juvan & Dolnicar, 2016). Understandably, governments are rather skeptical and do not introduce special environmental regulations for tourism businesses easily (Bramwell & Lane, 2010). On the other hand, the tourism sector could self-regulate, but doing so it will face a threat of losing profit because implementing environmentally sustainable measures increases operating cost (Hall & Higham, 2005; Juvan & Dolnicar, 2016). Therefore, what is left is the tourists themselves, who seem to be the most promising way of trying to reduce the negative impacts of tourism on the environment (Gössling, Hansson, Hörstmeier, & Saggel, 2002; Juvan & Dolnicar, 2016). Tourists can help by making environmentally sustainable decisions and behaving in an environmentally friendly way, and although this might sound desperate, there were 1,2 billion international tourist arrivals in 2016, a number that is said to grow to 1,8 billion by 2030 (UNWTO, 2011). Thus, if there is something that could convince even a small fracture of these people to behave more environmentally friendly, it will have a vast effect on the sector’s environmental sustainability. Since the environmental impact of food provision accounts for 20% of global greenhouse gas emissions (Hertwich & Peters, 2009), reducing the negative effect of food consumption and waste is considered a key strategy to mitigate climate change (Gössling, Garrod, Aall, Hille, & Peeters, 2011).
Except for a few studies (e.g. Gustavsson, Cederberg, Sonesson, Van Otterdijk, & Meybeck, 2011a; Marthinsen, Sundt, Kaysen, & Kirkevaag, 2012; Pirani & Arafat, 2016), the fact that around one-third of all food is either wasted or lost has not received as much attention from tourism academics as one could expect, given the magnitude of the problem in tourism (Frisvoll, Forbord, & Blekesaune, 2016). Neither has it been given much attention on how to handle it (Kallbekken & Sælen, 2013). The studies that do bring up food waste, such as food waste management initiatives tend to focus on the prevention of food waste. Prevention is thus far the most sustainable solution to the food waste problem, especially if one follows the European Waste Framework Directive (EC, 2008).

Another issue is that many studies choose to focus on investigating the sources of food waste from households (Evans, 2011a; Gjerris & Gaiani, 2013; Graham-Rowe, Jessop, & Sparks, 2014; T. E. Quested, Parry, Easteal, & Swannell, 2011), while little is known about other outlets such as restaurants, whose services highly contribute to the food waste amounts. As an example, in 2014 the Swedish households produced 720 000 tons of food waste, in comparison to the restaurants that generated 66 000 tons of food waste, of which around 60% was avoidable (Naturvårdsverket, 2017). Some studies have also looked into the aspects of the use of buffets to present meals to guests (Kallbekken & Sælen, 2013; Papargyropoulou et al., 2016). It is suggested that buffets not only encourage customers to eat more food, but also choose the unsustainable options, such as meats, and choose foods that they would not usually consume at home, such as prawns (Gössling et al., 2011). Lastly, buffet diners tend to produce more plate waste, but on the other hand, buffets could serve as inspiring customers to make climate-friendly decisions, either consciously or unconsciously (Pulkkinen, Roininen, Katajajuuri, & Järvinen, 2016).

Research has shown that designing different ways in which choices can be presented to consumers can alter their behavior (e.g. Juvan, Grün, & Dolnicar, 2017; Scheibehenne, Greifeneder, & Todd, 2010; Thaler & Sunstein, 1999), without lowering the guests’ satisfaction. Since tourists are not likely to sacrifice pleasure and enjoyment for the sake of the environment, a focus on the service quality is also crucial (Levett, 1998). Quality is one of the main drivers of customer satisfaction; consumers will always look for quality no matter what they are buying. This study therefore aims to look into ways to alter consumer food waste as well as identifying the opportunities of food service strategies that allow reducing food waste, while at the same time maintaining the quality of the service. This research further uses social practice theory (SPT) as a conceptual framework which allows a shift in the focus from
attitudes and behavior of the customers toward more holistic approach looking at ‘practice’ to further explain what other factors affect food waste practices.

1.1 Background and research gap

Food waste is a major environmental issue. It takes electricity, water, and energy to produce food, to store it, to refrigerate it, to transport it and to prepare it. If for some reason the food is then not consumed, it goes to landfill, where it produces a gas called methane, a greenhouse gas that is at least 25 times more powerful in global warming than carbon dioxide is (Gunders, 2012). Past studies illustrate alternative ways to reduce this environmental issue in the hospitality industry. One way would be to remind travelers while on holiday, while in a hotel, to do the right thing. However, research shows very clearly that explaining, educating and reminding people has not lead to behavioral change (Baker, Davis, & Weaver, 2014; Carrete, Castaño, Felix, Centeno, & González, 2012; Dolnicar, Knezevic Cvelbar, & Grün, 2017). Another idea could be to persuade customers, for example through “nudging” them into becoming more environmentally friendly. The attempt of nudging focuses on preserving the public’s freedom of choice while at the same time steering individuals towards the desired behavior. The influence of the plate size is one example of how businesses can manage the consumers’ food intake and thus reduce food waste (Wansink & Van Ittersum, 2013). Studies have shown that reducing the plate size at the hotel breakfast buffet by three centimeters leads to up to 20% less food waste (Kallbekken & Sælen, 2013). The impressive results were that the tourists were equally satisfied with the smaller plates. Plate reduction therefore is one straightforward solution of how it is possible to make breakfast buffets more environmentally friendly.

In light of food waste being a significant contributor to the tourism industry’s negative impact on the environment (Gössling et al., 2011) the study by Juvan et al. (2017) contributes enormously to the research into food waste in tourism. Their project was the first to test differences in food waste generated by different types of tourists as well as measuring the exact amount of food waste produced. Their study revealed that the average food waste per person per day (caused by food taken but not eaten at breakfast buffets) was 15.2 grams (Juvan et al., 2017). While 15.2 grams might not seem like that much, and in fact is not a huge amount (15.2 grams is equivalent to about half a bowl of cornflakes), the plate waste can cause restaurants and hotels unnecessary costs in food purchasing and production. Not only does it have a negative economic impact but it can also harm the environment through resulting in greenhouse
emissions as well as using more land and water resources. These problems do not arise from one person wasting 15,2 grams, but rather looking into the fact that there are 1,2 billion international tourists and between five and six billion domestic tourists who could be wasting 15,2 grams per person. So if each of these tourists, during their four nights of average stay, wastes half a bowl of cornflakes, we have a huge problem.

However, there are studies which indicate that there are differences in how much waste people produce. In the research by Juvan et al. (2017), it was identified that key characteristics of the guest mix are associated with higher or lower food waste. Factors that were associated with higher food waste were: Families with children who pile more on their plates than they can eat (Wansink & Johnson, 2015), guests from different countries have different food waste habits and lastly, food abundance effects food waste, showing that the more food we see, the more we think it is probably nothing special, and we are therefore more willing to waste it (Kuo & Shih, 2016).

One way to encourage tourists to be more environmentally friendly is to give them a little reward for the desired behavior (see also Han & Hyun, 2018 for similar findings in guests decision formation). A study by Dolnicar et al. (2017) gave the customers a choice to waive the entire room clean. The benefits of doing so are substantial. Overall one could save 1,5 kWh of energy, one hundred milliliters of chemicals and 35 liters of water. Interestingly the results from the research revealed that guests were cynical over the offered pro-environmental behavior. Guests did not see it as an environmental activity, but rather think that this is a way for the hotel to save money at their expense. The statement per se is not false; the hotel does save a great deal of money. To drive this experiment further the hotel decided to divide the economic benefits equally. I.e. 50% of the money saved went back to the hotel, and 50% of the money saved went back to the customer in form of a drink voucher, resulting in a minimization of 42% of the routine cleans, and interestingly, without lowering the guest’s satisfaction. However, on top of this, another experiment was conducted where they explained the environmental benefits of waiving the entire room clean. This showed no change what so ever, neither positively nor negatively, meaning that the knowledge of this being environmentally good did not have an effect (Dolnicar et al., 2017). Current theories, which are quite good at explaining, predicting, and changing pro-environmental behavior in the home context, fail catastrophically in the holiday context.

Barr et al. (2010) for instance noted that “whilst individuals are relatively comfortable with participating in a range of environmental behaviors in and around the home, the transference
of these practices to tourism contexts can be problematic” (Barr, Shaw, Coles, & Prillwitz, 2010: 474). The difference between how people behave at home compared to how they behave on holiday corroborates with the suggestion from Becken (2007) that for some individuals, tourism is not considered as a context for environmentally responsible behavior at all. Meaning that tourist’s values and beliefs are not aligned with their behaviors, which also means that trying to convince them, educate them or preach to them simply will not work. This issue leads back to the fact that tourists need to be enticed into becoming more environmentally friendly. One way is changing the infrastructure, such as with the plate reduction example, or rewarding the customer, such as the drink voucher example. However, whatever the case, and whatever we chose to do, the one thing we must not, is to assume that tourists will sacrifice pleasure enjoyment, for the sake of the environment.

If I eat my breakfast, and if I choose not to need my room cleaned, it does not make much of a difference. However, if 1.2 billion tourists nationally do that, it can actually make a big difference. So as an example, if all these international and domestic tourists were to be grouped into one huge group, and only 1% of this group would forgo the daily housekeeping service, it could save enough water for food preparation and drinking for five million humans, every single year (Dolnicar, 2017). Because sustainable development is a shared concern, sustainable initiatives should be conducted as a collective effort. This is why the research is being conducted since it would not only have environmental benefits but assist the case study in multiple ways as well as improving the industry and make it more durable.

1.2 Aim and objectives of the study

The broad aim of this study is to investigate food waste practices related to breakfast buffets in a hotel chain, in order to recommend possible strategies to reduce food waste (both from food waste such as plate waste from customers as well as food waste such as over production from the hotel) without jeopardizing the service quality. The study consists of three phases where each phase has a specific method and corresponds with the respective research objectives.

1. To assess the food waste from the breakfast buffet in Calmar Stadshotell.
2. To understand how to reduce food waste from the breakfast buffet.
3. To assess the interest of hotel management to adopt solutions reducing food waste from the breakfast buffet.
1.3 Flow of process for the study

The flow of process for the study of food waste generation and prevention was developed from the literature (based on Evans, 2012; Graham-Rowe et al., 2014; Quested, Marsh, Stunell, & Parry, 2013). The process has been designed to fit not only the challenges faced during the research process but also so it can be adapted to the particular case study in question. The first stage of the process is the waste audit, which is featured as the primary tool for data collection, focusing on data such as food weight, composition, and origin. However, the waste audit only offered limited information of the drivers of food waste. Therefore, methods such as participatory observations, interviews, and surveys will be conducted to further collect data. The process is designed so that the qualitative and quantitative methods are carried out simultaneously. For example, the waste audit data and the customer surveys indicated what the qualitative methods (interviews) should focus on, and what questions would give a greater understanding of the quantitative data collection (waste audit). The exchange of findings and results between these methods can be seen in figure 1 as thin arrows, while the thicker arrows indicate the process flow. Though the figure suggests that the process is linear, in reality, the research process involves cycles of data collection and analysis, before reaching the wanted outcomes.

![Figure 1 Flow of process for the study of food waste generation and prevention in the hospitality sector](image-url)
1.4 Disposition of the study

The following chapter outlines the chapters of this thesis with the purpose to provide the reader a guide to understanding the flow and structure of the study.

This thesis is built up of eight main chapters, including this introductory chapter that provides the necessary background information, aim and problem of the project. Chapter 2 consists of a literature review, presenting previous research on the topic of food waste on a global scale, food waste in the hospitality industry, as well as food waste directives. Chapter 3 presents the theoretical framework for the study, with two subchapters focusing on the Social Practice Theory and Service Quality. The fourth chapter provides a description of the case study Profil Hotels Calmar Stadshotell as well as the hotels eco-label Green Key.

Building in the previous literature and the theoretical framework, the fifth chapter outlines the methodology of the study, drawing on a research strategy implementing both quantitative (survey) and qualitative (interviews) methods as well as participatory observations and waste auditing. The chapter concludes with ethical considerations and research quality as well as limitations of the study. Chapter 6 presents the findings from the mixed methods used in this thesis, where the chapters are divided into the three different methods used. Since the results are divided into different subchapters, the following chapter discusses the findings and revisits the aim and objectives of the study. Finally, chapter 8 provides a conclusion where it reconnects with the aim and objectives as well as summarizes findings and suggests future research.

2 Literature review

The goal of this literature review is to show what is known about food waste (in general) and food waste in hotels (in particular). Firstly, a number of selected recent scientific articles and reports was analyzed to gain a better understanding of the terminology adopted when referring to food waste. Secondly, to find the right themes within this subject a focus on food waste at the end of the food supply chain was conducted, therefore not focusing on issues related to the beginning of the food supply chain, such as farming, harvesting, and processing. Instead, the focus lies on the retail and consumer part of food waste, with further attention to this issue in the hospitality sector.

The study investigates the use of the term “food waste” and “food loss” and reviews the documents in order to analyze the approaches adopted for food waste within the hospitality industry. Relevant articles and other documents have been identified through search engines
In addition to using keywords such as “Food waste” “food loss” as well as combining those words with “hotel” “hospitality” “tourism” “climate change” and “attitudes and behavior”. While the majority of the sources used in this literature review are academic and peer-reviewed articles, some reports and national documents are included because of their relevance to the topic. Even though reports of this sort are not usually used in literature reviews, they are included here since much of the academic and peer-reviewed articles referred to them. The documents selected for this study present a standard view of looking at food waste as something non-sustainable.

The structure of the literature review is as follows: Firstly, the chapter presents a definition of food waste, followed by an explanation of food waste as a global issue. The next chapter defines food waste in the hospitality sector, and lastly, the chapters present different solutions and directives from past studies on how to minimize food waste.

2.1 Defining food waste

Literature provides various definitions of food losses. In some studies, food wasted in the early stages of the supply chain (such as post-harvest of processing stages) is referred to as “food losses”, while food waste produced at the consumption stage is referred to as “food waste” (e.g. Gustavsson et al., 2011a; Lipinski et al., 2013). Others divided food waste into avoidable and unavoidable categories, in other words, referring to the edibility of the wasted food (Koivupuro et al., 2012; Papargyropoulou, 2014; Schott & Andersson, 2015). For the reader to understand the view of food waste in this thesis, an understanding of food is first needed. The definition of food in this research refers to food which has been originally produced for human consumption but for different reasons turned into non-food use or waste disposal. This definition is closely associated with the definition of food losses made by T. Quested and Johnson (2009) who group it into three categories:

1. Avoidable losses – food and drink thrown away that was, at some point prior to disposal, edible. This can be due to the food exceeding their date of expiry (e.g. moldy slice of bread, rotting meat)
2. Possibly avoidable losses – food that some people eat and some do not (e.g. apple peels, bread crusts)
3. Unavoidable losses – waste arising from food preparation that is not and will never be edible under normal circumstances (e.g. egg shells, pineapple skin, tea bags).
These definitions focus on the retail and consumption stages of food waste, which applies to the aim of this study seeing as it focuses on food waste at the consumption stage. The consumption stage in this thesis is further divided into preparation waste, overproduction waste, and plate waste.

The term plate waste is used to describe food taken but not eaten, the term overproduction waste is used to describe food prepared but not eaten, and the term preparation waste is used to describe food waste generated in the preparation stage (Jensen, Stenmarck, Sörme, & Dunsö, 2011; Kuo & Shih, 2016). All these stages include avoidable losses, possibly avoidable losses, and unavoidable losses.

The definitions of food waste are thus avoidable, possibly avoidable and unavoidable food losses from the preparation, overproduction and plate scraping stages. Finally, for further clarity of this study, the term “food waste” is used when referring to both food loss and food waste.

2.2 Food Waste – A global issue

Food waste has been identified as a barrier to global sustainability due to its impacts on natural resources, such as land and water (Food & Nations, 2013), food security (EIU, 2014), the environment (Katajajuuri et al., 2012) and human health (Pham, Kaushik, Parshetti, Mahmood, & Balasubramanian, 2015). In response to this, there has been an increase in public concern and political attention to food losses, which has resulted in a growth in literature dedicated to this emergent problem. For example, the Food and Agriculture Organization of the United Nations (FAO) estimates that each year nearly one-third of all food produced for human consumption is the world is lost or wasted.

The global volume of food waste is estimated to be around 1.6 Gtonnes of “primary product equivalents” (e.g., wheat) usually occurring in developing countries where the waste is due to post-harvest and during processing due to poor agricultural storage. Furthermore, 1.3 Gtonnes of the global food waste is due to the edible part of food, or the so-called food surplus and wastage at the later stages, which are usually observed in developed countries (Food & Nations, 2013; Parfitt, Barthel, & Macnaughton, 2010). Reports on the regional or individual country levels have also highlighted the scale of food waste and its impact on the environmental economic and social development. The European Union, for example, is said to generate roughly 100 million tons of food waste annually (Timmermans, 2015), and from the British waste and resources action programme report, it can be seen that the U.K. households alone
wasted approximately 7.2 million tons of food in 2012 (T. E. Quested et al., 2011). Other industrialized countries show similar numbers where for example Finland, Denmark, Norway, and Sweden threw away 30%, 23%, 20% and 10-20% of food bought, respectively (Gjerris & Gaiani, 2013). This is why, in the developed countries, the consumer plays an essential role in combating food waste.

2.2.1 Environmental impacts of food waste

The carbon footprint of food waste is estimated to be around 3.3 Gtonnes of co2 (FAO, 2013). According to the latest data available this number puts food waste in third place of top emitters, after USA and China (WRI, 2012). Similarly, the World Resources Institute brought up other costs to the environment due to food waste, including the drain of natural resources such as freshwater, cropland, and fertilizers. Food waste accounts for approximately 173 billion cubic meters of water per year (Lipinski et al., 2013), while at the same time water scarcity is one of the most pressing challenges faced by humans (Rockström, Falkenmark, et al., 2009). Food waste also uses approximately 194 million hectares of land per year (Foley et al., 2011), while at the same time the area most suitable for cropping have already been converted to cropland, meaning that expansion is usually connected to environmental degradation (West et al., 2010). Produced but uneaten food therefore takes up a lot of space, almost 1.4 billion hectares of land, which is equivalent to around 30% of the world’s agricultural area (FAO, 2013). Food production also incorporates the disruption on the biogenic cycles of nitrogen and phosphorus used as fertilizers (Rockström, Steffen, et al., 2009), which has adverse impacts on biodiversity and water quality (Bobbink et al., 2010). Another environmental impact of food waste is at its final stage in landfills. The disposal of food waste generates a tremendous amount of methane and carbon dioxide, which further contributes to climate change (Adhikari, Barrington, & Martinez, 2006). The previous stages of food before it becomes waste is also closely linked to carbon emissions, where issues such as processing, manufacturing, transportation, storage, distribution, and retail all have an embedded greenhouse gas impact (Padfield, Papargyropoulou, & Preece, 2012).

Though it is hard to estimate the total global environmental impact of food waste, there are analyses available based on results of recent studies on global food waste (Gustavsson et al., 2011a) and water footprints of agricultural products (Mekonnen & Hoekstra, 2011). It can be summed up that food waste creates an issue of wasting resources all along the supply chain, since throwing away edible food, you are throwing away a product that has used resources all along the food supply chain (FAO, 2013).
2.2.2 **Societal impacts of food waste**

In addition to economic and environmental impacts, food waste contributes to societal impacts (Salhofer, Obersteiner, Schneider, & Lebersorger, 2008). A focus here lies on the ethical and moral dimension of wasting food (Parfitt et al., 2010), especially in relation to the inequality between wasteful practices regarding food and the issue with food poverty (Evans, 2012). These issues are seen as major problems today and will continue to worsen alongside the growing population (Godfray et al., 2010). Making it worse are the habits, practices and cultural attitudes in the developed countries where high levels of food waste are produced (Garrone, Melacini, & Perego, 2014), while at the same time there is a food shortage in the developing countries (Godfray et al., 2010). When juxtaposing these two problems next to each other, it is easy to notice the ethical and moral issue. Namely, developed countries waste edible food, while undeveloped countries do not even have enough to eat (F. Schneider, 2013a).

Edwards and Mercer (2007) mention the ethics of food waste, where they explore the movements of “freeganism” and “gleaning” as a new form of consumption pattern. The groups consume food that has been thrown away, resulting in minimizing the environmental impact as well as addressing the social inequality of food access (Edwards & Mercer, 2007). According to Evans (2011a), there is a strong linkage between sustainable consumption of food and sparing in the use of money, goods, and resources, where the emphasis on careful consumption also links to avoidance of waste. Evans suggests that this has a strong moral dimension since the notion of food waste and its diversion from human consumption is immoral (Parfitt et al., 2010).

The individual behavior and cultural attitudes towards food of the developed countries can complicate recirculation and recovery, since their behavior creates a challenge when trying to minimize and prevent food waste (Evans, 2012; Godfray et al., 2010), but they at the same time try to be optimistic and meet the United Nations second sustainable development goal of “zero hunger”. The developed countries also have other organizations which emphasizes food waste, such as the US Environmental Protection Agency (EPA), who focus on the economic implications of food waste. The minimization of food waste is said to not only be beneficial on a societal and environmental aspect, but result in substantial cost savings (EPA, 2003; Papargyropoulou, Lozano, Steinberger, Wright, & bin Ujang, 2014).
2.2.3 Economic impacts of food waste

Food waste has significant economic impact (Evans, 2011b; Morrissey & Browne, 2004; WRAP, 2011). It not only causes smaller income revenues for the producer, but food waste also causes consumers to spend more money on food (WRAP, 2011). For example, at the consumption stage, food waste costs on average US$1,600 per year for a family of four in the United States, and for a family of four in the United Kingdom the costs is around £680 (WRAP, 2011). According to the FAO (2016) the cost of the global food waste in 2007 was as high as 750 billion USD and in the EU the number was 143 billion in 2012, keeping in mind that a great deal of this food loss was marked as avoidable food waste (Fusions, 2015). Studies also highlight the economic value of the food produced and wasted in the food supply chain (Gustavsson et al., 2011a; Lundqvist, de Fraiture, & Molden, 2008). According to these studies, avoidable food losses have a direct negative impact on the income, both for farmers and consumers. Considering the enormous amount of food losses in the food supply chain, making investments in reducing food losses being one way of lowering the costs of food for in the supply as well as in the consumption stage. Lundqvist et al. (2008) and Gustavsson et al. (2011a) suggest that food waste has a direct negative impact on the income for both farmers and consumers and therefore has a high economic value. Food insecurity is usually more seen as a question of access than a supply problem, but improving the efficiency of food supply would also result in bringing down the costs of food and thus increasing access (Papargyropoulou et al., 2016). If one considers the magnitude of food losses in the food supply chain, even minimizing it slightly through profitable investments could be one way of reducing food costs as well as being more environmentally friendly (Papargyropoulou et al., 2016).

In summary, food waste is a problem that has been ignored for a long time, whether looking at it from a producer or a consumer point of view. From an environmental perspective, if food waste was a country, it would be the 3rd largest emitter of carbon dioxide in the world (UN Environment, 2018). Looking at it from a social aspect, we have 2.1 billion people being overweight or obese while 800 million people are malnourished (UNWHO, 2017). However, what is maybe most surprising is the economic impact of food waste. Independent audits have shown that hotels for example on average throw away food that is equivalent to 245,000 USD per year, yet there are hardly any hotels that monitor this systematically. The next chapter therefore outlines the main issues regarding food waste in the hospitality industry as well as presents practical solutions that can be implemented in the hospitality industry. These examples of implementations are mostly from past literature as well as results from past studies. There
are however government efforts that have focused on tackling food waste, which can be useful in a smaller scale such as hotels and restaurants. To give a better understanding of this, the following chapters outlines the proposed actions against food waste as well as linking food waste and food waste directives to the hospitality industry.

2.3 Food waste in the hospitality industry

Food is today seen as one of the essential elements to a tourist experience (Hall, Sharples, Mitchell, Macionis, & Cambourne, 2004). The importance of food on holidays has been recognized in various studies for the past 25 years (Hall & Sharples, 2004; Ignatov & Smith, 2006; Kim, Eves, & Scarles, 2009; Telfer & Wall, 2000). It is recognized that there is an essential inter-relationship between food production and consumption, which from a sustainable aspect is highly significant. The social and cultural significance of food has also gained recognition, such as using food to sustain a regional identity (Everett & Aitchison, 2008; Pilcher, 1996; Timothy & Ron, 2013) as well as the role of food in tourism, where studies have shown that food can play an important role in tourist satisfaction (Nield, Kozak, & LeGrys, 2000; Quan & Wang, 2004). Research has suggested that consumption of food and beverages, experimenting with different local delicacies, could serve as a key reason to why travelers visit a particular destination (Kivela & Crotts, 2006). Thus, studies have shown that food plays an important role in the way the tourist views the destination as well as food being a reason to why some travelers would return to the same destination (Hall, Cambourne, Sharples, Macionis, & Mitchell, 2003; Henderson, 2009; Kivela & Crotts, 2006). The importance of food while traveling shows that the problem regarding food waste has a close linkage to practices, habits, as well as cultural attitudes. For this reason, it is important to study these practices to be able to tackle issues such as food waste. Lastly, a vital point is the economic aspect, where studies show that up to one-third of the tourists spending goes to food expenditures (Torres & Momsen, 2004).

Since generating waste is considered one of the most noticeable effects the hospitality industry has on the environment (Curry, 2012), it is of great importance to start looking into minimizations strategies for food waste in the hospitality industry (Pirani & Arafat, 2016). Unfortunately, there are not many scholarly publications available regarding food waste in the hospitality sector. A review paper that accounted for publications about food waste prevention on an international level only included one publication about cafeterias in Brazil, two publications focusing on the hospitality sector and one publication about hotel restaurants in
Norway (F. Schneider, 2013b). Most of the data regarding food waste in hospitality that is available are in the form of reports published. Some reports describe what kind of food waste that is generated in the hospitality industry (WRAP, 2011). However, there is still a lack of information regarding how much avoidable food waste the hospitality industry generates (Marthinsen et al., 2012). A review by Pirani and Arafat (2014) on waste management in the hospitality industry, with a focus on food waste management, showed that change in how food is produced and consumed is necessary if the food waste is to be minimized.

The exact amount of food waste produced in tourism is unknown, but it is estimated that hotels, restaurants and the catering industry are responsible for around 14% of the total food waste generated annually in the EU (Service, 2010). The waste from the hospitality industry can be divided into wet (such as organic and biodegradable) and dry waste. The wet waste is primarily food waste (Wagh, 2008), which accounts for more than 50% of the waste generated in the hospitality industry (Curry, 2012). Food waste in restaurants is a growing problem, which has been pointed out by several authors (Association, 2010; Kallbekken & Sælen, 2013; Papargyropoulou et al., 2016). Other researchers have observed that much of the carbon footprint from restaurants come from factors that cannot be controlled, such as customer behavior (Aschemann-Witzel, de Hooge, Amani, Bech-Larsen, & Oostindjer, 2015), over-packaging by suppliers (Silvennoinen et al., 2012) and the areas waste collection and recycling technologies available (Papargyropoulou, 2014).

Within the restaurant industry, there are different types of meal services and concepts provided. One concept that influences the amount of waste created is buffet-style catering, which involves having the food ready for the customers to help themselves. Buffet-style catering is a prevalent method of serving in the hospitality industry and typically presented by providing several stations with a variety of food items where the guests then can pick and self-serve. The buffet therefore offers a wide range of choices for the customers as well as a more accessible and quick meal service (E. Cohen & Avieli, 2004). This type of service is also the preferred way for breakfast and lunch serving in Sweden, which further validates the choice of case study destination for this thesis.

The buffet-style meals have shown to not only increase hotel performance directly through guests spending (Tanford & Suh, 2011), but indirectly through a higher guest satisfaction and reduced service staff costs (Betz, Buchli, Göbel, & Müller, 2015; Juvan et al., 2017). Since the buffets allow self-controlled servings, it also leads to reduced staff costs by reducing the number of staff needed for the serving (E. Cohen & Avieli, 2004). Unfortunately, the nature of
the buffet business model has made over-consumption and food waste easy to take place (Lin, 2016). For instance, buffets might encourage customers to eat not only more food but also more environmentally harmful foods that they would not necessarily eat at home (Gössling et al., 2011). This behavior leads to increased costs of food service due to more food being used (Kuo & Shih, 2016), and plate waste due to more food being taken, but not eaten (Wansink & Van Ittersum, 2013). Another factor increasing plate waste is the variety of unknown food items or dishes available which encourages hotel guests to overconsume (Quan & Wang, 2004). People tend to not only overload their plates but also pick dishes that they might not enjoy once they have tried them.

In summary, buffets can have a high impact on the environment for at least two significant reasons: 1) Buffets increase food consumption and food production and 2) Buffets increase food waste (Gössling et al., 2011).

By that, what can be stated is that the restaurant sector is a significant producer of food waste. Surprisingly, studies based on large sets of reliable data regarding the quantity of food waste from restaurants are somewhat scarce. There are mainly two studies that use pan-European data on food waste. The first one is the Bio Intelligence Service (BIOS) (Bräutigam, Jörissen, & Priefer, 2014) whereas the second study was carried out by the Swedish Institute for Food and Biotechnology (SIK) (Gustavsson, Cederberg, Sonesson, van Otterdijk, & Meybeck, 2011b). While the BIOS study focused on generating food waste through almost all stages of the food production/consumption process, it excluded agricultural production. On the other hand, the SIK study examines the generation of food waste at all stages of the food chain, including the agricultural production. Besides these two studies, there are also a large number of national studies such as the Waste and Resources Action Programme (WRAP), which is funded by the British government. This initiative aims at reducing all types of waste in the private and industrial sector, with a focus on food waste prevention. The report mainly deals with results or empirical surveys on food waste generation in the British food chain, particularly at the household level (e.g., T. E. Quested et al., 2011; Ventour, 2008; Williams et al., 2011). Sweden (Jensen et al., 2011), Finland (Koivupuro et al., 2012) and Norway (Hanssen & Møller, 2009) are also active in this field and has recently published several studies.

Even though there is research done across Europe, the estimation regarding food waste generation has not reached the consensus yet. Given that the data is seldom comparable, estimations regarding the food waste hotspots is relatively weak. The literature points out the customer plate waste as the primary source of food waste, and consequently, it is one of the
most often discussed sources of food waste in the restaurant industry (Engström & Carlsson-Kanyama, 2004). Studies showed that women and children generate more plate waste (Koivupuro et al., 2012) and researchers like Silvennoinen, Heikkilä, Katajajuuri, and Reinikainen (2015) found that potato, rice, and pasta are the main ingredients wasted. This behaviour can be linked to attitudes, awareness, and training of both consumers and employees since these are said to be another cause to plate waste (Aschemann-Witzel et al., 2015; Engström & Carlsson-Kanyama, 2004). Though attitudes, education, and awareness of food waste are hard to measure, it is said to be a fundamental cause of food waste in the hospitality sector (Monier et al., 2010).

Forecasting and planning, also known as serving waste, is the food that is prepared but not eaten (Garrone et al., 2014; Halloran, Clement, Kornum, Bucatariu, & Magid, 2014). This type of food waste is more common in buffet style servings (Silvennoinen et al., 2015) and is closely linked to preparation waste, also known as kitchen waste. However, kitchen waste is not discussed as a significant source of food waste since it is usually unavoidable food waste (Engström & Carlsson-Kanyama, 2004), but according to the WRAP (2011) study, kitchen waste was the most significant contributor to food waste.

According to Fusions (2015), hygiene regulations could create more food waste, wherein the report it is stated that though hygiene measures could prevent food waste, it is often a cause to unnecessary food waste due to strict limitations. Regarding legislation, another factor to food waste can be labeling, since meanings such as “best before” and “use by” can cause confusion leading to excessive food waste (Fusions, 2015). Also, consumer behavior is said to be a source of food waste, where numerous researchers show that consumer behavior affects food waste in restaurants (Aschemann-Witzel et al., 2015; Kallbekken & Sælen, 2013).

Though food waste is seen as a problem in the hospitality industry, there is still a lack of knowledge on how to handle it (Kallbekken & Sælen, 2013). The studies that do bring up food waste, such as food waste management initiatives, tend to focus on the prevention of food waste, which is further explained in the next chapter. Prevention is thus far the most sustainable solution to the food waste problem, especially if one follows the European Waste Framework Directive (EC, 2008). The following chapter therefore presents ways of reducing the amount of food waste generated, regarding both the producer and the consumer, where examples such as experiments, regulations, and directives are discussed.
2.4 Review of instruments and initiatives on food waste prevention

There is a growing global awareness about the problems and issues related to food waste (Halloran et al., 2014). Because of its adverse environmental, economic and social consequences (Aschemann-Witzel et al., 2015), stakeholders (such as academia, governmental and nongovernmental organizations) have started to join efforts in research projects for quantification and method standardization for food waste (Xue et al., 2017).

Given that waste management includes various factors such as the transport and disposal of waste as well as labor costs, the vast majority of food waste management initiatives focus on the prevention of food waste (Papargyropoulou, 2014), which is due to prevention being the most sustainable solution to the food waste problem. This idea complies well with the European Waste Framework Directive (WFD), which ranks management options and waste prevention in a waste hierarchy (EC, 2008). The WFD also encourages other options that might differ from the waste hierarchy but still delivers the best overall environmental outcome (Eriksson, Strid, & Hansson, 2015). Similar food waste reduction opportunities can be found in the literature. Creedon, Cunningham, Hogan, and O’Leary (2010), for instance, proposed similar guidelines to reduce losses in the catering sector. The below figure presents the waste hierarchy from the top favorable option downwards to the least favorable option (Figure 2).

![Waste Hierarchy Diagram](image)

**Figure 2** The waste hierarchy. Source: Adapted from European Parliament Council, 2008

The WFD has been designed to be suitable to all waste streams and due to its simplicity, can be implemented with ease into a waste prevention policy. As seen in Figure 2, the main priority of this model is to prevent waste being created in the first place, and from there it provides a hierarchy for the best methods of waste disposal with disposal being the least favorable option. Although the European Waste Framework Directive focuses on the social and economic
impacts as well as the environmental, the waste hierarchy’s main aim is to identify the best options with a focus on an environmental aspect. The fact that the focus on the environmental aspect has been greater than the economic aspect has been the basis of criticism, resulting in a number of economists urging people to mainly use the waste hierarchy as a guideline for waste strategies (e.g. Porter, 2010; Rasmussen et al., 2005). Food waste prevention tends to be a rather complex issue due the behaviors and practices associated with the method (Han, Hsu, & Lee, 2009). One reason to this is that practices linked to food prevention are not as visible as those linked to for example recycling, or in this case, food sorting (Quested et al., 2013). The prevention strategies for consumers are challenging since not only do the customers want value for their money, but issues such as expiration dates (which are connected to safety and health risks) are problematic since they generate more food waste when trusting expiration dates rather than trusting one's senses. This form of avoidable food waste is usually due to a confusion of the meaning behind labels such as “sell by”, “best before” and “use by”. Furthermore, the habit of disposal is an ingrained practice for consumers influenced by their sociocultural and economic views on consumption (Cooper, 2005). Since the system encourages consumers to easily engage in disposal behaviors, it is difficult to go against the system and re-educate the consumers to focus on the top of the waste management hierarchy. This can be seen in the purchase choices of consumers, who seem to be more willing to buy sustainable products, rather than actually looking into minimizing their consumption. This is highly evident especially in terms of meat consumption (Vanhonacker, Van Loo, Gellynck, & Verbeke, 2013).

Aside from the issues of disposal and recycling initiatives, a focus on the methods of prevention should be further discussed. Prevention strategies, either formal or informal, are taken from existing food waste literature, with a focus on implications in restaurants.

Some scholars suggest that the industry should focus on the consumers and how to encourage them to more sustainable choices rather than solely focus on creating a more sustainable food system (Kneafsey, Dowler, Lambie-Mumford, Inman, & Collier, 2013; Pais, 2009). Eating behavior that reflects more on sustainable production, such as buying products that are fair trade, eco-labeled, organic, as well as reducing their overall consumption, such as avoiding overeating and junk food as well as eating less meat is encouraged (EC, 2008; Verain, Dagevos, & Antonides, 2015). Although these sustainably produced food alternatives represent a shift towards the more sustainable and ethical methods, they barely represent 1% of the products offered in markets on a global scale (Vermeir & Verbeke, 2006). This is because choosing to
buy these products are dependent on a multitude of decision-making factors, where being an ethical consumer is still today more an exception than normality (Vermeir & Verbeke, 2006). This exception is also the case for businesses, where usually the costs for growing organic and eco-labeled products being more expensive than their conventionally produced products leads to restaurants not buying them (Radman, 2005; Verain et al., 2015). However, as stated by Gössling et al. (2011), food service providers such as restaurants should make more informed choices regarding purchasing, preparation, and presentation of their food since this can contribute to a more sustainable system of food production and consumption (Criveanu & Sperdea, 2014).

Smaller servings have shown to be effective in reducing the potential amount of food waste, although if there is food waste presented other studies suggest in donating the food (Kallbekken & Sælen, 2013). Donating food would not only have a social and ethical value but may be useful for marketing purposes (Lipinski et al., 2013; Pirani & Arafat, 2016). Unfortunately donating food can be difficult since there are a lot of regulations regarding this in the hospitality sector, mostly connected to health and safety regulations. The study by Sundt (2012) further showed that many companies in the hospitality sector feel obligated by law and internal routines to waste too much food due to this issue. Another way of lowering food waste in the consumption stage is to conduct consumer education campaigns (Lipinski et al., 2013). Lowering food waste could be done by the government or an organization to raise further awareness of the benefits, whether economic, ecological or social, of reducing food waste. Educational campaigns can also be seen in the restaurants, where experiments such as displaying educational signs have not only shown a decrease in food waste but have even worked in positive marketing purposes (Kallbekken & Sælen, 2013). Other studies have shown that a win-win alternative for minimizing food waste is through “nudging” consumers. Nudging can, for example, be done by reducing the plate size at a buffet, which results in a reduction of food waste, but interestingly enough, does not lower the customer satisfaction. By that, a simple nudge can not only minimize the food waste but also reduce the amount of food the restaurant needs to purchase. This would likely lead to increased profits since the change does not affect the customer satisfaction negatively (Kallbekken & Sælen, 2013) Lastly, revising the menu could have an enormous impact on food waste. The conversion from buffets to a la carte service has been actively promoted to reduce food waste (Sarjahani, Serrano, & Johnson, 2009), but even just revising the menu to serve less wasteful dishes has been recommended (Pirani & Arafat, 2016).
In summary, food waste is a problem that has been ignored for long enough, whether looking at it from a producer or a consumer point of view. As stated earlier, a minimization of food waste can have substantial economic, environmental and social benefits. Research has shown that designing different ways in which choices can be presented to consumers can alter their behavior (e.g., Juven et al., 2017; Scheibehenne et al., 2010; Thaler & Sunstein, 1999), without lowering the guests’ satisfaction. However, because sustainable development is a shared concern, sustainable initiatives should be conducted as a collective effort. By that, the same can be said about how the hospitality sector operates since even minor technical solutions can have fundamental changes regarding reducing food waste, without lowering the service quality. This is why this thesis is conducted, since looking into ways to alter consumer food waste as well as identifying the opportunities to reduce food waste would not only have economic, environmental and social benefits but would also help to improve the industry in making it more durable.

3 Theoretical framework

The following chapter identifies the key concepts and the relationship between them. Here the framework represents the outline of the concepts and explanations, beliefs and theories that further support the research that has been done (Maxwell, 2012).

3.1 Social Practice Theory

For the past years, there has been a growing interest in using the social practice theory (SPT) to theorize consumption, especially in the cases where one wants to look at changing the practices that are unsustainable or have a negative environmental impact (Sahakian & Wilhite, 2014). This approach enables a shift from the analytical focus on technologies and individuals to a more understanding view of everyday practices. SPT has its roots in the mid-twentieth century and builds on early work by Bourdieu, Giddens, and more. Not to forget more recent works by Reckwitz, Warde and Shove (Giddens, 1984; Reckwitz, 2002; Shove, 2010; Warde, 2005).

As Giddens states,

“The basic domain of study of the social sciences...is neither the experience of the individual actor, nor the existence of any form of societal totality, but social practices ordered across space and time.” (Giddens, 1984: 2)
Sharing the view of Giddens (1984) means that the pro-environmental actions and sustainable patterns of consumption are not based on the individual's attitudes and values constrained by contextual “barriers”, but rather as a form and part of social practices (Warde, 2005). In other words, the things that people do is based on the routines and views of what people consider being a “normal” way of life (Shove, 2005). SPT is a useful framework to emphasize people’s routines, practical consciousness, traditions and so on (Warde, 2005), which means that it seeks to conceptualize how people perform a practice (Reckwitz, 2002; Vlasov, 2015). This is done through working with individuals and turning them into case studies and representatives of a larger population (Reckwitz, 2002).

However, not everything about the SPT can be agreed on. Cetina, Schatzki, and Von Savigny (2005) for example emphasize that there is no unified practice approach. To start off with one might want to question what exactly a practice is. Some theorists say that a practice is the connection between different components (Warde, 2005) while others say that the practice should mean a focus on the different components itself (Reckwitz, 2002; Shove, 2005).

This thesis follows the understandings of practices proposed by Shove, Pantzar, and Watson (2012), which present a model connecting the three elements of materials, competence, and meanings. This approach therefore argues that as the individuals are performing a practice, they are at the same time reproducing the practice and the elements of which the practice is made (Shove et al., 2012). A simple but yet quite often used example to explain how practices evolve is the case of showering. Though it is not seen as anything new in western societies, the method of cleaning oneself has evolved over the last fifty or so years. In the past, the norm was to take a bath once or twice a week, but over the past years, the bathroom infrastructure has changed to incorporate showers (materials). Together with this, there have also been comparable changes in how personal hygiene is viewed (meanings) as well as conventions related to how we prepare ourselves for the day ahead (competence) (Shove & Walker, 2010). By that, showering has now become a routine practice for people in the western society as well as also being deeply integrated into everyday life. Social practices evolve and emerge (and eventually die out) due to their way of reconfiguring of their core elements as well as their reproduction by skilled practitioners.

The model proposed by Shove et al. (2012) has similarities to other approaches to practice, but it has been the most suitable to achieve the research aim of the thesis. In other words, for a practice to exist, all the three present elements: Materials, Meaning, and Competence must be interconnected. Materials are objects, tools and the body itself that are necessary to perform a
practice. Competences are the various skills and knowledge each person has, but also abilities and a form of understanding. Lastly, Meanings are the so-called mental activities, those that are connected to social and symbolic significances, but also our beliefs and emotions (Shove et al., 2012).

An insight into why SPT is useful and especially useful in this thesis should also be presented. As Warde states, practice theory “emphasizes routine over actions, flow and sequence over discrete acts, dispositions over decisions, and practical consciousness over deliberation” (Warde, 2015: 126). Since the researcher’s interest lies in looking into the habits and influences of food waste, routines and maybe even unconscious decisions related to unsustainable practices connected to food waste, practice theory works well as a tool to analyze these actions. Furthermore, practice theory is not a new subject when studying consumption habits like this. Examples such as food consumption (Holm, 2013), and maybe even more suitable as an example in this thesis, studies on how our daily activities impact on climate change and sustainability (Hitchings, 2007; Shove, 2005; Warde, 2015). The latest trend amongst this is that consumers are asked to change their behavior to become more sustainable (quite often through for example buying more sustainable products but also more expensive products), in the end providing to the general good of the world through their consumption (L. Cohen, 2001). However, as earlier stated in this thesis, though small alterations in behavior might make a difference, new consumer patterns are not the answer to avoiding catastrophic natural resource depletion and stopping the climate change (Warde, 2015). Another issue which has been brought up earlier is the idea that an environmental campaign will work without thoroughly educating the consumers, or even considering their personal factors and circumstances (Barnett, Cloke, Clarke, & Malpass, 2010).

Though SPT does have some issues and bring up delimitations to this thesis, it does allow examination of how people understand sustainability and how they act upon it, which in the end should give a result of at least better types of information, campaigns and policies about sustainability. This would therefore also bring the researcher closer to the aim of investigating the problems around food waste practices and to point out possible initiatives to reduce food waste without jeopardizing the service quality.

### 3.2 Service quality

As stated earlier, tourists are not likely to sacrifice pleasure and enjoyment for the sake of the environment. This is why a focus on the service quality is also needed in this thesis. Quality is
one of the primary drivers of customer satisfaction; consumers will always look for quality no matter what they are buying. For example, Grönroos defined SQ as “the outcome of an evaluation process, where the customers compare their expectations with the service they have received” (Grönroos, 1984: 37). By that, SQ should be considerably straightforward; quality should be a natural pursuit for any organization seeking for that source of competitive advantage. However, further investigation reveals that this is an oversimplification of a very complex issue. There is a massive amount of researches done on service quality, and while it would be preferred to view all the theories and models, the focus here is on those that have the greatest applicability to this research.

3.2.1 Service Quality as a concept

The traditional conceptualizations of service quality are grounded in the disconfirmation paradigm, where the perceived quality is viewed as a result of comparing a standard with a particular performance (Suuroja, 2003). Looking at service quality from the aspect of customer research literature, it can be agreed that SQ is a measure of how the service level is matched with the customers’ expectations as well as fulfilling their needs (Edvardsson, 1997). In other words, delivering quality service means conforming to customer expectations. This definition is highly customer oriented but does not mean that the provider should solemnly focus on what the customer wants and needs. Thus though the customer decides what is seen as good and bad quality, he or she does not necessarily have to be right (therefore this thesis does not believe in the saying that the “customer is always right”) (Grönroos, 2007; Evert Gummesson, 2012). Therefore, the thesis has a strong focus on the non-verbal customer needs, such as a sense of insight. Other important aspects are having a functional dialogue with the customers as well as an accurate and whole picture of the situation. This means that the researchers focus on service quality also links to interactions, activities, and solutions to problems that customers might have. As a part of this developing process, a value is being created regarding quality and organizational sustainability (Enquist, Edvardsson, & Petros Sebhatu, 2007).

One example of how this has been done earlier is by the work of Enquist et al. (2007) who evaluated the contributions of SQ to sustainability and added a value-based service quality thinking through combining it with other concepts such as total quality management. Therefore, this example shows how new ideas of how to create service quality is made through implementing different management systems (B. Schneider & White, 2004).
So moving back a couple of decades, the combination of service quality and sustainability was in the mid-90s formulated as the term green service quality by E Gummesson (1994). At this time, he wanted to urge people to reflect on the concept of sustainable service quality thinking and was surprised that there was a lacking of studies based on this concept. Even though today there is a vast number of researches conducted regarding service quality, there is still no agreement about what SQ is and how it can be measured, which also makes it extremely difficult to try and view service quality from a sustainable point of view. The next chapter views quality from different perspectives (so to describe it more specifically), with added own inputs in how it can relate to this thesis as well as an ongoing sustainable focus.

3.2.2 Service quality perspectives

Quality as a concept has numerous interpretations. This thesis project has focused on the five perspectives proposed by David A. Garvin, namely; (1) the transcendent approach of philosophy; (2) the product-based approach of economics; (3) the user-based approach to economics, marketing, and operations management; and (4) the manufacturing-based and (5) value-based approaches of operations management, which all are explained more deeply later on in this chapter. This approach is a good illustration of different ways quality can be viewed. It also provides a framework for understanding some of the problems associated with service quality. These perspectives are combined with the focus on Social Practice Theory, thus combining the five perspectives made by Davin A. Garvin with the understandings of practices as by Shove, Panzar, and Watson (2012).

As earlier stated, many studies have focused on the customer views when discussing quality, in other words seeing quality as based on the customers “needs”. Other terms used when looking at quality from this point of view is the word “expectations”. According to Pollitt and Bouckaert (1995) quality is the degree of alignment between the customers’ expectations and their perceptions of the actual service. This is interesting since the quality level of the same kind of service could then vary greatly depending on what kind of expectations the customer has (Grönroos, 2007). These forms of expectations can be seen in the hotel industry, where for example hotels star ratings can have a significant impact on what the customer expects from the venue. By that, a five-star hotel serving the same breakfast as a three-star hotel might get a lower rating, only due to the higher customer expectations.

Quality can also be defined from the perspective of the organization. This can especially be linked to the so-called working life. Looking at quality from this point of view focuses on the
employees social, physical and mental features (see for example Lawler, 1982). In the case study used for this thesis, this focus is highly enlightened in the Green Key criteria, specifically under the chapters “CSR” (Corporate social responsibility) and “Administration”. These criteria focus not only on working conditions, health, and safety but also the environment on both the local, national and global levels. The reasons to why a hotel would follow these criteria are many. Not only is it usually a part of a legislation or law, but it serves as a base in the company justifying their existence in terms of contributing to social welfare, beyond what is required for profit maximization (Mintzberg, Simons, & Basu, 2002) (keeping in mind that not many companies would engage in CSR if it would not be beneficial in some way or another).

Some researchers link the concept of quality to objectives. Here quality is seen as a form of an ongoing measurable fulfillment. The quality circle of Kumpusalo and Mäkelä (1993) is one example of this, where the quality circle starts with measuring the operation and continues with the evaluation of measurement results. The evaluation then leads to a change in the operation, and when the change has been affected long enough, the activity is re-measured. The results are thus compared with the primary measurement and the follow-up question of “is this closer to the target level” is asked. This way of measuring quality is considerably common in the hospitality industry, where for example customer feedback can be used to identify quality improvements, which can further be measured through looking into if the improvements have led to a higher customer satisfaction.

Another perspective that can be used to understand quality is through the “five approaches to defining quality” by David A. Garvin. This approach is a good summary of how different ways of quality is viewed as well as providing a framework for understanding some of the problems associated with service quality. He identifies the five major approaches to the definition of quality as: (1) the transcendent approach of philosophy; (2) the product-based approach of economics; (3) the user-based approach to economics, marketing, and operations management; and (4) the manufacturing-based and (5) value-based approaches of operations management (Garvin, 1984a)

The Transcendent-based approach views quality as “innate excellence”. According to this approach, quality cannot always be defined but is rather the result of an individuals experience. This definition is heavily influenced by Plato’s discussion of beauty, where he argues that beauty is of a “platonic form”, and therefore a term that is undefinable (Garvin, 1984b). For instance, as an individual, we know what we see as beautiful, but it might be difficult to
describe it to someone else. The same situation can be seen in service terms where a customer might be able to say that the service experience was good, but not able to explain why.

The product-based approach is somewhat different. Here the view of quality is easily measurable and precise. This approach provides the view that quality is a direct outcome of the features and attributes of a product. For example, a high-quality car that has the latest technologies and luxury features such as cruise control and GPS devices gives a vertical or hierarchical dimension of quality, leading to this car being ranked in quality according to the desired attributes it has.

User-based quality is determined by the customer, with an assumption that all individuals have different wants and needs, meaning that the highest quality products are those that best satisfy their preferences. The problem with this view is that this approach to quality is highly subjective. In reality, this is what is called perceived quality, which is not a reliable indicator of actual quality. For example, a well prepared and presented meal that took 30 minutes to deliver might not be seen as good quality if the customer is in a hurry (Metters, King-Metters, & Pullman, 2003).

In contrast to the user-based definitions of quality, the Manufacturing-based approach is considered entirely in the supply side and is primarily focused on the manufacturing practice. Since every manufactured product must meet a definite number of specifications, quality is measured by conformance (Vargo & Lusch, 2004). Good quality is viewed merely as meeting specifications, and with “making it right” the first time. This view is also highly focused on cost reduction. According to the manufacturing-based approach, improvements in quality lead to lower costs, since preventing defects is viewed as less expensive than repairing or reworking them (Garvin, 1984a).

Lastly, the value-based approach takes the view of manufacturing-based approach one step further, where quality is seen as a function of customer benefit relative to the cost or price, meaning that a quality product is something that provides performance at an acceptable cost. Thus, a 500€ main course dinner, no matter how well constructed, could not be viewed as a quality product since the target group for that product is very small. In reality, this approach can also be seen as a user-based approach since the customer is the one determining the value of the product or service (Garvin, 1984a).
4 Case description

This chapter contains a thick description of the hotel that this thesis is based on. It is worth acknowledging that the researcher works at the hotel as a part-time worker as well as did an internship period (10 weeks) in the hotel. The internship period gave a rich insight into the company as a whole, with a strong focus on the hotel's sustainability aspects and sustainability guidelines, provided by the international voluntary eco-label Green Key.

4.1 Ligula Hospitality Group AB

Ligula Hospitality Group AB is the parent company in a concern that owns, manages, and develops concepts and brands in the hotel and restaurant industry. The hotel activities run under the profiles ProfilHotels, Collection by Ligula, Motel L, Good Morning Hotels and Apartments by ligula. In addition to the hotels, the company also operate restaurant activities under brand names such as Pipes of Scotland, La Gare, Plaza Grill, The Lícrary Bar, and Sofiehof. All hotels are run under a concept called “The Art of Hotel Living”, which is a system that ensures quality levels within the various brands. Through this concept, regardless of the service provided in the hotels, they all have a universal minimum standard that ensures an excellent accommodation for all guests. The concept is then further divided into four cornerstones; Stay Inspired, Stay Connected, Stay Empowered and Stay Passionately (Ligula, 2018).

Ligula Hospitality Group AB currently has around 30 units, with a goal to grow to 50 within the upcoming years. The group operates today in Sweden and Denmark, where the management is in Gothenburg and Stockholm.

The group is a member of Visita in Sweden and Horesta in Denmark and therefore follows their ethical rules. The Ligula concern also works with a mutual environmental policy based on 3 R’s. These account for Reduce, Reuse and Recycle. Each unit establishes their local plans for supporting this mutual environmental policy. Moreover, the majority of the hotels have been certified according to the “Green Key”, which is an environmental program for hotels in the EU. Lastly, the business concept for the company is that “Ligula Hospitality Group AB together with the subsidiaries shall professionally with humble confidence create success by managing, establishing and refining brands and concepts in the hotel and restaurant industry” (Ligula, 2017b).
4.2 Profil hotels Calmar Stadshotell

In 1906 Calmar Stadshotell stood just as it is seen today, the last renovation taking place in 2018. Today it is a modern hotel with strong historical roots, located at the Main Square in Kalmar. The hotel houses Restaurant Statt and a Scottish-inspired bar called Pipes of Scotland as well as 132 guest rooms, seven conference rooms and a reception that is open 24/7. It is one of Kalmars most popular hotels and at the moment number two on the TripAdvisor top-list of hotels in Kalmar (Tripadvisor, 2017).

Since the business is highly seasonal, June to August being the high season, the staff number varies considerably. Summertime Calmar Stadshotell has approximately 60 staff employees and wintertime around 35. In December, for example, the staff routers included five receptionist, two night shift workers, eight housekeepers, four bartenders, five waiters, two breakfast chefs, four restaurant chefs, one kitchen manager, one conference manager, one restaurant manager, one hotel manager, one site manager and one housekeeping manager. For the hotel to run smoothly as well as scoring high on customer satisfaction, a strong cooperation between all the different sectors in the hotel is needed.

One way of how the hotel has grown their success over the past years can be seen in their morning briefing, where all the revenue managers are present. The daily meetings are built upon the idea of being meaningful, and the discussions are guided by the organizational values rather than focusing on numbers. They keep the meetings short and straightforward and focus on celebrating success, rather than magnifying the issues. This way of thinking can be seen throughout the business and its employees, which could be a reason to why the hotel has grown in sale and success over the past years. Calmar Stadshotell has also been part of Green Key since 2015 and feels that they now can focus more on their corporate social responsibility rather than just sales and numbers.

4.3 Green Key

Green Key began in Denmark in 1994 and is today an international voluntary eco-label for tourism facilities, which has its main focuses on environmental responsibility as well as sustainable operations. It is one of the largest eco-labels for the hospitality industry worldwide and has more than 2700 awarded hotels in more than 50 countries. As a non-profit and non-governmental programme, it operates under the umbrella organization of the Foundation for Environmental Education (FEE). The programme is supported by the World Tourism Organization, WTO and United Nations Environmental Programme, UNEP. Through awarding
and advocating facilities with positive environmental initiatives Green Key aims to contribute to the prevention of climate change.

The official aims for Green Key are to:

- Increase the use of environmentally friendly and sustainable methods of operation and technology in the establishments and thereby reduce the overall use of resources.
- Raise awareness and create behavioral changes in guests, staff, and suppliers of individual tourism establishments.
- Increase the use of environmentally friendly and sustainable methods and raise awareness to create behavioral changes in the hospitality and tourism industry overall. (GreenKey, 2017b)

4.3.1 Green Key and the Sustainable Development Goals

In 2015, at the United Nations Headquarters in New York, the Heads of State, Government and High Representatives agreed upon 17 Sustainable Development Goals (SDG) for 2015-2030. 2015 became a form of a landmark year for sustainability, as the agenda for the upcoming years was set to face the global challenges of today. The SDGs seek to address poverty, hunger, disease, fear and violence, healthcare, social protection, safety, education, sanitation, energy and sustainable habitats.

4.3.2 Green Key criteria

The Green Key criteria are built up by a number of international criteria that work as a baseline in all countries. The criteria are strengthened in countries with national operators to better adjust to national legislation, climate, culture, and infrastructure. The primary focus lies in environmental management as well as involvement with guests, staff, suppliers and the surrounding community. For example, in the hotel criteria fields such as water, waste and energy savings, involvement and awareness of guests and staff, as well as management of food and beverages are covered (GreenKey, 2017a).

The Green Key hotel criteria are built up by 13 different areas. Within every given area there are a number of mandatory criteria, of which all should be met to obtain the eco-label. After that, at least three optional score criteria should be met every additional year, until at least 50% of the score criteria are met. All criteria met are to be reported in connection with the annual environmental report. The criteria marked with (N) are new criteria for 2017, and the ones marked (P) are not mandatory but gives more points to the business. Below is presented two different criteria that are closely linked to the thesis.
Waste Criteria:

- The business enables material recycling in at least five fractions
- Instructions for how the staff should sort and handle waste is available and understandable
- Guests are offered the opportunity to recycle their waste (N)

Participatory observations: The material recycling is followed through all the hotel areas. The cleaning department and kitchen recycle soft and hard plastics, the reception recycles paper, newspapers, and cardboard (newspapers are sent back and notes in the reception are old documents that have been printed out). Glass is recycled and the restaurant is well informed on how to recycle both colored and uncolored glass and deposit bottles. The restaurant staff and the kitchen staff sort food waste (green bags) and household waste/combustible waste (black bags) accordingly.

According to a survey done by KSRR (the local authorities responsible for the collection and treatment of household waste within Kalmar), 84% of households in the area sort their food waste. There is also a good knowledge of what can be thrown into the green bags, and the majority (88%) find it easy to sort their food waste (KSRR, 2017).

To raise awareness among the guests about waste management, the hotel offers guests the opportunity to sort their waste in their rooms.

Food and drink Criteria:

- The share of organic, eco-labeled, fair-labeled and/or locally produced foods and beverages should increase each year
- At least one vegetarian option is offered to guests
- By default, tap water is served in the restaurants and conference facilities
- The business registers the amount of food waste and has established a plan of action to reduce the food waste.
- The business informs in the menus and buffets which products that are organic, eco-labeled, fair-trade marked and locally produced.

Participatory observations: When applying for the Green Key certificate the business must have at least 6 different product groups that should contain at least one food that is either organic, eco-labeled, fair trade or locally produced. Examples of product groups are tea, coffee, milk, and sugar. To meet the criterion, the eco-friendly products purchased should be used every day or at least in a significant amount. The share of eco-friendly products bought into the hotel
exceeds this criterion, and is growing every year. The hotel chain has strong regulations for what to buy in and what to serve the customers where examples such as the hotel breakfast and daily lunch menus show that the chain itself also focuses on eco-friendly alternatives. Lastly, part of the hotels purchasing policy is further based on WWF’s recommendations (WWF seafood guide) and do not buy seafood marked with a red light, such as eel, flounder, and burbot (WWF, 2017).

5 Methodology

This chapter introduces the research approach and strategy. Thereafter the data collection methods are presented in the order used for the research, thus first presenting the survey and the participatory observations as well as the waste audit, which were all conducted during the same period. Secondly, the key-informant interviews are presented, and lastly, limitations, ethical considerations, and research quality are presented.

5.1 Research strategy

This thesis research strategy is a case study design. This strategy is commonly used when researching the real world of when using a qualitative approach (Robson, 2011). The research is based on the design by Yin (2017), who describes a case study as a strategy where the questions of how and why are posed and with a focus on a contemporary phenomenon within a real-life context. Post-positivism is evident in Yins approach to a case study and focuses on maintaining objectivity in the methodological processes within the design (Yin, 2014). Post positivist qualitative researcher’s goal is to use science as a way to understand the nature of reality, while at the same time being aware that all measurement is imperfect (Denzin & Lincoln, 2011). Therefore, triangulation is used to this approach by using multiple sources of evidence, which further adds to the case study’s strength of dealing with a full variety of evidence such as documents, interviews, artifacts and observations (Yin, 2017). By using a combination of different methods, an understanding is gained of how and why certain attitudes and behavior occur in the case study.

A case study approach is therefore chosen for this thesis since there is a focus on food waste as a phenomenon as well as looking at food waste as a practice within a specific setting. Moreover, this kind of approach values multiple perspectives of participants as well as observing natural day-to-day circumstances.
The empirical work of this study consists of three steps, where the steps are divided into research phases. Each phase has a specific method and corresponds to the respective aim. The first phase was to develop a strong theoretical framework integrating the theories of social practice theory (SPT) as well as connecting this to a perspective of service quality. Secondly, an exploratory phase was conducted to measuring the food waste from the breakfast buffet in the hotel and handing out customer surveys to point out possible initiatives to reduce food waste. The responses and results were then further analyzed to find patterns and themes. The exploratory phase used a quantitative content analysis method, revealing what to focus on for the next third objective, the explanatory phase. The explanatory phase focused on assessing the interest of hotel management to adopt solutions reducing food wasted from breakfast service. A qualitative content analysis was used as a method, and the concept of Social Practice Theory guided the analysis of the interviews. The aim here was to gain a deeper understanding of the dominant factors that influence the hotel's different services. Five key informants were interviewed for this purpose and the informants were identified during the exploratory phase. The key-informant interviews contributed to a better understanding the phenomena researched. The following figure outlines the research strategy as a whole, showing the flow of the process as well as what phases answer to what research objectives.

![Diagram of research strategy phases]

**Figure 3 Research strategy phases**
Lastly, the quest of trying to understand the case as a whole by looking at the particularities of a single case is another critical aspect of this thesis. The next chapter explains why the researcher chose to focus on a single in-depth case.

5.1.1 **Single-in-depth case study**

Working with a single-in-depth case study provides a rich description of the incidents in everyday life, an approach that focuses on Yin’s definition of a single case study design as:

“an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident” (Yin, 1984: 23)

The in-depth element arises from the fact that a rich description is developed during the gathering of the data. This is done by looking at the attitudes and behaviors from different points of views, in this case, the founders, workers, and customers. Ergo, a single in-depth case study approach fulfills the needs to accomplish the aims of this thesis. Nevertheless, there are more reasons to why this decision was made. First, due to the researcher’s position (working at the hotel) at the time of deciding upon the research method, it became clear that there was a problem that the researcher intimately experienced. In other words, the researcher saw a research problem occur while working at the hotel, precisely when they had been asked to evaluate the consumption of breakfast services, but found it struggling to do so. After considering the single in-depth case study, the hotel turned out to have the relevant aspects necessary to conduct a single in-depth case study. The case included a social phenomenon to be investigated, real-life context, easy access and rapport, various embedded groups of analysis within the case as well as an accessible location that allowed the researcher to gather data on a more regular basis (Simons, 2009). Secondly, the in-depth element of this case study allowed the researcher to look into the exploration of what is actually going on in everyday practices. In summary, this research design combines Simons’ (2009) case study approach and Yin’s (2017) feature of a deep-seated case study.

5.2 **Mixed method research**

This thesis is built up through the belief that mixed method research offers a technique that is closest to what the researcher has used in practice. The mixed method research in this thesis is described as “the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study”(Johnson & Onwuegbuzie, 2004: 17).
Several motives underlie the reason for choosing a mixed method research approach. Bryman (2012) argues that there are 16 empirically derived reasons to employ mixed methods in research projects. Below are presented the reasons that fitted best for this research.

Quantitative and qualitative research deal with different research questions or issues within a project: Through using both quantitative and qualitative research a better overall picture is developed by combining the different methods strengths and purposes. As seen in this thesis the two methods have different roles in relation to the undertaken research and therefore give different aspects of the phenomenon being explored.

Triangulation: The term was originally created in the context of qualitative research, but the overall idea with the term is that the credibility of findings is greater when more than one source of data is used to confront a problem or issue. Thus, if quantitative and qualitative data can confirm each other, the trustworthiness is greater.

Multiple methods have therefore been used to look into the totality of the situation. Through the use of different sampling methods, different views of the same phenomenon can be presented. The reason to why these two methods are used is because they are both highly useful in this study. The characteristics of traditional quantitative research focus on deduction, theory testing, standardized data collection and statistical analysis, while the characteristics of traditional qualitative research in this thesis are discovery, exploration, theory generation and qualitative analysis. By that, through collecting multiple data using different methods will result in complementary strengths and no overlapping weaknesses (Brewer & Hunter, 1989). The following chapters go more in-depth into how the different methods can be used, and how they have been applied to this research. The chapters are divided into three main areas, drawing on the quantitative research method first, then the participatory observations and waste audit, and lastly the qualitative research method. This is due to the waste audit data and the customer surveys as the exploratory phase indicated what the explanatory phase, in this case, the interviews should focus on.

5.3 Survey

This study aims to investigate food waste practices and to pinpoint possible initiatives to reduce food waste without jeopardizing the service quality. The questions this survey sought to answer are therefore closely linked to the survey which focuses on looking into the guest’s views of the breakfast as well as the sustainability aspects of it (Question 1), the participatory observations that look into where the food waste is coming from (Question 2) and lastly,
conducting interviews with key informants to look into what has been done and what can be done to reduce food waste (Question 3).

1. How do guests perceive the breakfast service quality?
2. What drives the volume of food waste from hotel breakfast servings?
3. How can the business be altered in order to reduce food waste without reducing the service quality?

Bedded within the questions are also the non-verbal customer needs (1), such as a sense of insight. Other important aspects are having a functional dialogue with the customers (3) as well as an accurate and whole picture of the situation (2). This means that the researchers focus in service quality links to interactions, activities, and solutions to problems that customers might have, problems that can be found through conducting a survey, participatory observations as well as through interviewing key informants.

5.3.1 Constructing the survey

According to Bryman (2011), there are four different types of variables of which one can define the different survey questions. Interval scale allows for the degree of difference between items, while ratio scale, can answer the questions of “how much” or “how many”. The third variable is ordinal scale, which allows for rank order, such as first, second, third, but more importantly, and especially for this thesis, answering questions in the format of “totally agree” versus “totally disagree”. Lastly, nominal level is also used in this thesis, when the categories are not ranked but rather just described with words, such as the question of gender (Bryman, 2011).

The survey used in this study contained multiple variables of different survey questions, with a strong focus on the Likert scale method. This was mainly due to the survey enabling comparison and compilation of data through diagrams. The survey opened up with a description of the purpose of the survey, followed by information about the scope of the study as well as a reminder of the respondent’s anonymity. During the week that the survey was being handed out, a focus on different types of people was made (business, leisure, female, male, old, young, families and groups) and a total of 111 replies were gathered. Results of the survey are presented later on in this thesis.

5.3.2 Analysis strategy for survey

This analysis is based on the responses to a survey conducted in the hotel during their breakfast serving. A total of 111 responses were gathered, where the respondents were both male and female, business and leisure travelers as well as young and old, but all having the same quality
First of all, the responses were translated from Swedish to English using the researcher's own knowledge of the Swedish language as well as using online translation services when needed. After that, the responses that were in the form of an ordinal scale (i.e., in this survey from “totally agree” and “very good” coded as 5, to “totally disagree” and “very poor” coded as 1) were coded manually using the IBM SPSS Statistics 24. One-way ANOVAs were then further conducted since there was a keen interest in significant mean values among different group segments.

For identifying themes in the “additional comment” section, an inductive approach was applied to try and identify the dominant attitudes towards sustainability aspects in the hotel breakfast shown through the responses, which meant that a great deal of revising and altering was made during the process to find the key themes of attitudes that emerged from the different types of respondents.

The analysis was further guided by a five-step approach presented by Krippendorff (2012). First of all, the content needed to be unitized, which identifies and describes the units of analyses, such as words, responses to the questions, and sentences. The second step was sampling, which involves the selection of the study population. As it would not have been feasible to study all hotels or all consumers within one hotel, the sampling took place within one specific hotel at one specific period. For this study, all the individual responses (N=111) gathered were used. The third step is reducing, implying that the content is reduced to its “essentials”, which was done through coding and quantitative analysis. Through these steps, so far the general aim was to reduce the attitude responses to a number of mutual categories (which meant the researcher had to define the responses as well as code them and summarize them). After that the next step, inferring, was to figure out how the coded material was linked to the research questions, and lastly, present the results in written form, described by Krippendorff (2012) as narrating.

5.3.3 Coding Schedule

The coding schedule is usually a figure which includes all the data relating to the item being coded. Table 1 provides an outline of the coding schedule used in this thesis. Each of the columns is a dimension that has been coded. The codes were then furtherly transferred to a computer data file for analysis with a software package, in this case through using SPSS.
<table>
<thead>
<tr>
<th>Respondent #</th>
<th>Day</th>
<th>Gender</th>
<th>Age</th>
<th>Traveler Segment</th>
<th>Overall Satisfaction</th>
<th>Breakfast Satisfaction</th>
<th>Food waste</th>
<th>Eco-products</th>
<th>Age group</th>
<th>Gender &amp; Travel segment</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>4</td>
<td>1</td>
<td>43</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 1 Coding Schedule

The themes that were investigated in this study had a strong focus on attitudes as well as focusing on reasons to why the respondents behaved a certain way. Such as did their attitude towards the breakfast have an impact on the amount of food waste produced, and did the breakfast satisfaction have an impact on the guests overall satisfaction. However, some respondents had multiple reasons for their behavior as well as multiple reasons for their attitudes. For example, respondents commented that there were multiple reasons to why they would have a negative attitude against eco-friendly products served at the hotel breakfast, such as concerns about the price as well as concerns about the reliability of eco-friendly products (Respondent #24). When coding the responses, there was a strong focus on the responses from the Likert scale, since they are straightforward and easy to compare. However, the reasons to attitudes, if presented in the “additional comments” section, were gathered and divided into subgroups and presented as examples in the results.

5.4 Participatory observation and waste audit

This section provides a brief overview of the methods; participatory observations and waste auditing. These methods answer to the objective of assessing the food waste from the breakfast buffet in the hotel as well as building an understanding of how to reduce food waste.

5.4.1 Using participatory observation to encounter food waste

Through the participatory observation, the researcher was not only able to gather information but further become a part of the observed group (Robson, 2011).

During this time the researcher could exercise different roles within the case study and even participate in the events that she was studying (Yin, 2017). This way of collecting data is unique and gave the researcher access to information that she might not have otherwise found out, and it helped to give her an accurate portrayal of the restaurant practices. What was moreover a significant advantage of this method was its directness. The information gathered was not based on views of feelings or attitudes, but rather on what was being done. (This was then further analyzed through the survey and interviews to find the underlying cause of why certain things were happening as well as how it was being done)
One issue with this method is that the researcher could easily have affected her surroundings during the observation (Yin, 2017). To address this issue a focus on making the employees as comfortable as possible, and reminding them that the participatory observation was not conducted to judge the staff and the consumers, but to simply understand was conducted. During the participatory observations, a waste audit method was also implemented. The following chapter explains the waste audit more in detail.

5.4.2 Waste audit as a method

Waste audits are usually used to assess hotspots of food waste generation as well as informing waste prevention strategies (WRAP, 2011). The measurement is done by auditing the quantity and structure of waste streams through using weighing scales and on place analyses. Since waste audits are time and labor consuming, they are often carried out in smaller samples that represent a larger population but repeated at different times to account for variations such as seasonal change or days of the week (Okazaki, Turn, & Flachsbart, 2008).

The traditional studies of waste rely heavily on quantitative data (Newenhouse & Schmit, 2000), yet when used without supplemental methods, a traditional waste audit may suffer due to limitations. The major limitations of using the waste audit as a method were addressed as follows. Since waste audits only consider the physical aspects of waste, surveys and interviews were conducted to incorporate knowledge and attitudes regarding food waste. Secondly, the results are limited by the sampling week chosen, which is addressed through viewing the number and types of consumers during the audit week. Documenting the number and different types of consumers provided a method to estimate the temporal change in waste, building on earlier studies that have proven there are associations between waste generated and types of customers (e.g., Koivupuro et al., 2012; Papargyropoulou et al., 2016). Thirdly, the information gathered is limited to quantity questions, while information regarding, for example, the local waste management system may be crucial to identifying solutions to waste management (Yu & Maclaren, 1995).

The waste audit for this research was conducted over a one-week period. Building on previous research (Sustainable Restaurant Association, 2010; Strotmann et al., 2017), the food waste was categorized into three different categories. (1) “Preparation waste”, produced during the food preparation stage due to peeling, cutting, expiration, etc. (2) “Customer plate waste”, food discarded by customers after they have been served, and (3) “Buffet leftover waste”, which is excess food that has been prepared but not eaten by consumers and not saved for later use,
therefore being discarded. In addition to this, the food waste generated was categorized into groups of edible, non-edible and possibly edible food, based on visual observations. The visual examination was selected due to time and work restrictions, but this method could provide with some overall conclusions to be drawn. The food waste audit was conducted with the help of the employees, who were fully informed of what was being done as well as how and why. This led to the breakfast having three different stations of waste management, where both the employees and the researcher were sorting the waste into different groups. The groups were in the form of different colored plastic bags, one green bag where waste from the plate waste was gathered, one green bag station for food waste from preparation, and one green bag for food waste from overproduction. All other non-edible waste was thrown into black plastic bags. After the breakfast service, all the green bags were weight individually with a digital crane scale, and a waste diary was conducted during the waste-measuring week. Results of this are presented later on in this thesis.

5.5 **Key-informant interviews**

Through using the qualitative research approach a better view of the phenomena of food waste generation in a context-specific setting can be made, where a focus on “real world settings [where] the researcher does not attempt to manipulate the phenomenon of interest” (M. Q. Patton, 2005: 39) can be made. Broadly, qualitative research means “any kind of research that produces findings not arrived at by means of statistical procedures or other means of quantification” (Strauss & Corbin, 1990: 17), where the approach uses “purposeful sampling, collection of open-ended data, analysis of text or pictures, representation of information in figures and tables, and personal interpretation of the findings” (Creswell & Creswell, 2017: xxiv).

Field notes, participatory observations, surveys and interviews outline the findings of this thesis, walking hand in hand with a qualitative approach, focusing on habits and beliefs of participants. Through the qualitative approach the research aims to try and understand reality, which is socially constructed by individuals and how they interact with the world (Merriam & Tisdell, 2015). Furthermore, the qualitative approach is suitable for this thesis since its philosophical foundation lies in social constructionism (or otherwise called interpretivism). The inductive logic used for this starts with data collection, from which concepts and ideas emerge (Robson & McCartan, 2016).
The choice of what kind of interview method to be used depends entirely on the question that is being asked (e.g., Bryman & Nilsson, 2011; Kvale & Brinkmann, 2014). For this study, a number of interviews were conducted with the people that have informed and shaped the development of the management of food and waste throughout the food supply chain. The interviews were done once the waste-measuring week was complete as a follow-up, where a thirty-minute semi-structured interview was conducted. The interviews took place over the phone or at the site, and a recorder was used throughout the interviews.

The purpose of a semi-structured interview is that it is analytical, and with asking open-ended questions could give insights into the reasoning behind actions through participants giving highly detailed answers (Cook & Crang, 1995). Moreover, the semi-structured interview provided a better insight into the interviewee’s perspectives. At the same time, the semi-structured interview allows for enough focus on the specific issue, rather than going on tangents, which would be the likely approach in an unstructured approach (Bryman, 2015). The researcher’s interview questions were based on the literature review, SPT, and her research questions, but were also influenced by the observations made during the survey and waste-measuring week as well as the researcher’s personal experience from working in the hotel. The focus was highly in asking questions that were seen as non-threatening as well as being non-judgmental (Cook & Crang, 1995). The recordings from participant observations as well as the interviews were further transcribed by hand into a word document. The conceptual framework design of SPT was then used to group the results into meanings, materials, and competences and further compared between participants.

5.5.1 Interview Guide

This interview guide is based on the ideas of M. Patton (2002) and was developed to ensure that the same primary lines of inquiry were pursued with each person interviewed. Through the interview guide, topics and subject areas were presented with a chance for the interviewer to explore and ask questions which would not only illuminate a specific subject but stay within the given subject (M. Patton, 2002). The interview guide was developed with a focus on four types of questions: Background questions, experience and behavior questions, opinion and value questions and knowledge questions. The first part containing the background questions gave the respondent a chance to categorize himself/herself freely, which allowed an insight into their contextual setting (M. Patton, 2002: 351). The questions about the experience and behavior investigated how the respondent looks at a specific behavior and how they have experienced it. This part also focused on nudging the respondent to give a descriptive reply to
his/her experiences (M. Patton, 2002: 350). The opinion questions were aimed at understanding the values, opinions, and judgments of the respondents. Answering these questions would give an idea of what the respondent think about an experience or issue. Lastly, knowledge questions aimed to figure out the respondents’ factual information (M. Patton, 2002: 350).

The SPT concepts of material, meaning, and competence provided the anchor points around which precise questions regarding food waste was presented. The interview guide (see appendix 14.1) illustrates how the questions relate to the general topic area of food waste as well as the concepts of SPT.

5.5.2 Analysis Strategy for interviews

One of the most common approaches to analyze qualitative data is the so-called thematic analysis, which though it is seen as an essential part of the qualitative analysis does not have specific process steps (Becker et al., 2012). The thematic analysis of the interviews was guided by the concepts from SPT and was used in the same way as the quantitative content analytical approach (for the survey), focusing on categories and themes from the responses. This analysis is therefore explained as a theoretical reading exercise (Kvale & Brinkmann, 2014). The next subchapter further explains the researchers understanding of theoretical reading in this thesis.

To pursue the so-called thematic analysis for this thesis a focus on searching for repetitions in the responses throughout the interviews was conducted, which further led to different categories and concepts. The categories were predefined as themes that worked to guide the research focus during the interviews.

For a theoretical reading of interview materials it is ordinarily useful to think of the theoretical concepts and categories as sensitizing, meaning that rather than focusing on definitive viewpoints, they work as a suggestion of different viewpoints (Kvale & Brinkmann, 2014). This means that the theoretical reading had an open-mind and encouraged multiple interpretations, but with general categories that were predefined as theory-guided themes. For example, the issue of meanings in waste management can be regarded as a sub-theme, which then escalates further into different categories. While this way of compressing data according to predefined themes offers a structured way of qualitative analyses, it does have its disadvantages. By applying the predefined themes to an interview, there is a risk that one might be zoning out different types of phenomena that would otherwise have emerged without this theoretical restraint. So by applying the concepts of the SPT to the data, patterns of materials, meanings, and competence are most likely going to dominate the analysis. To prevent this from
happening it was crucial not to overemphasize the predefined themes. The way it was done was to use the predefined concepts to plan out the interview guide and the questions but still have the interview open and let the respondent explore other phenomena if wanted (Kvale & Brinkmann, 2014). This can be seen in the interview as opinion questions that could break the predefined themes, such as: “What is your opinion on sustainably labelled food, such as organic, local, free-range, etc.?” (Meaning) and “What would you suggest for restructuring breakfast buffet in a more sustainable way?” (Materials).

5.6 Limitations

Seeing as the research questions focus on answering the “how” and “why” within the practice of food waste, case studies are seen as most fitting to help analyze these questions (Yin, 2017). However, the study is highly limited since it focuses on one particular hotel, in one particular area, at one particular service. The limitation means that the results cannot be generalized since it is limited to the single in-depth case study. However, this has not been the point of this thesis. A focus on trying to gain a better understanding of the differences in people’s views and understandings of a specific phenomenon was wanted and could, therefore, be used later on in a more extensive and more in-depth examination.

However, participant observation has its flaws, since the researcher undoubtedly influences the behavior of the subjects (Gillespie & Michelson, 2011). Influencing is specifically accurate in the researcher’s case since she also worked at the hotel where the study was taken place. Since engaging in a form of direct observation, there is a high risk of potential error of observer narrowmindedness (Zikmund & Babin, 2010). This can also be said with the SPT used in this thesis since it requires many details to be recorded and in some cases needs some specific questions to find out what is the underlying issues that form the behavior. This could, however, mean that asking specific questions could alter the participant’s behavior and answers. Finally, this thesis is a point-in-time and point-in-place understanding of a phenomenon, but it could be used as a starting point for future research. That is why a focus on using multiple methods to try and at least get a broad understanding of the situation was chosen (Yin, 2017).

5.7 Ethical consideration and research quality

For this thesis to attain any form of trustworthiness, it has to obtain strong reliability and validity (Robson, 2011). If the research has reliability it is easily measured by doing the same procedure multiple times, and getting the same result, while validity can be defined as ”the quality of fit between an observation and the basis on which it is made” (Kirk & Miller, 1986:
For this research, guidelines by Robson and McCartan (2016) has been followed to reassure reliability. They suggest that one should be thorough, careful, and honest and keep full records of activities through the whole research process. Following these guidelines mean that the study should be able to be reproduced with the same results but at a different time, or a different location. Another support for reliability used in this thesis is the method of triangulation, where evidence from different sources to validate the facts and findings have been used (Rowley, 2002).

When conducting real-world qualitative research and involving other people in the procedure, ethics play a significant role in many phases of the research process (Becker et al., 2012). If not done correctly the research could have terrible outcomes, such as harming the participants as well as the researchers, including issues such as harm to the development, loss of self-esteem, and stress (Becker et al., 2012). This is one of the first categorizations that Diener and Crandall (1978) use in their discussion of ethical qualitative research. The second category is characterized by lack of informed consent, where it would mean a lack of full details of the research purpose which could result in lack of informed consent. The third category touches the subject of invasion of privacy, which does overlap somewhat to informed consent but issues of privacy are also connected to issues of anonymity and confidentiality, which should be respected (Diener & Crandall, 1978). The last category is the concern of whether deception has occurred. This category would occur if the researcher were to present their work as something that it is not. Conclusively one can say that conducting ethical research should always focus on ensuring that everyone and everything that take part in the research is safeguarded (Robson, 2011).

6 Results

The following chapters present the results and the analysis. The chapters are divided into three main areas, drawing on the quantitative research method first, followed by the participatory observations and waste audit, and lastly the results from the interviews. By that, the results are presented in the same way as the methods, with the exploratory phase results first followed by the explanatory phase results.

6.1 Results of the survey

The customer survey was conducted during a six-day period in the hotel, at the breakfast serving. The survey was handed out randomly to the customers during these six days and
usually at the end of the serving to reduce the impact the survey could have on the customer’s attitude and behavior. Out of the nearly 150 questionnaires filled out by customers, 111 were entirely filled and returned. For better accurate data, the questionnaires that were not filled out correctly has been left out of this thesis.

The survey presented the result that there are positive attitudes towards the topic of food waste as well as the significance of providing eco-labeled choices of products during the breakfast serving. The respondents also showed high satisfaction in the company as well as the hotels breakfast. The results were further analyzed using the IBM SPSS Statistics 24. Multiple tests were conducted, but a focus on the ANOVA analysis was used since there was a keen interest in mean values among different group segments. The group segments were divided into age, gender and travel segment.

6.1.1 Respondents background and segments
The gender data was analyzed using the “frequencies” tool and showed that out of the respondents, 45.9% were female (51) and 54.1% were male (60). The second demographic part was age, where the respondent could freely enter their age. Using two variables at once, in this case looking at the age profiles and the gender profiles, cross-tabulation was used. The cross-tabulation showed that on average, female respondents were 44.80 years old and male 48.68.

The next question on the survey was to find out the guest segment of the respondents, being either business or leisure guest. The analysis revealed that most of the respondents were staying at the hotel for business purposes. The business guest respondents consisted of 71.2% (79) of the total respondents, leaving 28.8% (32) categorizing themselves as leisure guests. The reason for this high number of business guests could be due to the fact that the survey was conducted under the hotel’s so-called low season, where a focus on the target group of business guests rather than leisure guests is more significant. The high result of business guests could also be due to the survey being conducted mostly during the weekdays, which during the low season has a low number of leisure travelers.

6.1.2 Respondents service quality impression
For this survey, the researcher deliberately asked two relatively simple and straightforward questions, namely the guests’ expectation about the breakfast and the guests’ expectation about the company. The questions were presented through a Likert scale with the choices of answering “very poor” (1) “poor” (2) “neutral” (3) “good” (4) and “very good” (5). A likert scale is the most commonly used type of approach used to scale the responses in a
questionnaire, and most fitting to find out the respondents attitude towards both the company and the breakfast serving. The questions were aligned deliberately next to each other (see appendix 14.2 Survey) to see if the respondent felt that there was a difference when comparing the company and the breakfast serving. The responses were later categorized into male and female to see if there was a difference in satisfaction. The results were then examined through a one-way ANOVA, comparing breakfast satisfaction and company satisfaction between gender as well as travel segments. The results show a difference in means in the gender and travel segments view of satisfaction with the company, but the results still showed that very few customers, either female or male or business or leisure travelers, answered that they were very unhappy with the company. There was therefore not a significant difference between the group's satisfaction with the company at the p<.05 level for the four groups [F(3, 107) = 0.65, p = 0.582].

<table>
<thead>
<tr>
<th>Segment</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female business</td>
<td>37</td>
<td>3.5676</td>
<td>1.01490</td>
<td>0.655</td>
<td>.582</td>
</tr>
<tr>
<td>Female leisure</td>
<td>14</td>
<td>3.7143</td>
<td>.91387</td>
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<td></td>
</tr>
<tr>
<td>Male business</td>
<td>42</td>
<td>3.8333</td>
<td>.90841</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male leisure</td>
<td>18</td>
<td>3.1667</td>
<td>.61835</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* The mean difference is significant at the 0.05 level.

Table 2 ANOVA: company satisfaction according to gender and travel segment

Similar results can be viewed when comparing the breakfast satisfaction between gender and travel segments. The results showed a significantly high mean score within all four groups, which resulted in no significant difference between the group's satisfaction with the breakfast at the p<.05 level for the four groups [F(3, 107) = 0.469, p = 0.705]

<table>
<thead>
<tr>
<th>Segment</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female business</td>
<td>37</td>
<td>4.0541</td>
<td>.81466</td>
<td>0.469</td>
<td>.705</td>
</tr>
<tr>
<td>Female leisure</td>
<td>14</td>
<td>4.2857</td>
<td>.72627</td>
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<tr>
<td>Male business</td>
<td>42</td>
<td>4.2143</td>
<td>.82644</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male leisure</td>
<td>18</td>
<td>4.2778</td>
<td>.61835</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* The mean difference is significant at the 0.05 level.

Table 3 ANOVA: breakfast satisfaction according to gender and travel segment
Explaining the attitude towards the company and the breakfast service, the results revealed that both male and female were satisfied with the company and the breakfast, regardless if you are a business traveler or a leisure traveler. When viewing the mean scores of the different groups it could, however, indicate that there is a greater satisfaction with the breakfast compared to the company.

Lastly, comparing the age data, there are some significant satisfaction differences regarding the company and the breakfast service. To get a better understanding of the comparison of age data (where the youngest respondent was 23 years old and the oldest 75 years old) and satisfaction (Breakfast satisfaction and company satisfaction), the respondents were first grouped into age groups of >29, 30-39, 40-49, 50-59, 60-69, and 70<.

The descriptive statistics revealed that the youngest age group had the highest mean score of satisfaction of the company at the whole (4,2) while the age group 60-69 had the lowest mean score of the company at the whole (3,44). Similar results are seen when viewing the age groups satisfaction of the breakfast service, where the youngest group had the highest mean score (4,9) while the lowest score (3,87) was made in the age group 30-39.

The ANOVA analysis was used to compare the mean values among the age groups and post hoc comparisons to evaluate the differences between the groups was conducted with the use of Tukey HSD test since equal variances were tenable. The tests revealed that there are differences between the mean scores of the age groups considering their breakfast satisfaction at the p<.05 level for the groups [F(5, 105) = 2.61, p = 0.029]. However, the age groups satisfaction to the company at whole did not significantly differ at the p<.05 level for the groups [F(5, 105) = 1.963, p = 0.090].

<table>
<thead>
<tr>
<th>Age group</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>00-29</td>
<td>10</td>
<td>4.200</td>
<td>.7881</td>
<td>1.963</td>
<td>.090</td>
</tr>
<tr>
<td>30-39</td>
<td>24</td>
<td>3.500</td>
<td>1.10335</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40-49</td>
<td>27</td>
<td>4.0370</td>
<td>.75862</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50-59</td>
<td>27</td>
<td>3.6667</td>
<td>.73380</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60-69</td>
<td>18</td>
<td>3.4444</td>
<td>.92178</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70-100</td>
<td>5</td>
<td>3.600</td>
<td>1.14018</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* The mean difference is significant at the 0.05 level.

Table 4 ANOVA: company satisfaction according to age group
<table>
<thead>
<tr>
<th>Age group</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>00-29</td>
<td>10</td>
<td>4.9000*</td>
<td>.31623</td>
<td>2.610</td>
<td>.029</td>
</tr>
<tr>
<td>30-39</td>
<td>24</td>
<td>3.8750*</td>
<td>1.11560</td>
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<td></td>
</tr>
<tr>
<td>40-49</td>
<td>27</td>
<td>4.2963</td>
<td>.66880</td>
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<td></td>
</tr>
<tr>
<td>50-59</td>
<td>27</td>
<td>4.1852</td>
<td>.73574</td>
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<tr>
<td>60-69</td>
<td>18</td>
<td>4.0556</td>
<td>.72536</td>
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<tr>
<td>70-100</td>
<td>5</td>
<td>4.0000</td>
<td>.70711</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* The mean difference is significant at the 0.05 level.

Table 5 ANOVA: breakfast satisfaction according to age group

Due to a statistically significant result found in the breakfast satisfaction according to age group, a Tukey post hoc test was conducted. The test indicated that the mean score for the age group 00-29 (M = 4.90, SD = 0.31) was significantly different than the age group 30-39 (M = 3.87, SD = 1.11). However, though the mean score seemed to decrease as the age increased, the other age groups did not significantly differ from each other.

Interestingly, results from a Pearson product-moment correlation coefficient indicated that there also was a significant positive association between the breakfast satisfaction and the overall company satisfaction, $r = 0.445$, $n = 111$, $p = 0.001$. In other words, the more satisfied the guest is with the breakfast, the more likely the guest is satisfied with the overall company.

### 6.1.3 Respondents interest in sustainability

The respondent’s attitude towards sustainability was another interesting variable since there are differences in attitudes depending on if you are female or male and business or leisure traveler. The attitude towards sustainability was also highly commented on in the “open comments”. A one-way between subjects ANOVA was conducted to first compare the attitudes towards food waste for gender and travel segment. To be able to compare all the subjects the customers were coded into (1) female business, (2) female leisure, (3) male business, and (4) male leisure. The results showed that there was a significant difference between the gender and travel segments at the $p<.05$ level for the four groups [$F(3, 107) = 4.35$, $p = 0.006$].

Because a statistically significant result was found, a post hoc test was computed. A Tukey post hoc test was selected which is designed to compare each of the conditions within the customers. This test therefore compares the genders and travel segments. Post hoc comparisons using the Tukey HSD test indicated that the mean score for female leisure (M = 3.71, SD = 0.82) was significantly different than the male business (M = 2.90, SD = 0.72). However, the resulting conditions within the customer segments, such as comparing the female leisure and
female business or male leisure and male business did not significantly differ from the attitudes to food waste minimization in restaurants.

<table>
<thead>
<tr>
<th>Segment</th>
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<th>Mean</th>
<th>SD</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female business</td>
<td>37</td>
<td>3,3243</td>
<td>.88362</td>
<td>4,353</td>
<td>.006</td>
</tr>
<tr>
<td>Female leisure</td>
<td>14</td>
<td>3,7143*</td>
<td>.82542</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male business</td>
<td>42</td>
<td>2,9048*</td>
<td>.72615</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male leisure</td>
<td>18</td>
<td>3,1667*</td>
<td>.61835</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* The mean difference is significant at the 0.05 level.

Table 6 ANOVA: food waste attitudes according to gender and travel segment

A second one-way ANOVA between subjects was conducted to compare the attitudes towards eco products for gender and travel segment. The results showed that there was a significant difference between the gender and travel segments at the p<.05 level for the four groups (female leisure, female business, male leisure, male business) [F(3, 107) = 3.89, p = 0.011].

Post hoc comparisons using the Tukey HSD test again indicated that the mean score for female leisure (M = 3.81, SD = 0.70) was significantly different than the male business (M = 3.45, SD = 0.99). However, the test also revealed a difference in male leisure (M = 3.27, SD = 0.89) and female leisure (M = 4.14, SD = 0.66) at the p<.05 level.

<table>
<thead>
<tr>
<th>Segment</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female business</td>
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<td>3,8108</td>
<td>.70071</td>
<td>3,894</td>
<td>.011</td>
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<tr>
<td>Female leisure</td>
<td>14</td>
<td>4,1429*</td>
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</tr>
<tr>
<td>Male business</td>
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<td>Male leisure</td>
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<td>3,1667*</td>
<td>.89479</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* The mean difference is significant at the 0.05 level.

Table 7 ANOVA: eco product attitudes according to gender and travel segment

Taken together, these results suggest that the female leisure traveler not only has the highest mean score in the “I would favor certain restaurants more if I knew they did a good job of minimizing food waste”, but it also significantly differs from the attitude of the male business traveler. The second statement “I would favor certain restaurants more if I knew they focused on environmentally friendly products” showed similar results, where again the female leisure
traveler had the highest mean score, as well as being significantly different both to the male business traveler as well as the male leisure traveler.

6.1.4 Respondents Suggestions/Open comments

In this chapter, open comments written by the respondents are discussed, with a focus on the most reoccurring comments amongst the respondents. A total of 42 (38%) respondents chose to include open comments, which encompassed different views of the breakfast as well as the service, the company, and sustainability aspects. The majority of the respondents had a positive view of the breakfast, commenting positively on the freshness of the fruits, the scrambled eggs and the variety of products available for people with allergies such as lactose intolerant and gluten-free diets. Some respondents found it hard to maneuver around the breakfast area and had to search a while to find what they wanted. Some described the qualities of the boiled eggs as too soft or that the shell was difficult to remove as well as comments on seasonality, such as changing the menu depending on if it is winter or summer.

Though the mean result of plate waste data between females and males demonstrated that women produced more plate waste than male, the stats showed that there is no significant difference in plate waste according to gender. This result relates to earlier investigations (Al-Domi et al., 2011) which have shown that there is no significant difference between plate waste of women and men. Neither was there a significant difference in guest’s satisfaction according to if they answered that they produced plate waste. Reasons given for leftover food were examples such as “lack of hunger”, “served myself too much food”, “too little/too much seasoning” and “products I did not like”. Furthermore, unavoidable food waste such as banana peels was brought up. Interestingly nearly all the respondents felt that nothing was missing from the breakfast buffet. The few replies that addressed products missing were shown to be served at the buffet. This misunderstanding could be an issue the hotel could look into since the survey showed that some customers found it hard to maneuver around the breakfast area, which could be a result to a lack of satisfaction if the customer does not find what he or she wants. The remaining comments addressed a lacking in products that focus on a specific diet, such as better gluten bread, as well as a better quality of products, such as freshly pressed orange juice instead of juice from concentrate.

According to the customer replies to open comments, plate waste mainly consisted of starch such as cereals and croissants, which comprehended with the personal observations during the waste audit period. A similar study by Engström and Carlsson-Kanyama (2004) confirmed this result showing that starch accompaniments were the largest group of plate waste.
Many of the open comments focused on issues with eco-friendly products, where three of the respondents commented that they favored eco-friendly and eco-labeled products but commented on issues of pricing as well as the reliability of the products. Comments that concerned the sustainability aspect of the breakfast were issues such as “I think it is important for the hotel to provide ecological options but it should not affect the price” (Respondent #5) and “it is better to buy locally produced products than imported eco products” (Respondent #52).

Lastly, the respondents with a special diet, such as vegetarian and vegan diets, also commented positively on the dietary products available to them, where one of the respondents linked their self-identity (vegan) to being a sustainable food consumer.

6.2 Results of participatory observations and waste measurement

In six days, the hotel had 496 breakfast customers, and 101,5 kg of food waste was generated within the buffet breakfast serving. On average, every person at the serving wasted 20 g of food, which is approximately the same amount of food waste per customer that has been calculated in earlier studies too. The waste consisted mostly of serving waste, such as preparation waste and overproduction, but the amounts per day varied significantly. Worth notable is that the preparation waste is waste that was non-avoidable (such as fruit peels) and therefore is relatively similar in amount during the complete waste audit period.

Day 1 was a weekday with few hotel guests as well as no walk-in breakfast guests. The number of guests accounted for was therefore the same amount of guest that was served. The low number of guests therefore not only resulted in a lower result of prep waste but also a lower amount of overproduction waste. The plate waste for day one was also minimal, due to two reasons. Firstly, the number of guests were few, which could result in the guests behaving differently. From personal observations, it was noticed that the more guests that were at the breakfast serving, the more food the customer seemed to take. Another reason for the minimal amount of plate waste could be that most of the customers were business travelers, which from personal observations showed to produce less plate waste than those who were leisure travelers.

Day 2 and day 3 were both weekdays and had approximately the same number of customers. There were also a few walk-in guests for the breakfast serving, but that number did not affect the breakfast serving as a whole since the preparation for these two days was done through accounting for 100 guests per day. The final number of guests during the breakfast servings were 63 for day 2 and 60 for day 3. Therefore, the results showed that though the preparation
waste was approximately the same for each day, the overproduction waste was significantly larger during day 2 and day 3, since the preparation was done for roughly 40 fewer guests than accounted for.

Similar results can be seen on day 5, where the preparation was done for a higher number of guests than actually served, resulting in a high amount of overproduction waste. The plate waste was also significantly higher during this day, which might be due to a higher number of customers at the breakfast serving.

During day 4 the number of walk-in guests that were allowed into the hotel was minimized since the number of guests staying in the hotel was considerably high. The preparation for the breakfast serving was done in accounting for roughly 100 guests, where the final number of guests at the breakfast serving was 155. The personal observations during this day showed that the buffet was continuously refilled since the prepared breakfast amount did not cover the guest amount. This, however, resulted in the smallest amount of overproduction waste during the whole waste audit period, since the personnel could follow the flow of food being eaten during the whole serving time and only refilled the buffet when a product was finished. During the personal observations, the number of customers during the breakfast serving was at its maximum, since the amount of personnel was limited, meaning that if there would have been more customers the service quality could have declined. Though the preparation waste that was produced mostly contained un-avoidable waste, and the overproduction waste was at its minimum, the final amount of food waste was close to the same amount as day 2 and day 3. This was due to the waste from the plate waste being significantly higher than the days earlier.

The last day of the waste measurement was on a Sunday, which from personal observations was shown to generate a massive amount of walk-in guests to the breakfast. The preparation was done in accounting for approximately 100 guests, where the final amount of customers were 101. Since the weekend buffet breakfast serves more products, the preparation waste was slightly higher than what would have been produced during a weekday.

From personal observations, it was clear that walk-in guests and leisure travelers produce a more significant amount of plate waste, which resulted in day 6 having the highest amount of overall food waste produced. Lastly, looking at the breakfast serving from an ecological and economic point of view, the best-case scenario is for the hotel to have 150 guests since the preparation waste is approximately the same whether the guests are 50 or more. The overproduction waste would also be at its minimum since the personnel can audit the food flow
accordingly. Lastly, this number of customers showed that the hotel generated the best economic result, without jeopardizing the service quality.

A summary of the waste audit can be seen in figure 4.

![Food waste audit](Image)

**Figure 4 Food waste audit results**

### 6.3 Results from the key informant interviews

This chapter analyses the interview data that was gathered during the qualitative phase of the study. The results are presented according to the interview guidelines and focused on groups of Meaning, Competences, and Materials from the theory of social practice.

#### 6.3.1 Key informants backgrounds

The interview started with opening questions to the participants, to get to know their background, their current position, as well as their perception of sustainability. For this analysis, the opening questions also served as an opening point into the different thematic questions as well as an aim to build trust between the interviewer and the participants (Crang & Cook, 2007).

The participants covered a wide range of occupations in the concept of the hotel's breakfast serving, where the participants could be divided into three subgroups: hotel suppliers, hotel
chain administration, and hotel eco-label directives. Three of the participants worked within a company that supplies complete rental- and cleaning services of textiles to all types of activities. Of these three, one works as a key account manager with a background in the hotel business, one works as the sales manager for the segment in Sweden, and one works with customer service as well warehouse and distribution. The second subgroup was from the hotel's administration, resulting in an in-house point of view regarding the breakfast buffet. The participant interviewed works as the hotel director at the hotel studied. Lastly, a participant that works closely with the hotels eco-label directives was interviewed. The participant works within the company Green Key as a national coordinator and has a university background in environmental science. It should be noted that due to anonymity reasons, the participants’ utterances have been randomized and not referred to specifically in the thesis.

All of the participants had some form of post-secondary education as well as an employment status as working full-time. All of the participants felt that they were “somewhat aware” of sustainable issues, where one declared that they were aware of sustainability issues relating to food. The researcher was interested in participants perspectives concerning their own awareness of sustainability, which should be noted as seen as a spectrum rather than the different options provided in the survey.

The original intention was to have a wide range of participants from different backgrounds and work positions, but on further investigation and viewing the results from the survey as well as the waste audit period, a focus on key informants was made instead. Since the survey, waste audit and personal observations gave the research-rich information about the concept studied, choosing to interview key informants resulted in giving added value to the already gathered data. Another reason for this was that the key informants fitted the specific profile for consumers interested in sustainable products nearly perfectly. According to Vermeir and Verbeke (2006), the ethical consumer is a “middle-aged person with a higher income, who is above-average educated, with a prestigious occupation and who is well-informed” (Vermeir & Verbeke, 2006: 93).

6.3.2 Key informants view on food and sustainability

Some participants had altered their behavior and habits and focused more on issues regarding sustainable food consumption, usually due to competence sparks, such as material triggers, health concerns and environmental concerns brought to light by new information.

“I think that you want to become more aware. You go to a grocery store, you go shopping, but at the same time you should ask yourself why you do it. To get rid of this wear and tear way of
thinking, buying cheap and in large quantities. Do I really need all of this? I guess at times we buy unnecessary things” (Verbatim 12. Interview, April 2018).

This particular give-and-take interaction of factors on peoples habits can also be shown in other authors who have studies SPT, such as Shove et al. (2012). The SPT factors play a role when making food choices, which can either have positive or negative influences on sustainability. One example is the concept of the breakfast buffet at the hotel, which is clearly influenced by trends and customer demands.

“We work with generous concepts. The breakfast for example is very big. There is a lot to choose from, which is for better or worse. But that is also the trend within the hotel business, the breakfast should be luxurious and have a lot to choose from” (Verbatim 9. Interview, May 2018).

Similar results can be seen from the hotel supplier’s point of view, where the customer demands are usually connected to quality rather than sustainability.

“You can say that 35% of all our emissions come from manufacturing, it is no doubt the biggest environmental impact. And that makes it interesting for us who look at what options we can offer the customers that would enable an environmental reduction, and if they are prepared to pay for it […] Therefore our goal is to raise the awareness among our customers and have a straight dialogue about what we want to achieve […] It’s interesting to see that the demands the customers have on our products actually have the highest environmental impact” (Verbatim 10. Interview, April 2018).

All participants mentioned a variety of influences that they had encountered, both regarding material, competences, and meanings, as well as other outside factors. The majority of the components that influenced their behavior had a connection to purchasing habits, which could be an important observation when looking into ways which one could minimize food waste, such as with reduction messages to consumers (Stefan, van Herpen, Tudoran, & Lähteenmäki, 2013).

When asked what role sustainability in food context plays in their life, choices such as eco-friendly products and vegetarian examples were brought up as sustainable food consumption. When asked about knowledge in issues regarding food, most participants said that they were aware of issues and that avoiding wasting food and supporting sustainable food efforts taken, such as buying local and organic food was important.

“I am a little torn between choosing ecological products over other products. Should I buy the ecologically grown tomatoes from Holland or should I buy the tomatoes that are locally produced? What exactly sustainability and climate impact is in this context is an issue. […] I’m a bit doubtful but also curious of what exactly one measures, and I also see myself as a big environmental villain since I travel a lot to and from Stockholm, also through work. So one
might think about whether all this is sustainable in the long run, which it isn’t” (Verbatim 1. Interview, April 2018)

Another association with sustainably labeled food was that it was not only better for the environment, but healthier, which is a typical consumer belief found in the literature (Vermeir & Verbeke, 2006).

“I try to be sustainable, but no one is perfect. It is hard in today’s society to only make environmentally friendly decisions, but I try to think about what I can do. I, for example, don’t eat meat and try to only buy organic food.” (Verbatim 11. Interview, April 2018)

6.3.3 Competences and Meanings related to food and sustainability

The following questions were asked to get a greater understanding of the knowledge (competences), and beliefs (meanings) participants had in regards to food waste. When asked if they thought that food waste was a problem in Kalmar, Sweden, and the world, the majority of the replies said that it has an impact but that waste management such as recycling and composting helps. Reasons to why food waste wasn’t seen as a big issue on a local scale was due to the fact that food waste is organic and will disappear (unlike plastic for example), and that Kalmar has an excellent waste management facility which separates the biowaste and turns the waste into biogas that is used for the local buses as well as in agriculture.

“I think this [food waste] is a problem everywhere. I think it depends on how educated people are and we have quite a good system here in Sweden. I think other countries might be a little bit behind us” (Verbatim 3. Interview, April 2018)

“We [the hotel] sort all our garbage. So our food waste, in this region, goes into the green bag and turns into biogas. In that sense, we [Kalmar] have come a long way.” (Verbatim 4. Interview, May 2018)

“It [minimizing food waste] is one of many important initiatives that should be worked on more. I’m more oriented in the Swedish parts of our establishments, but as I have understood it, there is a lot of food waste produced. A lot of food goes to waste in Sweden.” (Verbatim 5. Interview, April 2018)

These quotes demonstrate that there are different views and different knowledge, which could further influence the habits and beliefs of food waste and how to manage it. The biowaste management in Kalmar for example could lead to a licensing effect, where “good” choices can boost peoples self-image and lead to allowing themselves to have other not so good behaviors (Khan & Dhar, 2006). Another example of this can be seen in the water management for the hotel, where they are to follow the Green key water policy requirements in order to keep their ecolabel. One requirement for the hotel was to install low-flow toilets and showers, which is not only questionable if it always minimizes the water consumption, but could also be jeopardizing the service quality.
“The low-flow showers are interesting. We have installed them, but the result is that the guest spends a longer time in the shower since they still have to wash away the shampoo. Instead, we maybe should have just let the showers be. We still have a rain shower, because we want to give the customer a rain shower experience. Instead, we could still focus on the toilets, or somewhere else.” (Verbatim 6. Interview, May 2018)

The participants believed that the individuals themselves are responsible for behaving environmentally friendly, but that they should be aided in different ways to accomplish this. The government should, for example, continue providing resources to minimize food waste, such as the green bags, but examples such as education were said to be a resource that the government should provide. Other examples that the hotel could consider was to support local farmers as well as making tips and tricks to result in better environmental outcomes, without lowering the customer experience.

“We have created different scenarios where we reduce food waste, but the challenge isn’t internal, but rather how to work with the guest. It’s not that fun to put up huge signs where it states “don’t throw food”. We can’t become an environmental police, but we can work with the personnel, and become better as a company. But regarding the guests, it is hard to produce something sustainable”. (Verbatim 6. Interview, May 2018)

Another participant highlighted the possibilities with “nudging” the guest, where shifting the materials related to the breakfast service would not only improve the service quality (in providing a greater range of products) but further influence the customer to make more environmental decisions (such as choosing a vegetarian alternative). Though this example is shifting materials, it has a substantial value in competences and meanings when connecting it to SPT.

“The placement of the products can have a big impact [...] When offering vegan or vegetarian products they should be easy to find. Instead of having a corner with all the products, one could implement it instead. If the guest doesn’t identify as a vegan they won’t go to the “vegan corner” at the buffet. Putting, for example, the vegan yogurt next to the processed sour milk results in the guest not having to identify with that specific diet and might even try something new” (Verbatim 7. Interview, April 2018)

Lastly, most of the participants also commented on their habits and knowledge of eco-labeled products and the importance of food waste, but with more weight on eating sustainably rather than minimizing food waste. These statements reveal that there is less of a focus on minimization and prevention behaviors, and more on consuming sustainably. If one is to focus on the waste hierarchy, a strong recommendation for the government and the city of Kalmar would be to focus on shifting this consumer behavior towards less consuming. Working for example with the waste management hierarchy, and presenting this to the consumers and citizens to “nudge” them to think more sustainably should help to achieve this unconscious
change in habit. However, this requires looking into all the factors of meaning, competences, and materials (such as socioeconomic, contextual factors and other factors that influence food waste generation) so that reducing food waste rather than producing it would become a habitual behavior pattern in the end.

6.3.4 Materials related to food and sustainability

Materials are the objects, tools and the body itself that are necessary to perform a practice. In this case, the hotel infrastructure, the breakfast buffet, the customers as well as the staff can all be parts of the materials. The hotel has enabled material recycling in at least five fractions, where the food waste is recycled into green bags that are then used to produce biogas that is used for the local buses as well as in agriculture. The results of the study gave various suggestions of how one can restructure the materials into making the breakfast service more sustainable. One aspect that was addressed both in the literature as well as in the study was a reconstruction of the buffet service in itself to try and reduce the food waste produced. However, though it was clear from figure 4 that in general, there was a great deal of food waste generated during the breakfast buffet, one of the interviews recognized that a form of coffee break buffet, such as the one presented for conference groups at the hotel, can minimize food waste.

“The conference guests make their own sandwiches, so instead of us preparing and offering readymade sandwiches, which we then have to throw away if gone uneaten, the conference coffee break service offers a buffet so the guest can choose what they want to eat. This is perceived as positive for the guest but has also minimized our food waste” (Verbatim 8. Interview, May 2018)

This result was not only interesting, but reflected the study by Pirani and Arafat (2016), where their results were in opposition to the general statement that a la carte style servings would help to reduce plate waste (Sarjahani et al., 2009).

One participant also believed that these sustainable foods should become more supported and make more people aware of them. One reason behind this was not only that it would benefit the image of the company but in the end, could make sustainable foods more affordable.

“Firstly it’s about the current conditions. The hotel should buy in eco-labeled, organic, and local products. It can be difficult at times, since it can be expensive to invest in those products unless you have the financial potential to invest in those products, such as milk, eggs, muesli. The best thing would be if all the products were eco-labeled products. However, even organic, or if possible, locally produced, such as choosing to buy Swedish meat is important. And then it’s also about displaying it, showing the guests what the hotel does, their so-called goodwill, simply reinforces the brand through showing the guest that the company cares” (Verbatim 2. Interview, April 2018)
Today the hotel provides a wide range of ecological products for their food service, which is also one of the criteria from Green Key for the hotel to sustain their eco-label. However, the issue of pricing was said to be the biggest reason not to provide ecological products top to bottom.

The data was needed to flesh out the infrastructure (materials) of the breakfast service as this also has a significant influence on sustainable food practices according to SPT (Aschemann-Witzel et al., 2015). These results have further been found in the literature, where for example choosing sustainable products usually comes with a higher price, therefore preventing businesses in engaging with this advertised aspect of sustainability (Bryla, 2016; Garnett, 2011; Radman, 2005). This further connects to the views of SPT that materials such as money can play a huge role in determining consumption habits (Vermeir & Verbeke, 2006).

7 Discussion

This research was done in the pursuit of gathering knowledge to answer the objectives of investigating food waste practices related to breakfast buffets in a hotel chain, in order to recommend possible strategies to reduce food waste without jeopardizing the service quality. The following section will summarize this studies results and answer to the aims and objectives as well as relating it to the general theory of SPT.

7.1 Answering to the objectives and the aim of the study

To assess the food waste generated in the breakfast buffet as well as trying to understand how to reduce the food waste, an overall investigation of the food waste practices related to the breakfast buffet was needed. This was done through waste auditing, surveys, personal observations, and interviews, which results are further connected to the SPT, as explained in the next chapter.

7.1.1 What factors and practices lead to food waste

The factors found to be most relevant when it comes to producing food waste are discussed below. The chapter begins with looking into the components that influenced the sustainable habits according to the SPT and then moves on to specific factors that affect the waste generation in the service process. Though the factors are presented one by one, they are often interlinked in one way or another. The summary of components found in the study and the literature that influence sustainable habits are presented in table 9, distributed according to the SPT of competences, materials, and meanings. The components were then further distributed
into the five approaches to defining quality by David A. Garvin to illustrate how the researcher understood the components influences regarding quality.

| Competences | • Education  
|             | • Awareness  
|             | • Planning   
|             | • Knowledge  | **User-based approach**  
|             |               | Determined by the customer. All individuals have different needs. |
| Materials   | • Infrastructure of hotel  
|             | • Eco-products  
|             | • Waste management | **Product-based approach**  
|             |               | The view of quality is easily measurable. |
|             |               | **Manufacturing-based approach**  
|             |               | Entirely on the supply side, focused on the manufacturing practice. |
| Meanings    | • Feelings and values  
|             | • Environmental concerns  
|             | • Guilt  
|             | • Personal experience | **Transcendent approach**  
|             |               | The customer is able to say that the service experience was good, but not able to say why. |
|             |               | **Value-based approach**  
|             |               | Quality is viewed as customer benefit relative to the cost or price |

Table 8 Summary of components according to SPT and Service quality

SPT looks at how practices can be connected to habits and how and if they are reoccurring, how they are affected by internal and external factors and explains how practices are built up by individual choices (Reckwitz, 2002; Warde, 2005). The above table shows how competences, materials, and meanings were present in this study, which is closely linked to other results in past studies (Aschemann-Witzel et al., 2015; Block et al., 2016). This shows that though this case study might be unique and based on a specific place and a specific customer segment, it was still influenced by similar factors. SPT is used to understand practices in a group rather than one individual, but it should be noted that the participants in this study were in one way or another aware of sustainability issues related to food waste. The competences, materials, and meanings were then further studied according to a service quality model, which illustrated how the service level is matched with the customers’ expectations as well as fulfilling their needs (Edvardsson, 1997; Enquist et al., 2007).

As stated in the literature, practices connected to sustainability in a food context are complex since they are influenced by different types of factors, which often are hard to determine what exactly the sustainable or unsustainable behavior is (Stefan et al., 2013; Shove et al., 2012).
Similarly, the process of finding out what processes lead to sustainable choices can come from any of the three components, competence, meanings or materials, and due to these components all being linked together, a mix of factors attempting to enforce sustainable behavior positively can be seen (Warde, 2005). All of these different components can therefore either work against or with each other. The more components that encourage sustainability, the higher the likelihood of sustainable practices being done. However, not every customer or company is the same nor influenced in the same way as seen from the service quality perspective, which might make it challenging to adopt sustainable consumption behaviors. These challenges are why a solution such as educating customers and workers at the hotel could help to minimize these barriers, resulting in everyone engaging in a more sustainable behavior. The focus should not only lie in encouraging people to reflect on their impact on the environment, but also on how different practices could change their behavior into a more sustainable option, without lowering the service quality.

Overall, regarding what practices drive unsustainable behavior, the themes that arose were a repetition of what has been found in multiple other large-scale studies (Aschemann-Witzel et al., 2015; Block et al., 2016; Thyberg & Tonjes, 2016). The only new aspect that was noticed in the study was that people seem to have an overall good picture of what sustainability is, and probably attained more awareness of the issues with food waste. The results of this study however revealed that a consumer that seems aware of sustainability may still have questions about what exactly sustainable behavior is, as is seen from the interview results. The study showed that the customers have a high interest in eco-friendly products as well as food waste minimization, though the significant results only indicated that the female leisure travelers have the highest mean score in favoring eco-friendly products leading to a significant difference compared to the male business traveler. The female leisure traveler attitude towards favoring restaurants that focus on minimizing food waste significantly differs from the attitude of the male business travelers and the male leisure travelers.

Furthermore, the results demonstrated that there are factors that are directly linked to higher food waste practices in the service process. One of these factors is the type of service, in this case, the buffet style service, which has been reported to generate more food waste than a la carte style of service (Juvan et al., 2017). It is clear from the results that in general, there was a great deal of food waste generated during the breakfast buffet, but the results from this study also recognized that a form of buffet, such as the one presented for conference groups, can minimize food waste. The finding was not only interesting, but furtherly reflected to the study
by Pirani and Arafat (2016), who reported that a la carte style servings, in opposition to the general knowledge that a la carte servings reduce plate waste (Sarjahani et al., 2009), wouldn’t always result in minimizing plate waste. By that, the general strategy of converting buffet services into an a la carte service to reduce food waste may not be the best solution to minimizing food waste.

Another factor could be not only the types of food served but how it is served. When comparing the days monitored during the waste audit week, it showed that the preparation waste was fairly significant to the overall food waste for each day. One reason to this could be that the breakfast buffet in question serves a wide variety of products, as well as products that generate a lot of preparation waste. For example, studies have shown that dishes that are vegetable based produce a higher amount of preparation waste than for example pasta-based dishes (Pirani & Arafat, 2016), which was also seen during the waste auditing week where a great deal of preparation waste was fruit and vegetable peels. Then again the breakfast buffet service has shown to produce less preparation waste than a lunch buffet, which again might be due to the breakfast buffet usually serving foods such as cereals and jams, which have a longer shelf life. Similarly, the hotel could choose not to cut up fruits and vegetables, therefore not only minimizing the preparation waste but extend the shelf life of vegetables and fruits. However, lowering the presentation of the fruits would most certainly minimize the customer satisfaction and the service quality, since a variety of washed and cut up fruit and vegetable options are more appealing as well as better suited for a buffet experience. Lastly, the customer survey presented the result that there are positive attitudes towards the topic of eco-labeled choices of products during the breakfast serving. Therefore, though the hotel might view eco-labeled products as an issue due to higher costs, providing environmentally friendly products are seen as something positive when viewed from a sustainable aspect as well as a marketing aspect.

Another factor that significantly contributes to the production of food waste is the inaccurate forecasting of consumer demand, in other words, the ratio between how many guests that attend the service compared to how many guests forecasted for. The hotel tried to be as accurate as possible, through for example viewing the number of overnight guests, but the walk-in rate is nearly impossible to calculate, besides leaning on knowledge of past guest patterns. The actions taken in the hotel to cope with this issue was to first of all try and predict the number of guests, and secondly, limiting the number of walk-in guests depending on how many hotel guests are accounted for. The limitation therefore guaranteed a quality assurance for the overnight guests where the hotel does not take in more guests than it can handle, as well as giving a more
accurate number of attending guests. However, though the hotel focuses on minimizing the food waste and food costs, under-estimating the amount of food needed to fulfill the demand is not a risk the hotel is willing to take. Therefore, an error on the excess side is always preferred.

Since the study showed that there are different views and different knowledge in food waste management, it could further influence the habits and beliefs of food waste and how to manage it. The biowaste management in Kalmar, for example, could lead to a licensing effect, where “good” choices can boost people’s self-image and lead to allowing themselves to have other not so good behaviors, i.e., “food waste is not bad since it will be used later as an energy source”. The licensing effect can be seen in the study by Sundt (2012) where the hospitality sector demonstrated that wasting food can be regarded as more acceptable in society as new biogas solutions are introduced and promoted. This statement relates to the fact that most of the participants commented on their habits and knowledge of eco-labeled products and the importance of food waste, but with more weight on eating sustainably rather than minimizing food waste. These statements can further be seen in the literature, where there is less of a focus on minimization and prevention behaviors (Vanhonacker et al., 2013), which is something the government and the city of Kalmar could have a stronger focus on to try and change.

7.1.2 What views and practices reflect the broader sustainable food consumption

From the survey conducted for the thesis, a high expectation of service, quality, and even sustainability was shown from the responses. Customers today seem to not only expect a high standard service in products presented and the service given, but value an environmentally and ecologically friendly service (such as eco-products). The results of the survey therefore showed that customer’s views of quality could be linked to sustainability. Although it is intriguing to focus on this result, it is not a result that can be viewed as consequential since the participants were almost all considered to be ethical consumers, which according to the literature is still a consumer group representing an exception (Vermeir & Verbeke, 2006). The results from the survey also showed that there was a strong, positive correlation between breakfast satisfaction and company satisfaction, indicating that the more satisfied the customer is with the breakfast, the more satisfied he or she is with the overall business. The survey also showed that being a female leisure traveler you are more satisfied with the company as well as more satisfied with the breakfast compared to being a male business traveler. Reasons to these different aspects could be the guest’s level of expectation (Meaning), if they were a new guest or repeat guest.
(Competence), or if they were just dissatisfied with a minor product at the breakfast buffet (Materials). Another comparison between the different travel segments showed that business travelers had a lower interest in minimizing food waste, but the interest in consuming eco-friendly products was approximately the same in all groups, keeping in mind that the highest interests in these issues were from female leisure travelers. One possible solution to why waste management and ecological products have different interests could be that a focus on waste management is more about solving a global issue, while an interest in eco-friendly products could be due to favoring goods that are good for yourself as a human. These findings also correspond to the fact that today’s society has a strong focus on purchase choices of consumers, who seem to be more willing to buy sustainable products, rather than actually looking into minimizing their consumption (Vanhonacker et al., 2013). However, the results of this research showed that there is an interest in food waste prevention, especially if you are a female leisure traveler. The findings of gender differences in environmentally conscious behaviors in this thesis are also supported by previous research, where the variables are generally stronger for females (Han et al., 2009).

From the results, it was evident that there is a strong importance of the environment both in the views of the consumers and the producers, which could be seen due to proper waste management as well as the interest in sustainably labeled foods and other environmentally friendly practices. All participants seemed to be aware of how their habits are connected to sustainability. However, there was a stronger focus and interest in consuming sustainable foods rather than minimizing food waste, which matches what has been said in the literature (Vanhonacker et al., 2013; Verain et al., 2015). One issue that arose regarding consuming sustainable foods is that it is usually considered as more expensive, resulting in a limitation when wanting to act environmentally friendly. This statement is also consistent with the sustainability narrative from the literature (Garnett, 2011; Vanhonacker et al., 2013; Verain et al., 2015).

Being engaged in sustainability in the context of food can be due to social norms and one’s self-identity (Shove et al., 2012), where people might, for example, change their habit into something more popular and fashionable, such as sustainable eating, but not consider other impacts such as wasting food. By that, educational programs should be recommended where a greater awareness of food waste issues could help the consumer in seeing the whole picture, rather than only focusing on oneself. This problem further relates to the SPT, that states that our habits are unconscious and deeply embedded (Warde, 2005), and even if today’s social
pressures are changing our behaviors to become more sustainable, it is still integrated in an unsustainable system.

7.1.3 **Recommendations for possible strategies to reduce food waste**

There is sufficient literature that summarizes the factors that play a role in food consumption behaviors as well as the factors that are related to those habits (Aschemann-Witzel et al., 2015; Block et al., 2016; Thyberg & Tonjes, 2016). By that, it is highly recommended that the government or organizations use this information to provide information campaigns to alter behaviors (Block et al., 2016). Results from the study show that there is a strong awareness of sustainable food consumption, but it will need a strong and correctly aimed marketing push to result in a much needed behavioral paradigm shift, something that cannot be done through a hotel.

The results from the different data collections revealed possible strategies to reducing food waste in the hotel. Though the hotel already engages in different sustainability actions, there are still potential food waste management strategies that can be undertaken. One major area relates to the staff, where personal observations showed that the staff’s impact on food waste generation showed to be of great importance. If the staff is aware of the issues regarding food waste and see the value in minimizing avoidable food waste, it can have substantial benefits (Silvennoinen et al., 2015). The first stage of the breakfast serving is the storage and purchase, where the hotel showed a strong knowledge of waste reduction through optimized storage management (first-in-first-out principle) as well as an up-to-date adaption to food ordering where nearly no stock buying was visible. Food waste reduction that was clearly seen in the breakfast preparation and cooking stage was a reuse of leftovers (under consideration of health and safety legislations), controlling the preparation losses and strategies against overproduction such as freezing. During the breakfast serving the staff showed evident food waste reduction through for example not completely filling the chafing dishes towards the end of the breakfast time, therefore minimizing the overproduction waste, as well as having a strong focus on an attractive presentation during the buffet serving. This is also due to the fact that food waste is a type of waste that is difficult to reuse, when the food has been presented to the guest at certain conditions, there is little the staff can do to preserve the food (Quested et al., 2013; Thyberg & Tonjes, 2016; WRAP, 2011). This is specifically significant with breakfast products that need to be preserved in the chafing dishes.

Although the food waste generated from the hotel is used as energy at a later state, looking back at the waste hierarchy, this is not considered as a good alternative and should therefore
preferably be used to feed people (Papargyropoulou, 2014). However, there are still studies and reports that reflect on the impact the hotel staff can have on the food waste, such as maintaining a good inventory and revising menus (Parfitt et al., 2010; Pirani & Arafat, 2016), which from the study showed that the hotel already was engaging in such activities. By that, a further action of training staff and highlighting the benefits, as well as even rewarding the staff when taking effective measures is recommended (Betz et al., 2015).

There are however some opportunities for food waste reduction which are described in the literature and are not yet implemented in the hotel breakfast service. These examples have a strong focus on measures for food waste reduction through the consumers, who according to the literature seem to be the most promising way of trying to reduce the negative impacts of tourism on the environment (Gössling et al., 2002; Juvan & Dolnicar, 2016). The thesis waste audit result also showed that the plate waste generated from the customers presented a significant amount of the total food waste, which according to the personal observations mainly consisted of avoidable food loss. That is why the kitchen waste is not discussed as a significant source of food waste in this thesis since it mainly consisted of unavoidable food waste (Engström & Carlsson-Kanyama, 2004). By that, tourists can help by making environmentally sustainable decisions and behaving in an environmentally friendly way, resulting in consequential food waste minimization without making too big of a change in the service quality. However, as earlier discussed, one should proceed with caution, since higher sustainability for consumers does not always indicate a higher service quality (Enquist et al., 2007; Garvin, 1984b). One possible food waste reduction is for the hotel to involve the customers in the field of food waste and the causes of food waste through using posters. If presented professionally the posters would not only minimize the food waste produced from plate waste (Kallbekken & Sælen, 2013) but may also be useful in marketing purposes (Kallbekken & Sælen, 2013; Lipinski et al., 2013; Pirani & Arafat, 2016), highlighting the hotel’s values regarding sustainability. Due to the nature of the guests and their behavioral tendencies, promoting a participatory approach in food waste minimization strategies can be done more efficiently in some places than in others (Pirani & Arafat, 2016) but does not exclude the fact that it should be done. This is a matter which should be addressed within the hospitality industry, around the world, through having an honest and straightforward dialogue with the guest as well as with the staff (Marthinsen et al., 2012).

Another action could be to conduct surveys to find the reasons to plate waste and implement appropriate actions to minimize it. However, one reason to why the hotel has not yet implemented some of these strategies could be due to a question of service quality, where
through the interviews revealed a fear of reducing the customer experience due to regulations or informative posters.

8 Conclusions

The aim of this study was to investigate food waste practices related to breakfast buffets in a hotel chain, in order to recommend possible strategies to reduce food waste without jeopardizing the service quality. The surveys and waste auditing was conducted as part of the exploratory phase, which helped to establish the current status of the food waste issue in the hotel. The following step was to conduct interviews which gave a better understanding of the findings from the waste audit week as well as the customer survey. The food waste practices that were found to influence the food waste generations in the hotel from the mixed methods used were further supported in other literature. Some contextual factors (such as the waste management service provided in Kalmar as well as participants views of the value of minimizing food waste) demonstrate that it is of importance to try to understand all the different factors that influence sustainable as well as unsustainable food practices, especially when considering minimizing the food waste production. From the perspective of sustainability, improving the hotel's food waste management practices should be an essential part of its overall green strategy. The issues regarding food waste should not only be addressed by the staff working at the hotel, but the administration should also work to encourage guests to produce less food waste. This recommendation is crucial to the hotel since the study showed that the plate waste was a significant part of the overall food waste generated at the hotel, and as an avoidable food loss, it can only be minimized through a greater awareness from the guest. What is more, factors such as show-up rate, if not calculated correctly, can have huge impacts on generated food waste. In this case, the customer should, for example, adopt a new mindset where luxurious displays of food are not needed, and through that, accepting that a particular dish could run out or a smaller variety of food is presented. The main contribution of this study is that it provides an insight into a single-in-depth case study and its factors that influence food waste practices, and although the study was small scale, the results are supported by similar studies, therefore representing a real-life example. The study also showed that service quality should be viewed as a component of practice, and should, therefore, be added to the SPT model, contributing to a new theoretical view of social practices. The study also recommends on-site solutions to minimize the food waste as well as points out positive strategies that the hotel already has implemented. These strategies can also easily be
implemented into the business chains other hotels since all the venues follow the same structure, idea, and menu of the breakfast buffet. Furthermore, though the recommended strategies to reduce food waste in this thesis focus on the breakfast service in a hotel, they are not limited to a single service or a single business since most of the strategies can be implemented in other service sectors such as schools, hospitals, and a la carte restaurants. However, there is a limit to how much can be achieved with these measures. In the end, even if the hotel is overly sustainable and considers food waste accordingly, if the guest does not act environmentally it will result in a higher amount of food waste generated.

Another contribution to research that was found in this study is that though many participants were viewed as being ethical consumers, there is still a massive gap in knowledge regarding food waste and its significant environmental impact. Lastly, even though the study showed a keen awareness regarding sustainable food issues, the knowledge is mostly focused on superficial sustainable behavior. By that, recommendations for minimizing food waste such as governmental or non-governmental educational campaigns can result in confusing the average consumer, since the proper sustainability narrative is not focused on.

In sum, there are limitless strategies that can be implemented in a hotel to reduce food waste, strategies which could result in colossal positive impacts both socially, economically and environmentally. Although the researcher believes that every little helps, and is pleased to see that today’s social pressures are changing our behaviors to become more sustainable, it is all still integrated in an unsustainable system. Therefore the society will need a strong and correctly aimed push to result in a much needed behavioral paradigm shift, a push that cannot be done through a hotel, no matter how sustainable it becomes.

8.1 Suggestions for improvements and future research

It is important to point out some limitations to this study, as well as draw some boundaries regarding applicability of its results. The following sections discuss improvements for the data collection process as well as the successes and suggestions for improvement for future research. First, the different data gathering methods are discussed, after that specific caveats of the study are presented.

8.1.1 Caveats of this study

The concept of SPT proved to be valuable to capture essential insights into meanings behind food waste generation. However, though the theory provided views of the practices that are
unsustainable or have a negative environmental impact, other important contextual contributors could be related to the theory but were not necessarily captured by SPT. By that, the application of SPT is advised to work as a guideline since the findings from the theory did not show to solve a long-standing problem instantly. By that, it is of importance to go between and beyond its dimensions to find other relevant contributors to food waste generation.

Looking specifically at the research process there are some caveats that can be pointed out. At the beginning of the research process, the researcher was quite optimistic about finding participants as well as gathering data. In the beginning there was an issue with gathering participants to engage in the survey, however, after being more aggressive in the efforts to talk to volunteers, the researcher managed to gather survey respondents. Though at the time the number of survey results seemed like many, when going through the data and grouping the respondents the researcher felt that more respondents would have made the results more accurate. In regards to the attempt to gain participants for the interviews, both time-planning as well as contacting them could have been done better. Finding the key informants to interview was not difficult, since the results and information from the survey, personal observation and the food waste audit period directed the researcher to whom she should talk to in order to get further information. The problem arose when the dates for the interviews changed from early April to mid-May, when not only time was running out, but the key informants also had lack of time to participate in the interview.

Out of all the data collection processes, the personal observation went as planned. It took some planning to figure out how to observe both hotel workers as well as the customers without interfering in the process itself. However, watching how people act and work in the hotel environment was both exciting and fun, though at times a bit awkward and challenging when trying to not be viewed as some sort of sustainability judge.

During the personal observation process, food waste data collection was also conducted. It was good to see that the food waste audit period was viewed as something positive, both among the workers as well as the customers. However, as a research project, the waste measurement period probably influenced the behavioral actions and resulted in the people around noticing their habits throughout the week, which as a result had an impact on the data quality. Also, a one-week food waste measurement timespan was not enough to gain a proper insight into the average amount of food waste produced in the hotel breakfast service. Since the hotel is semi-irregular (summer season, winter season for example), the measurement would probably have differed greatly if it would have been done under another season.
Lastly, logistically, meeting or talking with participants to do the interviews went well. The interviews were all recorded, and the transcription process went smoothly. As the researcher conducted the interviews, she noticed that there were questions which should have been asked, as well as altering the questions a little bit, but that is information that you can only find out after doing multiple interviews.

8.1.2 Future Research

This project was not able to give a generalizable conclusion about what should be done to minimize the food waste created, nor any findings of how to minimize food waste that hasn’t already been revealed in previous research. However, some of the insights from the methods used and the results presented might be able to help direct future research as well as result in a minimization of food waste at the single in-depth case study. As the issue of food waste in the hospitality industry will gain more importance in the future, research will need to focus more on the underlying issues that form the behavior of wasting food, rather than merely looking into possible strategies to reduce food waste.
9 References


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10 Appendices

10.1 Interview guide for semi-structured interviews

Part 1 Personal information
1. What is your role within the company?
2. Describe your interest in sustainability issues (Meaning)
3. How do you feel about issues of sustainability in food context? What is it for you – how do you understand it? (Meaning)
4. What have you heard in regards to food that is an issue of sustainability? What are you concerned/not concerned about in terms of food sustainability? (Competence)
   a. If not aware: Have you heard of any issues concerning food? Do you concern yourself with those issues?
   b. If aware: has this influenced your behavior in any way?

Part 2 Company information
1. How is sustainability incorporated in the company? Do you follow any specific practices/policies/procedures? (Meaning, Competence, Material)
2. Is it important for your company to operate sustainably? Why? How? (Meaning)
3. Do you plan to develop your sustainability plans in the future? What are your goals? (Meaning)

Part 3 Food and sustainability
1. Can you point out barriers to food sustainability within the company? (Meaning, Competence, Material)
2. What do you think are barriers or challenges with preventing or minimizing food waste? (Meaning, Competence, Material)
3. What is your opinion on sustainably labelled food, such as organic, local, free-range, etc.? (Meaning)
4. What would you suggest for restructuring breakfast buffet in a more sustainable way? (Materials)

Part 4 Further questions
1. Which do you think should be focused on more in regards to consuming food sustainably? Focusing on sustainable products or reducing waste? (Meaning, Competence, Material)
2. What is the consumer responsibility to creating a sustainable food system and reducing waste? (Meaning, Competence, Material)
3. Do you think food waste is a problem within the business, in Sweden, in the world? (Meaning, Competence, Material)
10.2 Survey


Ålder __________________________
Kon □ Kvinna □ Man □ Vill ej uppge

Är du affärsresenär eller fritidsresenär? □ Affärsresenär □ Fritidsresenär

Overlag, hur nöjd eller missnöjd är du med vårt föreslag Calmar Stadshotell?

□ Mycket nöjd
□ Ganska nöjd
□ Neutral
□ Ganska missnöjd
□ Mycket missnöjd

Overlag, hur nöjd eller missnöjd är du med vår frukost?

□ Mycket nöjd
□ Ganska nöjd
□ Neutral
□ Ganska missnöjd
□ Mycket missnöjd

Lämnade du mat som du tagit åt dig?

□ Nej
□ Om ja, vad? __________________________

Var det något du saknade från frukostpuffén?

□ Nej
□ Om ja, vad? __________________________

Det är viktigt att restauranger gör ett bra jobb med att minimera matavfall

□ Håller helt med
□ Håller delvis med
□ Neutral
□ Håller delvis inte med
□ Håller inte alls med

Det är viktigt att erbjuda miljömärkta produkter under frukosten, så som KRAV, Svanen och Fairtrade produkter

□ Håller helt med
□ Håller delvis med
□ Neutral
□ Håller delvis inte med
□ Håller inte alls med

Övriga kommentarer:

________________________________________________________________________
________________________________________________________________________

Tack för din medverkan!